

TECTUM™ Roof Deck Project Installation Guidelines

Distribution:
Installation Supervisor
Job Foreman

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I. Introduction

The TECTUM™ roof deck project checklist is provided as a guide for contractors using TECTUM roof deck products.

Congratulations...you are about to install one of the premier roof decks available today. Quality installation procedures will assure a quality building. Proper handling will also assure the contractor of optimum production efficiency.

TECTUM roof deck products provide a combination of physical characteristics usually achieved only in a combination of several separate building materials. The installation of a TECTUM roof deck provides with one product 1) structural roof deck with diaphragm and vertical loading capacity; 2) excellent sound absorption; 3) insulation values up to an R of 45; and 4) a unique decorative textured interior finish.

II. General Instructions

Good planning will lower your risks of omissions and/or costly errors. TECTUM™ roof deck is relatively easy to install and maintain provided a few basic precautions are taken by the jobsite foreman by reviewing and using the guidelines for the job.

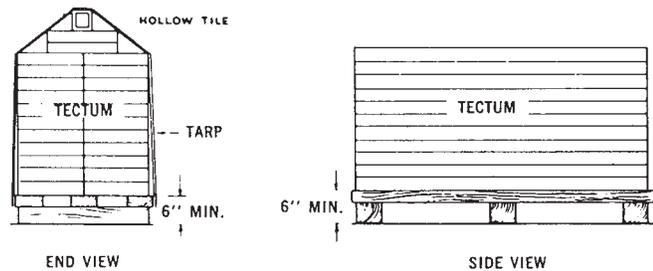
III. Before the Deck Arrives

To ensure fast, efficient installations, the following steps should precede the arrival of the TECTUM™ roof deck on the jobsite.

- A) The jobsite should be inspected. The area where the material will be stored and staged for production reserved.
 - 1) The accessibility of the building will determine the hoisting equipment required on the jobsite for unloading the trucks and placing material on the roof.
 - 2) Determine the start point on the deck.
 - 3) Verify the structural spacing of the purlins and structural steel/wood. Will standard length material be acceptable or will special lengths be required? Does it conform to the approved shop drawings?
 - 4) Verify the purlins are all spaced correctly on the same plane.
 - 5) Verify the perimeter supports are installed and properly aligned with the purlins/structural steel/structural wood.
- B) Shop drawings should be reviewed. Approved shop drawings are required before the project begins. Clarify questions or omissions with the architect before you proceed. The cutting list should be taken from the shop drawings and the order and delivery dates confirmed with Tectum Inc.
- C) Delivery dates should be confirmed a minimum of one week in advance of the requirements. Crews and equipment should be available to unload trucks in a timely matter. Truckers are independent contractors and the majority will be prompt, but delivery is always subject to weather, breakdowns and unforeseen circumstances. Do not schedule production until the material is on the jobsite. Inspect all TECTUM roof deck shipments. Any variation from the bill of lading must be noted as well as damage. Check accessories and provide safe storage.
- D) 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 sub-contractors as related to other trades. Access to the work area, restrictions to trades working below, spacing of bar joists/purlins to accommodate standard length material and coordination of waterproofing are examples of items that must be discussed.

E) Storage

- 1) TECTUM™ roof deck should be unloaded and stored on the site or in a building under construction on a stacking platform. The platform is to be raised at least 6" from the ground or floor level. The TECTUM roof deck should be covered with a tarpaulins, waterproof paper or plastic film and secured. Waterproof coverings must be ultraviolet (UV) light resistant for TECTUM III, NS and "E" decks. The deck will be stacked so that the protective cover will shed water. If the TECTUM roof deck is to be stored for a long period, the platform will be covered with a moisture resistant material before the deck is stacked on the platform. Allow for air circulation under the waterproof cover to prevent condensation.

