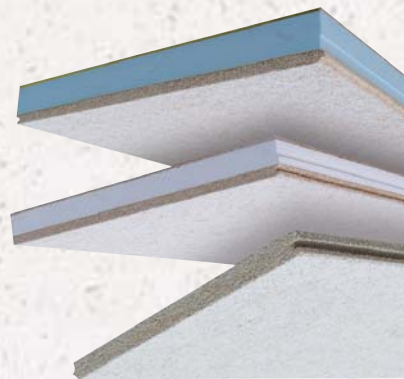


Roof Deck Installation Guidelines

June 2012

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Tectum panels are made from renewable and sustainable raw materials.

INTRODUCTION

This manual is designed to provide general assistance for the installation of Tectum Roof Deck products. As each project is unique, the manual does not cover all possible situations. If you need additional information for a specific challenge, please contact Tectum Inc. technical support at 888-977-9691.

GENERAL INFORMATION

Review of drawing and jobsite planning are essential to lowering your risk of errors and omissions. Tectum decks are relatively easy to install and maintain provided a few basic precautions are taken at the jobsite.

The architectural drawing needs to be reviewed before installation to verify that adequate structural support members are provided at perimeters, change of slope, and change of panel direction. If required structural support members are not shown, clarification of who provides these supports is required. Some other elements of a successful project include:

- Verification of acceptable structural support spacings for the specified product
- Support members are wide enough to provide required bearing
- Unsupported overhangs for Tectum composite decks do not exceed 24" in length direction, or 16" in width direction
- Tectum deck panels are cut in a single plane.

These issues should be clarified early in the process.

BEFORE THE DECK ARRIVES

To insure fast, efficient installation, the following steps should precede the arrival of the Tectum roof deck on the jobsite.

- Review Shop Drawings** - Approved shop drawings are required before the project begins. Clarify questions or omissions with the architect/engineer before you proceed. The cutting list on the shop drawings must be reviewed and verified with the panel layout. The order and delivery dates need to be confirmed with Tectum Inc.
- Contractor's Meeting** - Request the general contractor or owner's representative schedule a meeting to coordinate the installation

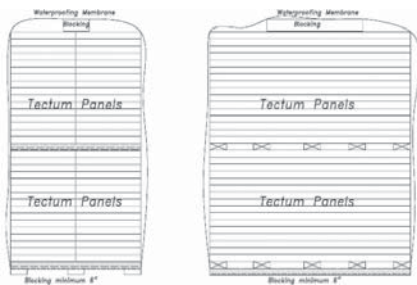
with other trades. Review the scope and responsibilities of the roof deck subcontractors as related to the other trades. Examples of items that must be discussed include access to the work area, restriction of trades working below, spacing of bar joist/purlins to accommodate standard length material when possible, coordination of waterproofing, and availability of equipment to move and locate deck on the roof.

- c. **Jobsite Inspection** - The area where the material will be stored and staged for installation reserved.
- d. **Building Accessibility** - The accessibility of the building will determine the hoisting equipment required on the jobsite for unloading the truck and placing materials on the roof.
- e. Determine the start point of the deck.
- f. **Structural Spacing** - Verify the structural spacing of the purlins and structural steel/wood. Verify if standard lengths are acceptable, or if panels require field cutting or special panel lengths. Verify that support spacing conforms to shop drawings.
- g. Verify that the supports are in the same plane and correctly spaced and not skewed.
- h. **Delivery Dates** - Delivery dates should be confirmed a minimum of one week in advance of the requirements. Crews and equipment should be available to unload the trucks in a timely manner. Truckers are independent contractors and the majority will be prompt. Delivery is always subject to weather, breakdown, and other unforeseen circumstances. Do not schedule production until the material is on the jobsite.

