SECTION 07 31 00

SYNTHETIC ROOF TILES

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\*\* NOTE TO SPECIFIER \*\* Brava Roof Tile; synthetic roof tiles.
This section is based on the products of Brava Roof Tile, which is located at:
915 E. Tyler St.
Washington, IA 52353
Tel: 844-290-4196
Fax: 319-343-1038
Email: [request info (marketing@bravarooftile.com)](https://admin.arcat.com/users.pl?action=UserEmail&company=Brava+Roof+Tile&coid=50185&rep=&fax=319-343-1038&message=RE:%20Spec%20Question%20(07320bra):%20%20&mf=)
Web: <http://www.bravarooftile.com>
 [ [Click Here](https://www.arcat.com/arcatcos/cos50/arc50185.html) ] for additional information.
When deciding on what roofing material to use on your home, Brava composite tile should be at the top of your list. You might be wondering: "What is composite tile?" or "Why should I use Brava composite roof tile on my home?"
Brava composite tile is the best alternative to traditional Spanish clay tile, natural slate, and cedar shake roofing! Our composite roofing products last longer, are far more durable, and much more aesthetically and architecturally pleasing than asphalt shingles, concrete tiles, or slate, shake, and clay tiles.

1. GENERAL
	1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Synthetic roof tiles of the following types:
			1. Shake shingles. (Cedar Shake)
			2. Spanish tiles. (Spanish Tile)
			3. Slate tiles. (Old World Slate)
		2. Accessories.
	1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 06 10 00 - Rough Carpentry.
		2. Section 07 60 00 - Flashing and Sheet Metal.
		3. Section 07 91 13 - Compression Seals.
	1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. ASTM International (ASTM):
			1. ASTM D226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
			2. ASTM D3161 - Standard Test Method for Wind-Resistance of Asphalt Shingles (Fan-Induced Method).
			3. ASTM E108 (UL 790) - Standard Test Methods for Fire Tests of Roof Coverings.
			4. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
		2. Florida Building Code Testing Application Standard (TAS): TAS 125 - Test for Uplift Resistance on Roof Assemblies.
		3. International Code Council (ICC): ES Acceptance Criteria AC07 Section 4.9.
		4. Underwriters Laboratories (UL):
			1. UL 790 - (Exterior Exposure), Standard Test Methods for Fire Tests of Roof Coverings.
			2. UL 997 - Wind Resistance of Prepared Roof Covering Materials.
			3. UL 2218 - Impact Resistance of Prepared Roof Covering Materials.
	1. SUBMITTALS
		1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
		2. Product Data:
			1. Manufacturer's data sheets on each product to be used.
			2. Preparation instructions and recommendations.
			3. Storage and handling requirements and recommendations.
			4. Typical installation methods.

\*\* NOTE TO SPECIFIER \*\* Delete selection samples if colors have already been selected.

* + 1. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
		2. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square representing actual product, color, and patterns.
		3. Shop Drawings: Include details of materials, construction and finish. Include relationship with adjacent construction.
	1. QUALITY ASSURANCE
		1. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum five years documented experience.
		2. Installer Qualifications: Company specializing in performing Work of this section with minimum two years documented experience with projects of similar scope and complexity.
		3. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.

\*\* NOTE TO SPECIFIER \*\* Include mock-up if the project size or quality warrant the expense. The following is one example of how a mock-up on might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project. Delete if not required.

