

SECTION 07 32 00
CLAY ROOF TILE

BURBANK UNIFIED SCHOOL DISTRICT
SUMMER 2025 ROOFING PROJECTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Clay Roof Tile
- B. Underlayment
- C. Adhesives
- D. Accessories
- E. Edge Treatment and Roof Penetration Flashings

1.2 SCOPE OF WORK

- A. Provide all labor, equipment, and miscellaneous materials to install District purchased and furnished roofing materials over the properly prepared substrate.

- B. DISTRICT SUPPLIED MATERIAL

Note that this project includes the installation of owner-supplied material; the District has acquired roofing material through the CMAS (California Multiple Award Schedules) program.

- C. All products listed in 2.1, D will be furnished by the District. All products not listed in 2.1, D are to be furnished by the Contractor. All products listed in 2.1, D will be manufactured by The Garland Company and purchased by Burbank Unified School District. Any material or accessories required for the installation of the roof system in excess of the district provided material must be supplied by the Contractor. It is up to the Contractor to determine the precise amount of material required for the completion of this project; and to provide excess material, as required.

- D. Contractor to comply with Roof Site Maps to determine scopes of work for each building. Contractor responsible to determine deck type. Color-coded site map for reference only.

- E. Clay Tile Reset Scope of Work

1. Completely remove existing tile and underlayment down to the deck
2. Repair any damaged decking as required. Contractor to include 7% deck replacement in the base bid. If the amount of deck replacement exceeds 7%, the contractor is to receive a change order equal to the unit price for deck replacement per sq ft multiplied by the sq ft in excess of the amount included in the base bid amount. If the amount of deck replacement is less than 7%, the contractor is to provide a credit.
3. Install new valley, trim, and edge metal using 22GA R-Mer prefinished flat stock.
4. Apply SA Primer to the structural deck at a rate of .5 gal per sq.
5. Apply HPR SA FR Base Sheet to entire field and flashings.
6. Apply Terra Seal underlayment over the base sheet. Shingle all plies.

7. Flashings / Sheet Metal:
 - a. All flashing plies to be terminated with a termination bar set in butyl tape and fastened every 6" o.c. Caulk above the termination bar.
 - b. Edge: Install 22 gauge, galvanized edge metal. Set edge metal in mastic over the terra seal flashing ply and prime the surface before Terra Seal application. Color to be Terra Cotta
 - c. Gutters: Replace all existing gutters. Install 22 gauge, kynar gutters – fabricated from RMER SS Flat Stock. All gutters to be 5"x5"x5" box gutters. Coping Cap: Install new, 22 gauge, kynar Terra Cotta coping cap metal.
8. All penetrations to be lead flashed.
9. Install clay tile. Contractor to re-use clay tile. Contractor to assume 40% tile replacement. Clay tile to be set in Terra-Lock Adhesive per manufacturer installation requirements. All new tiles to match old tiles in color and design. New tiles to be hidden and randomly set to blend in with old.

1.3 REFERENCES

- A. ASTM C 144 - Standard Specification for Aggregate for Masonry Mortar.
- B. ASTM C 150 - Standard Specification for Portland Cement.
- C. ASTM C 270 - Standard Specification for Mortar for Unit Masonry
- D. ASTM C 1167 - Standard Specification for Clay Roof Tiles.
- E. ASTM E 108 (UL 790) - Standard Test Methods for Fire Tests of Roof Coverings
- F. ASTM D 226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
- G. ASTM D1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials.
- H. ASTM D 1002 - Standard Test Method for Apparent Shear Strength of Single-Lap-Joint Adhesively Bonded Metal Specimens by Tension Loading (Metal-to-Metal)
- I. ASTM D 2626 - Standard Specification for Asphalt-Saturated and Coated Organic Felt Base Sheet Used in Roofing.
- J. ASTM D 2822 - Standard Specification for Asphalt Roof Cement.
- K. IAPMO ES Evaluation Report 0356 - Clay Roof Tiles.
- L. IAPMO UES ER-2015 - TRI Concrete and Clay Roof Tile Installation Manual
- M. Florida Building Code - FL22539, FL23992
- N. Miami-Dade County Approvals - 17-0515.04, 17-0329.12, 17-0329.13, 17-0329.14, 17-0905.02, 14-1020.01, 17-0905.01
- O. Texas Department of Insurance - TDI Approval RC-21 Clay Roof Tiles
- P. TRI Cold & Snow Concrete and Clay Tile Design Criteria for Cold and Snow Regions.
- Q. TRI Concrete and Clay Roof Tile Installation Manual Fifth Edition

- R. FRSA/TRI Florida High Wind Tile Installation Manual Fifth Edition.

1.4 SUBMITTALS

- A. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- B. Shop Drawings: Indicate metal flashing profiles, joint locations, fastening locations, and installation details. Indicate tile layout with location of cut and special shaped tiles identified.
- C. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- D. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.
- E. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- F. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for periodic checking, cleaning and maintenance.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with NRCA Roofing and Waterproofing Manual.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified with documented ISO 9001 certification and minimum of twelve years of documented experience and must not have been in Chapter 11 bankruptcy during the last five years.
- C. Installer Qualifications: Company specializing in performing Work of this section with minimum five years documented experience and a certified Pre-Approved Garland Contractor. Installer must submit a Certified Pre-approval letter from Garland with bid form.
- D. Installer's Field Supervision: Maintain a full-time Supervisor/Foreman on job site during all phases of roofing work while roofing work is in progress.
- E. Product Certification: Provide manufacturer's certification that materials are manufactured in the United States and conform to requirements specified herein, are chemically and physically compatible with each other, and are suitable for inclusion within the total roof system specified herein.
- F. Source Limitations: Obtain all components of roof system from a single manufacturer. Secondary products that are required shall be recommended and approved in writing by the roofing system Manufacturer. Upon request of the Architect or Owner, submit Manufacturer's written approval of secondary components in list form, signed by an authorized agent of the Manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging with labels intact until ready for installation.
- B. Deliver products to project site in manufacturer's unopened pallets, labeled with data indicating compliance with specified requirements.
- C. Maintain dry storage area for products of this section until installation of products.

1.7 SEQUENCING

- A. Ensure that locating templates and other information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction progress.
- B. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.8 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. Do not overload the roof. Distribute stacks of tile uniformly on roof at not greater than 12 inches (305 mm) in height.

1.9 WARRANTY

- A. 5-year installer warranty covering all leaks and failures in roofing
- B. 20-year Material Warranty on approved underlayment
- C. 30-Year Limited Warranty on MCA Tiles.

1.10 EXTRA MATERIALS

- A. Provide an additional 1 percent of installed roof tiles, but at least one full square, for Owner's use in roof maintenance.
- B. Furnish extra materials packaged with protective covering for storage and identified with labels clearly describing contents.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Tiles and Underlayment
 1. Basis of Design (Tiles):
Maruhachi Ceramics of America, Inc. (MCA), Clay Roof Tile or approved equal
 2. Underlayment, Base Sheet, Primer, Adhesive:
Garland Company, Inc. (The); 3800 E. 91st St., Cleveland, OH 44105. Web Site:
www.garlandco.com.
Tony DeMartinis
(818) 900-3000
tdemartinis@garlandco.com
- B. Roofing Contractor to be responsible for all Garland materials in excess of District purchased and furnished amount. District to provide material quantities matching the specified amount below. Any additional Garland material required to complete the project is the responsibility of the roofing contractor. Roofing Contractor responsible for purchasing additional materials required, including all freight and tax charges.
- C. Roofing contractor to be at delivery of District purchased roof materials. The District has no responsibility to provide any equipment for handling and / or loading the materials to the Contractor's trucks. Upon signature of delivery, the roofing contractor assumes full

responsibility for all District purchased roof materials. Any materials lost or stolen are the responsibility of the roofing contractor to replace. Roofing Contractor responsible for freight and tax on the replaced materials.