WHEN THE DECK ARRIVES

- a. Inspect all Tectum Roof Deck shipments. Any variation from the bill of lading must be noted. Any damage needs to be noted. Check accessories and provide safe storage.
- b. Tectum roof deck should be unloaded and stored on the site on a stacking platform. The platform is to be raised at least six inches from the ground or floor level. The platform needs to be covered with a moisture resistant material before the deck is stacked on the platform. Cover the deck with water shedding material and secure. Insure that the covering will stay in place in case of wind and rain

or snow. Allow for air circulation under the cover to prevent condensation. If Tectum composite decks are being covered, the water shedding material must be prevent ultraviolet light from passing through.



- c. When stacking material of different lengths, segregate the lengths for easy access to the various lengths. This reduces the time required to search for proper length material for the various spacing of members and speeds installation.

CARE OF MATERIALS

- a. Use care when handling Tectum roof deck products to prevent damage. Damage to the edges, corners and surface can occur from mechanical devices and staining due exposure from various sources.
- b. All Tectum deck laid in a day should be made watertight at the completion of that day's work, preferably by the application of the roofing, or at the option of the contractor by covering with waterproof film or material, such as polyethylene. When the sidewalls are not erected when the deck is installed, edges and plank ends should be temporarily weather proofed to safeguard against damage.
- c. If uncompleted deck gets wet, planks should be placed over it to support any heavy materials which might be stacked on the deck, or to support the weight of wheel barrows or buggies transporting concentrated loads. If wetting has been ongoing over a period of time, judgment must be used as to whether wet panels need to be replaced.

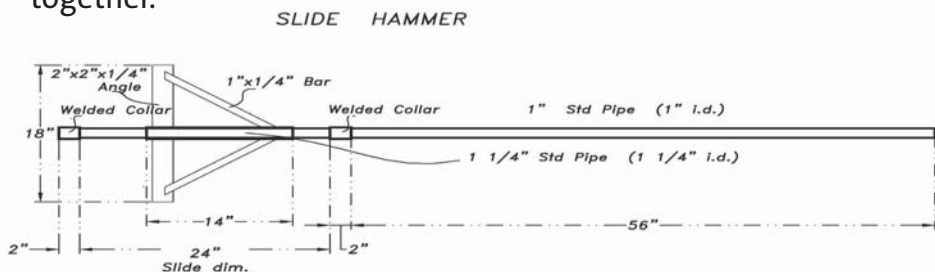
CAUTIONS

- a. SAFETY. All pertinent health and safety rules and regulations for the project must be followed.
- b. Avoid concentrated loading during construction. Loads should be distributed over multiple bar joist.
- c. Secure all individual panels before allowing traffic or other trades on roof deck.

- d. Do not install damaged or marred panels.
- e. Do not expose roof deck to prolonged precipitation. If job conditions do not permit prompt application of the roofing, the Tectum deck should be protected from the weather. Sloped roofs should be covered with underlay paper.
- f. Tectum roof deck should not be installed over freshly poured, uncured concrete floors. Concrete floors should not be installed after the Tectum deck installation without providing adequate ventilation. See the recommendations of the current ASHRAE Handbook of Fundamentals.

INSTALLATION GENERAL

- a. A well thought out plan of action will incorporate all the elements needed to complete the project in a timely fashion: work schedule, materials, labor, tools, and hoisting equipment are some of the considerations. A meeting with the crew before the project begins should provide a plan of action, including starting point, job conditions, and the type of Tectum deck, fastening system and safety precautions.
- b. Different Tectum decks will require special tools. Most jobs will require cutting, fasteners and a slide hammer to drive panels tightly together.

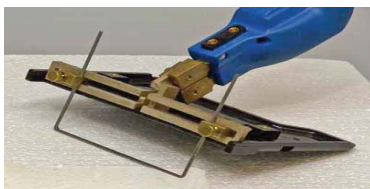


The slide hammer is a tool that can be fabricated in many shops. It allows for the panels to be driven tight without standing on the unsecured panel. It is a safe effective method for doing this.

