

SECTION 07322

CLAY ROOFING TILE

PART GENERAL

SECTION INCLUDES

Clay Roofing Tile.

Fasteners.

Underlayment.

Waterproofing Membrane.

Ice Dam.

Flashings and Counterflashings.

RELATED SECTIONS

Section 06100 - Rough Carpentry.

Section 06200 - Finish Carpentry.

Section 07530 - Elastomeric Sheet Roofing.

Section 07600 - Flashing and Sheet Metal.

Section 07710 - Manufactured Roof Specialties: Snow guards.

REFERENCES

ASTM B 370 - Standard Specification for Copper Sheet and Strip for Building Construction.

ASTM C 67 - Standard Test Methods of Sampling and Testing Brick and Structural Clay Tile.

ASTM C 387 - Standard Specification for Packaged, Dry, Combined Materials for Mortar and Concrete.

ASTM C 887 - Standard Specification for Packaged, Dry, Combined Materials for Surface Bonding Mortar.

ASTM C 920 - Standard Specification for Elastomeric Sealants.

ASTM C 1167 - Standard Specification for Clay Roof Tiles.

ASTM D 226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.

ASTM D 1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.

ASTM D 2626 - Standard Specification for Asphalt-Saturated and Coated Organic Felt Base Sheet Used in Roofing.

ASTM D 4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.

SMACNA Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors' National Association, Inc.

#### SUBMITTALS

Submit under provisions of Section 01300.

Product Data: Manufacturer's descriptive literature for products specified in this section.

Shop Drawings: Indicate the following:

Roofing tile:

Exposure pattern.

Locations and configurations of special shapes.

Locations and configuration of each type roof flashing.

Fabricated sheet metal items:

Dimensioned profiles.

Locations and extent of each item; include joint locations.

Jointing methods and materials.

Provisions for prevention of electrolytic action between dissimilar materials.

Interface with adjacent construction.

Selection Samples: Two sets of color charts or samples representing manufacturer's full range of available colors.

Verification Samples: Three full-size tile samples of each type tile specified, representing actual color and finish of products to be installed.

Manufacturer's printed installation instructions for each product, including product storage requirements.

Closeout Submittals: Warranty documents, issued and executed by tile manufacturer, countersigned by Contractor.

## QUALITY ASSURANCE

### Mock-Up:

Construct mock-up using materials specified in this section.

Construct mock-up as directed, at location indicated or directed.

Construct mock-up at location indicated or directed, size \_\_\_ feet by \_\_\_ feet (\_\_\_ m by \_\_\_ m).

Obtain Architect's acceptance of mock-up before beginning construction activities of this section; accepted mock-up will be standard by which completed work of this section is judged.

Mock-up may not remain as part of Work.

Accepted mock-up may remain as part of Work.

### Pre-Installation Meeting:

Convene at job site seven (7) calendar days prior to scheduled beginning of construction activities of this section to review requirements of this section. Require attendance by representatives of the following:

Installer of this section.

Other entities directly affecting, or affected by, construction activities of this section.

Notify Architect four (4) calendar days in advance of scheduled meeting date.

## DELIVERY, STORAGE, AND HANDLING

Store products of this section in manufacturer's unopened packaging until installation.

Maintain storage area conditions for products of this section in accordance with manufacturer's instructions until installation.

## WARRANTY

### Special Warranty:

The Contractor warrants products of this section, as installed, to be in accordance with the Contract Documents and free from faults and defects in materials and workmanship for a period of 3 years. Combine special warranty of this section with products, as installed, of the following sections:  
Section 07530.  
Section 07600.

Manufacturer's Warranty: Furnish tile manufacturer's warranty against defects in product materials; warranty to include reimbursement for labor required for replacement of defective tiles for 20-year period, replacement of defective tile materials for 75-year period.

## PART PRODUCTS

### MANUFACTURERS

Acceptable Tile Manufacturer: Ludowici Roof Tile, Inc.; P.O. Box 69, New Lexington, OH 43764. ASD. Tel: (800) 945-8453 or (614) 342-1995, Fax: (614) 342-5229.

Requests for substitution will be considered in accordance with provisions of Section 01600.