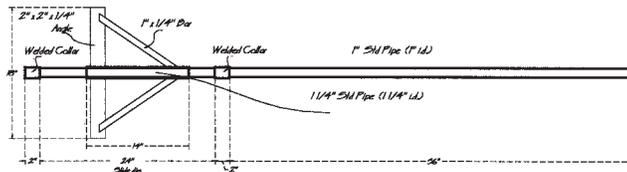


F) Care of the Material

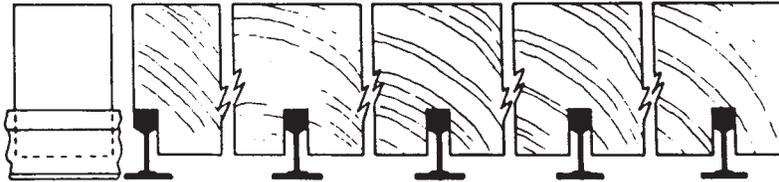
- 1) Care must be used in handling TECTUM roof deck to prevent damaging edges and exposed surfaces from mechanical devices and staining due to exposure.
- 2) All TECTUM deck laid in a day should be made water tight at the completion of that days work, preferably by the application of the roofing, or at the option of the contractor, by covering with waterproof film such as polyethylene. When sidewalls and roof deck are not erected at the same time, edges and plank ends should be temporarily weather proofed to safeguard against damage.
- 3) 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 replacement.
- 4) Application of roofing over TECTUM roof decks should be in accordance with roofing manufacturer's specifications. Careful job coordination will result in the simultaneous application of the roofing to insure the TECTUM deck is not exposed to precipitation or condensation which may cause water staining. Extended exposure to moisture may result in loss of structural strength. If job conditions do not permit prompt application of the roofing, the TECTUM deck shall be protected from the weather. Sloped roof shall be covered with underlay paper.

IV. Installation

- A) Safety. All pertinent health and safety rules and regulations for the project must be followed.
- B) Planning. A well thought out plan of action will incorporate all the elements need to complete the project in a timely fashion: work schedule, materials, labor, tools and hoisting equipment. A meeting with the crew before the project begins should provide them with a plan of action, the job conditions they will be working with and the type of material, fasteners and safety precautions.
- C) Transfer. For transferring TECTUM™ roof deck from the storage or staging area to the roof, a forklift hoist or a crane may be used. A level platform for temporary storage on the deck is recommended. The platform must spread the load to the underlying structure.
For moving TECTUM roof deck panels across a low slope roof, the use of light roller conveyors (roller skate type) is recommended. Dollies (four wheel, rubber tire) can be used. Planking should be used to prevent concentrated loading from stacks or piles of construction material and wheeled vehicles.
- D) Tools. Different TECTUM deck systems will require special tools; however, most jobs will require cutting, fasteners and a slide hammer to drive the TECTUM panels tightly together.

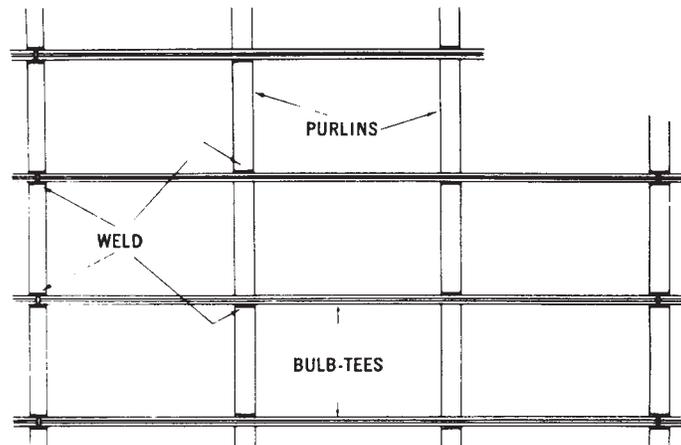


- 1) Cutting. Circular saws and Linearlink VCS12 for thicker TECTUM III and "E" panels. CAUTION: Cutting should be done on a level surface. Dust on a sloped roof will create a hazard.
- 2) Fastening - Tile System.
 - a) Positioning and Attaching Tees
 - (1) Bulb tees/truss tees should be spaced accurately according to specifications (plus or minus 1/16") and securely positioned by means of templates. The tees should be welded at every point of crossing over the main framing members by means of a fillet weld on alternate sides of the tee flanges at intermediate supports for spans of less than 8' (both sides on spans over 8') and on both sides of the tees at the ends. Fillet welds should be a minimum of 3/4" in length. Allow expansion joints as directed by the structural engineer. Screws can be used instead of fillet welds for truss tees. Holes for the screws can be prepunched or field drilled with the typical pattern the same as the welds. Attachment must meet the uplift requirements of the local building code.