Most Tectum I panels can be cut with a standard circular saw for either 7 1/4" or 10" diameter blades. Tectum composite panels are best cut with a beam saw. This is a circular saw base with a 12" chain saw blade.

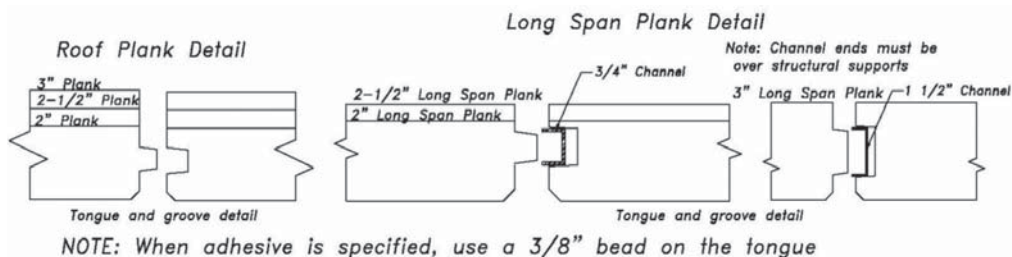


For cutting foam from Tectum composite panels as required where there are unsupported overhangs, a hot wire cutter is recommended. This tool allows for clean cutting of the foam without a large amount of foam dust. Dust on a sloped deck can cause a slip hazard.

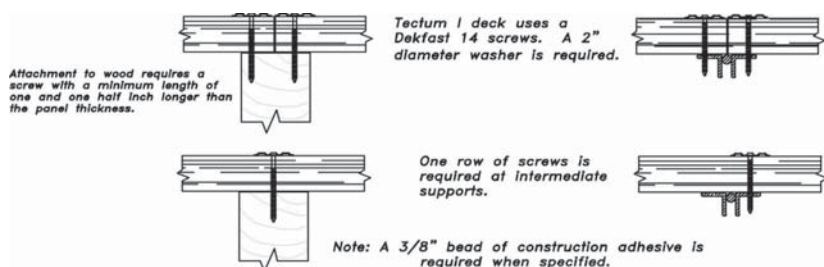


TECTUM I PLANK AND LONG-SPAN PLANK

- a. Tectum I Plank and Long Span Plank are composed of Tectum substrate only. They have a tongue and groove edge. The interior exposed surface has a bevel below the tongue and groove joint. The plank span between structural supports and all panel ends must be supported. Long Span Plank has a 16 gauge channel that fits into the joint and increases the span. Channel ends must be over supports. Plank ends are square.



- b. Panel ends are screwed to supports. The supports are typically either wood or steel members. Screw spacing is dependant on uplift resistance and shear capacity. In all conditions a minimum of two screws per structural bearing is required.

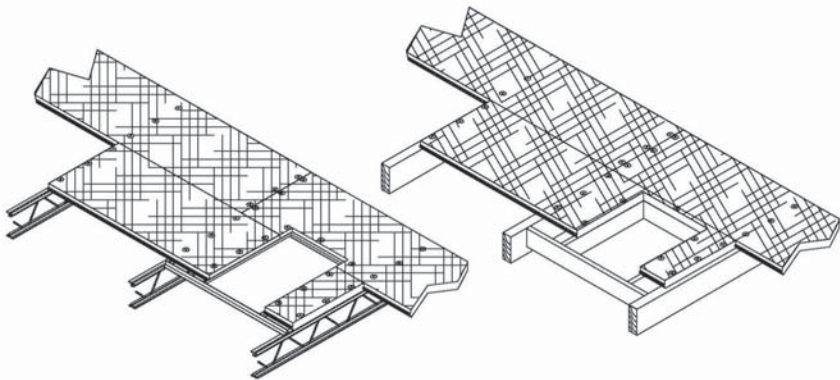


Tectum Plank attached directly to steel or wood

7

- d. All openings greater than eight inches in any direction must be framed. Any opening within four inches of the channel in Long Span plank must be framed. The deck is screwed to the framing. The screw spacing is based on uplift and shear requirements. Typical screw spacing is 12" o.c.