Substitutions: Not permitted.

Unless otherwise specified for an individual product or material, supply all products specified in this section from the same manufacturer.

### MATERIALS

Underlayment: Asphalt-saturated organic felt conforming to ASTM D 226, Type II, non-perforated, nominal weight 30 pounds per 100 square feet (1.5 kg/sq m); two layers required.

Underlayment: Asphalt-saturated and coated organic felt conforming to ASTM D 2626, non-perforated, with fine mineral surfacing one side, nominal weight 43 pounds per 100 square feet (2.0 kg/sq m).

Waterproofing Membrane:

Acceptable product: Winter-Guard, manufactured by CertainTeed Corporation.

Characteristics: Self-adhering rubberized asphalt membrane conforming to ASTM D 1970, with high traction surface, internal reinforcement, and split-back plastic release film.

Wood Stringers: S4S, maximum 19 percent moisture content, nominal 1 inch (25 mm) thick, of height required to support tile.

Flashings and Counterflashings: Copper sheet conforming to ASTM B 370, cold rolled, natural finish; 16 ounces per square foot (4882 g/sq m) minimum thickness.

Copper Wire: 18 gage (1.2 mm) minimum.

Cement Mortar for Setting Tile: 1 part Portland cement mortar ASTM C 270 Type M and 4 parts sand.

Roof Cement: Asphalt roof cement conforming to ASTM D 4586, Type I.

Sealant Used in Lieu of Flashing Cement: ASTM C 920 silicone.

Joint Sealer: Silicone sealant conforming to ASTM C 920, Class 25.

MANUFACTURED UNITS

Clay Roofing Tile Type \_\_:

Acceptable product: Americana Tile.

Profile: Flat interlocking tile with tree bark textured surface.

Nominal size: 9 inches (228 mm) wide by 14 inches (355 mm) long.

Average exposure: 8-1/4 inches (209 mm) wide by 11 inches (279 mm) long.

Acceptable product: Americana XL Tile.

Profile: Flat interlocking tile with tree bark textured surface.

Nominal size: 10-3/4 inches (273 mm) wide by 16 inches (406 mm) long.

Average exposure: 10-1/8 inches (257 mm) wide by 13 inches (330 mm) long.

Acceptable product: Antique Tile.

Profile: Flat slab shingle tile with rough-textured surface and chipped butt.

Nominal size: 7 inches (178 mm) wide by 12 inches (305 mm) long.

Average exposure: 7 inches (178 mm) wide by 5 inches (127 mm) long.

Nominal size: 8 inches (204 mm) wide by 15 inches (381 mm) long.

Average exposure: 8 inches (204 mm) wide by 6-1/2 inches (165 mm) long.

Acceptable product: Brittany Tile.

Profile: Flat slab shingle tile with crude texture.

Nominal size: 7 inches (178 mm) wide by 12 inches (305 mm) long.

Average exposure: 7 inches (178 mm) wide by 5 inches (127 mm) long.

Acceptable product: Calais Tile.

Profile: Flat slab shingle tile with cratered and irregular surface.

Nominal size: 7 inches (178 mm) wide by 15 inches (381 mm) long.

Average exposure: 7 inches (178 mm) wide by 6-1/2 inches (165 mm) long.

Acceptable product: Classic Tile.

Profile: Flat interlocking tile with smooth-textured surface.

Nominal size: 9 inches (228 mm) wide by 14 inches (355 mm) long.

Average exposure: 8-1/4 inches (209 mm) wide by 11 inches (279 mm) long.

Acceptable product: Classic XL Tile.

Profile: Flat interlocking tile with smooth-textured surface.

Nominal size: 10-3/4 inches (273 mm) wide by 16 inches (406 mm) long.

Average exposure: 10-1/8 inches (257 mm) wide by 13 inches (330 mm) long.

Acceptable product: Colonial Tile.

Profile: Flat slab shingle tile with tree bark textured surface.

Nominal size: 7 inches (178 mm) wide by 15 inches (381 mm) long.

Average exposure: 7 inches (178 mm) wide by 6-1/2 inches (165 mm) long.

Acceptable product: 8-inch Conosera Tile.

Profile: Interlocking shingle with tapered

surface rib.  
Nominal size: 8-3/4 inches (222 mm) wide by 13 inches (330 mm) long.  
Average exposure: 7-3/4 inches (197 mm) wide by 10-3/4 inches (273 mm) long.  
Acceptable product: Crude Tile.  
Profile: Flat slab shingle tile with uneven surface and chipped, round-edged butt.  
Nominal size: 6-1/4 inches (159 mm) wide by 12 inches (305 mm) long.  
Average exposure: 6-1/4 inches (159 mm) wide 5 inches (127 mm) long.  
Acceptable product: French Tile.  
Profile: One-piece deep-fluted tile with deep locks all four sides.  
Nominal size: 9 inches (228 mm) wide by 16-1/4 inches (412 mm) long.  
Average exposure: 8-1/8 inches (206 mm) wide by 13-3/8 inches (338 mm) long.  
Acceptable product: Georgian Tile.  
Profile: Flat slab shingle tile with even hand-split wood shake surface.  
Nominal size: 8 inches (203 mm) wide by 15 inches (381 mm) long.  
Average exposure: 8 inches (203 mm) wide by 6-1/2 inches (165 mm) long.  
Acceptable product: Greek Tile.  
Profile: Tapered angular-peak cover tile and tapered flat pan tile pan and cover system.  
Pan and cover nominal length: 12-3/4 inches (324 mm).  
Pan and cover average exposure length: 10 inches (254 mm).  
Pan: Cover-to-cover centerline width of 12 inches (305 mm).  
Acceptable product: Imperial Tile.  
Profile: Flat interlocking shingle tile.  
Nominal size: 10 inches (254 mm) wide by 15 inches (381 mm) long.  
Average exposure: 9-1/4 inches (235 mm) wide by 12 inches (304 mm) long.  
Acceptable product: Italian Tile.  
Profile: Curved tile, pan and cover system.  
Cover: Straight, nominal length \_\_ inches (\_\_ mm).  
Cover: Tapered, nominal length \_\_ inches (\_\_ mm).  
Average exposure length: \_\_ inches (\_\_ mm).

Pan: Straight, cover-to-cover centerline width of \_\_ inches (\_\_ mm), \_\_ inches (\_\_ mm) long.  
Pan: Tapered, cover-to-cover centerline width of \_\_ inches (\_\_ mm), \_\_ inches (\_\_ mm) long.

Acceptable product: Lanai Tile.  
Profile: Flat interlocking shingle tile with sanded, weathered texture surface.  
Nominal size: 9 inches (228 mm) wide by 14 inches (355 mm) long.  
Average exposure: 8-1/4 inches (209 mm) wide by 11 inches (279 mm) long.

Acceptable product: Lanai XL Tile.  
Profile: Flat interlocking shingle tile with sanded, weathered texture surface.  
Nominal size: 10-3/4 inches (273 mm) wide by 16 inches (405 mm) long.  
Average exposure: 10-1/8 inches (257 mm) wide by 13 inches (330 mm) long.

Acceptable product: Norman Tile.  
Profile: Flat slab rustic-textured shingle tile with sanded surface.  
Nominal size: 7 inches (178 mm) wide by 15 inches (381 mm) long.  
Average exposure: 7 inches (178 mm) wide by 6-1/2 inches (165 mm) long.

Acceptable product: Provincial Tile.  
Profile: Flat slab shingle tile with machine-scored surface and rounded butt.  
Nominal size: 7 inches (178 mm) wide by 15 inches (381 mm) long.  
Average exposure: 7 inches (178 mm) wide by 6-1/2 inches (165 mm) long.

Acceptable product: Roman Tile.  
Profile: Tapered curved cover tiles and tapered flat pan tiles pan and cover system.  
Nominal length: 12-3/4 inches (324 mm).  
Average exposure length: 10 inches (254 mm).  
Cover-to-cover centerline width of 12 inches (305 mm).

Acceptable product: Spanish Tile.  
Profile: One-piece barrel tile.  
Nominal size: 9-3/4 inches (248 mm) wide by 13-1/4 inches (337 mm) long.  
Average exposure: 8-1/4 inches (209 mm) wide by 10-1/4 inches (260 mm) long.

