

SPECIFICATIONS AND GENERAL NOTES

DIVISION 1 - GENERAL REQUIREMENTS

01010 - SUMMARY OF WORK

PART I - GENERAL

A. The Architect considers these plans to be generally accu- rate, reliable, and free of defect, but does not guarantee their absolute accuracy to the last detail; ac- cordingly, the contractor shall verify all dimensions and conditions before starting work, and shall immediately notify the Architect and/or Engineers of any omissions, discrepancies, or errors found.

B. In the event any conflicting items should occur in the drawings, general notes, specifications, building codes, or soils report, that condition or requirement which is the most stringent shall govern.

C. Any construction technique, process, or specialty not specifically dealt with in these plans shall be in ac- cordance with the minimum requirements set forth in the 2015 edition of the International Building Code, 2015 International Existing Building Code, any applicable local municipal code, or manufacturer's or trade association's recommendations; the most stringent shall govern.

D. Any proposed modifications or changes to these plans are subject to review by the Architect. The Architect shall NOT BE RESPONSIBLE FOR ANY CHANGES made without his knowledge and written approval.

E. The contractor shall abide by the requirements set forth in the "General Conditions of the Contract for Construction", A.I.A. Document A-201, dated 2012.

F. ALL MATERIALS MENTIONED HEREIN MAY NOT BE USED IN EVERY BUILDING (coordinate with drawings).

G. Any "or equal" note shall mean "if approved by the Designer in advance."

H. For all applicable Specification Sections: Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

DIVISION 2 - SITEWORK

02010 - SUBSURFACE INVESTIGATION

PART I - GENERAL

-NOT APPLICABLE

SECTION 0219 - SELECTIVE DEMOLITION
PART I - GENERAL
1.1 SECTION INCLUDES

- A. Selective Site Demolition:
1. Demolition of designated site improvements including paving, curbing, site walls, and utility structures.
 2. Demolition of below-grade foundations and site improvements to depth to avoid conflict with new construction or site work.
 3. Removal of hollow items or items which could collapse.

4. Salvage of designated items.
5. Protection of site work and adjacent structures.
6. Disconnection, capping, and removal of utilities.
7. Pollution control during building demolition, including noise control.
8. Removal and legal disposal of materials.
9. Designated site improvements and adjacent construction.
10. Interruption, capping or removal of utilities as applicable.

- B. Selective Building Demolition:
1. Selective demolition of interior partitions, systems, and building components designated to be removed.
 2. Selective demolition of exterior facade, structures, and removed.
 3. Protection of portions of building adjacent to or selective demolition.
 4. Removal of abandoned utilities and wiring systems.
 5. Notification to Owner of schedule of shut-off of utilities which serve occupied spaces.
 6. Pollution control during selective demolition, including noise control.
 7. Removal and legal disposal of materials.
 8. Protection of designated site improvements and adjacent construction.
 9. Salvage of designated items.
 10. Interruption, capping or removal of utilities as applicable.

- C. Hazardous Materials:
1. Not present.
 2. Removed under separate prior contract.
 3. Removed as a part of this contract.

1.2 QUALITY ASSURANCE

A. Codes and Regulations: Comply with governing codes and regulations. Use experienced workers.

1.3 SEQUENCING

- A. Immediate areas of work will not be occupied during selective demolition. The public, including children, may occupy adjacent areas.
- B. No responsibility for buildings and structures to be demolished will be assumed by the Owner.
- C. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.
- PART 3 EXECUTION
- 3.1 SELECTIVE DEMOLITION
- A. Demolition Operations: Do not damage building elements and improvements indicated to remain. Items of salvage value, not included on schedule of salvage items to be returned to Owner, shall be removed from structure. Storage or sale of items at project site is prohibited.

- B. Utilities: Locate, identify, disconnect, and seal or cap off utilities in buildings to be demolished.
- C. Shoring and Bracing: Provide and maintain interior and exterior shoring and bracing.
- D. Occupied Spaces: Do not close or obstruct streets, walks, drives or other occupied or used spaces or facilities without the written permission of the Owner and the authorities having jurisdiction. Do not interrupt utilities serving occupied or used facilities without the written permission of the Owner and authorities having jurisdiction. If necessary, provide temporary utilities.
- E. Operations: Cease operations if public safety or remaining structures are endangered. Perform temporary corrective measures until operations can be continued properly.
- F. Security: Provide adequate protection against accidental trespassing. Secure project after work hours.
- G. Restoration: Restore finishes of patched areas.