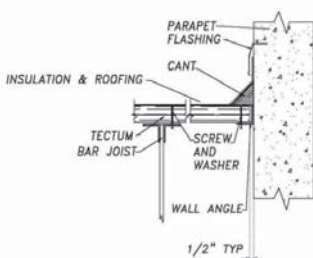
Tectum Plank – Opening Detail



- e. All perimeter and transitions must be fully supported for Tectum I plank and LS plank. This is typically a structural angle at the perimeter and a bent plate at hips and valleys. When the change of slope is less than that of $\frac{1}{2}$ " in 12 from both directions, the tongue and groove joint can be installed at the change of slope. If the panel direction is perpendicular to the change of slope support is required.

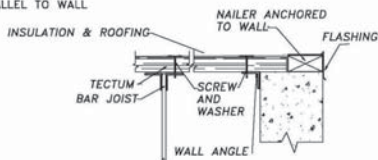
PARAPET DETAIL—

JOIST PARALLEL TO WALL



FLUSH EAVE DETAIL—

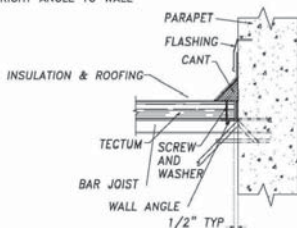
JOIST PARALLEL TO WALL



NOTE: Panel can be screwed to masonry wall instead of angle. It is not practical to screw through a plate into masonry.

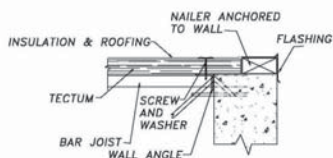
PARAPET DETAIL—

JOIST RIGHT ANGLE TO WALL



FLUSH EAVE DETAIL—

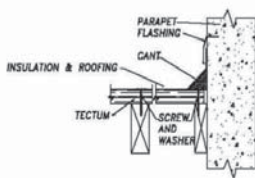
JOIST RIGHT ANGLE TO WALL



NOTE: Panel can be screwed to masonry wall instead of angle. It is not practical to screw through a plate into masonry.

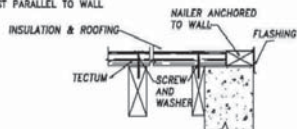
PARAPET DETAIL—

WOOD JOIST PARALLEL TO WALL



FLUSH EAVE DETAIL—

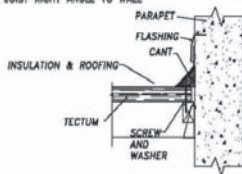
WOOD JOIST PARALLEL TO WALL



NOTE: Panel can be screwed to masonry or wood wall system instead of edge support. It is not practical to screw through a metal plate into masonry.

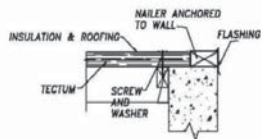
PARAPET DETAIL—

WOOD JOIST RIGHT ANGLE TO WALL



FLUSH EAVE DETAIL—

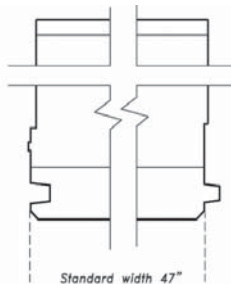
WOOD JOIST RIGHT ANGLE TO WALL



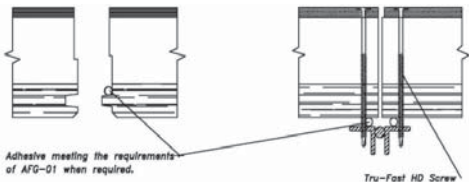
NOTE: Panel can be screwed to masonry or wood wall system instead of edge support. It is not practical to screw through a metal plate into masonry.