* + 1. Mock-Up: Construct a mock-up with actual materials in sufficient time for Architect's review and to not delay construction progress. Locate mock-up as acceptable to Architect and provide temporary foundations and support.
			1. Intent of mock-up is to demonstrate quality of workmanship and visual appearance.
			2. If mock-up is not acceptable, rebuild mock-up until satisfactory results are achieved.
			3. Retain mock-up during construction as a standard for comparison with completed work.
			4. Do not alter or remove mock-up until work is completed or removal is authorized.
	1. PRE-INSTALLATION CONFERENCE
		1. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Architect, Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.
	2. DELIVERY, STORAGE, AND HANDLING
		1. Store and handle in strict compliance with manufacturer's written instructions and recommendations.
		2. Protect from damage due to weather, excessive temperature, and construction operations.
		3. Store and dispose of solvent-based materials, and materials used with solvent based materials, in accordance with requirements of local authorities having jurisdiction.
	3. PROJECT CONDITIONS
		1. 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 recommended limits.
	4. WARRANTY
		1. Manufacturer's Warranty: Provide manufacturer's standard limited warranty:
			1. Manufacturer's 50 year warranty for shingles against breakage and deterioration that causes leaks under normal weather and use conditions.
1. PRODUCTS
	1. MANUFACTURERS
		1. Acceptable Manufacturer: Brava Roof Tile, which is located at: 915 E. Tyler St.; Washington, IA 52353; Tel: 844-290-4196; Fax: 319-343-1038; Email: [request info (marketing@bravarooftile.com)](https://admin.arcat.com/users.pl?action=UserEmail&company=Brava+Roof+Tile&coid=50185&rep=&fax=319-343-1038&message=RE:%20Spec%20Question%20(07320bra):%20%20&mf=); Web: <http://www.bravarooftile.com>

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
		2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.
	1. PERFORMANCE REQUIREMENTS
		1. Roof system to consist of manufactured synthetic tiles attached to structural substrate to form weather tight roof envelope with no measurable water penetration.
		2. Tiles shall be manufactured with variations in color and size, textured faces and edges, and sufficient thickness to provide a realistic installed appearance.
		3. Method of attachments shall be designed to adequately resist wind uplift for roof configuration and project location.

\*\* NOTE TO SPECIFIER \*\* Select first or second paragraph below for fire resistance. Second option is not available for Cedar Shake tiles. Delete fire resistance not required.

* + 1. Fire resistance when installed over one layer 30 lbs felt that meets ASTM D226 Type II standard or a listed synthetic underlayment: Class C tested in accordance with ASTM E108/UL790.
		2. Fire resistance when installed over one layer 30 lbs felt that meets ASTM D226 Type II standard or a listed synthetic underlayment: Class A tested in accordance with ASTM E108/UL790.
		3. Impact Resistance: Class 4 to withstand two drops of 2 inches (51 mm) diameter, 1.2 lbs (0.54 kg) steel ball dropped from 20 feet (6096) tested in accordance with UL 2218.
		4. Freeze-thaw resistance: No crazing, cracking, delamination of coating, or other deleterious surface changes after one month exposure with temperature cycled from -40 to +180 degrees F (0 degrees to 82 degrees C) in 22 hours tested in accordance with International Code Council (ICC)- ES Acceptance Criteria AC07 Section 4.9.
		5. Accelerated weathering: Little change after 2,500 hours exposure to ultraviolet (UV) radiation, elevated temperature, moisture, and thermal shock.
		6. Fungus resistance: No algae growth when inoculated with blue green algae in warm, damp environment for 4 to 6 weeks tested in accordance with ASTM G21.

\*\* NOTE TO SPECIFIER \*\* Brava composite shake tile offers the aesthetics of hand split cedar, that even the most fastidious consumer would agree is stunningly the same. Our multi-colored synthetic roof tile is unparalleled in the composite roofing market and is available in three different widths. Our product can be installed in straight courses or in a staggered application to give it a more rugged appearance. No other imitation shake comes close to our authentic appearance and quality. Delete if not required.