Acceptable product: 18-inch Spanish Tile.  
Profile: One-piece barrel tile.  
Nominal size: 9-3/4 inches (248 mm) wide by 18



inches (457 mm) long.  
Average exposure: 8-1/4 inches (209 mm) wide by  
15 inches (381 mm) long.

Acceptable product: Straight Barrel Mission Tile.  
Profile: Barrel tile, pan and cover system.  
Pan and cover nominal length: 14-1/4 inches  
(362 mm).  
Pan and cover average exposure length: 11-1/4  
inches (285 mm).  
Pan and cover nominal length: 16 inches  
(406 mm).  
Pan and cover average exposure length: 13 inches  
(330 mm).  
Pan and cover nominal length: 18 inches  
(457 mm).  
Pan and cover average exposure length: 15 inches  
(381 mm).  
Pan and cover cover-to-cover centerline width:  
11-1/2 inches (292 mm).

Acceptable product: Tapered Mission Tile.  
Profile: Tapered barrel tile, pan and cover  
system.  
Pan and cover nominal length: 16 inches  
(406 mm).  
Pan and cover average exposure length: 13 inches  
(330 mm).  
Straight Pan: Cover-to-cover centerline width of  
10 inches (254 mm).  
Tapered Pan: Cover-to-cover centerline width of  
9-1/2 inches (241 mm).

Acceptable product: Tower Tile System.  
Profile: Curved tile, of manufacturer's standard  
sizes, shapes, and lengths, arranged to indicated  
roof surface.  
Exposure: Random, as indicated on drawings.

Acceptable product: Williamsburg Tile.  
Profile: Flat interlocking shingle tile with  
hand-split shake texture surface.  
Nominal size: 9 inches (228 mm) wide by 14  
inches (355 mm) long.  
Average exposure: 8-1/4 inches (209 mm) wide by  
11 inches (279 mm) long.

Acceptable product: Williamsburg XL Tile.  
Profile: Flat interlocking shingle tile with  
hand-split shake texture surface.  
Nominal size: 10-3/4 inches (273 mm) wide by 16  
inches (406 mm) long.  
Average exposure: 10-1/8 inches (257 mm) wide by

13 inches (330 mm) long.

Characteristics: Incombustible, vitrified tile manufactured from shale and fire clays, having less than 3.0 percent moisture absorption when tested in accordance with ASTM C 67, and meeting Grade 1 freeze/thaw resistance requirements when tested in accordance with ASTM C 1167.

Color: Selected from full range of manufacturer's available colors.

Color: \_\_\_\_\_.

Color: Custom color \_\_\_\_\_.

Multi-Color Custom Sequence:

Color A: \_\_\_\_\_.

Color B: \_\_\_\_\_.

Color C: \_\_\_\_\_.

Colors: Specified in SCHEDULES Article of this section.

Special Shapes and Fittings: Supply special shapes and fittings of same material and finish as adjacent tile, factory-formed before firing, as indicated on drawings or specified in manufacturer's instructions for project conditions including, but not limited to, the following:

Hips.

Ridges.

Rakes.

Eaves.

Valleys.

Termination caps.

Fasteners: Corrosion-resistant; types and sizes specified in manufacturer's instructions for indicated uses and conditions.

## MIXES

Grout:

Mix the following materials in equal parts:

Factory-mixed mortar meeting requirements of ASTM C 387, Type N.

Factory-mixed surface bonding mortar meeting requirements of ASTM C 887.

Add mineral oxide pigment to match color of roofing tile.

Add water and acrylic additive in accordance with mortar materials manufacturers' instructions to obtain correct mix for workability.

## FABRICATION

Form flashings in accordance with manufacturer's instructions for indicated project conditions.

Form other indicated sheet metal items as follows:

Gutters: SMACNA Plate Number \_\_\_\_\_.  
Conductor heads: SMACNA Plate Number \_\_\_\_\_.  
Downspouts: SMACNA Plate Number \_\_\_\_\_.