3.2 SCHEDULE

- A. Items to be Salvaged for Delivery to Owner:
1. Doors and hardware.
- D. Utilities Requiring Interruption, Capping, or Removal:
1. Electric.
 2. Heat.
 3. Water.
 4. Gas.
 5. Sewerage

02730 - SANITARY SEWERAGE

PART I - GENERAL

- A. The contractor and plumber shall check actual sewer depth PRIOR to foundation excavation. If sewer depth is inadequately shallow for construction according to plans, the contractor shall notify the Architect in writing, and obtain Architect's response before proceeding with excavation work.

DIVISION 3 - CONCRETE

03300 - CAST-IN-PLACE CONCRETE

PART I - GENERAL

- A. If requested, submit concrete mix designs to general contractor for approval prior to any pours.
- B. Concrete compressive strength of all footings, stem walls, crawlspace foundation walls, and interior slabs-on-grade shall be equal to at least 2500 psi within 28 days after pouring; whereas full basement walls and retaining walls shall attain a compressive strength of at least 3000 psi. Minimum strength for exterior flatwork shall be 2500 psi, but 3000 psi is recommended.

PART II - PRODUCTS

- A. Cement shall be gray Portland Type II, low alkaline. Slump shall be 3 to 4 maximum for stem walls and footings. 4 to 5 maximum for walls, and slabs-on-grade, including interior slabs-on-grade, self-supporting slabs, exterior concrete porches, driveways and sidewalks.
- B. Continuous footings shall be 10" deep x 20" wide, w/ (2) #4 bars x cont., and #4 J-bar dowels at 24" o.c. (unless noted otherwise on drawings).
- C. Foundation walls shall be 8" wide (typical unless otherwise noted on drawings).
- D. All foundation walls shall be reinforced with #4 bars @ 24" o.c. horizontally & vertically, with every other vertical bar tied to footing dowel (unless noted otherwise on drawings).

- E. Fly ash content shall not exceed 15% in any mix design.
- F. All metal reinforcing bars shall be ASTM A-615 grade 60 (Fy=60 ksi).
- G. Welded wire fabric/mesh shall comply with ASTM A 185.
- H. Where 6" x 6" welded wire mesh is recommended, slabs shall be 4" thick and have "chairs" @ 3'-0" o.c. each way to hold mesh 1" minimum above bottom of slab.

PART III - EXECUTION

- A. All concrete work shall comply with A.C.I. Standard Specification for Structural Concrete for Buildings (A.C.I. 301-72; revised 1981).
- B. All walls shall be shored prior to backfilling.
- C. Maximum spacing of horizontal bars in stem walls shall be 12" o.c.
- D. All reinforcing bars shall be anchored and spaced from the forms (unless otherwise noted) as follows: 3/4" in protected walls and suspended slabs, 2" in unprotected walls, and 3" above bottom of footings.
- E. All splices in continuous reinforcing bars are to be lapped a minimum of 40 bar diameters.
- F. Horizontal reinforcing shall run continuous around foundation wall corners, or shall be tied to corner rebar dowels.
- G. All lumber in contact with concrete to be pressure treated lumber or redwood. See 06 110 - Rough Carpentry.

DIVISION 5 - METALS

05120 - STRUCTURAL STEEL

PART I - GENERAL

- A. All structural steel shall conform to ASTM A-36, Fy = 36 ksi, and anchor bolts shall conform to ASTM A-307.

05500 - METAL FABRICATIONS

PART I - GENERAL

PART II - PRODUCTS

- A. Materials:
1. Steel plates, shapes, and bars: ASTM A 36.
 2. Steel bar grating: ASTM A569.
 3. Bolts: ASTM A 325.
 4. Fasteners: Zinc coated fasteners designed for loading and use.