* 1. SYNTHETIC SHAKE SHINGLES
		1. Basis of Design: Brava Roof Tile, Cedar Shake; as manufactured by Brava Roof Tile.
		2. Lightweight, synthetic shake shingles with the appearance, color, texture, and thickness of natural wood shakes.
		3. Material: Engineered polymer formulated from post-industrial recycled plastic.
		4. Installed weight: At 10 inch (254 mm) exposure: 355 lbs per sq ft (17.4 kg per sq m).
		5. Profile: Rectangular shape with exposed to view upper surface and edges textured to resemble natural wood shake. Underside formed with reinforcing ribs for added strength and stability.
		6. Size:
			1. Thickness: 3/8 to 1 inch (9.5 to 25 mm) at butt end.
			2. Length: 24 inches (610 mm).
			3. Variable widths: 5, 7, and 12 inches (127, 178, and 305 mm).
		7. Starter Shingle: 12 inches (305 mm) long by 12 inches (305 mm) wide.
		8. Markings: Form shingles with markings on upper surface to indicate nailing locations and provide alignment guidelines for different exposure lengths.
		9. Finish: Multi color comparable to natural wood shakes. Internal UV stabilizers to provide durable color stability.

\*\* NOTE TO SPECIFIER \*\* Delete colors not required.

* + - 1. Color: Lake Forest.
			2. Color: Aged.
			3. Color: Aspen.
			4. Color: Natural.
			5. Color: Charcoal.
			6. Color: Weatherwood.
			7. Color: Rustic.
			8. Color: Sierra.
			9. Color: Weathered.
			10. Color: White.
			11. Color: To be selected by Architect.
			12. Color: As indicated on Drawings.

\*\* NOTE TO SPECIFIER \*\* Barrel roof tile, more commonly known as Spanish Tile (or Double Roman), is a term often used to describe the multiple forms of semi-cylindrical roofing tile that is laid in an interlocking pattern. Spanish tile roofing has been around for centuries and continues to be the preference of many homeowners today. Brava composite barrel tile undoubtedly kindles the beauty of European Old World roofing. Delete if not required.

* 1. SYNTHETIC SPANISH TILES
		1. Basis of Design: Brava Roof Tile, Spanish Tile; as manufactured by Brava Roof Tile.
		2. Lightweight, synthetic Spanish tiles with the appearance, texture, and thickness of concrete or clay Spanish tiles.
		3. Material: Engineered polymer formulated from post-industrial recycled plastic.
		4. Installed weight: At 13.5: 257 lbs per sq ft (12.6 kg per sq m).
		5. Profile: Barrel shape with exposed upper surface and edges to resemble concrete or clay Spanish tile.
		6. Size:
			1. Length: 16.5 inches (419 mm).
			2. Width: 13 inches (330 mm).
		7. Starter Shingle: 3 inches (76 mm) long by 11.75 inches (298 mm) wide.
		8. Markings: Form tiles with markings on upper surface to indicate nailing locations and provide alignment guidelines.
		9. Finish: Specified color patterning comparable to concrete or clay Spanish tiles. Internal UV stabilizers to provide durable color stability.

\*\* NOTE TO SPECIFIER \*\* Delete colors not required.

* + - 1. Color: Aged Mission.
			2. Color: Antigua.
			3. Color: Black Brown Blend.
			4. Color: Brown.
			5. Color: French Clay.
			6. Color: Gray.
			7. Color: Green.
			8. Color: Mediterranean.
			9. Color: Mocha.
			10. Color: Mocha Sand.
			11. Color: New Aged Terra Cotta.
			12. Color: Onyx.
			13. Color: Sand.
			14. Color: Terra Cotta.
			15. Color: Terra Cotta Brown.
			16. Color: Terra Cotta Dark Brown.
			17. Color: Tuscan.
			18. Color: Vespera.
			19. Color: White.
			20. Color: Vintage Clay.
			21. Color: To be selected by Architect.
			22. Color: As indicated on Drawings.

\*\* NOTE TO SPECIFIER \*\* With a 1 inch profile, Brava's Old World Slate polymer tile has the volume of traditional slate roof tiles with a fraction of the weight. This allows for less expensive shipping costs and ease of installation. Our Old World Slate shingles have the thickest synthetic slate roof profile available. The 1 inch thick profile of this product creates beautiful color exposure and an unsurpassed durability. Our composite slate roof tiles are available in any custom color or color combination. Delete if not required.