TECTUM COMPOSITE PLANKS: TECTUM III, E AND NS DECKS

a. Tectum composite planks are composed of a Tectum substrate with a minimum thickness of $1\frac{1}{2}$ ", a foam core of Dow Styrofoam for Tectum III deck, and EPS for Tectum E and NS decks, and a top surface of $\frac{7}{16}$ " OSB. These panels have square ends with a tongue and groove joint along the long edge. Depending on the thickness of the Tectum panel specified, spans of up to 96" are acceptable.

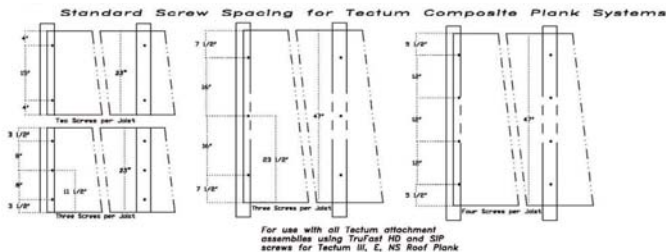


b. Panel ends are screwed to supports with a $\frac{3}{8}$ " bead of construction adhesive meeting the requirements of AFG-01. Panel edges are adhered together with a $\frac{3}{8}$ " bead of construction adhesive. Where panels are continuous over a support, one row of screws is used.



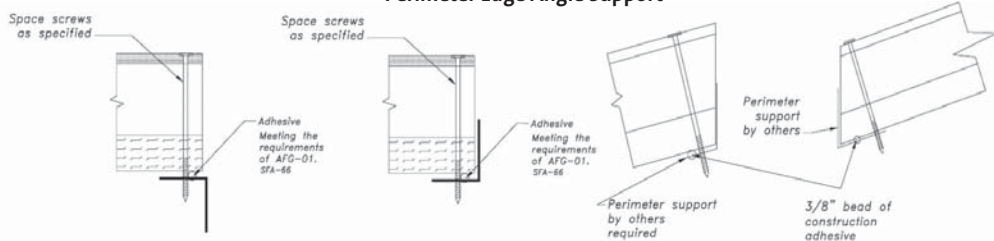
Tectum III, E, and NS decks use SIP screws. Minimum length is one inch longer than panel thickness. $1\frac{1}{2}$ " penetration preferred.

c. Screw attachment for 47" wide panels is 3 or 4 screws per bearing. Additional screws may be required depending on specifications. Screw attachment for 23" wide panels is two or three screws per bearing. Additional screws may be required depending on specifications. (See Drawing on Page 10 - Standard Screw Spacing)

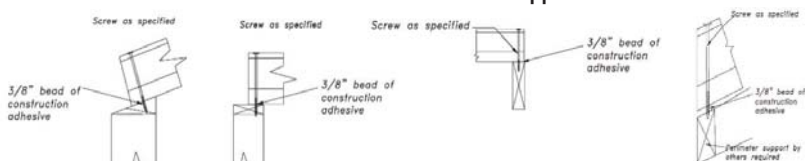


- d. All openings greater than eight inches in any direction must be framed. The deck is screwed to the framing. The screw spacing is based on uplift and shear requirements. Typical screw spacing is 12" o.c. Opening details are the same as those shown for Tectum I plank.
- e. All perimeter and transitions must be fully supported for Tectum composite plank. This is typically a structural angle or wood member at the perimeter and a bent plate or wood member at hips, valleys and ridge. When the change of slope is less than that of $\frac{1}{2}$ " in 12 from both directions, the tongue and groove joint can be installed at the change of slope. If the panel direction is perpendicular to the change of slope support is required. Overhangs at the perimeter (Tectum III/E plank 5" or thicker) of up to 24" in the panel length direction when the panel is 72" or greater in length and up to 16" in the panel width direction when the panel width is 47" are permitted.

