

St. John's Seminary Redevelopment

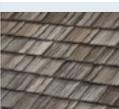
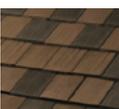
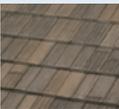
Sample Material Specifications



Texas Cool Roof Tiles

STANDARD WEIGHT CONCRETE TILE LISTED BY COLOR AND SRI VALUE

Image	Description	Energy Star	Profile	Part Number	Color	CRRC ID #	Ref.	Emit.	SRI
	Continental Seville		Tejas España	1TEWS0030	Orange	0942-0102	0.43	0.90	49
	Continental Riviera		Tejas España	1TEWS6164	Orange, Yellow	0942-0101	0.42	0.89	47
	Continental Bisque		Tejas España	1TEWS6174	Orange, Tan	0942-0100	0.35	0.91	39
	Brazos Blend		Tejas España	1TEWS6217	Red, Brown Multicolor	0942-0093	0.34	0.89	37
	Newport Sun		Tejas España	1TECS6953	Orange, Tan	0942-0073	0.31	0.90	33
	Terra Cotta		Tejas España Boosted Barcelona	1TECS6100 1BHCS6100K	Red, Orange, Multicolor	0942-0030	0.29	0.89	30
	Charleston		Country Slate	1TCCS6070	Orange, Tan	0942-0073	0.29	0.87	29
	Desert Sage		Tejas España	1TECS0024	Tan, Brown, Black Multicolor	0942-0098	0.27	0.93	29
	New Clay		Tejas España Boosted Barcelona Villa	1TECS6931 1BHCS6931K 1VACS6931	Orange, Tan Multicolor	0942-0010	0.25	0.93	27
	Casa Grande Blend		Tejas España Boosted Barcelona	1TECS6144 1BHCS6144K	Orange, Red, Black Multicolor	0942-0014	0.23	0.91	23
	Buckskin		Barcelona Impact Tejas España	1BITS0141 1TECS0141	Tan, Brown Multicolor	0942-0009	0.22	0.90	22

Image	Description	Energy Star	Profile	Part Number	Color	CRRC ID #	Ref.	Emit.	SRI
	Marbled Terra Cotta	–	Tejas España Villa	1TECS6129 1VACS6129K	Orange, Black Multicolor	0942-0020	0.19	0.91	18
	Charcoal Brown Blend	–	Barcelona Impact Tejas España	1BITS1132 1TECS1132	Tan, Grey Multicolor	0942-0005	0.18	0.91	17
	Salerno Clay	–	Barcelona Impact Tejas España	1BITS6330 1TECS6330	Orange, Tan Multicolor	0942-0012	0.17	0.93	17
	Vintagewood	–	Madera 900	1MDCL5011	Tan, Grey, Brown Multicolor	0942-0089	0.12	0.94	11
	Wolf Grey	–	Country Slate Impact Tejas España	1TETS5969 1TECS5969	Red, Brown, Multicolor	0942-0090	0.11	0.91	8
	Cobblestone	–	Country Split Shake	1TSCB3957	Grey, Brown Multicolor	0942-0062	0.11	0.90	8
	Mountainwood	–	Madera 900	1MDCL5001	Tan, Brown Multicolor	0942-0110	0.08	0.93	5
	Charcoal	–	Country Slate Impact Tejas España	1TETS1130 1TECS1130	Grey, Black Multicolor	0942-0064	0.08	0.92	5

Disclaimer: The printed colors shown on this sheet may vary from actual available tile colors. Before making a final selection, be sure to review actual tile samples and roof installations. Please contact your local sales office for further assistance.

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SECTION 07321

CONCRETE ROOF TILE

Display hidden notes to specifier. (Don't know how? [Click Here](#))

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Concrete roof tiles and roof system components.
- B. Metal roof flashing.
- C. Underlayments.
- D. Related roof accessories.

1.2 RELATED SECTIONS

- A. Section 06100 - Rough Carpentry; Roof sheathing and nailers.
- B. Section 07600 - Flashing and Sheet Metal.
- C. Section 07710 - Roof Specialties; Roof gutters and downspouts.
- D. Section 08600 - Skylights.
- E. Division 15 - Mechanical: Mechanical work projecting through roof.
- F. Division 16: - Electrical: Electrical work projecting through roof.

1.3 REFERENCES

- A. ASTM A 641 - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 1998.
- B. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- C. ASTM C 1492 – Standard Specification for Concrete Roof Tile.
- D. ASTM D 226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 1997a.

- E. ASTM D 1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
- F. ASTM D 2626 - Standard Specification for Asphalt-Saturated and Coated Organic Felt Base Sheet Used in Roofing; 1997b.
- G. AWWA C2 - Lumber, Timber, Bridge Ties and Mine Ties -- Preservative Treatment by Pressure Processes; 2001.
- H. IAPMO UES ER-2015 - TRI Concrete and Clay Roof Tile Installation Manual
- I. IAPMO ES Report – 412 for Boral Roofing Concrete Roof Tiles.
- J. Tile Roofing Institute (TRI) - Concrete and Clay Design Criteria for Cold and Snow Regions.
- K. FRSA/TRI Florida High Wind Tile Installation Manual, Revised 5th Edition, 2014.
- L. ICC ESR 1647 (ICC-ES) - International Code Council Evaluation Services.
- M. ICC AC 180 – Acceptance Criteria for Clay and Concrete Roof Tiles.
- N. Florida Building Codes, Product Approval - FL7849, FL601, FL1431
- O. CAN/CSA-A220. Series-06 –Concrete Roof Tiles.
- P. ICC AC 188 for Underlayments.
- Q. AC 48 for Underlayments in severe climates.
- R. AC 148 for Wakaflex flashing and ridge venting products.
- S. ASTM E 903 - Standard Test Method for Solar Absorptance, Reflectance, and Transmission of Materials Using Integrating Spheres.
- T. Leadership in Energy and Environmental Design (LEED).
- U. California Title 24 Energy Efficient Standards.
- V. ENERGYSTAR.
- W. Cool Roof Rating Council (CRRC).

1.4 DESIGN REQUIREMENTS

- A. Roofing tile materials and installation shall conform to the requirements of ICC ESR 1647.
- B. Roofing tile materials and installation shall conform to the requirements of Miami Dade County Notice of Acceptance (NOA) as follows:
 1. NOA 12-0222.02 – Barcelona 900 Concrete Roof Tile
 2. NOA 12-0308.20 – Villa 900 Concrete Roof Tile
 3. NOA 12-0308.21 – Tejas Espana Concrete Roof Tile
 4. NOA 12-0308.22 – Villa Concrete Roof Tile
 5. NOA 12-0308.24 – Missions Concrete Roof Tile

6. NOA 12-0904.03 – Saxony 700 (Shake, Slate & Split Shake) Concrete Roof Tile
7. NOA 12-0904.04 – Saxony 600 (Shake, Slate, Split Shake) Concrete Roof Tile
8. NOA 12-0904.05 – Espana Concrete Roof Tile
9. NOA 12-0904.12 – Saxony (Shake, Slate, Split Shake) Concrete Roof Tile
10. NOA 13-0723.05 – Saxony 900 Concrete Roof Tile
11. NOA 13-1113.05 - BORAL TileSeal
12. NOA 14-0408.06 - Spanish “S” Nuevo Concrete Roof Tile
13. NOA 14-0416.10 – Wakaflex Flashing
14. NOA 15-0601.05 – Madera 700 Concrete Roof Tile
15. NOA 15-0601.06 – Cedarlite 600 Concrete Roof Tile
16. NOA 15-0601.07 - Madera Concrete Roof Tile

- C. Roofing tile materials and installation shall conform to the SBCCI Standard for Hurricane Resistant Residential Construction, SSTD10-99, the International Building Code for One and Two Family Dwelling Code and the Florida Building Code 2007.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. 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.
- C. 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.
- D. Selection Samples: For each finish product specified, two complete sets of tile colors representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish product specified, two full size samples representing actual product, color, and patterns.
- F. Certificates of Compliance: Submit to certify compliance with referenced standards.
- G. LEED Submittals: Provide a roofing system that will achieve or aid in the qualification of points satisfying
 1. Sustainable Site credit 7.2 – Heat Island Effect – Roof.
 2. Materials & Resources credit 5 – Local and Regional Materials.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum five years documented experience producing concrete roof tile and member of Tile Roof Institute.
- B. Installer Qualifications: Minimum five years documented experience installing products specified in this section and/or supervision by a manufacturers authorized installation representative.
- C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 1. Finish areas designated by Architect.

2. Mock-up shall be a minimum of a 10 foot (3.05 M) by 10 foot (3.05 M) area and include the edge, ridge, valley and other typical transition conditions anticipated.
3. Do not proceed with remaining work until installation workmanship and appearance is approved by Architect.
4. Mock-up may not remain as part of Work.
5. Accepted mock-up may remain as part of Work.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging 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.

1.8 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. Roof Tile: Boral Roofing's Limited Lifetime, Fully Transferable, Non-Prorated Product Warranty against defects in roof tile for the life of the structure.
- B. Installation Warranty: Warrants products of this section, as installed, to be in accord with the Contract Documents and free from faults and defects in materials and workmanship for a period of 3 years after completion.

1.10 EXTRA MATERIALS

- A. Provide an additional 1 percent of installed roof tiles, but not less than 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. Acceptable Manufacturer: Boral Roofing; 7575 Irvine Center Drive, Suite 100, Irvine, CA 92618-2930. ASD. Tel: (949) 585-8200. Toll Free Tel: 800-571-TILE (8453); Fax: (949) 756-2401. Web: www.boralroof.com.
- B. Manufacturing and Distribution Facility:
 1. Arizona Region:

- a. Phoenix Plant, 1832 S. 51st Avenue, Phoenix, AZ 85043. Tel: 603-269-2288, Toll Free: 800-845-9921.
- 2. Florida, Southeast, Northeast Regions:
 - a. Pompano Beach Plant, 1369 Hammondville Road, Pompano Beach, FL 33069. Tel: 954-786-5380, Toll Free: 800-818-0974.
 - b. Lake Wales Plant, 200 Story Road, Lake Wales, FL 33853. (P.O. Box 632, Lake Wales, FL 33859-0632), Tel: 863-678-9405, Toll Free: 800-282-3633.
- 3. Hawaii Region:
 - a. Hawaii, Hawaii Docks, Tacoma Plant, 10920 Steele Street Lakewood WA 98499. Tel: 800-699-8453.
- 4. Northern California Region:
 - a. Lathrop Plant, 642 Roth Road, Lathrop, CA 95330. Tel: 209-983-1600. Tel: 800-669-8453.
 - b. Stockton Plant, 9508 South Harlan, French Camp, CA 95231, Mailing: PO Box 6037, Stockton, CA 95206. Tel: 209-982-1473. Tel: 800-669-8453.
- 5. Pacific Northwest Region:
 - a. Tacoma Plant, 10920 S. Steele St., Lakewood, WA 98499. Tel: 253-581-3666, Toll Free Tel: 800-451-0500.
- 6. Rocky Mountain and Hearland Regions:
 - a. Denver Plant, 10121 Dallas Street, Henderson, CO 80640. Tel: 303-286-3856.
- 7. Southern California Region:
 - a. Rialto Plant: 3511 North Riverside Avenue, Rialto, CA 92377. Tel: 909-822-4407. Tel: 800-769-8453.
- 8. Southern Nevada Region:
 - a. Henderson Plant, 430 Eastgate, Henderson, NV 95020. Tel: 702-564-8453, Toll Free: 800-224-3560.
- 9. Texas Region:
 - a. Katy Plant, 30595 FM 529, Brookside, TX 77434. Tel: 281-371-2634, Toll Free: 866-204-8426.

C. Substitutions: Not permitted.

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

2.2 CONCRETE ROOF TILE – ARIZONA

- A. Standard Weight Tile: Mission “S” profile.
 - 1. Finishing Tile: Provide Mansard Trim, Hip Starter and Mansard Apex 3-Way tiles.
 - 2. Size: 16-1/2 inches (419 mm) by 13 inches (330 mm), nominal.
 - 3. Coverage: 90 field tiles per 100 square feet (9.29 sm) of roof area.
 - 4. Installed weight per square: Approximately 1030 lbs (467 kg).
 - 5. Color: As selected by the Architect.
- B. Standard Weight Tile: Boosted Barcelona profile.
 - 1. Size: 13-1/2 inches (323 mm) by 6-1/2 inches (165 mm), nominal.
 - 2. Coverage: 10 percent application, 20 percent application, 30 percent application.
 - 3. Installed weight per square including field tile: 10 percent, 945 lbs (429 kg), 20 percent, 990 lbs (449 kg), 30 percent, 1,050 lbs (476 kg).
 - 4. Color: As selected by the Architect.
- C. Standard Weight Tile: Saxony Slate profile.
 - 1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 - 2. Size: 16-1/2 inches (419 mm) by 13 inches (330 mm), nominal.
 - 3. Coverage: 88 field tiles per 100 square feet (9.29 sm) of roof area.

4. Installed weight per square: Approximately 950 lbs (431 kg).
 5. Color: As selected by the Architect.
- D. Standard Weight Tile: Saxony Shake profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 16-1/2 inches (419 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 88 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 950 lbs (431 kg).
 5. Color: As selected by the Architect.
- E. Standard Weight Tile: Saxony Country Slate profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 16-1/2 inches (419 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 88 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 950 lbs (431 kg).
 5. Color: As selected by the Architect.
- F. Standard Weight Tile: Madera 900 profile.
1. Finishing Tile: Provide Rake, Hip/Ridge and Tapered Eave Starter tiles.
 2. Size: 13-1/2 inches (323 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 120 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 950 lbs (431 kg).
 5. Color: As selected by the Architect.
- G. Midweight Tile: Madera 700 profile.
1. Finishing Tile: Provide Rake, Hip/Ridge and Tapered Eave Starter tiles.
 2. Size: 13-1/2 inches (323 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 120 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 720 lbs (327 kg).
 5. Color: As selected by the Architect.
- H. Lightweight Tile: Cedarlite 600 profile.
1. Finishing Tile: Provide Rake, Hip/Ridge and Tapered Eave Starter tiles.
 2. Size: 13-1/2 inches (323 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 120 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 590 lbs (268 kg).
 5. Color: As selected by the Architect.
- I. Lightweight Tile: Duralite Espana 600 profile.
1. Finishing Tile: Provide Capri Trim, Capri Hip Starter and Apex 3-Way tiles.
 2. Size: 17 inches (432 mm) by 12-3/8 inches (314 mm), nominal.
 3. Coverage: 89 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 590 lbs (268 kg).
 5. Color: As selected by the Architect.
- J. Lightweight Tile: Duralite Villa 600 profile.
1. Finishing Tile: Provide Capri Trim, Capri Hip Starter and Apex 3-Way tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 87 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 580 lbs (263 kg).
 5. Color: As selected by the Architect.