* 1. SYNTHETIC SLATE TILES
		1. Basis of Design: Brava Roof Tile, Old World Slate; as manufactured by Brava Roof Tile.
		2. Lightweight, synthetic slate tiles with the appearance, texture, and thickness of traditional slate tiles.
		3. Material: Engineered polymer formulated from post-industrial recycled plastic.
		4. Installed weight: At 10 inch exposure: 339 lbs per sq ft (16.5 kg per sq m).
		5. Profile: Rectangular shape with exposed upper surface and edges to resemble traditional slate tile.
		6. Size:
			1. Length: 22 inches (559 mm).
			2. Width: 12 inches (305 mm).
		7. Starter Shingle: 12 inches (305 mm) long by 12 inches (305 mm) wide.
		8. Markings: Form tiles with markings on upper surface to indicate nailing locations and provide alignment guidelines.
		9. Finish: Specified color patterning comparable to traditional slate tiles. Internal UV stabilizers to provide durable color stability.

\*\* NOTE TO SPECIFIER \*\* Delete colors not required.

* + - 1. Color: Vintage.
			2. Color: Sonoma.
			3. Color: Atlantic.
			4. Color: Onyx.
			5. Color: Charcoal.
			6. Color: Cottage.
			7. Color: European.
			8. Color: Gray.
			9. Color: Deep Green.
			10. Color: Purple.
			11. Color: Sheridan.
			12. Color: Victorian.
			13. Color: Welsh.
			14. Color: Arendale.
			15. Color: To be selected by Architect.
			16. Color: As indicated on Drawings.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. ACCESSORIES
		1. Underlayment: Asphalt saturated and coated organic felt base sheet which meets requirements of ASTM D 2626 or a listed synthetic underlayment, in accordance with manufacturer's instructions.
		2. Waterproof Sheet Membrane: Cold applied, self-adhering waterproof membrane composed of polyethylene film coated one side with rubberized asphalt adhesive.
			1. Thickness: 40 mils (1 mm).
			2. Low temperature flexibility: Unaffected at minus 32 degrees F (minus 36 degrees C).
			3. Minimum tensile strength: 250 psi (1724 kPa).
			4. Minimum elongation: 250 percent.
			5. Permeance: 0.05 perms maximum.
			6. Approved membranes include, but are not limited to:
				1. Soprema Cophene FR GR (75).
				2. Grace Ice and Water.
				3. Tamko Ice and Water.
		3. Flashing: Fabricate from sheet to profiles and dimensions indicated on Drawings and approved shop drawings and in accordance with general requirements specified in Section 07 60 00 - Flashing and Sheet Metal- Flashing and Sheet Metal.

\*\* NOTE TO SPECIFIER \*\* Delete material not required.

* + - 1. Material: 16-ounce copper.
			2. Material: 26 gage (0.455 mm) galvanized steel.
			3. Base Flashings: To be used over or under the roof coverings and are turned up on the vertical surface.
				1. Base flashings should extend under the uppermost row of tile the full depth of the tile or at least 4 inches (102 mm) over the tile immediately below the metal. The vertical leg of the metal should be turned up a minimum of 4 inches (102 mm) and extend 4 inches (102 mm) on the tile as it is laid.
			4. Linear Components: Form in longest possible lengths with 8 ft (2.5 m) as minimum.
			5. Counter Flashings: Extend 4 inches (102 mm) minimum up vertical surfaces and 4 inches (102 mm) minimum under shingles.
			6. Eave Flashings: Form bottom edge outward 1/4 inch (6 mm) and hem to form drip.
			7. Valley Flashings: 24 inches (610 mm) minimum width and extending 10 inches (254 mm) minimum from valley center line.

\*\* NOTE TO SPECIFIER \*\* Delete fasteners not required.

* + 1. Standard Fasteners: 3/8 inch (9.5 mm) flat head nails 1-3/4 inches (44 mm) long.

\*\* NOTE TO SPECIFIER \*\* Delete materials not required.