PART III - EXECUTION

- A. Take field measurements prior to fabrication. Do not delay job; allow for cutting and fitting if field measurement not practical.
- B. Form work true to line with sharp angles and edges. Weld continuously, grind flush and make smooth on exposed surfaces.
- C. Lintels: Provide sizes indicated with 8" bearing each end.
- A. Unless otherwise noted in structural drawings, Roof sheathing shall be 5/8" waterboard sheathing or 5/8" CDX plywood with exterior glue, bearing a 4220 span index. "Simpson Strong-Tie" plywood sheathing clips shall be installed at midspan at all locations where spacing of trusses exceeds 24" o.c. Fasten plywood at edges with 8d commons at 6" o.c. or 14 gauge 1 1/2" staples. Fasten field of panels with 8d commons at 12" o.c. or 14 gauge 1 1/2" staples.
- B. Floor sheathing shall be 3/4" C.D.X. T & G plywood or waterboard with exterior glue, bearing a 4220 span index, minimum. Fasten with 16d ring shank nails at 8" o.c. at edges and boundary, and 10" o.c. in field, or use 16 gauge 1 5/8" x 7/16" staples at 2 1/2" o.c. at edges and 4" o.c. in field.
- C. Structural shear panels at exterior and interior walls shall be 1/2" C.D.X. plywood or waterboard 24/0 nailed same as roof sheathing above. Solid block above shear panels, and nail through sheathing with (6) 8d nails and toenail with (3) 16d nails minimum.
- D. Non-structural shear panels at walls may be 1/2" celotex.
- E. Provide metal hurricane ties at each rafter or truss.

DIVISION 6 - WOOD AND PLASTICS

06100 - ROUGH CARPENTRY

PART I - GENERAL

- A. All lumber shall conform to PS20-70 (the American Lumber Standard) and be graded by the latest edition of the WWP/A. Each piece of lumber shall bear an official grade stamp and trademark.
- B. Assumed floor and roof loads (verify with local jurisdiction and coordinate w/ Struct. Drawings and notes.

PART II - PRODUCTS

- A. Unless otherwise noted in structural drawings, all structural members shall be of Douglas Fir No. 2 grade or better.
- B. Timber in contact with concrete shall be redwood or pressure treated fir.
- C. Exposed wood columns and timbers shall be Douglas Fir Larch, Construction Grade, and "Free of Heart Center", with edges lightly eased. Concealed columns and timbers may be Douglas Fir Larch No. 1 (Fb=1200 psi, Fv=85, and E = 1,600,000 psi, minimum.
- D. Framing anchors shall be "Simpson Strong-Tie", "Teco", or "Silver Metal Products, Inc.". Provide Simpson connectors at locations as required or where indicated on on framing drawings. Use "Simpson Ornamental Connectors" or equal, at front entry porch posts and beams (unless otherwise directed by Owner).
- E. All headers shall be (2) 2 x 12's minimum, unless otherwise noted.
- F. Provide cross bridging at midspan for all spans over 8'-0", and at one-third points for spans over 16'-0" (bridging not required with TJI floor system, unless noted otherwise.
- G. Provide and install tie-down clips as per code on each truss, alternate ends.
- H. Provide diagonal bracing at all truss gable ends.
- I. Bearing walls supporting two floors shall be 2 x 6 studs @ 16" o.c. anchored as noted in structural notes. Non-bearing interior walls shall be 2 x 4 studs @ 16" o.c.
- J. Interior (non-bearing) prefabricated "Marbeline columns to be as directed, selected and approved by Owner & Designer. on drawings).

- E. Fly ash content shall not exceed 15% in any mix design.
- F. All metal reinforcing bars shall be ASTM A-615 grade 60 (Fy=60 ksi).
- G. Welded wire fabric/mesh shall comply with ASTM A 185.
- H. Where 6" x 6" welded wire mesh is recommended, slabs shall be 4" thick and have "chairs" @ 3'-0" o.c. each way to hold mesh 1" minimum above bottom of slab.

PART III - EXECUTION

- A. All built-up beams and typical headers shall be nailed together with 16d nails at each end, and construction adhesive between members. Typical headers shall, in addition, contain a single solid layer of 1/2" CDX plywood between members.
- B. Crown all framing members.
- C. Provide solid fire blocking at floor and roof lines for fireplace chase.
- D. Double framing members shall be provided directly below roof-mounted equipment plates, hangers for heavy equipment, and hangers for any and all piping 4" in diameter or larger, unless otherwise detailed.
- E. Double joists under all parallel partitions.
- F. All wood stud bearing walls over 10'-0" high shall have horizontal herringbone bridging, not less than 2" nominal thickness x same width as studs, fitted tight and spiked to studs. Bridging shall be at mid-height of partition, or not more than 7'-0" o.c. in any situation. For walls over 10'-0" in height studs shall be minimum 2 x 6 studs at 16" o.c. with horizontal herringbone bridging of same dimension, fitted tight and spiked to studs. Bridging shall be spaced at one-third points.
- G. Provide solid blocking at all bearing walls, midheight.
- H. Cross bridging or bracing shall be provided at all floor and roof joist locations where the span exceeds 8'-0" clear. Span locations that exceed 16'-0" clear shall receive bridging at one-third points. Bridging shall be Simpson Strong-Tie (or equal) Nailless Metal Bridging, min. 16 gauge steel with "V" section, or solid bridging not less than one size smaller than joist.
- I. Minimum nailing of lumber members shall be installed in accordance with U.B.C. tables or other applicable local building codes.
- J. Bearing walls shall have double top plates with joints lapped a minimum of 48", and fastened together with a minimum of (10) 16d nails each side of lap; nails shall be driven in pairs at a maximum spacing of 12" o.c.
- K. Provide bracing at all corners and at every 25' minimum, along all exterior walls unless otherwise noted on structural plans. Braced area shall be not less than 25% of total exterior wall area.
- L. Wood Treatment: Preservative treatment: Pressure treated with waterborne preservatives, to comply with AWPB LP-2 for above-ground items. Kiln dry after treatment to 19% max. moisture content for lumber and 15% for plywood. Treat above-ground wood exposed to deterioration by moisture and all wood in contact with the ground or fresh water.

06112 - PLYWOOD AND DIAPHRAGMS

PART I - GENERAL

PART II - PRODUCTS

- A. Unless otherwise noted in structural drawings, Roof sheathing shall be 5/8" waterboard sheathing or 5/8" CDX plywood with exterior glue, bearing a 4220 span index. "Simpson Strong-Tie" plywood sheathing clips shall be installed at midspan at all locations where spacing of trusses exceeds 24" o.c. Fasten plywood at edges with 8d commons at 6" o.c. or 14 gauge 1 1/2" staples. Fasten field of panels with 8d commons at 12" o.c. or 14 gauge 1 1/2" staples.
- B. Floor sheathing shall be 3/4" C.D.X. T & G plywood or waterboard with exterior glue, bearing a 4220 span index, minimum. Fasten with 16d ring shank nails at 8" o.c. at edges and boundary, and 10" o.c. in field, or use 16 gauge 1 5/8" x 7/16" staples at 2 1/2" o.c. at edges and 4" o.c. in field.
- C. Structural shear panels at exterior and interior walls shall be 1/2" C.D.X. plywood or waterboard 24/0 nailed same as roof sheathing above. Solid block above shear panels, and nail through sheathing with (6) 8d nails and toenail with (3) 16d nails minimum.
- D. Non-structural shear panels at walls may be 1/2" celotex.
- E. Provide metal hurricane ties at each rafter or truss.

06112 - PLYWOOD AND DIAPHRAGMS

PART I - GENERAL

PART II - PRODUCTS

- A. Unless otherwise noted in structural drawings, Roof sheathing shall be 5/8" waterboard sheathing or 5/8" CDX plywood with exterior glue, bearing a 4220 span index. "Simpson Strong-Tie" plywood sheathing clips shall be installed at midspan at all locations where spacing of trusses exceeds 24" o.c. Fasten plywood at edges with 8d commons at 6" o.c. or 14 gauge 1 1/2" staples. Fasten field of panels with 8d commons at 12" o.c. or 14 gauge 1 1/2" staples.
- B. Floor sheathing shall be 3/4" C.D.X. T & G plywood or waterboard with exterior glue, bearing a 4220 span index, minimum. Fasten with 16d ring shank nails at 8" o.c. at edges and boundary, and 10" o.c. in field, or use 16 gauge 1 5/8" x 7/16" staples at 2 1/2" o.c. at edges and 4" o.c. in field.
- C. Structural shear panels at exterior and interior walls shall be 1/2" C.D.X. plywood or waterboard 24/0 nailed same as roof sheathing above. Solid block above shear panels, and nail through sheathing with (6) 8d nails and toenail with (3) 16d nails minimum.
- D. Non-structural shear panels at walls may be 1/2" celotex.
- E. Provide metal hurricane ties at each rafter or truss.

PART III - EXECUTION

- A. All sheathing shall be installed with joints staggered, and face grain running perpendicular to framing direction, with a two-span minimum.

06190 - PREFABRICATED WOOD TRUSSES

PART I - GENERAL

THIS SECTION PERTAINS TO ANY EXISTING WOOD TRUSSES THAT MAY BE NECESSARY TO BE REPLACED-FIELD VERIFY AND INSPECT ALL EXISTING ROOF TRUSSES

- A. Provide prefabricated and pre-engineered wood trusses.
- B. Comply with recommendations of TPI Design Specifications for Metal Plate Connected Wood Trusses.

PART II - PRODUCTS

- A. Trusses: Standard dimensional lumber connected by metal plates.
- B. Wood: Softwood meeting stress rating and design requirements.
- C. Metal Plates: Galvanized sheet steel, ASTM A 446, Grade A, coating G60.
- D. Accessories: Wind anchors and bracing.

06200 - FINISH CARPENTRY AND MILLWORK

PART I - GENERAL

- A. Provide finish carpentry for exterior items exposed to view:
1. Running and standing trim and moldings.
 2. Door frames.
 3. Decorative elements.
- B. Provide finish carpentry for interior items exposed to view:
1. Running and standing trim and moldings, door and window casing, paneling, wood shelving and closet accessories, wood stair treads, rails and balusters, wood valances, decorative elements, and fireplace mantel.
- C. Provide custom millwork with ship finish:
1. Wood casework and cabinets, plastic laminate casework and countertops. Quality standard for fabrication and products: Architectural Woodwork Institute Quality Standards, Premium grade unless noted otherwise.

PART II - PRODUCTS

- A. Exterior finish carpentry:
1. Trim and boards for transparent finish: N.A.
 2. Trim and boards for painted finish: Clear pine or fir, or other softwood suitable for exposure and use.
- B. Interior finish carpentry and millwork:
1. Trim and boards for transparent finish: N.A.
 2. Trim and boards for opaque finish: Softwood suitable for exposure and use. Base and door casing shall be 3" colonial profile (coordinate with Owner). Profile to be approved by Owner.
 3. Plastic Laminates: NEMA LD-3, 0.050" thick horizontal grade. At counters, quality standard for fabrication and products: Architectural Woodwork Institute Quality Standards, Premium grade unless noted otherwise.
 4. Wood shelving and closet accessories.
 5. Wood stair treads, risers, stringers (including circular stair-to be designed by stair manu. as directed by home Designer), rails and balusters.
 6. Fireplace mantels as directed by Owner and Designer.
- C. Shelving and closets:
1. Service and closet shelving: Melamine with round nosing.
 2. Wall brackets: Knappe and Vogt or approved equal.
 3. Closet bars: Telescoping steel with chrome finish.

PART III - EXECUTION

- A. Provide work to sizes, shapes, and profiles indicated. Install work to comply with quality standards referenced. Back prime work and install plumb, level and straight with tight joints; scribe work to fit.

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

07196 - NON WOVEN AIR RETARDERS

PART I - GENERAL

- A. Furnish and install air retarder on the exterior side of exterior wall sheathing.