- K. Lightweight Tile: Duralite Saxony 600 Shake profile.
Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 1. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 2. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 3. Installed weight: Approximately 570 lbs (258 kg).
 4. Color: As selected by the Architect.

- L. Lightweight Tile: Duralite Saxony 600 Split Shake profile.
 1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 or 4-Way tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 570 lbs (258 kg).
 5. Color: As selected by the Architect.

- M. Lightweight Tile: Duralite Saxony 600 Slate profile.
 1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 570 lbs (258 kg).
 5. Color: As selected by the Architect.

2.3 ROOF SYSTEM COMPONENTS – ARIZONA

- A. Underlayment:
 1. Boral TileSeal HT Self-Adhering Underlayment.
 2. GatorSeal Granular Heavy Duty Self-Adhering Underlayment
 3. Boral TileSeal 40 Underlayment.

- B. Fasteners: Sized to penetrate deck minimum 3/4 inch (19 mm) or through thickness of deck or batten.

- C. Flashings:
 1. Tile Pan, 26 gauge Galvanized Sheet Steel side wall flashing.
 2. Wakaflex universal flashing for abutments at chimneys, walls and other rising structures.
 3. Terminal Bar metal flashing for chimneys and other roof to wall structures.
 4. Ribbed Valley Metal 1 inch minimum Center Diverter, 26 gauge, Galvanized Sheet Steel.
 5. Plumbing Stacks and Other Pipes Penetrating Roofs.

- D. Adhesive: Code approved adhesive suitable to bond to concrete roof tile.

- E. Eave Closures:
 1. Vented Eave Riser - Metal to match tile profile.
 2. Eave Riser - Metal to match tile profile.

- F. Battens:
 1. Elevated Batten System 1 inch (25 mm) by 2 inches (51 mm) by 8 feet (2.44 m).
 2. Elevated Batten System 1 inch (25 mm) by 3 inches (76 mm) by 8 feet (2.44 m).
 3. Elevated Batten System 1 inch (25 mm) by 2 inches (51 mm) by 4 feet (1.22 m).
 4. FirePro Elevated Batten System 1 inch (25 mm) by 3 inches (76 mm) by 4 feet (1.22 m). Fire Retardant Treated.

5. FirePro Elevated Batten System 1 inch (25 mm) by 2 inches (51 mm) by 4 feet (1.22 m). Fire Retardant Treated
 6. Batten Extenders 10 inches (254 mm) for use with standard battens at tile pans.
 7. Batten Extenders 18 inches (457 mm) for use with standard battens at valleys.
- G. Hip & Ridge
1. Figaroll Plus, ridge vent and weather block for all profiles.
 2. Zephyr Roll: ridge vent and weather block flat tiles, 11 inch by 33 foot (279 mm by 10 M).
 3. Zephyr Roll: ridge vent and weather block, 13.4 inch by 33 foot (340 mm by 10 M). For medium and high profile tiles.
 4. Ridge Riser: Elevates ridge board to proper height. For all profiles. For use with Figaroll Plus or Zephyr Roll.
- H. Rake & Gable End
1. Rake and Ridge tiles. Choose to match tile profile and color.
- I. Field Venting: Select to match profile of concrete roof tile.

2.4 CONCRETE ROOF TILE – FLORIDA, SOUTHEAST, NORTHEAST

- A. Standard Weight Tile: Spanish S Nuevo profile.
1. Finishing Tile: Provide Capri Trim tiles.
 2. Size: 17 inches by 9-1/4 inches, nominal.
 3. Coverage: 114 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 994 lbs (427 kg).
 5. Color: As selected by the Architect.
- B. Standard Weight Tile: Barcelona 900 profile.
1. Finishing Tile: Provide Capri Trim, Hip Starter and Capri Apex 3-Way tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 950 lbs (431 kg).
 5. Color: As selected by the Architect.
- C. Standard Weight Tile: Boosted Barcelona profile.
1. Size: 13-1/2 inches (323 mm) by 6-1/2 inches (165 mm), nominal.
 2. Coverage: 10 percent application, 20 percent application, 30 percent application.
 3. Installed weight per square including field tile: 10 percent, 945 lbs (429 kg), 20 percent 990 lbs (449 kg), 30 percent, 1,050 lbs (476 kg).
 4. Color: As selected by the Architect.
- D. Standard Weight Tile: Villa 900 profile.
1. Finishing Tile: Provide Rake, Ridge, Capri Trim, Hip Starter and Capri Apex 3-Way.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 920 lbs (418 kg).
 5. Color: As selected by the Architect.
- E. Standard Weight Tile: Saxony 900 Slate profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 or 4 Way tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.

3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 950 lbs (432 kg).
 5. Color: As selected by the Architect.
- F. Standard Weight Tile: Saxony 900 Shake profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 or 4 Way tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 950 lbs (432 kg).
 5. Color: As selected by the Architect.
- G. Standard Weight Tile: Saxony 900 Split Shake profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 or 4 Way tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 950 lbs (432 kg).
 5. Color: As selected by the Architect.
- H. Standard Weight Tile: Boral Roofing's Madera 900 profile.
1. Finishing Tile: Provide Rake, V Ridge and Tapered Eave Starter tiles.
 2. Size: 13-1/2 inches (323 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 120 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 950 lbs (432 kg).
 5. Color: As selected by the Architect.

2.5 ROOF SYSTEM COMPONENTS – FLORIDA, SOUTHEAST, NORTHEAST

- A. Underlayment:
1. Boral TileSeal HT Self-Adhering Underlayment.
 2. Citadel Plus Base Sheet
- B. Fasteners: Sized to penetrate deck minimum 3/4 inch (19 mm) or through thickness of deck or batten.
1. Quik Drive Screws, Roofing Specific.
- C. Wind Clips:
1. Zip-Clip Adjustable Tile Clip.
- D. Flashings:
1. Ribbed Tile Pan, 26 gauge Galvanized Sheet Steel sidewall flashing.
 2. Wakaflex universal flashing for abutments at chimneys, walls and other rising structures.
 3. Terminal Bar metal flashing for chimneys and other roof to wall structures.
 4. Ribbed Valley Metal 1 inch Center Diverter, 26 gauge, Galvanized Sheet Steel.
 5. Plumbing Stacks and Other Pipes Penetrating.
- E. Adhesive: Code approved adhesive suitable to bond to concrete roof tile.
- F. Eave Closures: Provide to match tile profile.
1. Vented Eave Riser - Metal.
 2. Eave Riser - Metal.

- G. Battens:
 1. Elevated Batten System 1 inch (25 mm) by 2 inches (51 mm) by 8 feet (2.44 m).
- H. Hip & Ridge
 1. Figaroll Plus, ridge vent and weather block for all profiles.
 2. Zephyr Roll: ridge vent and weather block flat tiles, 11 inch by 33 foot (279 mm by 10 M).
 3. Zephyr Roll: ridge vent and weather block, 13.4 inch by 33 foot (340 mm by 10 M). For medium and high profile tiles.
 4. Ridge Riser: Elevates ridge board to proper height. For all profiles. For use with Figaroll Plus or Zephyr Roll.
 5. Trim Lock Hip & Ridge Metal. Choose size to match tile profile.
- I. Rake & Gable End
 1. Rake and Ridge tile. Choose to match tile profile and color.
- J. Field Venting
 1. Select to match profile of concrete roof tile.

2.6 CONCRETE ROOF TILE – HAWAII

- A. Standard Weight Tile: Barcelona 900 profile.
 1. Finishing Tile: Provide Capri Trim, Hip Starter and Capri Apex 3-Way tiles as needed.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Approximately 930 lbs (422 kg).
 5. Color: As selected by the Architect.
- B. Standard Weight Tile: Villa 900 profile.
 1. Finishing Tile: Provide Capri Trim, Hip Starter and Capri Apex 3-Way tiles as needed.
 2. Size: 16-1/2 inches (419 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 90 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 900 lbs (409 kg).
 5. Color: As selected by the Architect.
- C. Standard Weight Tile: Saxony 900 Slate profile.
 1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles as needed.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 910 lbs (413 kg).
 5. Color: As selected by the Architect.
- D. Standard Weight Tile: Saxony 900 Hartford Slate profile.
 1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles as needed.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 910 lbs (413 kg).
 5. Color: As selected by the Architect.
- E. Standard Weight Tile: Saxony 900 Shake profile.
 1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles as needed.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.

3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 910 lbs (413 kg).
 5. Color: As selected by the Architect.
- F. Standard Weight Tile: Madera 900 profile.
1. Finishing Tile: Provide Rake, V Ridge and Tapered Eave Starter tiles as needed.
 2. Size: 13-1/2 inches (323 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 120 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 950 lbs (432 kg).
 5. Color: As selected by the Architect.
- G. Lightweight Tile: Cedarlite 600 profile.
1. Finishing Tile: Provide Rake, V Ridge and Tapered Eave Starter tiles as needed.
 2. Size: 13-1/2 inches (323 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 120 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 590 lbs (268 kg).
 5. Color: As selected by the Architect.
- H. Lightweight Tile: Duralite Espana 600 profile.
1. Finishing Tile: Provide Capri Trim, Capri Hip Starter and Apex 3-Way tiles as needed.
 2. Size: 17 inches (432 mm) by 12-3/8 inches (314 mm), nominal.
 3. Coverage: 89 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 590 lbs (268 kg).
 5. Color: As selected by the Architect.
- I. Lightweight Tile: Duralite Villa profile.
1. Finishing Tile: Provide 600 Capri Trim, Hip Starter Capri and Apex 3-Way tiles as needed.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 87 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 600 lbs (272 kg).
 5. Color: As selected by the Architect.
- J. Lightweight Tile: Duralite Saxony 600 Shake profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3y tiles as needed.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 570 lbs (258 kg).
 5. Color: As selected by the Architect.
- K. Lightweight Tile: Duralite Saxony 600 Split Shake profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles as needed.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 579 lbs (263 kg).
 5. Color: As selected by the Architect.
- L. Lightweight Tile: Duralite Saxony 600 Slate profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles as needed.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.

4. Installed weight: Approximately 570 lbs (259 kg).
 5. Color: As selected by the Architect.
- M. Midweight Tile: Duralite Saxony 700 Shake profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles as needed.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 720 lbs (327 kg).
 5. Color: As selected by the Architect.
- N. Midweight Tile: Duralite Saxony 700 Split Shake profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles as needed.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 720 lbs (327 kg).
 5. Color: As selected by the Architect.
- O. Midweight Tile: Duralite Saxony 700 Slate profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles as needed.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 720 lbs (327 kg).
 5. Color: As selected by the Architect.

2.7 ROOF SYSTEM COMPONENTS – HAWAII

- A. Underlayment:
1. Boral TileSeal HT Self-Adhering Underlayment.
- B. Fasteners: Sized to penetrate deck minimum 3/4 inch (19 mm) or through thickness of deck or batten.
- C. Wind Clips:
1. Zip-Clip, Adjustable Tile Clip.
 2. Wind Clips, stainless steel.
- D. Flashings:
1. Ribbed Tile Pan, 26 gauge Galvanized Sheet Steel side wall flashing.
 2. Wakaflex universal flashing for abutments at chimneys, walls and other rising structures.
 3. Terminal Bar metal flashing for chimneys and other roof to wall structures.
 4. Ribbed Valley Metal 1 inch Center Diverter, 26 gauge, Galvanized Sheet Steel.
 5. Plumbing Stacks and Other Pipes Penetrating Roof: Wakaflex Pipe Flashing.
- E. Adhesive: Code approved adhesive suitable to bond to concrete roof tile.
- F. Eave Closures: Provide to match tile profile.
1. Vented Eave Riser - Metal.
 2. Eave Riser - Metal.

- G. Battens:
 1. Elevated Batten System 1 inch (25 mm) by 2 inches (51 mm) by 4 feet (1.22 m). Pressure Treated

- H. Hip & Ridge
 1. Figaroll Plus, ridge vent and weather block for all profiles.
 2. Zephyr Roll: ridge vent and weather block flat tiles, 11 inch by 33 foot (279 mm by 10 M).
 3. Zephyr Roll: ridge vent and weather block, 13.4 inch by 33 foot (340 mm by 10 M). For medium and high profile tiles.
 4. Ridge Riser: Elevates ridge board to proper height. For all profiles. For use with Figaroll Plus or Zephyr Roll.
 5. Trim Lock Hip & Ridge Metal. Choose size to match tile profile.

- I. Rake & Gable End
 1. Rake and Ridge tile. Choose to match tile profile and color.

- J. Field Venting
 1. Select to match profile of concrete roof tile.

2.8 CONCRETE ROOF TILE – NORTHERN CALIFORNIA

- A. Standard Weight Tile: Barcelona 900 profile.
 1. Finishing Tile: Provide Capri Trim, Hip Starter and Capri Apex 3-Way tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 930 lbs (422 kg).
 5. Color: As selected by the Architect.

- B. Standard Weight Tile: Boosted Barcelona profile.
 1. Size: 13-1/2 inches (323 mm) by 7 inches (178 mm), nominal.
 2. Coverage: 10 percent application, 20 percent application, 30 percent application.
 3. Installed weight per square including field tile: 10 percent application, 945 lbs (429 kg), 20 percent application, 990 lbs (449 kg), 30 percent application, 1,050 lbs (476 kg).
 4. Color: As selected by the Architect.

- C. Standard Weight Tile: Villa 900 profile.
 1. Finishing Tile: Provide Capri Trim, Hip Starter and Capri Apex 3-Way tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 87 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 930 lbs (423 kg).
 5. Color: As selected by the Architect.