- D. Listed in the tables below are quantities of district provided material. Any material or accessories required for the installation of the roof system in excess of the district provided material must be supplied by the Contractor. It is up to the Contractor to determine the precise amount of material required for the completion of this project; and to provide excess material, as required. Maximum quantity of the OFCI materials to be provided for all roofing which will be provided to the Contractor is as follows:

George Washington Elementary School

Material	Amount	Unit Size
HPR SA FR Base Sheet	65	Roll
Terra Seal	47	200 sf Roll

Ralph Waldo Emerson Elementary School

Material	Amount	Unit Size
HPR SA FR Base Sheet	254	150 sf Roll
Terra Seal	184	200 sf Roll

2.2 CLAY ROOF TILE

- A. Clay Tile General:
1. Made with up to 59 percent recycled raw materials and are 100 percent recyclable.
 2. Class A fire rated.
 3. Cool Roof and Energy Star rated.
 4. California Title 24 (Heat Island) Compliant without upgrades.
- B. One Piece "S" Mission Roofing Tile: Type I, ASTM C 1167 Grade 1 and ASTM E 108 (UL790), Class A.
1. Complies with Uniform Evaluation Report IAPMO ES 0356 (covers City of Los Angeles and is in lieu of ICC-ES), Florida Building Code - FL22539.7, Miami-Dade County Approval 17-0515.04 and TDI Approval RC-21.
 2. Size: 19 inches by 14-1/2 inches (463 mm by 368 mm)
 3. Exposed Size: 16 inches by 12 inches (406 mm by 305 mm) O.C.
 4. Weight per square: 788 lbs (38 kg/m²).
 5. Weight per piece: 10.5 lbs (4.8 kg).
 6. Pieces per square: 75 pcs (pieces per M2: 8.073 pcs).
 7. Color: Mission Blend to be approved by the Owner prior to project start

2.3 ACCESSORY MATERIALS

- A. Substrate Materials:
1. Decking: Solid, structural material adequate to meet project loading requirements.
 2. Nailers Boards: Decay resistant, nominal 2 inches (50 mm) by sufficient height to satisfy project conditions, not bowed or twisted.
 3. Metal or Poured Concrete Roof Decks: Where design indicates concrete roof deck or metal roof deck, Tile-Tie or Polyset AH-160 Roof Tile Adhesive may be used where approved by the authorities having jurisdiction.

- B. Primer:
 - 1. SA Primer: VOC Acrylic primer for use with self-adhering base sheet.
- C. Underlayments:
 - 1. HPR SA FR Base Sheet: Fiberglass-reinforced SBS-modified base sheet.
 - 2. Terra Seal: Self-adhered high-temp, tile roof underlayment with polyester felt surface.
- D. Mastic:
 - 1. KEE-Lock Mastic
- E. Urethane Sealant:
 - 1. Tuff Stuff

2.4 TILE ATTACHMENT MATERIALS

- A. Adhesive:
 - 1. Terra-Lock Adhesive: Two-component, low rise, solvent-free, polyurethane HFO foam adhesive.
- B. Tile Fasteners:
 - 1. #14 stainless steel roofing screw of appropriate length to penetrate $\frac{3}{4}$ " through wood deck
 - 2. Storm-Lock Stainless Steel Deck Anchor spaced 5' apart
 - 3. Storm-Lock Nose Hooks to be installed per manufacturer's written instructions in accord with the building wind uplift calculations
- C. Rake and Gable End:
 - 1. Prefabricated Rake and Ridge tile. Choose to match tile profile and color.
- D. Flashings:
 - 1. Ribbed Valley Metal, minimum 0.016-inch (26 gauge galvanized sheet) corrosion resistant metal flashing.
- E. Mortar materials, plastic cement and sealant: Code approved adhesive suitable to bond to clay roof tile.
 - 1. Cement Mortar: ASTM C 270, Type M
- F. Snow Retention: Provide as required per local code and snow loads for metal and concrete roofing decks.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Verify surfaces are uniform free of ridges, warp or voids, smooth, clean and dry
- C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

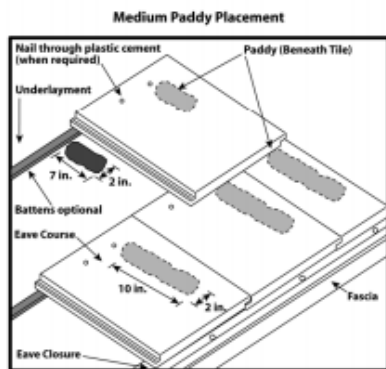
- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result under the project conditions.