PART II - PRODUCTS

- A. Approved Manufacturers:
1. Barracade by Simplex Products Division, Adrian, MI.
 2. Rufocwrap by Raven Industries, Sioux Falls, SD.
 3. Tyvek Housewrap by DuPont Company, Wilmington, DE.
- PART III - EXECUTION
- A. Install in accordance with manu. instructions over exterior wall sheathing. Seal penetrations through air infiltration retarder immediately prior to installation of finish material.
- B. Vapor retarder is to be air tight and free from holes, tears, and punctures.
1. At completion of air infiltration retarder installation, inspect exposed air infiltration retarder for holes, tears, and punctures and repair damaged areas.

07200 - INSULATION

PART I - GENERAL

- A. Provide building insulation of blanket and loose-fill types as applicable:
1. Roofs and attics (interior), fiberglass batt or loose fill type insulation.
 2. Exterior stud walls, fiberglass, mineral fiber batt or loose fill type insulation.
 3. Soffits (where occurs at structural overhang), floors of living spaces above garage & crawlspace.
- B. Provide vapor barrier at building perimeter.
- C. Use experienced installers.

PART II - PRODUCTS

- A. Blanket/batt type insulation: Unfaced, 4 mil visqueen (vapor barrier), glass fiber blanket insulation types; Owens Corning Fiberglass Corp. or approved equal (ALTERNATE: Loose fill type insulation).
1. Roof:
 - a. 12" fiberglass batt, R-38 (or loose fill type insul.), 4 mil visqueen.
 2. Exterior stud walls and floors over crawlspace, garage, or overhang:
 - a. 6" fiberglass batt, R-19 (or loose fill type insul.), 4 mil visqueen; 3 1/2" fiberglass batt, R-11 (min.) @ basement fndn. walls (Coord. w/ Owner).
- B. Alternate loose fill type insulation: Loose, granular perlite or vermiculite.
- C. Vapor barrier: 4 mil clear polyethylene sheet.

PART III - EXECUTION

- A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction. Coordinate with work of other sections. Provide full thickness in one layer over entire area, tightly fitting around penetrations.
- B. Install vapor barrier over entire area of inside face of exterior walls and elsewhere as indicated. Seal all seams and around perimeter and penetrations with duct tape to form a continuous vapor barrier free of holes.
- C. Protect installed insulation and vapor barrier.
- D. Blow loose insulation into required areas; take great care to provide uniform coverage at correct density and thickness to obtain specified R-value.

SECTION 07320
CLAY ROOF TILE

PART 1 GENERAL

- 1.1 SECTION INCLUDES
- A. Replacement of existing Clay roof tiles and roof system components if required and determined necessary.
- B. Underlayment.
- C. Related roof accessories.
- 1.5 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.

1.6 DELIVERY, STORAGE, AND HANDLING

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

1.7 SEQUENCING

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

1.8 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. Do not overload the roof. Distribute stacks of tile uniformly on roof at not greater than 12 inches (305 mm) in height.
- 1.9 WARRANTY
- A. 50-Year Limited Warranty is available on all MCA Tiles.

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.
- C. 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: MCA Clay Roof Tile, which is located at: 1985 Sampson Ave.; Corona, CA 92879; Toll Free Tel: 800-736-6221; Tel: 951-736-9590 ; Fax: 951-736-6052; Email: request info (sales@mca-tile.com); Web: www.mca-tile.com
- B. Substitutions: As approved.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.2 CLAY ROOF TILE

- A. Clay Tile General:
1. Made with up to 59 percent recycled raw materials and are 100 percent recyclable.
 2. Class A fire rated.
 3. Cool Roof and Energy Star rated.
- B. One Piece "S" Mission Roofing Tile: Type I, ASTM C 1167 Grade 1 and ASTM E 108 (UL790), Class A.
1. Compiles with Uniform Evaluation Report IPAPMO ES 0356 (covers City of Los Angeles and is in lieu of ICC-ES), Florida Building Code - FL1109-R, Miami-Dade County Approval 12-0320.32 and TDI Approval RC-21.