- D. Standard Weight Tile: Saxony 900 Hartford Slate profile.
 1. Finishing Tile: Provide manufacturer's 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 910 lbs (414 kg).
 5. Color: Natural Marble, Classics Finish.

- E. Standard Weight Tile: Saxony 900 Slate profile.

1. Finishing Tile: Provide manufacturer's 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 910 lbs (414 kg).
 5. Color: Natural Marble, Classics Finish.
- F. Standard Weight Tile: Saxony 900 Shake profile).
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 910 lbs (414 kg).
 5. Color: As selected by the Architect.
- G. Standard Weight Tile: Saxony 900 Split Old English Thatch profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 91 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 980 lbs (445 kg).
 5. Color: As selected by the Architect.
- H. Standard Weight Tile: Madera 900 profile.
1. Finishing Tile: Provide Rake, V Ridge and Tapered Eave Starter tiles.
 2. Size: 13-1/2 inches (323 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 120 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 950 lbs (431 kg).
 5. Color: As selected by the Architect.
- I. Lightweight Tile: Cedarlite 600 profile.
1. Finishing Tile: Provide Rake, V Ridge and Tapered Eave Starter tiles.
 2. Size: 13-1/2 inches (323 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 120 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 590 lbs (268 kg).
 5. Color: As selected by the Architect.
- J. Lightweight Tile: Duralite Espana 600 profile.
1. Finishing Tile: Provide Capri Trim, Hip Starter Capri and Apex 3-Way tiles.
 2. Size: 17 inches (432 mm) by 12-3/8 inches (314 mm), nominal.
 3. Coverage: 89 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 590 lbs (268 kg).
 5. Color: As selected by the Architect.
- K. Lightweight Tile: Duralite 600 Villa profile.
1. Finishing Tile: Provide Capri Trim, Hip Starter Capri and Apex 3-Way tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 87 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 600 lbs (272 kg).
 5. Color: As selected by the Architect.
- L. Lightweight Tile: Duralite Saxony 600 Shake profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.

2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 570 lbs (259 kg).
 5. Color: As selected by the Architect.
- M. Lightweight Tile: Duralite Saxony 600 Split Shake profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 570 lbs (259 kg).
 5. Color: As selected by the Architect.
- N. Lightweight Tile: Duralite Saxony 600 Slate profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 or 4-Way tiles as needed.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 570 lbs (259 kg).
 5. Color: As selected by the Architect.
- O. Midweight Tile: Duralite Saxony 700 Shake profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 720 lbs (327 kg).
 5. Color: As selected by the Architect.
- P. Midweight Tile: Duralite Saxony 700 Split Shake profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 2. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 3. Installed weight: Approximately 720 lbs (327 kg).
 4. Color: As selected by the Architect.
- Q. Midweight Tile: Duralite Saxony 700 Slate profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 720 lbs (327 kg).
 5. Color: As selected by the Architect.

2.9 ROOF SYSTEM COMPONENTS – NORTHERN CALIFORNIA

- A. Underlayment:
1. Boral TileSeal HT Self-Adhering Underlayment.
 2. GatorSeal Granular Heavy Duty Self-Adhering Underlayment
 3. Boral TileSeal 40 Underlayment.
- B. Fasteners: Sized to penetrate deck minimum 3/4 inch (19 mm) or through thickness of deck or batten.

1. Quik Drive Screws, Roofing Specific.
- C. Wind Clips:
1. Zip-Clip, Adjustable Tile Clip.
- D. Flashings:
1. Ribbed Tile Pan, 26 gauge Galvanized Sheet Steel side wall flashing.
 2. Wakaflex universal flashing for abutments at chimneys, walls and other rising structures.
 3. Terminal Bar metal flashing for chimneys and other roof to wall structures.
 4. Ribbed Valley Metal 1 inch Center Diverter, 26 gauge, Galvanized Sheet Steel.
 5. Plumbing Stacks and Other Pipes Penetrating Roof: Wakaflex Pipe Flashing.
- E. Adhesive: Code approved adhesive suitable to bond to concrete roof tile.
- F. Eave Closures:
1. Vented Eave Riser - Metal.
 2. Eave Riser - Metal.
 3. Eave Closure "T" - Metal. For Madera or Cedarlite tiles only.
- G. Battens:
1. Elevated Batten System 1 inch (25 mm) by 3 inches (76 mm) by 8 feet (2.44 m). Pressure treated.
 2. Elevated Batten System 1 inch (25 mm) by 3 inches (76 mm) by 8 feet (2.44 m).
 3. Elevated Batten System 1 inch (25 mm) by 2 inches (51 mm) by 8 feet (2.44 m).
 4. Elevated Batten System 1 inch (25 mm) by 3 inches (76 mm) by 4 feet (1.22 m).
 5. Elevated Batten System 1 inch (25 mm) by 2 inches (51 mm) by 4 feet (1.22 m).
 6. FirePro Elevated Batten System 1 inch (25 mm) by 3 inches (76 mm) by 4 feet (1.22 m). Fire Retardant Treated.
 7. FirePro Elevated Batten System 1 inch (25 mm) by 2 inches (51 mm) by 4 feet (1.22 m). Fire Retardant Treated
 8. Batten Extenders 18 inches (457 mm) for use with standard battens.
 9. Batten Extenders 10 inches (254 mm) for use with standard battens.
- H. Hip and Ridge
1. Figaroll Plus: Ridge vent and weather block, for all profiles.
 2. Zephyr Roll: Ridge vent and weather block, 11 inch by 33 inch (279 by 838 mm). For flat tiles.
 3. Zephyr Roll: Ridge vent and weather block, 13.4 inch by 33 inch (340 by 839 mm). For medium and high profile tiles.
 4. Ridge Riser: Elevates ridge board to proper height. For all profiles. For use with Figaroll Plus or Zephyr Roll.
- I. Rake and Gable End
1. Rake and Ridge tile. Choose to match tile profile and color.
 2. Metal Rake Trim.
 3. Gable End Rubber Wedges.
- J. Field Venting: Select to match profile of concrete roof tile.

2.10 CONCRETE ROOF TILE – PACIFIC NORTHWEST

- A. Standard Weight Tile: Barcelona 900 profile.
1. Finishing Tile: Provide Capri Trim, Hip Starter and Capri Apex 3-Way tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.

3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 930 lbs (408 kg).
 5. Color: As selected by the Architect.
- B. Standard Weight Tile: Villa 900 profile.
1. Finishing Tile: Provide Capri Trim, Hip Starter and Capri Apex 3-Way tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 87 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 930 lbs (423 kg).
 5. Color: As selected by the Architect.
- C. Standard Weight Tile: Saxony Slate profile (FACS prefix).
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 910 lbs (414kg).
 5. Color: As selected by the Architect.
- D. Standard Weight Tile: Saxony 900 Split Old English Thatch profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 or 4-Way tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 91 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 980 lbs (445 kg).
 5. Color: As selected by the Architect.
- E. Standard Weight Tile: Saxony 900 Shake profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 16-1/2 inches (419 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 90 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 1050 lbs (476 kg).
 5. Color: As selected by the Architect.
- F. Standard Weight Tile: Madera 900 profile.
1. Finishing Tile: Provide manufacturer's Rake, Hip/Ridge and Tapered Eave Starter tiles.
 2. Size: 13-1/2 inches (323 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 120 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 950 lbs (431 kg).
 5. Color: As selected by the Architect.

2.11 ROOF SYSTEM COMPONENTS – PACIFIC NORTHWEST

- A. Underlayment:
1. Boral TileSeal HT Self-Adhering Underlayment.
 2. Boral TileSeal 50 HT Self-Adhering Underlayment.
 3. Boral Ply 40 Underlayment.
- B. Fasteners: Sized to penetrate deck minimum 3/4 inch (19 mm) or through thickness of deck or batten.
1. Quik Drive Screws, Roofing Specific.
- C. Wind Clips:

1. Zip-Clip, Adjustable Tile Clip.
- D. Flashings:
1. Ribbed Tile Pan, 26 gauge Galvanized Sheet Steel sidewall flashing.
 2. Wakaflex universal flashing for abutments at chimneys, walls and other rising structures.
 3. Terminal Bar metal flashing for chimneys and other roof to wall structures.
 4. Ribbed Valley Metal 1 inch Center Diverter, 26 gauge, Galvanized Sheet Steel.
 5. Plumbing Stacks and Other Pipes Penetrating.
- E. Adhesive: Code approved adhesive suitable to bond to concrete roof tile.
- F. Eave Closures: Provide to match tile profile.
1. Vented Eave Riser - Metal.
 2. Eave Riser - Metal.
- G. Battens:
1. Elevated Batten System 1 inch (25 mm) by 3 inches (76 mm) by 8 feet (2.44 m).
 2. Elevated Batten System 1 inch (25 mm) by 2 inches (51 mm) by 8 feet (2.44 m).
 3. Elevated Batten System 1 inch (25 mm) by 3 inches (76 mm) by 4 feet (1.22 m). Fire Retardant Treated.
 4. Elevated Batten System 1 inch (25 mm) by 2 inches (51 mm) by 4 feet (1.22 m). Fire Retardant Treated
 5. FirePro Elevated Batten System 1 inch (25 mm) by 3 inches (76 mm) by 4 feet (1.22 m). Fire Retardant Treated.
 6. FirePro Elevated Batten System 1 inch (25 mm) by 2 inches (51 mm) by 4 feet (1.22 m). Fire Retardant Treated
 7. Batten Extenders 18 inches (457 mm) for use with standard battens.
 8. Batten Extenders 18 inches (457 mm) for use with standard battens.
- H. Hip and Ridge
1. Figaroll Plus, ridge vent and weather block for all profiles.
 2. Zephyr Roll: ridge vent and weather block flat tiles, 11 inch by 33 foot (279 mm by 10 M).
 3. Zephyr Roll: ridge vent and weather block, 13.4 inch by 33 foot (340 mm by 10 M). For medium and high profile tiles.
 4. Ridge Riser: Elevates ridge board to proper height. For all profiles. For use with Figaroll Plus or Zephyr Roll.
- I. Rake and Gable End
1. Rake and Ridge tile. Choose to match tile profile and color.
 2. Metal Rake Trim.
 3. Gable End Rubber Wedges.
- J. Field Venting: Provide to match tile profile.

2.12 CONCRETE ROOF TILE – ROCKY MOUNTAIN, HEARTLAND

- A. Standard Weight Tile: Barcelona 900 profile.
1. Finishing Tile: Provide Capri Trim, Hip Starter and Capri Apex 3-Way tiles.
 2. Size: 17 inches (432 mm) by 12-3/8 inches (314 mm), nominal.
 3. Coverage: 89 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 900 lbs (408 kg).
 5. Color: As selected by the Architect.

- B. Standard Weight Tile: Boosted Barcelona 900 profile.
1. Size: 13-1/2 inches (323 mm) by 6-1/2 inches (165 mm), nominal.
 2. Coverage: 10 percent application, 20 percent application, 30 percent application.
 3. Installed weight per square including field tile: 10 percent application, 945 lbs (429 kg), 20 percent application, 990 lbs (449 kg), 30 percent application, 1,050 lbs (476 kg).
 4. Color: As selected by the Architect.
- C. Standard Weight Tile: Villa 900 profile.
1. Finishing Tile: Provide Capri Trim, Hip Starter and Capri Apex 3-Way tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 87 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 900 lbs (408 kg).
 5. Color: As selected by the Architect.
- D. Standard Weight Tile: Saxony Slate profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 960 lbs (436 kg).
 5. Color: As selected by the Architect.
- E. Standard Weight Tile: Saxony Slate Impact profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 1000 lbs (454 kg).
 5. Color: As selected by the Architect.
- F. Standard Weight Tile: Saxony Shake profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 960 lbs (435 kg).
 5. Color: As selected by the Architect.
- G. Standard Weight Tile: Saxony Split Old English Thatch profile.
1. Finishing Tile: Provide Ridge Angled, Rake Angled, and Hip Starter Angled tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 88 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 960 lbs (435 kg).
 5. Color: As selected by the Architect.
- H. Standard Weight Tile: Madera 900 profile.
1. Finishing Tile: Provide Rake, V Ridge and Tapered Eave Starter tiles.
 2. Size: 13-1/2 inches (323 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 120 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 950 lbs (431 kg).
 5. Color: As selected by the Architect.

2.13 ROOF SYSTEM COMPONENTS - ROCKY MOUNTAIN, HEARTLAND

- A. Underlayment:
 - 1. Boral TileSeal HT Self-Adhering Underlayment.
 - 2. Boral Ply 40 Underlayment.
- B. Fasteners: Sized to penetrate deck minimum 3/4 inch (19 mm) or through thickness of deck or batten.
- C. Wind Clips:
 - 1. Zip-Clip, Adjustable Tile Clip.
 - 2. Wind Clips, galvanized.
- D. Flashings:
 - 1. Ribbed Tile Pan, 26 gauge Galvanized Sheet Steel side wall flashing.
 - 2. Wakaflex universal flashing for abutments at chimneys, walls and other rising structures.
 - 3. Terminal Bar metal flashing for chimneys and other roof to wall structures.
 - 4. Ribbed Valley Metal 1 inch Center Diverter, 26 gauge, Galvanized Sheet Steel.
 - 5. Plumbing Stacks and Other Pipes Penetrating Roof: Wakaflex Pipe Flashing.
- E. Adhesive: Code approved adhesive suitable to bond to concrete roof tile.
- F. Eave Closures:
 - 1. Vented Eave Riser - Metal.
 - 2. Eave Riser - Metal.
- G. Battens:
 - 1. Elevated Batten System 1 inch (25 mm) by 3 inches (76 mm) by 8 feet (2.44 m).
 - 2. Elevated Batten System 1 inch (25 mm) by 2 inches (51 mm) by 8 feet (2.44 m).
 - 3. Elevated Batten System 1 inch (25 mm) by 2 inches (51 mm) by 4 feet (1.22 m). Fire Retardant Treated.
- H. Hip and Ridge
 - 1. Figaroll Plus, ridge vent and weather block for all profiles.
 - 2. Zephyr Roll: ridge vent and weather block flat tiles, 11 inch by 33 foot (279 mm by 10 M).
 - 3. Zephyr Roll: ridge vent and weather block, 13.4 inch by 33 foot (340 mm by 10 M). For medium and high profile tiles.
 - 4. Ridge Riser: Elevates ridge board to proper height. For all profiles. For use with Figaroll Plus or Zephyr Roll
- I. Rake and Gable End
 - 1. Rake and Ridge tile. Choose to match tile profile and color.
- J. Field Venting: Select to match profile of concrete roof tile.