3.3 INSTALLATION - GENERAL

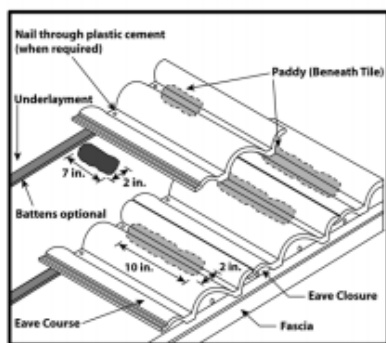
- A. Install in accordance with manufacturer's instructions and the following:
 - 1. IAPMO UES Evaluation Report 0356 - Clay Roof Tiles.
 - 2. IAPMO UES ER-2015 - TRI Concrete and Clay Roof Tile Installation Manual (TRI Installation Manual).
 - 3. TRI Cold & Snow Concrete and Clay Tile Design Criteria for Cold and Snow Regions.
 - 4. FRSA/TRI Florida High Wind Tile Installation Manual, Revised Fifth Edition, 2014.

3.4 INSTALLATION

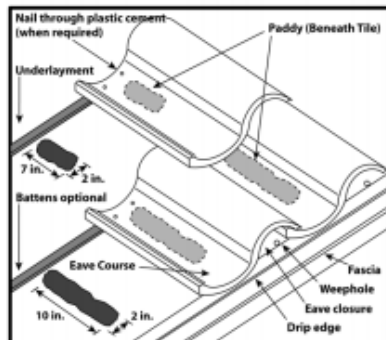
- A. Install in accordance with manufacturer's instructions and the applicable building code.
 - 1. Deck surfaces must be clean and dry prior to installation of underlayment. Foreign particles must be cleaned from all interlocking areas to ensure proper seating and to prevent water damming.
 - 2. Fascia boards or cant strips must be installed to properly elevate the first tile course.
- B. On vertical applications, and on extremely steep pitches where wind currents may cause lift:
 - 1. Set the butt of each tile in a bead of the specified plastic cement or sealant, or provide stainless steel "Wind Locks" as required.
 - 2. Use plastic cement and sealant carefully, and avoid smearing the exposed tile surface.
- C. Clay Tile Installation- Installation of Tile Adhesive & Tile
 - 1. Remove the existing roof system to the structural deck.
 - 2. Salvage existing clay tile. Tile to be re-used.
 - 3. Calibration of the Dupont approved dispensing equipment is required before application of any adhesive. The mix ratio of the "A" component and the "B" component shall be maintained between 1.0 – 1.15 (A) to (B). For Ratio calibration, take the net weight of the "A" chemical divide it by the net weight of the "B" chemical.
 - 4. All underlayment must be free of dust, debris, or oil or any foreign matter that will inhibit the bond of the adhesive.
 - 5. Adhesive shall be placed in accordance with the "paddy placement details" as shown below:



Flat/Low Profile Tile



Medium Profile Tile



High Profile Tile

Flat/Low Profile Tile

1. Starting at the eave course, apply a minimum 2" (50.8 mm) x 10" (254 mm) x 1" (25.4 mm) foam paddy onto the underlayment positioned as shown under the strengthening rib of the tile closest to the overlock of the tile being set. Insure approximately 17 (109.7 cm²) - 23 (148.4 cm²) square inch adhesive contact with the underside of the tile.
2. At the second course, apply a minimum 2" (50.8mm) x 7" (177.8 mm) x 1" (25.4 mm) foam paddy onto the underlayment positioned as shown under the strengthening rib closest to the overlock of the tile being set.
3. Continue in same manner. Insure approximately 10" (64.5 cm²) - 12 (77.4 cm²) square inch adhesive contact with the underside of the tile.

Medium Profile/Double Pan Tile

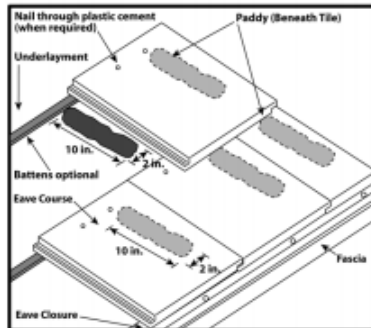
1. Starting at the eave course, apply a minimum 2" (50.8 mm) x 10" (254 mm) x 1" (25.4 mm) foam paddy onto the underlayment positioned as shown under the pan portion of the tile closest to the overlock of the tile being set. Insure approximately 17 (109.7 cm²) - 23 (148.4 cm²) square inch adhesive contact with the underside of the tile.
2. At the second course, apply a minimum 2" (50.8mm) x 7" (177.8 mm) x 1" (25.4 mm) foam paddy onto the underlayment positioned as shown under the pan portion of the tile closest to the overlock of the tile being set.
3. Continue in the same manner. Insure approximately 12" (77.4 cm²) - 14 (90.3 cm²) square inch adhesive contact with the underside of the tile.