Template for Positioning Bulb Tees

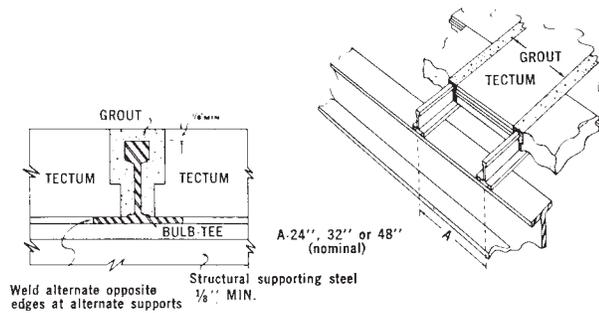
- (2) Ends of bulb tees/truss tees should fall on the main framing members and have a minimum bearing of 1". At this point, a fillet weld should be made on both sides of the tee flange. Where tee ends bear on masonry, they should be secured by suitable means. Typically a welding plate is attached to the masonry.
- (3) When laying tees on wood purlins, welding plates spaced at 24" or 32" o.c. are nailed or screwed to the purlins and the tees welded to the plates. When concrete purlins are used, steel inserts should be provided.
- (4) On sloped decks, when tees are placed parallel with the ridge, the tile spacing must be carefully checked since the TECTUM™ deck will naturally bear more on the lower bulb tee. This will require temporary shimming of the tile to insure equal grouting on both sides of the tiles.
- (5) Truss tees may be used when the framing members are wood. The truss tees are screwed to the wood members with a 14 gauge screw at least 1-1/2" in length through the bottom angles.



Recommended Welding Layout

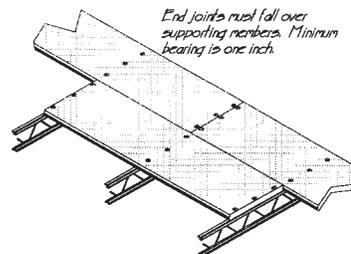
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- b) Laying TECTUM™ Tile on Bulb Tees
- (1) TECTUM roof tile is laid with the long dimension parallel to bulb tee sub purlins. Each tile should be spaced evenly between the bulb tees to provide a minimum edge bearing of 1/2".
 - (2) When laying 48" long ends T & G tile, all joints running perpendicular to the bulb tees are broken by starting with a full tile, then a half tile, in alternate rows. When square end special length tile is applied, the ends should fall over the bulb tee supports. Tile lengths should be staggered where practical.
 - (3) The unsupported tongue and groove ends should be butted tightly.
 - (4) Tile is then cut to fit at ridges, hips, valleys, parapets, curbs, walls, around vents, pipes, etc. Where it is necessary to cut and fit standard pieces, use a power saw with carbide tipped blades.
- c) Bulb Tee Spacing and Anchoring TECTUM Tile
- (1) The open joints between tile and bulb tees are filled with grout prior to the application of roofing or insulation. Check with your Tectum Inc. distributor for premixed TECTUM grout. See Technical Bulletin T-32.
 - (2) After grout has been poured, it should be leveled.
 - (3) 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 slot for the fillerstrips.
 - (4) Tile used on a slope may require wedges to maintain the proper spacing of the panel in the tee. The wedges are placed between the tee and the panel on the lower side.
 - (5) Tile installed with tees running up the slope will require an additional mechanical fastener or thrust angles to prevent the tile from moving down the slope.
 - (6) Grout should fill the entire space between tile and bulb tee. After the grout has taken its initial set, the excess above the top surface of the deck should be scraped off to form a joint flush with the top surface of the deck. The roofing or insulation may then be applied.



- 3) TECTUM™ Plank Systems
 - a) Verify that the span does not exceed the plank capacity.
 - b) All TECTUM plank should be started approximately 2" from the parapet wall and/or wood blocking as dictated by building design.
 - c) In laying TECTUM plank, the unsupported tongue and groove are butted tightly. This is best accomplished using a Tectum Inc. slide hammer. This tool reduces the risk of damage to the panels that can occur when using a driving block and sledge. Safety is also increased as the user does not need to be at the edge of the panel swinging a sledge.
 - d) The end joints on adjacent rows of plank are staggered.
 - e) All TECTUM plank, with the exception of long span when clip attached, should be installed with the tongue leading. This facilitates the application of construction adhesive when required.

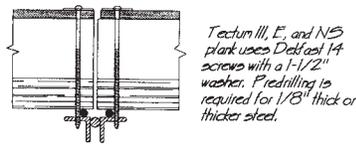
- 4) Anchorage of TECTUM Roof Plank
 - a) Install TECTUM plank in accordance with the approved shop drawings.
 - b) Typical methods of installation include attachment with screws and washers, clips, special nails or special screws. Installations may require construction adhesive. The adhesive is placed on structural members and along the tongue. A 3/8" bead is used.
 - c) Anchorage must be at intervals which provide uplift meeting the requirement of the local building codes or 30 lbs. p.s.f., whichever is greater.
 - d) A minimum of two (2) screws or nails per bearing is required unless clips are used.