2.14 CONCRETE ROOF TILE – SOUTHERN CALIFORNIA

- A. Standard Weight Tile: Barcelona 900 profile.
 - 1. Finishing Tile: Provide Capri Trim, Hip Starter and Capri Apex 3 tiles.
 - 2. Size: 17 inches (432 mm) by 12-3/8 inches (314 mm), nominal.
 - 3. Coverage: 89 field tiles per 100 square feet (9.29 sm) of roof area.
 - 4. Installed weight per square: Approximately 900 lbs (408 kg).

5. Color: As selected by the Architect.
- B. Standard Weight Tile: Boosted Barcelona 900 profile.
1. Size: 13-1/2 inches (323 mm) by 6-1/2 inches (165 mm), nominal.
 2. Coverage: 10 percent application, 20 percent application, 30 percent application.
 3. Installed weight per square including field tile: 10 percent application, 945 lbs (429 kg), 20 percent application, 990 lbs (449 kg), 30 percent application, 1,050 lbs (476 kg).
 4. Color: As selected by the Architect.
- C. Standard Weight Tile: Villa 900 profile.
1. Finishing Tile: Provide Capri Trim, Hip Starter and Capri Apex 3 tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 87 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 900 lbs (408 kg).
 5. Color: As selected by the Architect.
- D. Standard Weight Tile: Saxony 900 Slate profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 930 lbs (422 kg).
 5. Color: As selected by the Architect.
- E. Standard Weight Tile: Saxony 900 Hartford Slate profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 930 lbs (422 kg).
 5. Color: As selected by the Architect.
- F. Standard Weight Tile: Saxony 900 Country Slate profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 or 4-Way tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 930 lbs (422 kg).
 5. Color: As selected by the Architect.
- G. Standard Weight Tile: Saxony 900 Split Old English Thatch profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 930 lbs (422 kg).
 5. Color: As selected by the Architect.
- H. Standard Weight Tile: Saxony 900 Shake profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.

4. Installed weight per square: Approximately 930 lbs (422 kg).
 5. Color: As selected by the Architect.
- I. Standard Weight Tile: Madera 900 profile.
1. Finishing Tile: Provide Rake, V Ridge and Tapered Eave Starter tiles.
 2. Size: 13-1/2 inches (323 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 120 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 950 lbs (431 kg).
 5. Color: As selected by the Architect.
- J. Lightweight Tile: Cedarlite 600 profile.
1. Finishing Tile: Provide Rake, V Ridge and Tapered Eave Starter tiles.
 2. Size: 13-1/2 inches (323 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 120 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 590 lbs (268 kg).
 5. Color: As selected by the Architect.
- K. Lightweight Tile: Duralite Espana 600 profile.
1. Finishing Tile: Provide Capri Trim, Hip Starter Capri and Apex 3-Way tiles.
 2. Size: 17 inches (432 mm) by 12-3/8 inches (314 mm), nominal.
 3. Coverage: 89 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 590 lbs (268 kg).
 5. Color: As selected by the Architect.
- L. Lightweight Tile: Duralite Villa 600 profile.
1. Finishing Tile: Provide Capri Trim, Hip Starter Capri and Apex 3-Way tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 87 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 580 lbs (263 kg).
 5. Color: As selected by the Architect.
- M. Lightweight Tile: Duralite Saxony 600 Shake profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 570 lbs (259 kg).
 5. Color: As selected by the Architect.
- N. Lightweight Tile: Duralite Saxony 600 Split Shake profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 570 lbs (259 kg).
 5. Color: As selected by the Architect.
- O. Lightweight Tile: Duralite Saxony 600 Slate profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 570 lbs (259 kg).
 5. Color: As selected by the Architect.

- P. Lightweight Tile: Duralite Saxony 700 Shake profile.
 1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 720 lbs (327 kg).
 5. Color: As selected by the Architect.

- Q. Lightweight Tile: Duralite Saxony 700 Split Shake profile.
 1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 720 lbs (327 kg).
 5. Color: As selected by the Architect.

- R. Lightweight Tile: Duralite Saxony 700 Slate profile.
 1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 720 lbs (327 kg).
 5. Color: As selected by the Architect.

2.15 ROOF SYSTEM COMPONENTS - SOUTHERN CALIFORNIA

- A. Underlayment:
 1. Boral TileSeal HT Self-Adhering Underlayment.
 2. Boral TileSeal 50 HT Self-Adhering Underlayment.
 3. Boral Ply 40 Underlayment.

- B. Fasteners: Sized to penetrate deck minimum 3/4 inch (19 mm) or through thickness of deck or batten.
 1. Quik Drive Screws, Roofing Specific.

- C. Wind Clips:
 1. Zip-Clip, Adjustable Tile Clip.

- D. Flashings:
 1. Ribbed Tile Pan, 26 gauge Galvanized Sheet Steel side wall flashing.
 2. Wakaflex universal flashing for abutments at chimneys, walls and other rising structures.
 3. Terminal Bar metal flashing for chimneys and other roof to wall structures.
 4. Ribbed Valley Metal 1 inch Center Diverter, 26 gauge, Galvanized Sheet Steel.
 5. Plumbing Stacks and Other Pipes Penetrating Roof: Wakaflex Pipe Flashing.

- E. Adhesive: Code approved adhesive suitable to bond to concrete roof tile.

- F. Eave Closures: Provide to match tile profile.
 1. Vented Eave Riser - Metal.
 2. Eave Riser - Metal.
 3. Eave Closure "T" - Metal. For Madera or Cedarlite tiles only.

- G. Battens:
1. Elevated Batten System 1 inch (25 mm) by 3 inches (76 mm) by 8 feet (2.44 m) pressure treated.
 2. Elevated Batten System 1 inch (25 mm) by 3 inches (76 mm) by 8 feet (2.44 m).
 3. Elevated Batten System 1 inch (25 mm) by 2 inches (51 mm) by 8 feet (2.44 m).
 4. Elevated Batten System 1 inch (25 mm) by 3 inches (76 mm) by 4 feet (1.22 m). Fire Retardant Treated.
 5. Elevated Batten System 1 inch (25 mm) by 2 inches (51 mm) by 4 feet (1.22 m). Fire Retardant Treated
 6. FirePro Elevated Batten System 1 inch (25 mm) by 3 inches (76 mm) by 4 feet (1.22 m). Fire Retardant Treated.
 7. FirePro Elevated Batten System 1 inch (25 mm) by 2 inches (51 mm) by 4 feet (1.22 m). Fire Retardant Treated.
 8. Batten Extenders 18 inches (457 mm) for use with standard battens.
- H. Hip and Ridge
1. Figaroll Plus, ridge vent and weather block for all profiles.
 2. Zephyr Roll: ridge vent and weather block flat tiles, 11 inch by 33 foot (279 mm by 10 M).
 3. Zephyr Roll: ridge vent and weather block, 13.4 inch by 33 foot (340 mm by 10 M). For medium and high profile tiles.
 4. Ridge Riser: Elevates ridge board to proper height. For all profiles. For use with Figaroll Plus or Zephyr Roll.
- I. Rake and Gable End
1. Rake and Ridge tile. Choose to match tile profile and color.
 2. Metal Rake Trim.
 3. Gable End Rubber Wedges.
- J. Field Venting Select to match profile of concrete roof tile.

2.16 CONCRETE ROOF TILE – SOUTHERN NEVADA

- A. Standard Weight Tile: Barcelona profile.
1. Finishing Tile: Provide Capri Trim, Hip Starter and Capri Apex 3-Way tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 89 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 900 lbs (408 kg).
 5. Color: As selected by the Architect.
- B. Standard Weight Tile: Boosted Barcelona profile.
1. Size: 13-1/2 inches (323 mm) by 6-1/2 inches (165 mm), nominal.
 2. Coverage: 10 percent application, 20 percent application, 30 percent application.
 3. Installed weight per square including field tile: 10 percent application, 945 lbs (429 kg), 20 percent application, 990 lbs (449 kg), 30 percent application, 1,050 lbs (476 kg).
 4. Color: As selected by the Architect.
- C. Standard Weight Tile: Saxony 900 Slate profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 910 lbs (413 kg).

5. Color: As selected by the Architect.
- D. Standard Weight Tile: Saxony 900 Shake profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 17 inches (432 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 85 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 910 lbs (414 kg).
 5. Color: As selected by the Architect.
- E. Standard Weight Tile: Madera 900 profile.
1. Finishing Tile: Provide Rake, V Ridge and Tapered Eave Starter tiles.
 2. Size: 13-1/2 inches (323 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 120 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 950 lbs (431 kg).
 5. Color: As selected by the Architect.

2.17 ROOF SYSTEM COMPONENTS - SOUTHERN NEVADA

- A. Underlayment:
1. Boral TileSeal HT Self-Adhering Underlayment.
- B. Fasteners: Sized to penetrate deck minimum 3/4 inch (19 mm) or through thickness of deck or batten.
- C. Wind Clips:
1. Wind Clips, Galvanized.
- D. Flashings:
1. Ribbed Tile Pan, 26 gauge Galvanized Sheet Steel side wall flashing.
 2. Wakaflex universal flashing for abutments at chimneys, walls and other rising structures.
 3. Terminal Bar metal flashing for chimneys and other roof to wall structures.
 4. Ribbed Valley Metal 1 inch Center Diverter, 26 gauge, Galvanized Sheet Steel.
 5. Plumbing Stacks and Other Pipes Penetrating Roof: Wakaflex Pipe Flashing.
- E. Adhesive: Code approved adhesive suitable to bond to concrete roof tile.
- F. Eave Closures: Provide to match tile profile.
1. Vented Eave Riser - Metal.
 2. Eave Riser - Metal.
- G. Battens:
1. Elevated Batten System 1 inch (25 mm) by 2 inches (51 mm) by 4 feet (1.22 m).
- H. Hip and Ridge
1. Figaroll Plus, ridge vent and weather block for all profiles.
 2. Zephyr Roll: ridge vent and weather block flat tiles, 11 inch by 33 foot (279 mm by 10 M).
 3. Zephyr Roll: ridge vent and weather block, 13.4 inch by 33 foot (340 mm by 10 M). For medium and high profile tiles.
 4. Ridge Riser: Elevates ridge board to proper height. For all profiles. For use with Figaroll Plus or Zephyr Roll.

- I. Rake and Gable End
 - 1. Rake and Ridge tile. Choose to match tile profile and color.
- J. Field Venting: Select to match profile of concrete roof tile.

2.18 CONCRETE ROOF TILE – TEXAS

- A. Standard Weight Tile: Tejas Espana profile.
 - 1. Finishing Tile: Provide Capri Trim, Hip Starter and Capri Apex 3-Way tiles.
 - 2. Size: 16-1/2 inches (419 mm) by 13 inches (330 mm), nominal.
 - 3. Coverage: 87 field tiles per 100 square feet (9.29 sm) of roof area.
 - 4. Installed weight per square: Approximately 900 lbs (408 kg).
 - 5. Color: As selected by the Architect.
- B. Standard Weight Tile: Barcelona Impact profile.
 - 1. Finishing Tile: Provide Capri Trim, Hip Starter and Capri Apex 3-Way tiles.
 - 2. Size: 16-1/2 inches (419 mm) by 13 inches (330 mm), nominal.
 - 3. Coverage: 89 field tiles per 100 square feet (9.29 sm) of roof area.
 - 4. Installed weight per square: Approximately 1030 lbs (467 kg).
 - 5. Color: As selected by the Architect.
- C. Standard Weight Tile: Boosted Barcelona profile.
 - 1. Size: 13-1/2 inches (323 mm) by 6-1/2 inches (165 mm), nominal.
 - 2. Coverage: 10 percent application, 20 percent application, 30 percent application.
 - 3. Installed weight per square including field tile: 10 percent application, 945 lbs (429 kg), 20 percent application, 990 lbs (449 kg), 30 percent application, 1,050 lbs (476 kg).
 - 4. Color: As selected by the Architect.
- D. Standard Weight Tile: Villa profile.
 - 1. Finishing Tile: Provide Capri Trim, Hip Starter and Capri Apex 3 tiles.
 - 2. Size: 16-1/2 inches (419 mm) by 13 inches (330 mm), nominal.
 - 3. Coverage: 90 field tiles per 100 square feet (9.29 sm) of roof area.
 - 4. Installed weight per square: Approximately 900 lbs (408 kg).
 - 5. Color: As selected by the Architect.
- E. Standard Weight Tile: Saxony Shake profile.
 - 1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 - 2. Size: 16-1/2 inches (419 mm) by 13 inches (330 mm), nominal.
 - 3. Coverage: 92 field tiles per 100 square feet (9.29 sm) of roof area.
 - 4. Installed weight per square: Approximately 1030 lbs (467 kg).
 - 5. Color: As selected by the Architect.
- F. Standard Weight Tile: Saxony Country Slate profile.
 - 1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 - 2. Size: 16-1/2 inches (419 mm) by 13 inches (330 mm), nominal.
 - 3. Coverage: 92 field tiles per 100 square feet (9.29 sm) of roof area.
 - 4. Installed weight per square: Approximately 1030 lbs (467 kg).
 - 5. Color: As selected by the Architect.
- G. Standard Weight Tile: Saxony Country Slate Impact profile.