High Profile Tile

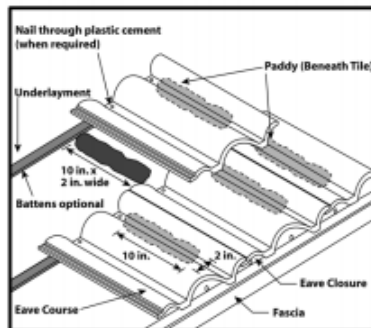
1. Starting at the eave course, apply a minimum 2" (50.8 mm) x 10" (254 mm) x 1" (25.4 mm) foam paddy onto the underlayment positioned as shown under the pan portion of the tile closest to the overlock of the tile being set. Insure approximately 17 (109.7 cm²) - 23 (148.4 cm²) square inch adhesive contact with the underside of the tile.
2. At the second course, apply a minimum 2" (50.8mm) x 7" (177.8 mm) x 1" (25.4 mm) foam paddy onto the underlayment positioned as shown under the pan portion of the tile closest to the overlock of the tile being set.
3. Continue in the same manner. Insure approximately 17" (109.7 cm²) - 19 (122.6 cm²) square inch adhesive contact with the underside of the tile.

MEDIUM PADDY

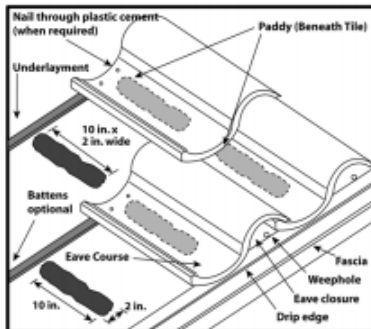
Large Paddy Placement



Flat/Low Profile Tile



Medium Profile Tile



High Profile Tile

Flat/Low Profile Tile

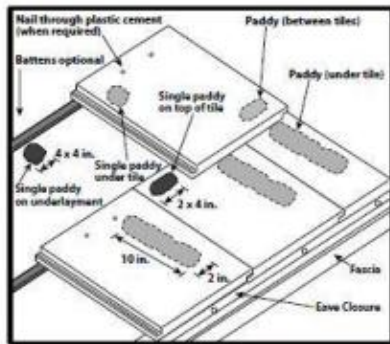
1. Starting at the eave course, apply a minimum 2" (50.8 mm) x 10" (254 mm) x 1" (25.4 mm) foam paddy onto the underlayment positioned as shown under the strengthening rib closest to the overlock of the tile being set.
2. Continue in the same manner. Insure approximately 17 (109.7 cm²) – 23 (148.4 cm²) square inch adhesive contact with the underside of the tile.

Medium Profile/Double Pan Tile

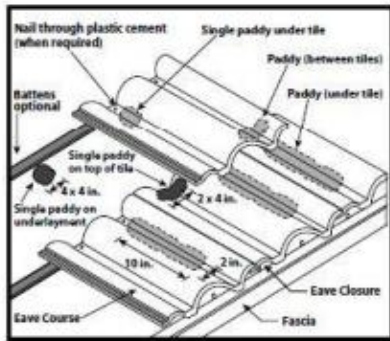
1. Starting at the eave course, apply a minimum 2" (50.8 mm) x 10" (254 mm) x 1" (25.4 mm) foam paddy onto the underlayment positioned as shown under the pan portion of the tile closest to the overlock of the tile being set.
2. Continue in same manner. Insure approximately 17 (109.7 cm²) – 23 (148.4 cm²) square inch adhesive contact with the underside of the tile.