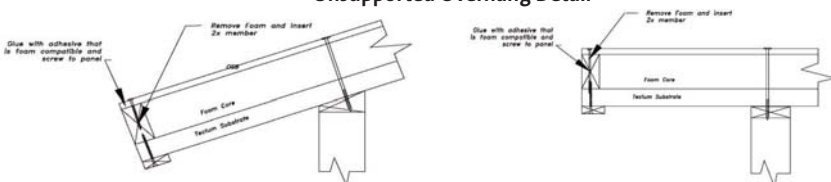
Perimeter Edge Angle Support

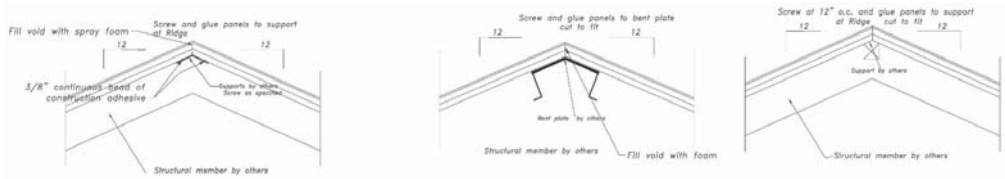


Perimeter Wood Support



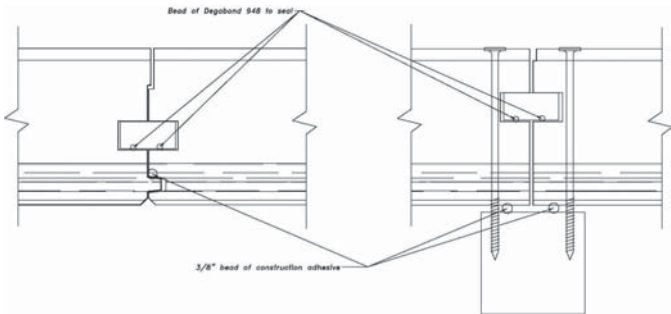
Unsupported Overhang Detail



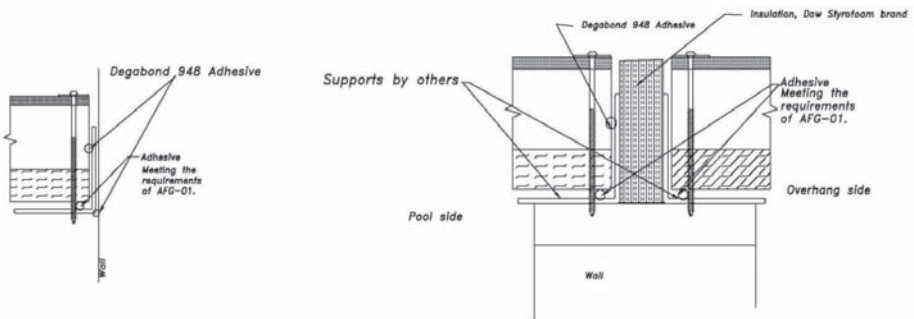


TECTUM IIIP ROOF PLANK

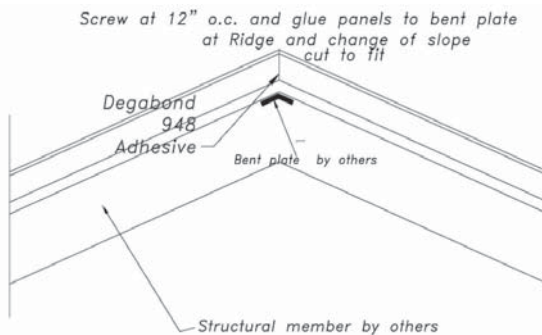
- a. Tectum IIIP Roof Plank is designed for use in high humidity areas during the heating season. These areas include but not limited to swimming pools, aquatic centers and ice rinks.
- b. The difference between Tectum III Roof Plank and Tectum IIIP Roof Plank are the panel perimeter details as shown below.



- c. The slots in the panels are filled with foam fillers that are provided with the panels. These are sealed in place with a bead of Degabond 948 adhesive.
- d. The perimeter of the building details below show (1) stopping at the wall and (2) an overhang condition that must be supported by others. If the panel ends at the wall the requirement for insulation beyond the panel still exists.



- e. Insulate the panels at openings and seal the panel at the ridge. (See Drawing on Page 12 - Tectum IIIP Ridge Detail)



TECTUM I ROOF TILE

Positioning and Attaching Tees

- Bulb tees (218 bulb tee is the only available size) should be spaced according to the specifications ($\pm 1/16"$) and securely positioned by means of templates. Tee ends must fall over supports and have a minimum 1" bearing. A fillet weld of a minimum of $3/4"$ on each side at the tee ends is required. The same $3/4"$ weld is required at intermediate supports on alternate sides for spans of 84" or less and on both sides for spans greater than 84". Tees are typically spaced at 24" or 32" o.c.
- Where tee ends fall on masonry, they must be secured by a suitable means. Typically a welding plate is attached to the masonry.
- When laying tees on wood purlins, welding plates are screwed to purlins at 24" or 32" centers and the tees are welded to the plates or the tees are punched to accept screws. Two screws per tee end and two at each intermediate support are required. Screws need to be a minimum of 14 gauge with a minimum $1 1/2"$ penetration.

Laying Tectum Tile Between Bulb Tees

- Tectum roof tile is laid with the long dimension parallel to the bulb tee sub purlins. Each tile should be spaced evenly between the bulb tees and shall have a minimum $1/2"$ edge bearing.
- When tongue and groove ends are used. The ends should be staggered by half the panel length.
- On sloped decks, when tees are placed parallel to the ridge, the tile spacing must be carefully checked since the Tectum deck will naturally bear more on the lower bulb tee. Temporary shimming may be required to maintain equal bearing and grout on both side

of the tile.

- d. The roof tile is cut to fit at perimeters and transitions. Continuous support is required at transitions. A saw with a carbide tipped blade is typically used for cutting the roof tile.

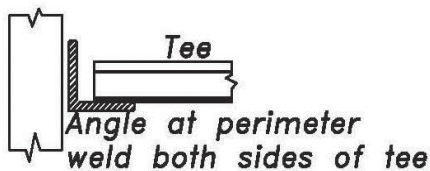
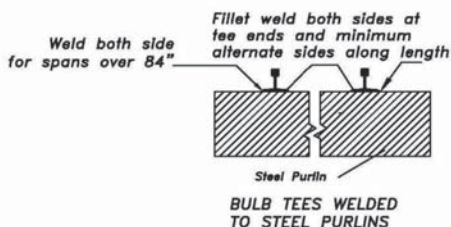
Anchoring Tectum Tiles

- a. The open joints between the roof tile and the bulb tee are filled with Tectum grout prior to the application of insulation or roofing. See Technical Bulletin T-32
- b. After grout is poured, it should be leveled.
- c. Filler strips may be required for thicker Tectum tile. A special hoe or trowel should be used to level the grout and provide the proper depth for the filler strip.
- d. When square end panels are used, roof tile ends must fall over the bulb tee supports. Roof tile ends are screwed to the bulb tee supports. When tongue and groove roof tile is used the tongue and groove is adhered together with a $\frac{3}{8}$ " bead of construction adhesive. Tiles are to be screwed to the bulb tee supports at each crossing. A bead of adhesive over the structural supports may be required before the tile is placed and screwed.
- e. Grout should fill the entire space between the bulb tee and the roof tile. Scrape off the excess to form a flush joint with the top surface of the joint.

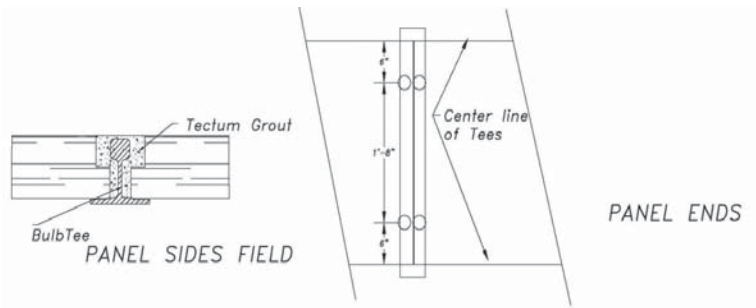
Bulb Tee Template



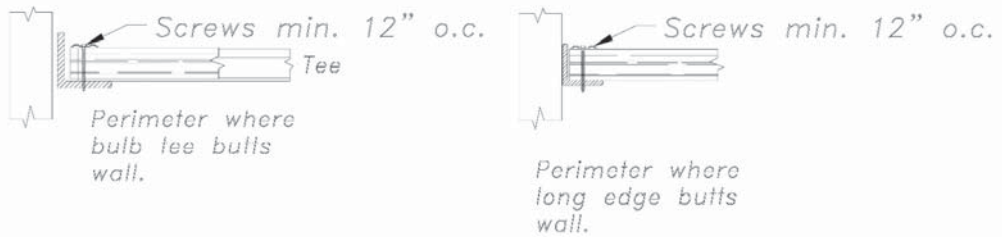
Bulb Tee Attachment



Field Attachment



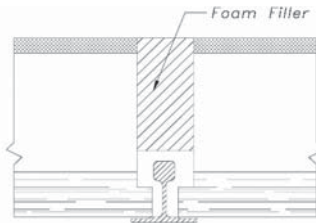
Perimeter Attachment



When Bulb Tee Overhangs the Wall, Attach An Angle to the Bulb Tee Ends
Panels Would Be Screwed to Angles As Shown In Perimeter Attachment



If Tectum Composite Panels Are Used As Tile, Foam Filler Strips Are Required



SPECIAL REQUIREMENTS

A. Painting

- The exposed side of the Tectum Roof Deck may be painted after installation. Painting instructions for field painting can be found in Marketing Bulletin M-77. Do not use oil base paints.

B. Sound Transmission

- Where sound transmission over walls is undesirable and privacy is

an issue a two inch thick piece of wood, grout or other dense non-porous material is installed at the middle of the wall. Attachment of the deck on both sides of the sound block is required. This is typically accomplished with an angle by others installed on both sides of the wall.

C. Wind Seals

- a. In some instances a wind seal may be required at the exterior wall. A wind seal can be any non-porous material. Attachment of the deck to both sides of the wind seal is required. This is typically accomplished with an angle by others installed on both side of the exterior wall. A wind seal cannot be installed if there is an unsupported overhang.

DAILY CLEANUP AT JOBSITE

- a. Protect cutoffs that are required for other areas. Dispose of all other cutoffs, dunnage and waste materials at the end of each working day.

INSPECTION/ACCEPTANCE

- A. The job foreman for the installation of the deck should inspect the job in progress at various intervals to insure the following.
 - a. The deck surface is suitable to accept roofing.
 - b. The deck is protected against rain/snow at the end of the day's work.
 - c. Heavy concentrated loads are not being applied to the deck.
 - d. Remove and replace any pieces that are found unsuitable due to damage from handling and installation.
 - e. Check the following:
 1. Are all pieces properly secured with screws?
 2. Are all joints both side and ends driven tight?
 3. Is good ventilation provided for closed in buildings during construction?
 4. For Roof Tile - are joints properly grouted?

- a. A final inspection by the erection crew foreman and the job superintendent to verify that the deck is acceptable in all respects. The final inspection should be confirmed in writing and if possible signed by both and filed with the permanent job records.