1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3 tiles.
 2. Size: 16-1/2 inches (419 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 92 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 1080 lbs (490 kg).
 5. Color: As selected by the Architect.
- H. Standard Weight Tile: Saxony Country Split Shake profile.
1. Finishing Tile: Provide 90 degree Rake, 3-Sided Ridge, 3-Sided Hip Starter and Apex 3y tiles.
 2. Size: 16-1/2 inches (419 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 92 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight per square: Approximately 1030 lbs (467 kg).
 5. Color: As selected by the Architect.
- I. Standard Weight Tile: Madera 900 profile.
1. Finishing Tile: Provide Rake, V Ridge and Tapered Eave Starter tiles.
 2. Size: 13-1/2 inches (323 mm) by 13 inches (330 mm), nominal.
 3. Coverage: 120 field tiles per 100 square feet (9.29 sm) of roof area.
 4. Installed weight: Approximately 935 lbs (424 kg).
 5. Color: As selected by the Architect.

2.19 ROOF SYSTEM COMPONENTS - TEXAS

- A. Underlayment:
1. Boral TileSeal HT Self-Adhering Underlayment.
 2. Boral TileSeal 50 HT Self-Adhering Underlayment.
 3. GatorSeal Granular Heavy Duty Self-Adhering Underlayment
- B. Fasteners: Sized to penetrate deck minimum 3/4 inch (19 mm) or through thickness of deck or batten.
1. Quik Drive Screws, Roofing Specific.
- C. Wind Clips:
1. Zip-Clip, Adjustable Tile Clip.
 2. Wind Clips, Galvanized.
- D. Flashings:
1. Ribbed Tile Pan, 26 gauge Galvanized Sheet Steel side wall flashing.
 2. Wakaflex universal flashing for abutments at chimneys, walls and other rising structures.
 3. Terminal Bar metal flashing for chimneys and other roof to wall structures.
 4. Ribbed Valley Metal 1 inch Center Diverter, 26 gauge, Galvanized Sheet Steel.
 5. Plumbing Stacks and Other Pipes Penetrating Roof: Wakaflex Pipe Flashing.
- E. Adhesive: Code approved adhesive suitable to bond to concrete roof tile.
- F. Eave Closures: Provide to match tile profile.
1. Vented Eave Riser - Metal.
 2. Eave Riser - Metal.
 3. Eave Closure "T" - Metal. For flat tiles only.
- G. Battens:
1. Elevated Batten System 1 inch (25 mm) by 3 inches (76 mm) by 8 feet (2.44 m).

2. Elevated Batten System 1 inch (25 mm) by 2 inches (51 mm) by 8 feet (2.44 m).
 3. Elevated Batten System 1 inch (25 mm) by 2 inches (51 mm) by 4 feet (1.22 m).
 4. Batten Extenders 18 inches (457 mm) for use with standard battens.
- H. Hip and Ridge
1. Figaroll Plus, ridge vent and weather block for all profiles.
 2. Zephyr Roll: ridge vent and weather block flat tiles, 11 inch by 33 foot (279 mm by 10 M).
 3. Zephyr Roll: ridge vent and weather block, 13.4 inch by 33 foot (340 mm by 10 M). For medium and high profile tiles.
 4. Ridge Riser: Elevates ridge board to proper height. For all profiles. For use with Figaroll Plus or Zephyr Roll.
- I. Rake and Gable End
1. Rake and Ridge tile. Choose to match tile profile and color.
 2. Gable End Rubber Wedges.
- J. Field Venting: Select to match profile of concrete roof tile.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Verify surfaces are uniform, 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 ER-2015 - TRI Concrete and Clay Roof Tile Installation Manual – 2015 (TRI Installation Manual). TRI/WSRCA Standard Installation Guides for Concrete and Clay Roof Tile in Cold Weather Applications.
 2. FRSA/TRI Concrete and Clay Roof Tile Installation Manual Fifth Edition (For Florida Applications).
 3. CAN/CSA-A220.1-Series-06 - Concrete Roof Tiles.

3.4 UNDERLAYMENT APPLICATION:

- A. Underlayment: Install in accordance with the manufacturer's instructions and TRI Installation Manual.

- B. Install ridge vents; follow vent manufacturer's installation recommendations and TRI Installation Manual.

3.5 FLASHING INSTALLATION

- A. Install flashings to shed water and prevent water penetration under tiles.
- B. Valleys: Install preformed metal flashing over underlayment.
 - 1. Follow manufacturer's installation recommendations.
 - 2. Follow TRI Installation Manual.
- C. Side Wall Flashing:
 - 1. Follow manufacturer's installation recommendations.
 - 2. Follow TRI Installation Manual.
- D. Counter Flashing:
 - 1. Follow manufacturer's installation recommendations.
 - 2. Follow TRI Installation Manual.
- E. Install batten extenders to support tile over flashing.
- F. Install tiles so as not to inhibit water flow on flashings.
- G. Head and Apron Flashing:
 - 1. Follow vent manufacturer's installation recommendations.
 - 2. Follow TRI Installation Manual.
- H. Flashing at Curb Mounted Skylights and Other Items:
 - 1. Follow manufacturer's installation recommendations.
 - 2. Follow TRI Installation Manual.
- I. Flashing at Plumbing Stacks, Pipes, Turbines, Vents, Etc:
 - 1. Follow manufacturer's installation recommendations.
 - 2. Follow TRI Installation Manual.
 - 3. Apply color coordinated paint to all exposed metal flashings.
- J. Coatings: Apply color coordinated paint to all exposed metal flashings.

3.6 BATTEN INSTALLATION

- A. Install battens in accordance with the manufacturer's installation recommendations and TRI

3.7 TILE INSTALLATION

- A. Layout:
 - 1. Follow manufacturer's installation recommendations.
 - 2. Follow TRI Installation Manual.
- B. Wind clips: _____.
- C. Hips: Use prefabricated hip starter.
 - 1. Follow manufacturer's installation recommendations.
 - 2. Follow TRI Installation Manual.

- D. Hips and Ridges, Mechanically fastened:
 - 1. Follow manufacturer's installation recommendations.
 - 2. Follow TRI Installation Manual.
- E. Rakes and Gables:
 - 1. Follow manufacturer's installation recommendations.
 - 2. Follow TRI Installation Manual.

3.8 CLEANING

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

3.9 REPAIR AND REPLACEMENT

- A. Damaged Tile:
 - 1. Follow manufacturer's installation recommendations.
 - 2. Follow TRI Installation Manual.
- B. Damaged Small Valley and Hip Cuts:
 - 1. Follow manufacturer's installation recommendations.
 - 2. Follow TRI Installation Manual.

3.10 PROTECTION

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

END OF SECTION

SECTION 09220 - PORTLAND CEMENT PLASTER

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. One-coat exterior portland cement plasterwork (stucco): fiber-reinforced stucco.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.

1.3 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: For portland cement plaster assemblies with fire-resistance ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

1.4 PROJECT CONDITIONS

- A. Comply with ASTM C 926 requirements.
- B. Exterior Plasterwork: Apply plaster when ambient temperature is greater than 40 deg F.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in manufacturer's original, new, unopened packages and containers bearing manufacturer's name and label.
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 40 deg F. Maintain containers used in storage of coatings in a clean condition, free of foreign materials and residue. Do not store longer than 6 months before final use.
 - 1. Protect cementitious coating materials from freezing. Keep materials dry and off of the ground. Keep storage area neat and orderly. Remove waste daily. Take necessary measures to ensure that workers and work areas are protected from health hazards resulting from handling, mixing, and applying the coating.

1.6 COORDINATION/SCHEDULING

- A. Provide minimum 28 day cure of concrete and concrete masonry units before the installation of stucco.

- B. For load bearing stud wall assemblies, commence the stucco installation after completion of all floor, roof construction and other construction that imposes dead loads on the walls to prevent excessive deflection (and potential cracking) of the stucco.
- C. Sequence interior work such as drywall installation prior to stucco installation to prevent stud distortion (and potential cracking) of the stucco.
- D. Provide site grading such that the stucco terminates above earth grade minimum 4 inches (100 mm) and above finished grade (pavers/sidewalk) minimum 2 inches (51 mm). Provide increased clearance in freeze/thaw climate zones.
- E. Provide protection of rough openings before installing windows, doors, and other penetrations through the wall and provide sill flashing. Coordinate installation of moisture barrier with window and door installation to provide weather proofing of the structure and to prevent moisture infiltration and excess air infiltration.
- F. Install window and door head flashing immediately after windows and doors are installed.
- G. Install diverter flashings wherever water can enter the wall assembly to direct water to the exterior.
- H. Install copings and sealant immediately after installation of the stucco and when finish coatings are dry.
- I. Attach penetrations through stucco to structural support and provide water tight seal at penetrations.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.

2.2 METAL LATH

- A. Expanded-Metal Lath: ASTM C 847 with ASTM A 653/A 653M, G60, hot-dip galvanized zinc coating.
 - 1. Diamond-Mesh Lath: Self-furring.
 - a. Weight: 2.5 lb/sq. yd..
- B. Paper Backing: FS UU-B-790, Type I Grade D, Style 2 vapor-permeable paper.

1. Provide paper-backed lath at exterior locations.

2.3 ACCESSORIES

- A. General: Comply with ASTM C 1063 and coordinate depth of trim and accessories with thicknesses and number of plaster coats required.
- B. Zinc and Zinc-Coated (Galvanized) Accessories:
 1. Foundation Weep Screenshot: Fabricated from hot-dip galvanized steel sheet, ASTM A 653/A 653M, G60 zinc coating.
 2. Cornerite: Fabricated from metal lath with ASTM A 653/A 653M, G60, hot-dip galvanized zinc coating.
 3. External-Corner Reinforcement: Fabricated from metal lath with ASTM A 653/A 653M, G60, hot-dip galvanized zinc coating.
 4. Cornerbeads: Fabricated from zinc-coated (galvanized) steel.
 - a. Small-nose style; use unless otherwise indicated or recommended by plaster manufacturer.
 5. Casing Beads: Fabricated from zinc-coated (galvanized) steel; square-edged style; with expanded flanges.
 6. Control Joints: Fabricated from zinc-coated (galvanized) steel; one-piece-type, folded pair of unperforated screeds in M-shaped configuration; with perforated flanges and removable protective tape on plaster face of control joint.

2.4 MISCELLANEOUS MATERIALS

- A. Water for Mixing: Potable and free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.
- B. Fiber for Base Coat: Alkaline-resistant glass or polypropylene fibers, 1/2 inch long, free of contaminants, manufactured for use in portland cement plaster.
- C. Bonding Compound: ASTM C 932.

2.5 PLASTER MATERIALS

- A. One Coat Stucco System: factory proportioned, fiber reinforced cement based stucco for trowel or pump application, field mixed with graded sand (ASTM C897) and water.
 1. Available Products:
 - a. Parex Incorporated; Parex 1-Coat Stucco 210 Concentrate.
 - b. Sto Corp.; Sto Powerwall Stucco.
 - c. Stuc-O-Flex International, Inc.; Waterway Stucco Assembly
 - d. Magna Wall; Magna Wall FRS (Fiber-Reinforced Stucco).
 2. Color: gray

2.6 FOAM BUILD-OUTS

A. Adhesive

1. One component, polymer modified, cement based high build adhesive.

B. Insulation Board

1. EPS Insulation Board--nominal 1.0 lb/ft³ Expanded Polystyrene (EPS) Insulation Board in compliance with ASTM C 578 Type I requirements, and EIMA Guideline Specification for Expanded Polystyrene (EPS) Insulation Board.

C. Reinforcing Mesh:

1. Nominal 4.2 oz/yd² (143 g/m²), flexible, symmetrical, interlaced open-weave glass fiber fabric treated with alkaline resistant coating.

D. Base Coats:

1. Fiber reinforced acrylic based waterproof base coat mixed with portland cement (for use as a waterproof base coat to waterproof foundations, parapets, splash areas, trim and other projecting architectural features).

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect adjacent work from soiling, spattering, moisture deterioration, and other harmful effects caused by plastering.

3.2 INSTALLING ACCESSORIES

- A. Install according to ASTM C 1063 and at locations indicated on Drawings.

- B. Control Joints: Install control joints at locations indicated on Drawings.

1. As required to delineate plasterwork into areas (panels) of the following maximum sizes:
 - a. Vertical Surfaces: 144 sq. ft..
 - b. Horizontal and other Nonvertical Surfaces: 100 sq. ft..
2. At distances between control joints of not greater than 18 feet o.c.
3. As required to delineate plasterwork into areas (panels) with length-to-width ratios of not greater than 2-1/2:1.
4. Where control joints occur in surface of construction directly behind plaster.

5. Where plasterwork areas change dimensions, to delineate rectangular-shaped areas (panels) and to relieve the stress that occurs at the corner formed by the dimension change.

3.3 PLASTER APPLICATION

- A. General: Comply with ASTM C 926.
- B. Bonding Compound: Apply on unit masonry plaster bases.
- C. Plaster Base Coat Finish: Finish to be selected by Owner and / or Architect according to manufacturers written instructions.
- D. Elastomeric-Based Finish Coatings: Apply coating system, including primers, finish coats, and sealing topcoats, according to manufacturer's written instructions.
- E. Installation over cast-in-place concrete or concrete masonry units:
 1. Install foundation weep screed at the base of the wall.
 2. Install casing beads at stucco terminations—doors, windows and other through wall penetrations. Install two piece expansion joints (or back-to-back casing beads) at joints in the supporting construction, building expansion joints, where the stucco is to be installed over dissimilar construction or substrates, at changes in building height, at floor lines, columns, and cantilevered areas. Install one piece expansion joints at corners of windows, doors and similar through wall penetrations, and every 250 ft² (23 m²). Install corner bead at outside corners and corner lath at inside corners. Install full accessory pieces where possible and avoid small pieces. Seal adjoining pieces by embedding ends in sealant. Abut horizontal into vertical joint accessories. Attach at no more than 7 inches (178 mm) on center into concrete/masonry with appropriate fasteners.
 3. Pre-moisten concrete masonry units and absorbent concrete prior to the placement of stucco (unless bonding agent has been applied to the CMU surface).
 4. Scratch Coat: apply the stucco with sufficient pressure to ensure intimate contact with the substrate and complete coverage to an approximate thickness of 1/2 inch (6 mm).
 5. After the stucco has lost sufficient moisture so that the surface sheen has disappeared, float the surface lightly with a darby or wood float to densify the surface and to provide a smooth, even surface. Float before the stucco becomes so rigid that it cannot be moved beneath the float.
 6. Moist cure after the stucco has set by lightly fogging the surface for at least 48 hours. Fog as frequently as required during the 48 hour period to prevent loss of moisture from the stucco. Avoid eroding the stucco surface with excess moisture. If relative humidity exceeds 75% the frequency of moist-curing can be diminished.
 7. Concrete and concrete masonry units require minimum 28 day cure before the installation of stucco. The requirement for an expansion joint every 144 ft² (13 m²) may be waived on solid substrates without metal lath such as cast-in-place concrete and concrete masonry units provided joints in the supporting

construction exist at appropriate intervals and they are reflected in the stucco. In such cases joint spacing in the stucco shall not exceed 250 ft² (23 m²).

F. Installation over frame construction with sheathing:

1. Weep Screed Installation
 - a. Install foundation weep screed at the base of the wall securely to framing with the appropriate fastener. Locate foundation weep screed so that it overlaps the joint between the foundation and framing by a minimum of 1 inch (25 mm). Locate the foundation weep screed minimum 4 inches (100 mm) above earth grade, 2 inches (51 mm) above finished grade (paved surfaces, for example).
2. Weather Protection
 - a. Protect sills of rough openings with barrier membrane.
 - b. Apply moisture barrier in compliance with the applicable building code. Wrap paper into rough opening and lap over barrier membrane at jambs. Lap paper over foundation weep screed attachment flange and window/door head flashings
3. Casing Bead and Expansion Joint Installation
 - a. Install casing beads at stucco terminations—doors, windows and other through wall penetrations. Install expansion joints (or back-to-back casing beads) at building expansion joints, where the stucco is to be installed over dissimilar construction or substrates, at changes in building height, at floor lines, columns, and cantilevered areas. Install one piece expansion joints at corners of windows, doors, and similar through wall penetrations, and every 144 ft² (13 m²). Install full accessory pieces where possible and avoid small pieces. Seal adjoining pieces by embedding ends in sealant. Abut horizontal into vertical joint accessories. Attach at no more than 7 inches (178 mm) into framing with appropriate fasteners.
4. Lath Installation
 - a. Diamond Mesh Metal Lath
 - 1) General--install metal lath with the long dimension at right angles to structural framing. Terminate lath at expansion joints. Do not install continuously beneath joints.
 - 2) Seams/Overlaps--overlap side seams minimum 1/2 inch (13 mm) and end seams minimum 1 inch (25 mm). Stagger end seams. Overlap casing beads and expansion joints minimum 1 inch (25 mm) over narrow wing accessories, minimum 2 inches (51 mm) over expanded flange accessories. Do not install lath continuously beneath expansion joints.
 - 3) Attachment--fasten securely through sheathing into structural framing at 7 inches (178 mm) on center maximum vertically and 16 inches (406 mm) on center horizontally*. Wire tie at no more than 9 inches (225 mm) on center at: side laps, accessory overlaps, and where end laps occur between supports.

the face. Pull the backwrap mesh around the foam build-out and fully embed it into the foam base coat. Use a corner trowel for neat straight corners.

5. Apply the foam base coat to the foam build-out and approximately 3 inches (76 mm) onto the adjacent stucco surfaces to an approximate thickness of 1/8 inch (3 mm). Immediately embed the reinforcing mesh in the wet base coat. Trowel from the center to the edges of the mesh to avoid wrinkles and remove excess base coat. Overlap mesh seams minimum 2-1/2 inches (64 mm). Overlap mesh onto adjacent stucco wall surfaces minimum 2-1/2 inches (64 mm) at terminations of the foam build-out and feather onto the stucco wall surface.
6. Do not install foam build-outs over joints in the stucco wall assembly. Terminate foam build-outs and backwrap in accordance with instructions above).

H. Primer Installation

- a. Apply primer evenly with brush, roller or proper spray equipment over the clean, dry stucco and foam build-outs, and allow to dry thoroughly before applying finish.

I. Finish Installation

1. Apply finish directly over the stucco and foam build-outs when dry. Apply finish by spraying or troweling with a stainless steel trowel, depending on the finish specified. Follow these general rules for application of finish:
 - a. Allow primed stucco wall surface to dry minimum 28 days.
 - b. Avoid application in direct sunlight.
 - c. Apply finish in a continuous application, and work a wet edge towards the unfinished wall area. Work to an architectural break in the wall before stopping to avoid cold joints.
 - d. Weather conditions affect application and drying time. Hot or dry conditions limit working time and accelerate drying. Adjustments in the scheduling of work may be required to achieve desired results; cool or damp conditions extend working time and retard drying and may require added measures of protection against wind, dust, dirt, rain and freezing. Adjust work schedule and provide protection.
 - e. Float "R" (rilled texture) finishes with a plastic float to achieve their rilled texture.
 - f. Do not install separate batches of finish side-by-side.
 - g. Do not apply finish into or over joints or accessories. Apply finish to outside face of wall only.
 - h. Do not apply finish over irregular or unprepared surfaces, or surfaces not in compliance with the requirements of the project specifications.

3.4 CUTTING AND PATCHING

- A. Cut, patch, replace, and repair plaster as necessary to accommodate other work and to restore cracks, dents, and imperfections. Repair or replace work to eliminate blisters, buckles, crazing (check cracking), dry outs, efflorescence, sweat outs, and similar defects and where bond to substrate has failed.

END OF SECTION 09220

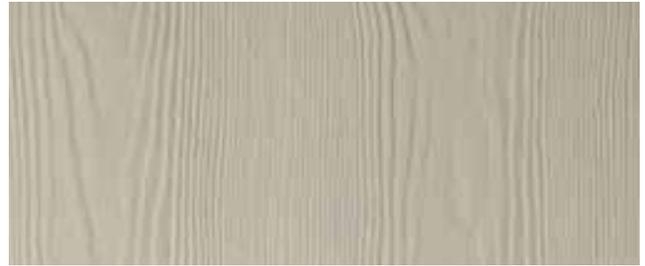
HardiePanel® Vertical Siding Product Description

HardiePanel® vertical siding is factory-primed fiber-cement vertical siding available in a variety of sizes and textures. Examples of these are shown below. Textures include smooth, stucco, Cedarmill® and Sierra 8. HardiePanel vertical siding is $\frac{5}{16}$ -in. thick and is available in 4x8, 4x9 and 4x10 sizes. Please see your local James Hardie dealer for texture and size availability.

HardiePanel vertical siding is available as a prefinished James Hardie® product with ColorPlus® Technology. The ColorPlus coating is a factory applied, oven baked finish available on a variety of James Hardie siding and trim products. See your local dealer for availability of products, color and accessories.



Stucco



Cedarmill®



Sierra 8



Smooth



SECTION 074646

FIBER CEMENT SIDING

(James Hardie HZ10 Engineered for Climate Siding)

Display hidden notes to specifier. (Don't know how? [Click Here](#))
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PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Fiber cement lap siding, panels, shingle, trim, fascia, moulding and accessories; James Hardie HZ10 Engineered for Climate Siding.
- B. Factory-finished fiber cement lap siding, panels, shingle, trim, fascia, moulding and accessories; James Hardie HZ10 Engineered for Climate Siding.

1.2 RELATED SECTIONS

- A. Section 054000 - Light Gage Metal Framing: Wall framing and bracing.
- B. Section 061000 - Rough Carpentry: Wood framing and bracing.
- C. Section 061000 - Rough Carpentry: Sheathing.
- D. Section 072400 - Insulation: Exterior wall insulation.

1.3 REFERENCES

- A. ASTM D3359 - Standard Test Method for Measuring Adhesion by Tape Test, Tool and Tape.
- B. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.

1.4 SUBMITTALS

- A. Submit under provisions of Section 013000.
- B. 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.
- C. Shop Drawings: Provide detailed drawings of atypical non-standard applications of cementitious siding materials which are outside the scope of the standard details and specifications provided by the manufacturer.
- D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

- E. Verification Samples: For each finish product specified, two samples, minimum size 4 by 6 inches (100 by 150 mm), representing actual product, color, and patterns.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum of 2 years experience with installation of similar products.
- B. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Finish areas designated by Architect.
 - 2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
 - 3. Refinish mock-up area as required to produce acceptable work.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store siding on edge or lay flat on a smooth level surface. Protect edges and corners from chipping. Store sheets under cover and keep dry prior to installing.
- C. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.7 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.

1.8 WARRANTY

- A. Product Warranty: Limited, non-pro-rated product warranty.
 - 1. HardiePlank HZ10 lap siding for 30 years.
 - 2. HardiPanel HZ10 vertical siding for 30 years.
 - 3. HardieSoffit HZ10 panels for 30 years.
 - 4. HardieShingle HZ10 siding for 30 years.
 - 5. HardieTrim HZ10 boards for 15 years.
 - 6. Artisan HZ10 lap siding for 30 years.
 - 7. Artisan HZ10 Lock Joint System siding for 30 years
- B. Finish Warranty: Limited product warranty against manufacturing finish defects.
 - 1. When used for its intended purpose, properly installed and maintained according to Hardie's published installation instructions, James Hardie's ColorPlus finish with ColorPlus Technology, for a period of 15 years from the date of purchase: will not peel; will not crack; and will not chip. Finish warranty includes the coverage for labor and material.
- C. Workmanship Warranty: Application limited warranty for 2 years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: James Hardie Building Products, Inc., which is located at: 26300 La Alameda Suite 400 ; Mission Viejo, CA 92691; Toll Free Tel: 866-274-

3464; Tel: 949-367-4980; Fax: 949-367-4981; Email: [request info \(info@jameshardie.com\)](mailto:request_info@jameshardie.com); Web: www.jameshardiecommercial.com

- B. Substitutions: Not permitted.
- C. Requests for approval of equal substitutions will be considered in accordance with provisions of Section 016000.

2.2 SIDING

- A. HardiePlank HZ10 lap siding, HardiePanel HZ10 vertical siding, HardieSoffit HZ10 panels and HardieShingle HZ10 siding requirement for Materials:
 - 1. Fiber-cement Siding - complies with ASTM C 1186 Grade II, Type A.
 - 2. Fiber-cement Siding - classified as noncombustible when tested in accordance with ASTM E 136.
 - 3. Fiber-cement Siding - have a flame-spread index of 0 and a smoke-developed index of 5 when tested in accordance with ASTM E 84.
 - 4. CAL-FIRE, Fire Engineering Division Building Materials Listing - Wildland Urban Interface (WUI) Listed Product. [[Ask Ben about this one.]]
 - 5. ICC-ES Evaluation Report No. ESR-2290 (HardiePlank and HardieShingle), ESR-1844 (HardiePanel), and NER-405 (HardieSoffit)
 - 6. City of Los Angeles, Research Report No. 24862.
 - 7. Miami Dade County, Florida Notice of Acceptance-13-0311.07.
 - 8. US Department of Housing and Urban Development Materials Release 1263e.
 - 9. California DSA PA-019.
 - 10. City of New York M EA 223-93-M.
 - 11. Florida State Product Approval FL13192 (HardiePlank and HardieShingle), FL13223 (HardiePanel), and FL13265 (HardieSoffit).
 - 12. Texas Department of Insurance Product Evaluation EC-23.
- B. Artisan HZ10 lap siding requirement for Materials:
 - 1. Fiber-cement Siding - complies with ASTM C 1186 Grade II, Type A.
 - 2. Fiber-cement Siding - classified as noncombustible when tested in accordance with ASTM E 136.
 - 3. Fiber-cement Siding- have a flame-spread index of 0 and a smoke-developed index of 5 when tested in accordance with ASTM E 84.
 - 4. Warnock Hersey Product Listing.
 - 5. CAL-FIRE, Fire Engineering Division Building Materials Listing - Wildland Urban Interface (WUI) Listed Product.
 - 6. Florida State Product Approval FL10477.
 - 7. Miami Dade County, Florida Notice of Acceptance 12-0517.05.
 - 8. Texas Department of Insurance Product Evaluation EC-55.
 - 9. Manufacturer's Technical Data Sheet.
- C. Artisan HZ10 Lock Joint System requirement for Materials:
 - 1. Fiber-cement Siding - complies with ASTM C 1186 Grade II, Type A
 - 2. Fiber-cement Siding - classified as noncombustible when tested in accordance with ASTM E 136.
 - 3. Fiber-cement Siding - have a flame-spread index of 0 and a smoke-developed index of 5 when tested in accordance with ASTM E 84.
 - 4. Warnock Hersey Product Listing..
 - 5. Manufacturer's Technical Data Sheet.
- D. Lap Siding: Artisan HZ10 Lap Siding as manufactured by James Hardie Building Products, Inc.
 - 1. Type: Smooth 5-1/4 inches (133 mm) with 4 inches (102 mm) exposure.

2. Type: Smooth 7-1/4 inches (184 mm) with 6 inches (152 mm) exposure.
 3. Type: Smooth 8-1/4 inches (210 mm) with 7 inches (178 mm) exposure.
 4. Type: Texture 5-1/4 inches (133 mm) with 4 inches (102 mm) exposure.
 5. Type: Texture 7-1/4 inches (184 mm) with 6 inches (152 mm) exposure.
 6. Type: Texture 8-1/4 inches (210 mm) with 7 inches (178 mm) exposure.
- E. Lap Siding: Artisan HZ10 Joint Lock System Siding as manufactured by James Hardie Building Products, Inc.
1. Type: Texture 8-1/4 inches (210 mm) with 7 inches (178 mm) exposure.
- F. Lap Siding: HardiePlank HZ10 Lap as manufactured by James Hardie Building Products, Inc.
1. Type: Smooth 5-1/4 inches (133 mm) with 4 inches (102 mm) exposure.
 2. Type: Smooth 6-1/4 inches (159 mm) with 5 inches (127 mm) exposure.
 3. Type: Smooth 7-1/4 inches (184 mm) with 6 inches (152 mm) exposure.
 4. Type: Smooth 8-1/4 inches (210 mm) with 7 inches (178 mm) exposure.
 5. Type: Smooth 9-1/4 inches (235 mm) with 8 inches (203 mm) exposure.
 6. Type: Smooth 12 inches (305 mm) with 10-3/4 inches (273 mm) exposure.
 7. Type: Select Cedarmill 5-1/4 inches (133 mm) with 4 inches (102 mm) exposure.
 8. Type: Select Cedarmill 6-1/4 inches (159 mm) with 5 inches (127 mm) exposure.
 9. Type: Select Cedarmill 7-1/4 inches (184 mm) with 6 inches (152 mm) exposure.
 10. Type: Select Cedarmill 8-1/4 inches (210 mm) with 7 inches (178 mm) exposure.
 11. Type: Select Cedarmill 9-1/4 inches (235 mm) with 8 inches (203 mm) exposure.
 12. Type: Select Cedarmill 12 inches (305 mm) with 10-3/4 inches (273 mm) exposure.
 13. Type: Beaded Smooth 8-1/4 inches (210 mm) with 7 inches (178 mm) exposure.
 14. Type: Beaded Cedarmill 8-1/4 inches (210 mm) with 7 inches (178 mm) exposure.
- G. Vertical Siding: HardiePanel HZ10 siding as manufactured by James Hardie Building Products, Inc.
1. Type: Smooth Vertical siding panel 4 feet by 8 feet (1219 mm by 2438 mm).
 2. Type: Smooth Vertical siding panel 4 feet by 9 feet (1219 mm by 2743 mm).
 3. Type: Smooth Vertical siding panel 4 feet by 10 feet (1219 mm by 3048 mm).
 4. Type: Cedarmill Vertical siding panel 4 feet by 8 feet (1219 mm by 2438 mm).
 5. Type: Cedarmill Vertical siding panel 4 feet by 9 feet (1219 mm by 2743 mm).
 6. Type: Cedarmill Vertical siding panel 4 feet by 10 feet (1219 mm by 3048 mm).
 7. Type: Stucco Vertical siding panel 4 feet by 8 feet (1219 mm by 2438 mm).
 8. Type: Stucco Vertical siding panel 4 feet by 9 feet (1219 mm by 2743 mm).
 9. Type: Stucco Vertical siding panel 4 feet by 10 feet (1219 mm by 3048 mm).
 10. Type: Sierra 8 inches (203 mm) Vertical siding panel 4 feet by 8 feet (1219 mm by 2438 mm).
 11. Type: Sierra 8 inches (203 mm) Vertical siding panel 4 feet by 9 feet (1219 mm by 2743 mm).
 12. Type: Sierra 8 inches (203 mm) Vertical siding panel 4 feet by 10 feet (1219 mm by 3048 mm).
- H. Shingle Siding: HardieShingle HZ10 siding as manufactured by James Hardie Building Products, Inc.

1. Type: HardiShingle Individual Shingles 6 inches (152 mm) wide by 18 inches (457 mm) high with 8 inches (203 mm) exposure.
 2. Type: HardiShingle Individual Shingles 8 inches (203 mm) wide by 18 inches (457 mm) high with 8 inches (203 mm) exposure.
 3. Type: HardiShingle Individual Shingles 12 inches (305 mm) wide by 18 inches (457 mm) high with 8 inches (203 mm) exposure.
 4. Type: HardieShingle Straight-Edge Notched Panel 48 inches (1219 mm) wide by 16 inches (406mm) high with 7 inches (178 mm) exposure.
 5. Type: HardieShingle Staggered-Edge Notched Panel 48 inches (1219 mm) wide by 16 inches (406mm) high with 7 inches (178 mm) exposure.
 6. Type: HardieShingle Half Round Notched Panel 48 inches (1219 mm) wide by 19 inches (483mm) high with 7 inches (178 mm) exposure.
 7. Type: Sierra 8 inches (203 mm) Vertical siding panel 4 feet by 10 feet (1219 mm by 3048 mm).
- I. Soffit Panels: HardieSoffit HZ10 soffit panel, factory sealed on 5 sides as manufactured by James Hardie Building Products, Inc.
1. Type: Smooth non-vented, 12 inches (305 mm) by 12 feet (3658 mm).
 2. Type: Smooth non-vented, 16 inches (406 mm) by 12 feet (3658 mm).
 3. Type: Smooth non-vented, 24 inches (610 mm) by 8 feet (2438 mm).
 4. Type: Smooth vented, provides 5 square inches (32.3 sq.cm) of net free ventilation per linear foot, 12 inches (305 mm) by 12 feet (3658 mm).
 5. Type: Smooth vented, provides 5 square inches (32.3 sq.cm) of net free ventilation per linear foot, 16 inches (406 mm) by 12 feet (3658 mm),
 6. Type: Smooth vented, provides 5 square inches (32.3 sq.cm) of net free ventilation per linear foot, 24 inches (610 mm) by 8 feet (2438 mm).
 7. Type: Textured Cedarmill non-vented, 12 inches (305 mm) by 12 feet (3658 mm).
 8. Type: Textured Cedarmill non-vented, 16 inches (406 mm) by 12 feet (3658 mm).
 9. Type: Textured Cedarmill non-vented, 24 inches (610 mm) by 8 feet (2438 mm).
 10. Type: Textured Cedarmill vented, provides 5 square inches (32.3 sq.cm) of net free ventilation per linear foot, 12 inches (305 mm) by 12 feet (3658 mm).
 11. Type: Textured Cedarmill vented, provides 5 square inches (32.3 sq.cm) of net free ventilation per linear foot, 16 inches (406 mm) by 12 feet (3658 mm).
 12. Type: Textured Cedarmill vented, provides 5 square inches (32.3 sq.cm) of net free ventilation per linear foot, 24 inches (610 mm) by 8 feet (2438 mm).
 13. Thickness: 1/4 inch (6 mm).
- J. Trim:
1. HardieTrim HZ10 boards as manufactured by James Hardie Building Products, Inc.
 - a. Product: Batten Boards, 2-1/2 inch (63 mm) width.
 - b. Product: 4/4 Boards, 3-1/2 inch (89 mm) width.
 - c. Product: 4/4 Boards, 5-1/2 inch (140 mm) width.
 - d. Product: 4/4 Boards, 7-1/4 inch (184 mm) width.
 - e. Product: 4/4 Boards, 9-1/4 inch (235 mm) width.
 - f. Product: 4/4 Boards, 11-1/4 inch (286 mm) width.
 - g. Product: 4/4 NT3 Boards, 3-1/2 inch (89 mm) width.
 - h. Product: 4/4 NT3 Boards, 5-1/2 inch (140 mm) width.
 - i. Product: 4/4 NT3 Boards, 7-1/4 inch (184 mm) width.
 - j. Product: 4/4 NT3 Boards, 9-1/4 inch (235 mm) width.
 - k. Product: 4/4 NT3 Boards, 11-1/4 inch (286 mm) width.
 - l. Product: 5/4 Boards, 3-1/2 inch (89 mm) width.
 - m. Product: 5/4 Boards, 5-1/2 inch (140 mm) width.

- n. Product: 5/4 Boards, 7-1/4 inch (184 mm) width.
 - o. Product: 5/4 Boards, 9-1/4 inch (235 mm) width.
 - p. Product: 5/4 Boards, 11-1/4 inch (286 mm) width.
 - q. Product: 5/4 NT3 Boards, 3-1/2 inch (89 mm) width.
 - r. Product: 5/4 NT3 Boards, 4-1/2 inch (114 mm) width.
 - s. Product: 5/4 NT3 Boards, 5-1/2 inch (140 mm) width.
 - t. Product: 5/4 NT3 Boards, 7-1/4 inch (184 mm) width.
 - u. Product: 5/4 NT3 Boards, 11-1/4 inch (286 mm) width.
 - v. Texture: Smooth.
 - w. Texture: Rustic.
 - x. Texture: Wood Grained.
 - y. Length: 12 feet (3658 mm).
 - z. Thickness: 3/4 inch (19 mm).
 - aa. Thickness: 1 inch (24 mm).
- 2. HardieTrim HZ10 Fascia boards as manufactured by James Hardie Building Products, Inc.
 - 3. Artisan HZ10 Accent trim as manufactured by James Hardie Building Products, Inc.
- K. Crown Mouldings:
- 1. HardieTrim HZ10 Crown moulding manufactured by James Hardie Building Products, Inc.

2.3 FASTENERS

- A. Wood Framing Fasteners:
- 1. Wood Framing: 4d common corrosion resistant nails.
 - 2. Wood Framing: 6d common corrosion resistant nails.
 - 3. Wood Framing: 8d common corrosion resistant nails.
 - 4. Wood Framing: 8d box ring common corrosion resistant nails.
 - 5. Wood Framing: 0.083 inch (2.1 mm) shank by 0.187 inch (4.7 mm) head by 1-1/2 inches (38 mm) corrosion resistant ring shank nails.
 - 6. Wood Framing: 0.089 inch (2.2 mm) shank by 0.221 inch (5.6 mm) head by 2 inches (51 mm) corrosion resistant siding nails.
 - 7. Wood Framing: 0.090 inch (2.3 mm) shank by 0.215 inch (5.5 mm) head by 1-1/2 inches (38 mm) corrosion resistant ring shank nails.
 - 8. Wood Framing: 0.093 inch (2.4 mm) shank by 0.222 inch (5.6 mm) head by 2 inches (51 mm) corrosion resistant siding nails.
 - 9. Wood Framing: 0.093 inch (2.4 mm) shank by 0.222 inch (5.6 mm) head by 2-1/2 inches (64 mm) corrosion resistant siding nails.
 - 10. Wood Framing: 0.092 inch (2.3 mm) shank by 0.222 inch (5.6 mm) head by 2 inches (51 mm) corrosion resistant galvanized nails.
 - 11. Wood Framing: 0.092 inch (2.3 mm) shank by 0.225 inch (5.7 mm) head by 2-1/4 inches (57 mm) corrosion resistant galvanized nails.
 - 12. Wood Framing: 0.092 inch (2.3 mm) shank by 0.222 inch (5.6 mm) head by 2-1/2 inches (64 mm) corrosion resistant galvanized nails.
 - 13. Wood Framing: 0.091 inch (2.3 mm) shank by 0.221 inch (5.6 mm) head by 1-1/2 inches (38 mm) corrosion resistant siding nails.
 - 14. Wood Framing: 0.091 inch (2.3 mm) shank by 0.225 inch (5.7 mm) head by 1-1/2 inches (38 mm) corrosion resistant ring shank nails.
 - 15. Wood Framing into WSP: 0.121 inch (3 mm) shank by 0.371 inch (9.4 mm) head by 1-1/4 inches (32 mm) corrosion resistant roofing nails.
 - 16. Wood Framing: No. 11 gauge 1-1/4 inches (32 mm) corrosion resistant roofing nails.
 - 17. Wood Framing: No. 11 gauge 1-3/4 inches (44 mm) corrosion resistant roofing nails.

18. Wood Framing into WSP: No. 8 1-5/8 inches (41 mm) by 0.375 inch (9.5 mm) head corrosion resistant ribbed wafer head screws.
- B. Metal Framing:
1. Metal Framing: 1-1/4 inches (32 mm) No. 8-18 by 0.375 inch (9.5 mm) head self-drilling, corrosion resistant S-12 ribbed buglehead screws.
 2. Metal Framing: 1-5/8 inches (41 mm) No. 8-18 by 0.323 inch (8.2 mm) head self-drilling, corrosion resistant S-12 ribbed buglehead screws.
 3. Metal Framing: 1 inch (25 mm) No. 8-18 by 0.323 inch (8.2 mm) head self-drilling, corrosion resistant ribbed buglehead screws.
 4. Metal Framing: 1.5 inch (38mm) [AGS-100] 0.100 inches by 0.25 inches (2.54 mm by 6.35 mm) ET&F Pin or equivalent pneumatic fastener.
 5. Metal Framing: 1.5 inch (38mm) 0.100 inches by 0.313 inches (2.54 mm by 7.95 mm) ET&F Pin or equivalent pneumatic fastener.
- C. Masonry Walls (CMU):
1. Masonry Walls: ET&F No. ASM-144-125, 0.144 inch (3.6 mm) shank by 0.30 inch (7.6 mm) head by 1-1/4 inches (32 mm) long corrosion resistant nails
 2. Masonry Walls: ET&F No. ASM-144-150, 0.145 inch (3.6 mm) shank by 0.30 inch (7.6 mm) head by 1-1/2 inches (38 mm) long corrosion resistant nails
 3. Masonry Walls: Max System CP-C 832 W7-ICC, 0.145 inch (3.6 mm) shank by 0.30 inch (7.6 mm) head by 1.3 inches (33 mm) long corrosion resistant nails
 4. Masonry Walls: Max System CP-C 838 W7-ICC, 0.145 inch (3.6 mm) shank by 0.30 inch (7.6 mm) head by 1-1/2 inches (38 mm) long corrosion resistant nails
 5. Masonry Walls: Aerosmith SurePin 0.144 inch (3.6 mm) shank by 0.30 inch (7.6 mm) head by 1-1/4 inches (32 mm) long corrosion resistant nails
 6. Masonry Walls: Aerosmith SurePin 0.144 inch (3.6 mm) shank by 0.30 inch (7.6 mm) head by 1-1/2 inches (38 mm) long corrosion resistant nails
 7. Jaaco Nail Pro NP145S 0.145 inch (3.6 mm) shank by 0.30 inch (7.6 mm) head by 1-1/4 inches (32 mm) long corrosion resistant nails
 8. Jaaco Nail Pro NP145S 0.145 inch (3.6 mm) shank by 0.30 inch (7.6 mm) head by 1-1/2 inches (38 mm) long corrosion resistant nails

D. NOTE TO SPECIFIER ** Certain geographic areas allow a minimum single coat of 100% acrylic or exterior grade latex, high quality alkali resistant paint on unprimed product. James Hardie recommends, minimum one coat primer plus on or two topcoats.**

2.4 FINISHES

- A. Factory Primer: Provide factory applied universal primer.
1. Primer: Factory primed by James Hardie.
 2. Topcoat: Refer to Section 099000 and Exterior Finish Schedule.
- B. Factory Finish: Refer to Exterior Finish Schedule.
1. Product: ColorPlus Technology by James Hardie.
 2. Definition: Factory applied finish; defined as a finish applied in the same facility and company that manufactures the siding substrate.
 3. Process:
 - a. Factory applied finish by fiber cement manufacturer in a controlled environment within the fiber cement manufacturer's own facility utilizing a multi-coat, heat cured finish within one manufacturing process.
 - b. Each finish color must have documented color match to delta E of 0.5 or better between product lines, manufacturing lots or production runs

as measured by photo spectrometer and verified by third party.