Fabrication of other indicated sheet metal items is specified in Section 07600.

## PART EXECUTION

### EXAMINATION

Verification of Conditions: Ensure that decks to receive clay tile roofing conform to requirements specified in tile manufacturer's instructions.

#### Installer's Examination:

Have installer of this section examine conditions under which construction activities of this section are to be performed, then submit written notification if such conditions are unacceptable. Transmit two copies of installer's report to Architect within 24 hours of receipt. Beginning construction activities of this section before unacceptable conditions have been corrected is prohibited. Beginning construction activities of this section indicates installer's acceptance of conditions.

### INSTALLATION

#### Waterproofing Membrane:

Adhere directly to deck, following membrane manufacturer's instructions. Beginning at eave edge, install perpendicular to roof slope. Overlap side joints minimum 4 inches (100 mm); overlap end joints minimum 4 inches (100 mm). Install additional layer on rough surfaces; install additional layer of full-width membrane parallel to, and centered on, hips, ridges and valleys. Do not permit plastic cement, or other petroleum

solvent-based cements, to come in contact with waterproofing membrane.

#### Ice Dam:

Adhere waterproofing membrane directly to deck, following membrane manufacturer's instructions. Beginning at eave edge, install perpendicular to roof slope; extend to 24 inches (609 mm) past interior face of exterior wall or as required by regulating building code, whichever is greater.

Overlap side joints and end joints minimum 4 inches (100 mm).

Install additional layer on rough surfaces; install additional layer of full-width membrane parallel to, and centered on, hips, ridges and valleys.

Do not permit plastic cement, or other petroleum solvent-based cements, to come in contact with waterproofing membrane.

#### Underlayment:

Beginning at eave edge, install perpendicular to roof slope; extend minimum of 4 inches (100 mm) over gutters and valley flashing, and minimum 6 inches (150 mm) up abutting vertical surfaces.

Overlap side joints minimum 2-1/2 inches (64 mm); overlap end joints minimum 6 inches (150 mm).

Install second layer parallel to first layer, maintaining specified overlap at gutters, valley flashings, and at side and end joints; locate side joints minimum 18 inches (457 mm) from first layer side joints, and locate end joints minimum 12 inches (300 mm) from first layer end joints.

Install additional layer on rough surfaces; install additional layer of full-width underlayment parallel to, and centered on, hips, ridges and valleys.

Fasten sides and ends to deck with fasteners spaced at maximum 6 inches (150 mm) on centers.

#### Valley Flashings:

Install minimum 20 inch (508 mm) wide flashing over full-width waterproofing membrane material; fasten metal to deck with cleats.

Overlap end joints minimum 5 inches (127 mm); do not solder joints.

Lap underlayment over edges of flashing 4 inches (100 mm).

Install flashing over full-width waterproofing membrane material.

Interleave roofing tiles with minimum 20 inch (508 mm) wide prepared metal flashing sheets. Attach roofing tiles to deck, using copper wires wired to copper straps nailed beyond top edge of metal flashing.

Intersections of Roof Surfaces and Abutting Vertical Surfaces:

Install continuous 12 inch (304 mm) wide strips of waterproof membrane material to extend 9 inches (228 mm) across roof deck and 3 inches (76 mm) up vertical surface.

Install continuous metal flashing to extend 3 inches (76 mm) up vertical surface.

At locations where vertical surface will abut top edge of tile, install metal flashing to extend 3 inches (76 mm) up vertical surface, form metal flashing to extend minimum 3 inches (76 mm) over tile, and form 1/2 inch (12 mm) return hem at edge of metal.

Form saddle flashings for protrusions through roof in accordance with manufacturer's instructions.

Fabricated Sheet Metal Items: Install in accordance with shop drawings and SMACNA ASMM.

Fabricated Sheet Metal Items: Installation is specified in Section 07600.

PROTECTION

Section 01700 - Contract Closeout: Protecting installed work.

Do not permit traffic over finished roof surface.

SCHEDULES

Location: \_\_\_\_\_.  
Tile: \_\_\_\_\_.  
Color: \_\_\_\_\_.  
Texture: \_\_\_\_\_.

END OF SECTION