High Profile/Single Pan Tile

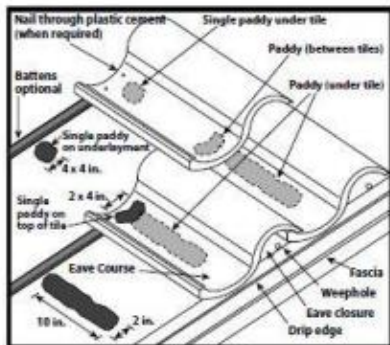
1. Starting at the eave course, apply a minimum 2" (50.8 mm) x 10" (254 mm) x 1" (25.4 mm) foam paddy onto the underlayment positioned as shown under the pan portion of the tile closest to the overlock of the tile being set.
2. Continue in same manner. Insure approximately 17 (109.7 cm²) – 23 (148.4 cm²) square inch adhesive contact with the underside of the tile.



Flat/Low Profile Tile



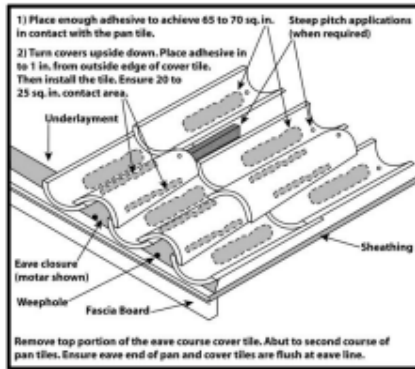
Medium Profile Tile



High Profile Tile

1. On the eave course only, apply a minimum 2" (50.8 mm) x 10" (254 mm) x 1" (25.4 mm) foam paddy onto the underlayment positioned as shown, under the strengthening rib for flat tile or under the pan portion of the tile for low or high profile tile closest to the overlock of the tile being set. Leave approximately 4" (101.6 mm) up from the eave edge free of foam to prevent the expanded adhesive from blocking the weep holes. Insure approximately 17-23 in² (109.7-148.4 cm²) of adhesive contact with the underside of the tile.
2. Apply a 4" (101.6 mm) x 4" (101.6 mm) x 1" (25.4 mm) foam paddy onto the underlayment just below the second course line positioned foam paddy under the strengthening rib for flat tile, or under the pan portion of the tile, closest to the underlock for the second course tile to be installed. Insure approximately 8-9 in² (51.6-58.1 cm²) of adhesive contact with the underside of the tile.
3. Also apply a 2" (50.8 mm) x 4" (101.6 mm) x 3/4" (19 mm) paddy on top of the eave course tile surface as shown, on top of the strengthening rib for flat tile or on top of the pan portion of the tile, closest to the underlock of the first course of tile. Install second course of tile. It is easier to work in a horizontally however it is not mandatory. Insure approximately 9 (58.1 cm²) - 11 (71 cm²) square inch adhesive contact with the underside of the tile at the overlap and 7 (45.2 cm²) - 9 (58.1 cm²) square inch adhesive contact with the underside of the tile at the head of the tile. Continue in same manner.

TWO PADDY



Two Piece Barrel - High Profile Tile

Two Piece Barrel (Cap and Pan) Tile

1. Starting at the eave course, apply a minimum 2" (50,8 mm) x 10" (254 mm) x 1" (25.4 mm) foam paddy onto the underlayment positioned as shown under two adjacent pan tiles. Support eave tiles from rocking until adhesive has a chance to cure.
2. Continue in same manner bringing two pan courses up toward the ridge. Insure approximately 65 (419.4 cm²) – 70 (451.6 cm²) square inch adhesive contact with the underside of the pan tile.
3. Turn covers upside down exposing the underside of the tile. Apply a minimum 1" (25.4 mm) x 10" (254 mm) bead of adhesive directly on the inner edge of each side of the cover tile. Leave approximately ¼" (19 mm) to 1" (25.4 mm) from the outside edge of the tile inward free of foam to allow for expansion.
4. Turn cover tile over after foam is applied and place onto pan tile course. Insure a minim of 20 (129 cm²) – 25 (161.3 cm²) square inch contact area on each side of the cover tile to the pan tile. Continue in same manner. Trim away any cured exposed foam adhesive. Pointing of longitudinal edges of the cover tiles are considered optional.
5. When additional nailing is required, 2" (50.8 mm) x 4" (101.6 mm) nailers or the tie wire system using galvanized stainless steel or copper wire and compatible nails may be