4. Protection: Factory applied finish protection such as plastic laminate that is removed once siding is installed
5. Accessories: Complete finishing system includes pre-packaged touch-up kit provided by fiber cement manufacturer. Provide quantities as recommended by manufacturer.

C. Factory Finish Color for Trim, Soffit and Siding Colors:

1. Alpine Frost JH50-10.
2. Arctic White JH10-20.
3. Autumn Tan JH20-20.
4. Boothbay Blue JH70-20.
5. Chestnut Brown JH80-30.
6. Cobble Stone JH40-10.
7. Countrylane Red JH90-20.
8. Evening Blue JH70-30.
9. Frosted Green JH60-20.
10. Harris Cream JH80-10.
11. Heathered Moss JH50-20.
12. Iron Gray JH90-30.
13. Khaki Brown JH20-30.
14. Light Mist JH70-10.
15. Monterey Taupe JH40-20.
16. Mountain Sage JH50-30.
17. Navajo Beige JH30-10.
18. Parkside Pine JH60-30.
19. Sail Cloth JH20-10.
20. Sandstone Beige JH30-20.
21. Soft Green JH60-10.
22. Timber Bark JH40-30.
23. Traditional Red JH90-10.
24. Tuscan Gold JH80-20.
25. Woodland Cream JH10-30.
26. Woodstock Brown JH30-30.
27. Terra Cotta JH15-20.
28. Coral Coast JH25-20.
29. Aqua Marine JH35-20.
30. Cool Breeze JH45-20.
31. Pink Sand JH55-20.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If framing preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Nominal 2 inch by 4 inch (51 mm by 102 mm) wood framing selected for minimal shrinkage and complying with local building codes, including the use of water-resistive barriers or vapor barriers where required. Minimum 1-1/2 inches (38 mm) face and straight, true, of uniform dimensions and properly aligned.
 1. Install water-resistive barriers and claddings to dry surfaces.
 2. Repair any punctures or tears in the water-resistive barrier prior to the installation of the siding.
 3. Protect siding from other trades.

- D. Minimum 20 gauge 3-5/8 inch (92 mm) C-Stud 16 inches maximum on center or 16 gauge 3-5/8 inches (92 mm) C-Stud 24 inches (610 mm) maximum on center metal framing complying with local building codes, including the use of water-resistive barriers and/or vapor barriers where required. Minimum 1-1/2 inches (38 mm) face and straight, true, of uniform dimensions and properly aligned.
 - 1. Install water-resistive barriers and claddings to dry surfaces.
 - 2. Repair any punctures or tears in the water-resistive barrier prior to the installation of the siding.
 - 3. Protect siding from other trades.

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 for the substrate under the project conditions.
- C. Install a water-resistive barrier is required in accordance with local building code requirements.
- D. The water-resistive barrier must be appropriately installed with penetration and junction flashing in accordance with local building code requirements.
- E. Install Engineered for Climate™ HardieWrap™ weather barrier in accordance with local building code requirements.
- F. Use HardieWrap™ Seam Tape and joint and laps.
- G. Install and HardieWrap™ flashing, HardieWrap™ Flex Flashing.

3.3 INSTALLATION - HARDIEPLANK HZ10 LAP SIDING AND ARTISAN HZ10 LAP SIDING

- A. Install materials in strict accordance with manufacturer's installation instructions.
- B. Starting: Install a minimum 1/4 inch (6 mm) thick lath starter strip at the bottom course of the wall. Apply planks horizontally with minimum 1-1/4 inches (32 mm) wide laps at the top. The bottom edge of the first plank overlaps the starter strip.
- C. Allow minimum vertical clearance between the edge of siding and any other material in strict accordance with the manufacturer's installation instructions.
- D. Align vertical joints of the planks over framing members.
- E. Maintain clearance between siding and adjacent finished grade.
- F. Locate splices at least one stud cavity away from window and door openings.
- G. Use off-stud metal joiner in strict accordance with manufacturer's installation instructions.
- H. Wind Resistance: Where a specified level of wind resistance is required Artisan lap siding is installed to framing members and secured with fasteners described in ICC-ES Evaluation Report No. ESR-2290
- I. Face nail to sheathing.
- J. Locate splices at least 12 inches (305 mm) away from window and door openings.

3.4 INSTALLATION - ARTISAN HZ10 LOCK JOINT SYSTEM SIDING

- A. Install materials in strict accordance with manufacturer's installation instructions.
- B. Starting: Install bottom course at bottom of the wall. Apply consecutive courses horizontally in a stacking affect as the Lock Joint system connecting into the course below.
- C. Allow minimum vertical clearance between the edge of siding and any other material in strict accordance with the manufacturer's installation instructions.
- D. Align vertical joints of the siding minimum 4 inches from framing members.
- E. Maintain clearance between siding and adjacent finished grade.
- F. Locate splices at least 12 inches (305 mm) away from window and door openings.
- G. Wind Resistance: Where a specified level of wind resistance is required Artisan HZ10 Lock Joint System siding is installed to framing members and secured with fasteners described in Artisan V Rustic code compliance sheet
- H. Face nail to sheathing.

3.5 INSTALLATION - HARDIEPANEL HZ10 VERTICAL SIDING

- A. Install materials in strict accordance with manufacturer's installation instructions.
- B. Block framing between studs where HardiePanel siding horizontal joints occur.
- C. Install metal Z flashing and provide a 1/4 inch (6 mm) gap at horizontal panel joints.
- D. Place fasteners no closer than 3/8 inch (9.5 mm) from panel edges and 2 inches (51 mm) from panel corners.
- E. Allow minimum vertical clearance between the edge of siding and any other material in strict accordance with the manufacturer's installation instructions.
- F. Maintain clearance between siding and adjacent finished grade.
- G. Specific framing and fastener requirements refer to ICC-ES Evaluation Report No. ESR-1844
- H. Factory Finish Touch Up: Apply touch up paint to cut edges in accordance with manufacturer's printed instructions.
 - 1. Touch-up nicks, scrapes, and nail heads in pre-finished siding using the manufacturer's touch-up kit pen.
 - 2. Touch-up of nails shall be performed after application, but before plastic protection wrap is removed to prevent spotting of touch-up finish.
 - 3. Use touch-up paint sparingly. If large areas require touch-up, replace the damaged area with new pre-finished siding. Match touch up color to siding color through use of manufacturer's branded touch-up kits.

3.6 INSTALLATION - HARDIE HZ10 SHINGLESIDE CLADDING

- A. Install materials in strict accordance with manufacturer's installation instructions.
- B. Substrate: Install a minimum 7/16 inch (11 mm) thick OSB wall sheathing or equivalent braced walls complying with applicable building codes.

- C. Starting: Install a minimum 1/4 inch (6 mm) thick lath starter strip at the bottom course of the wall.
- D. Maintain clearance between siding and adjacent finished grade.
- E. Apply starter course of 10 inches (254 mm) shingles or 9-1/2 inches (241 mm) lap siding overlapping the starter strip.
- F. Apply subsequent courses horizontally with a minimum 10 inch overlap at the top and a minimum 2 inch (51 mm) side lap. The bottom edge of the first two courses overlaps the starter strip.
- G. Fasten between 1/2 inch (13 mm) and 1 inch (25 mm) in from the side edge and between 8-1/2 inches (216 mm) and 9 inches (229 mm) up from the shingle bottom edge.
- H. Allow minimum vertical clearance between the edge of siding and any other material in strict accordance with the manufacturer's installation instructions.
- I. Ensure vertical joints of overlapping shingle course do not align.
- J. Wind Resistance: Where a specified level of wind resistance is required, Hardie Shingle siding is installed to substrate and secured with a minimum two fasteners described in ICC-ES Evaluation Report No. ESR-2290.

3.7 INSTALLATION - HARDIETRIM HZ10 BOARDS

- A. Install materials in strict accordance with manufacturer's installation instructions. Install flashing around all wall openings.
- B. Fasten through trim into structural framing or code complying sheathing. Fasteners must penetrate minimum 3/4 inch (19 mm) or full thickness of sheathing. Additional fasteners may be required to ensure adequate security.
- C. Place fasteners no closer than 3/4 inch (19 mm) and no further than 2 inches (51 mm) from side edge of trim board and no closer than 1 inch (25 mm) from end. Fasten maximum 16 inches (406 mm) on center.
- D. Maintain clearance between trim and adjacent finished grade.
- E. Trim inside corner with a single board trim both side of corner.
- F. Outside Corner Board Attach Trim on both sides of corner with 16 gage corrosion resistant finish nail 1/2 inch (13 mm) from edge spaced 16 inches (406 mm) apart, weather cut each end spaced minimum 12 inches (305 mm) apart.
- G. Allow 1/8 inch gap between trim and siding.
- H. Seal gap with high quality, paint-able caulk.
- I. Shim frieze board as required to align with corner trim..
- J. Fasten through overlapping boards. Do not nail between lap joints.
- K. Overlay siding with single board of outside corner board then align second corner board to outside edge of first corner board. Do not fasten HardieTrim boards to HardieTrim boards.

- L. Shim frieze board as required to align with corner trim.
- M. Install HardieTrim Fascia boards to rafter tails or to sub fascia.

3.8 FINISHING

- A. Finish unprimed siding with a minimum one coat high quality, alkali resistant primer and one coat of either, 100 percent acrylic or latex or oil based, exterior grade topcoats or two coats high quality alkali resistant 100 percent acrylic or latex, exterior grade topcoat within 90 days of installation. Follow paint manufacturer's written product recommendation and written application instructions.
- B. Finish factory primed siding with a minimum of one coat of high quality 100 percent acrylic or latex or oil based exterior grade paint within 180 days of installation. Follow paint manufacturer's written product recommendation and written application instructions.

3.9 PROTECTION

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

END OF SECTION

SECTION 05 51 00 - METAL STAIRS AND RAILS

PART 1 - GENERAL

1.1 AGREEMENT:

The contract and any contract change orders, the drawings and this section of the specifications with all addenda, together with Division 01 - General Requirements are all incorporated to form the contract documents and the entire basis for agreement between contractor and subcontractor. No allowance will subsequently be made on behalf of the subcontractor for errors due to his negligence in failing to acquaint himself with the contract documents and the site conditions or for his failure to determine the owner's desired meaning and intentions of these contract documents before starting work.

1.2 SCOPE:

Furnish all labor, materials and equipment necessary and proper to complete the metal stairs and rail work shown on the drawings and specified herein or reasonably implied by same. In general, the stairs and rail work shall include the following:

- a. Metal Stairs
- b. Rail
- c. Miscellaneous
- d. Submittals
- e. Warranty
- f. Clean up
- g. Materials

1.3 Prior to the erection of work, carefully inspect the installed work of other trades and verify that all work is complete to the point where stairs and rail installation may commence and that the completed installation will be in strict accordance with the design as shown on the drawings and in these specifications. In the event of discrepancy, immediately notify the project superintendent and proceed as he directs.

1.4 All work must be in accordance with the latest AISC Standards.

1.5 Material and fabrication requirements in the plans must be strictly followed.

1.6 Subcontractor shall be responsible for insuring that the stairs and rails comply with all local, state and federal requirements.

1.7 Warranty: This subcontractor shall warrant the work under this section against defects in materials and workmanship for a period of one (01) year following issuance of Certificate of Occupancy for the final building of the project.

PART 2 - PRODUCTS

2.1 Structural Steel: All structural steel and plates shall conform with ASTM A-36 in the size and shape indicated on the drawing and shall receive one shop coat of primer.

2.2 Fasteners: All bolts, nuts and screws shall be new, free from rust and conforming with ASTM A-307 and AISC standards.

- 2.3 Stairs and Rail: Stairs and rail shall be as detailed on the drawings and receive one shop coat of primer.
- 2.4 Precast Concrete Treads: Comply with requirements of structural cast-in-place concrete for normal-weight, ready-mix concrete with a minimum 28-day compressive strength of 5,000 psi (35 MPa) and a total air content of not less than 4 percent nor more than 6 percent.
- 2.5 Reinforcing Wire Treads: Galvanized, welded wire fabric, 2 inches by 2 inches--W0.3 by W0.3 (16 ASW gage or 0.0625-inch diameter); comply with ASTM A 185 and ASTM A 82, except for minimum wire size.
- 2.6 Welding Rods: All welding rods shall be appropriate for the structural member material.
- 2.7 Other Materials: All other materials, not specifically described but required for a complete installation, shall be new, free from rust, best quality of their respective kinds, and subject to the approval of the contractor.
- 2.8 Primer Paint: All primer shall be an industrial grade product. All materials will be thoroughly cleaned before priming.

PART 3 - EXECUTION

- 3.1. Metal Stairs:
- a. Subcontractor will furnish and install the complete stair assemblies with columns, plates, treads and stringers.
 - b. Furnish all anchor bolts, fasteners, washers and other parts or devices necessary for proper and stable installation of the stairs. Provide lock washers under all nuts.
 - c. Install metal caps to seal exposed ends of columns.
 - d. Drill or punch holes required for the attachment of work or other trades and for bolted connections. Burned holes are not acceptable.
- 3.2. Rail:
- a. Subcontractor will furnish and install all metal rail.
 - b. Stair, walkway, landing and balcony rail will be installed after drywall.
 - c. Rail pickets must be welded at all four sides to top and bottom tube (seal welded).
 - d. Install metal caps to seal exposed ends of rail.
- 3.3 Miscellaneous: All joints and intersections of metal to fit tightly and be securely fastened. Make all work square, plumb, straight and true. This subcontractor shall grind smooth all exposed welds. All field welds will receive one touch-up coat of primer the day welds are made. After the erection and installation is complete, touch-up all priming damaged during transportation and erection.
- 3.4 Submittals: Submit shop drawings to the contractor for approval. Indicate quantities, materials, sizes, shapes and all methods of anchorage, bracing and attachment to the work of other trades.

- 3.5 Clean Up: Clean up all debris caused by work of this section keeping site and buildings neat at all times. Debris is to be placed in location designated by project superintendent.

END OF SECTION