2. Size: 19 inches by 14-1/2 inches (463 mm by 368 mm)
3. Exposed Size: 16 inches by 12 inches (406 mm by 305 mm) O.C.
4. Weight per square: 788 lbs (38 kg/m2).
5. Weight per piece: 10.5 lbs (4.8 kg).
6. Pieces per square: 75 pcs (pieces per M2: 8.073 pcs).
7. Color: Color to match existing unless otherwise determined by owner.

2.3 ACCESSORY MATERIALS

- A. Substrate Materials:
1. Nailer Boards: Decay resistant, nominal 2 inches (50 mm) by sufficient height to satisfy project conditions, not bowed or twisted.
 - B. Underlayment:
 1. No. 30 asphalt felt or equivalent complying with ASTM D 226, Type I.
 - C. Fasteners: Sized to penetrate deck minimum 3/4 inch (19 mm) or through thickness of deck or batten.
 1. Minimum No. 11 gage, 5/16 inch-diameter-head (7.9 mm), corrosion-resistant nails.
 - D. Rake and Gable End:
 1. Prefabricated Rake and Ridge tile. Choose to match tile profile and color.
- ** NOTE TO SPECIFIER ** Select the required flashing material from the following paragraphs and delete those not required. Coordinate with flashing specified in other sections of the specification.

- E. Flashings:
1. Ribbed Valley Metal, minimum 0.016-inch (26 gauge galvanized sheet) corrosion resistant metal flashing.
 2. Other Flashing: At the juncture of the roof and vertical surfaces, flashing and counter-flashing shall be provided per roofing manufacturer's instructions, and when the flashing and counterflashing are of metal, they shall be not less than 0.019-inch (No. 26 galvanized sheet gage) corrosion-resistant metal.
 3. Plumbing Stacks and Other Pipes Penetrating Roofs as recommended by the manufacturer.
- NOTE TO SPECIFIER: Select adhesive if required, delete if not required.

- F. Mortar materials, plastic cement and sealant: Code approved adhesive suitable to bond to clay roof tile.
1. Cement Mortar: ASTM C 270, Type M
 2. Sand: ASTM C 144.
 3. Portland cement: ASTM C 150, Type I.
 4. Plastic cement: ASTM D 2822.
 5. Silicone sealant: ASTM D 1002.
- G. Snow Retention: Provide as required per local code and snow loads for metal and concrete roofing decks.

PART 3 EXECUTION

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

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result under the project conditions.
- 3.3 INSTALLATION - GENERAL
- A. Install in accordance with manufacturer's instructions and the following:
1. IPAPMO UES Evaluation Report 0356 - Clay Roof Tiles.
 2. IPAPMO UES ER-2015 - TRI Concrete and Clay Roof Tile Installation Manual (TRI Installation Manual).
 3. TRI Cold & Snow Concrete and Clay Tile Design Criteria for Cold and Snow Regions.
- 3.4 INSTALLATION
- A. Install in accordance with manufacturer's instructions and the applicable building code.
1. Deck surfaces must be clean and dry prior to installation of underlayment. Foreign particles must be cleaned from all interlocking areas to ensure proper seating and to prevent water damming.
 2. Fascia boards or cant strips must be installed to properly elevate the first tile course.

- B. On vertical applications, and on extremely steep pitches where wind currents may cause lift:
1. Set the butt of each tile in a bead of the specified plastic cement or sealant, or provide stainless steel "Wind Locks" as required.
 2. Use plastic cement and sealant carefully, and avoid smearing the exposed tile surface.
- NOTE TO SPECIFIER: Select paragraphs applicable to the tile specified under Products and delete the paragraphs that are not applicable.
3. Completely and neatly fill and point up all voids.
- C. Visual Inspection: Avoid color patterning, checkerboarding, spotting, and stairstepping:
1. After the installation of each 80 roofing tiles, make a visual inspection from the ground level and at a distance from the building of about 40 feet (12 m).
 2. Verify that tile courses follow straight and true lines;
 3. Verify that color range is smooth with no abrupt changes.
 4. Make necessary corrections before proceeding with further installation.

3.5 CLEANING

- A. Remove all broken tile, debris and excess tile from roof.
- B. Sweep cut tiles clean.
- 3.6 REPAIR AND REPLACEMENT
- A. Dam