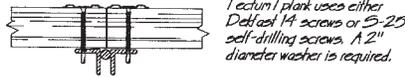
Detail of Tectum Plank over bar joist. Joist spacing not to exceed allowable span of deck. Screw spacing is shown in Technical Bulletin T-69. Screws per panel width will vary depending on uplift and diaphragm requirements.

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- e) Clips, when used, should be placed at each crossing of the plank over supporting members. Typical attachment of the clip is by welding. Screwattachment is also acceptable.
- f) Screws are required to be of sufficient length to penetrate the steel with full threads. Screws into wood need to be at least 1" longer than the deck thickness. Nails should be of sufficient length to penetrate the nailable members by 1-1/2".
- g) Special attachment methods may be required for diaphragm construction. Contact Tectum Inc. for additional information.
- h) Special installation methods are required in high humidity areas such as over swimming pools. Contact Tectum Inc. for proper design and special installation requirements.



Tectum III, E, and NS plank uses Deltast 14 screws with a 1-1/2" washer. Predrilling is required for 1/8" thick or thicker steel.

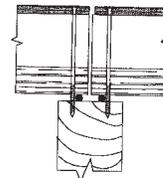


Tectum I plank uses either Deltast 14 screws or S-25 self-drilling screws. A 2" diameter washer is required.



One row of screws is required at intermediate supports.

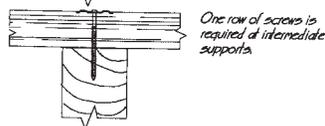
Note: A 3/8" bead of construction adhesive is required when specified.



Tectum III, E, and NS uses an SLP screw. Minimum length 1" greater than panel thickness.



Tectum I plank uses Deltast 14 screws. A 2" diameter washer is required.



One row of screws is required at intermediate supports.

Note: A 3/8" bead of construction adhesive is required when specified.

E) Special Requirements.

- 1) Penetrations in roof deck — Openings greater than 8" in diameter or 8" in any dimension shall be framed and tied into the structural framing. Skylights require special care. Adequate drainage for condensation on metal component of openings must be provided.
- 2) Painting. The exposed underside of TECTUM™ decks may be painted after installation with a sprayer using quality paint. A latex non-bridging paint should be used to maintain acoustical properties.

F) Cautions.

- 1) Avoid concentrated loading during construction. Pallets should be distributed over several bar joists when being placed on roof staging area.
- 2) Secure all individual panels before allowing traffic or other trades on roof.
- 3) Do not install damaged or marred panels.
- 4) 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.

TECTUM deck must not be subjected to excessive water during the erection process.

- 5) TECTUM roof deck should not be installed over freshly poured, uncured concrete floors without providing adequate ventilation. See the recommendations of the ASHRAE Handbook of Fundamentals.

6) Limitations. TECTUM III or TECTUM I decks with a vapor retarder and additional insulation must be used in high humidity areas. TECTUM "E" and NS should not be specified for rooms subject to continuous high humidity such as swimming pools or commercial laundries. When suspended ceilings are used under TECTUM decks, the enclosed space should always be vented following the ventilation recommendations of the current ASHRAE Handbook of Fundamentals.

7) Sound Transmission Blocks. To minimize room to room sound transmission, place sound transmission blocks over partitions. Blocking should be 2" thick wood, grout or equally dense material and should be caulked for best results when wood or other rigid materials are used.

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- 8) Wind Seal. To prevent heat loss laterally through the TECTUM deck, a wind seal should be installed when TECTUM deck spans an exterior wall. Wind seals can be roofing felt, wood, grouting material, etc.

- G) Daily Cleanup at Jobsite. All endouts, dunnage and waste materials shall be disposed of at the end of each working day. Protect cutoffs that are required for use in other areas.

- H) Inspection/Acceptance. The job foreman for the erection area should inspect the job in progress at various intervals to ensure the following:
 - 1) Is the deck surface suitable to receiving roofing?
 - 2) Is roof deck protected against rain after the day's work?
 - 3) During erection, are overly heavy concentrated loads being applied to deck surface?
 - 4) Any pieces found unsuitable due to abrasion marks, abused plank or tile should be removed and replaced.
 - 5) Check the following:
 - a) Are all clips properly spaced and installed correctly?
 - b) Are all joints properly grouted?
 - c) Are all pieces properly secured by nails or screws?
 - d) Are all joints, both side and end, driven tight?
 - e) Is good ventilation provided for closed in building during construction?

- 6) Upon final inspection by erection crew foreman, another final inspection should be made with the job superintendent to verify that the deck is acceptable in all respects. The final inspection should be confirmed in writing, if possible signed by both inspectors and filed with the other permanent job records.