- D. Adhere tile directly in freshly applied adhesive. Tile must be set prior to adhesive "skinning over" usually 1-2 minutes depending on the ambient temperature.
- E. The adhesive is not to be exposed permanently to ultra-violent rays (sunlight). Any exposed foam may be cut away and covered with mortar or coated with a good quality acrylic paint or paint designed for the application to polyurethane foam.
- F. Installing One Piece "S" Mission roofing tiles:
 1. Clay Birdstop (if previously applied):
 - a. Install the clay birdstops or concrete mud ball full length of all eaves.
 - b. If no rain gutter condition, install first row 13 inches (330 mm) from the eave, leaving a 3 inch (76 mm) overhang; exposure length shall not exceed 16 inches (406 mm) centers, and width exposure shall not exceed 12 inches (305 mm) centers.
 - c. If installing rain gutter, install first row 1.5 inch (38mm) overhung
 - d. Exposure length shall not exceed 16 inches (406 mm) centers, and width exposure shall not exceed 12 inches (305 mm) centers.
 - e. Install nailers at ridges and hip warp with the felt,
 - f. Install nailers at rakes, and gables.
 2. Install the tile in rows from left to right, beginning at lower left corner of the roof.
 - a. Start at the lower left corner with a gable tile;
 - b. Install ridge, hip, and valley tiles in accordance with the applicable building code.
 - 1) Provide cement mortar at all ridges and hips to completely seal the area under ridge and hip tiles;
 - 2) Install a thin coat of rich cement mortar (one part Type I Portland cement to three parts sand) along exposed edges of all ridge and hip tiles.
 - 3) Completely and neatly fill and point up all voids.
 3. Installing One Piece "S" Mission roofing tiles with two piece eave
 - a. Birdstop, Boosters, DS07 Two Piece Eave Pan and DS02 Two Piece Eave Top
 - 1) Install clay birdstops or concrete mud ball full length of all eaves.
 - 2) Install first row of DS07 Two Piece Eave Pans 13 inches (330 mm) from the eave, leaving a 3 inch (76 mm) overhang; exposure length shall not

exceed 16 inches (406 mm) centers, and width exposure shall not exceed 12 inches (304.8 mm) centers. If rain gutter is indicated use 1.5 inch (38 mm) overhang.

- 3) Install booster above birdstop.
 - 4) Install DS02 Two Piece Eave Top tiles directly above booster tile; length exposure shall not exceed 13 inch (325 mm) centers, and width exposure shall not exceed 12 inches (304.8 mm) centers.
 - 5) Install the nailers at ridges hip warp with the felt.
 - 6) Install nailers at rakes, and gables.
 - b. Install One Piece "S" Mission Tile in the 2nd row from left to right, beginning at lower left corner of the roof.
 - 1) Install each tile successively, fastening each tile with the specified fasteners.
 - 2) Length exposure on field tile shall not exceed 16 inches (406 mm) centers, and width exposure on field tiles shall not exceed 12 inch (304.8 mm) centers
 - 3) Install ridge, hip, and valley tiles in accordance with the applicable building code.
 - a) Provide cement mortar at all ridges and hips to completely seal the area under ridge and hip tiles;
 - b) Completely and neatly fill and point-up all voids
- G. Visual Inspection: Avoid color patterning, checkerboarding, spotting, and stairstepping:
1. After the installation of each 80 roofing tiles, make a visual inspection from the ground level and at a distance from the building of about 40 feet (12 m).
 2. Verify that tile courses follow straight and true lines;
 3. Verify that color range is smooth with no abrupt changes.
 4. Make necessary corrections before proceeding with further installation.

3.5 CLEANING

- A. Remove all broken tile, debris and excess tile from roof.
- B. Sweep cut tiles clean.

3.6 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

3.7 FIELD QUALITY CONTROL

- A. Inspection: Provide manufacturer's field observations at start-up and at intervals of 3 days per working week. Provide a final inspection upon completion of the Work.
 1. Warranty shall be issued upon manufacturer's acceptance of the installation.
 2. Field observations shall be performed by a Sales Representative employed full-time by the manufacturer and whose primary job description is to assist, inspect and approve membrane installations for the manufacturer.
 3. Provide observation reports from the Sales Representative indicating procedures followed, weather conditions and any discrepancies found during inspection.
 4. Provide a final report from the Sales Representative, certifying that the roofing system has been satisfactorily installed according to the project specifications, approved details and good general roofing practice.
- B. Correct defects or irregularities discovered during field inspection.

END OF SECTION