* + - 1. Material: Copper.
			2. Material: Stainless steel.
			3. Material: Hot-dipped galvanized.
		1. High wind fasteners (110 mph): 1/8 inch (3 mm) diameter, 2 inch (51 mm) ring shank roofing nails.

\*\* NOTE TO SPECIFIER \*\* Delete materials not required.

* + - 1. Material: Copper.
			2. Material: Stainless steel.
			3. Material: Hot-dipped galvanized.
		1. High wind fasteners (198.5 lbs per sq ft): No. 10 x 2-1/2 inch (64 mm) screws.
			1. Epoxy, polymer or ceramic coated.

\*\* NOTE TO SPECIFIER \*\* Delete material not required.

* + - 1. Material: Stainless steel.
			2. Material: Hot-dipped galvanized.
1. EXECUTION
	1. EXAMINATION
		1. Do not begin installation until substrates have been properly constructed and prepared.
		2. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.
	2. PREPARATION
		1. Clean surfaces thoroughly prior to installation.
		2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
		3. Coordinate installation with provision of gutters and downspouts as specified herein.
		4. Verify roof is complete, rigid, braced, and deck members are securely fastened. Ensure proper ventilation has been provided for roof space. Do not proceed with roofing until deficiencies are addressed.
		5. Verify roof deck is clean, dry, and ready to receive synthetic shake shingles.
	3. INSTALLATION
		1. Install products in accordance with manufacturer's instructions, approved submittals and in proper relationship with adjacent construction.
		2. Underlayment Installation: Install self-adhered waterproof sheet membrane on the eaves. Cover the waterproof sheet membrane and the remaining portions of the roof as scheduled with the approved underlayment. Then install waterproof sheet membrane in valleys, along walls and around projections terminating on top of underlayment. Install underlayment in accordance with underlayment and tile manufacturers' recommendations.
		3. Flashing Installation:
			1. Install overhanging drip edge on eaves and gable ends and metal flashings at valleys, ridges, hips, roof curbs, penetrations, and intersections with vertical surfaces in accordance with Section 07 60 00 - Flashing and Sheet Metal- Flashing and Sheet Metal.
			2. Weather lap joints 2 inches (52 mm) minimum and seal with sealant as specified in Section 07 91 13 - Compression Seals- Joint Fillers.
			3. Secure in place with clips, nails, and other fasteners.
		4. Layout: Accurately layout shingles. Ensure that edges are parallel and perpendicular to roof eaves.
		5. Color: Verify that materials are the selected color. Some color variation is to be expected. If color variation exceeds original selection, immediately cease installation and notify manufacturer.
		6. Selection: Pull materials from three separate pallets to ensure proper color blending.
		7. Spacing: Provide 3/8 inch gap between shingles to allow for expansion and contraction.
		8. Roof Slope: Minimum roof slope recommended for the application of synthetic roof tile is 4:12.
		9. Fastening: Attach each tile to wood deck with 2 nails using hammer or pneumatic nail gun.
			1. Place nails at locations indicated on tiles.
		10. Cutting: Layout work to avoid cutting shingles.
			1. At gables and vertical intersections, vary combination of shingle width and spacing of shingles to avoid cutting.
			2. If cutting is required, place shingle such that cut edge is not exposed.
			3. Use circular saw or straight edge and utility knife if cuts are necessary.
	4. FIELD QUALITY CONTROL
		1. Field Inspection: Coordinate field inspection in accordance with appropriate sections in Division 01.
		2. Inspect units as they are installed. Do not install cracked, broken, twisted, curled, or otherwise damaged units.
		3. As work progresses, exercise care not to scratch or mar installed units. Units damaged during installation shall be immediately removed and discarded.
		4. After approximately 338 units (2 squares) have been installed, inspect roof from ground. Verify proper layout and appearance. Repeat inspection throughout installation.
		5. Visually inspect complete installation to ensure that it is weather tight.
	5. CLEANING AND PROTECTION
		1. Clean products in accordance with the manufacturer's recommendations.
		2. Protect installed products until completion of project.
		3. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION