



Terracotta Rainscreens Cladding System Specification



Issued 12/22/15



**ARGETON
Manufacturers Specification**

SECTION 07417-TERRACOTTA DOUBLE-SKIN CLADDING PANELS

PART 1-GENERAL

1.01 STIPULATION

The specifications sections “General Conditions”, “Special Requirements” and “General Requirements” form a part of this section by this reference thereto and shall have the same force and effect as if printed herewith in full.

1.02 SUMMARY

A. Section includes:

Exterior wall cladding system consisting of double-skin, terracotta panels installed with aluminum panel clips attached to aluminum vertical framing sections anchored to structural wall substrate and utilizing the rainscreen principle.

B. Related sections:

1. Section 03300 – Cast-in Place Concrete
2. Section 05400 – Load-Bearing Metal Studs
3. Section 07210 – Building Insulation: Batt thermal insulation installed behind terracotta cladding system
4. Section 07270 – Air Barriers: Sheet air infiltration barrier installed in cavity behind terracotta cladding panels
5. Section 07600 – Flashing and Sheet Metal: Sheet metal air cavity flashings, wall transitions, sills, trim, parapet cap and other sheet metal components
6. Section 06100 – Rough Carpentry
7. Section 09250 – Gypsum Board
8. Section 08925 – Glazed Aluminum Curtain Walls

1.03 SYSTEM DESCRIPTION

A. Terracotta Rainscreen Assembly: Terracotta clay tile attached to an aluminum subgirt support system fixed to a backup wall system consisting of insulation as attached to air and vapor barrier membrane applied to light gauge metal framing or concrete masonry unit wall backup. Furnish fastening and flashing as required to complete rainscreen system.

B. Aluminum Subgirt System: Aluminum vertical hat or T channels section which include aluminum clips, stainless steel rivets, and accessories.

C. Aluminum Drainage Channels at Vertical Joints:

1. Maintain uniformed vertical joint dimension and alignment.
2. Secure tiles from rattling in the wind and plane out tiles flat façade.
3. Capture, collect and redirect incidental moisture out of the wall.

1.04 PERFORMANCE REQUIREMENTS**A. General: Design, fabricate and install components so that the completed exterior wall system will withstand live loads, the inward and outward pressures specified, and loads stipulated by the Building Code in effect for this Project.**

1. The system shall have a design load of positive and negative pressures up to 40 psf.
2. Deflections within the system are to be limited to L/360 or less when tested in accordance with positive and negative pressures and as required to prevent cracking or damage to tile facing.
3. The exterior wall system shall be designed to meet all specified performance requirements. Where performance requirements result in more than one load or pressure, the load or pressure which produces the greatest stress shall govern.
4. Live Load: Live load as indicated in drawings is force acting normal to wall at mid-height, cumulative to outward force.

B. Movement: Design, fabricate and install system to withstand building, seismic and thermal movements including deflections, temperature change without buckling, distortion, joint failure, glass breakage, or undue stress on system components, anchors, or permanent deformation of any kind.

1. Provide for thermal movement over an ambient temperature range of 120 deg. F and a surface temperature range of 180 deg. F.

1.05 SUBMITTALS**A. Product Data: For each type of product indicated include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of terracotta clay tile and accessory.****B. Shop Drawings: Show fabrication and installation layouts of terracotta clay tiles; details of edge conditions, joints, tile profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; conditions and details of adjacent construction, and special details. Distinguishing among factory, shop, and field assembled work.**

1. Shop drawings must include integration of the system with all other adjacent building systems. Shop drawings shall include dimensionally accurate depiction of all adjacent exterior wall building materials including but not limited to floor

structure, curtainwall and related components, CMU or cold formed steel framing backup, exterior sheathing, firesafing (if applicable), insulation, air/vapor barrier, terracotta or metal panel cladding, sills, aluminum trim, blocking, interior wall construction, expansion joints etc.

2. Accessories: Include details of the following items at a scale of not less than 1 ½ inches per 12 inches:
 - a. Flashing and trim
 - b. Anchorage systems

C. Samples for Initial Selection: For each type of terracotta tile indicated:

1. Include similar samples of trim and accessories involving color selection.

D. Samples for Verification: For each type of exposed finish required, prepare three samples of size indicated below:

1. Terracotta Clay Tiles As Specified.

E. Qualification Data: For installer and professional engineer.

F. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for each product.

G. Material test reports for terracotta clay tiles including the following:

1. Compressive strength
2. Absorption
3. Freeze/thaw testing
4. Efflorescence
5. Flexural strength

H. Maintenance Data: For terracotta tiles to include in maintenance manuals.

I. Warranties: Sample of warranties

1. Material: 10 years – Terracotta Rainscreen System Supplier
2. Workmanship: 2 years - Installer

1.06 QUALITY ASSURANCE

A. Performance Test Standards: Provide exterior wall system which has been tested and certified by manufacturer to provide specified resistance to air and water infiltration when installed as indicated and when tested in accordance with AAMA 501, Methods of Test for Metal Walls.

- B. Field Test: Provide suitable small sample area for field testing by owner/testing consultant for resistance to air infiltration and water penetration of a small representative sampling of installed clay tile cladding assemblies and adjacent perimeter construction per requirements of AAMA 501.901 Test Method B.
1. Resistance to air infiltration using static air pressure difference: ASTM E 783-Field Measurement of Air Leakage through Installed Exterior Windows and Doors.
 2. Resistance to water penetration using static air pressure difference: ASTM E 1105-Field Determination of Water Penetration and Installed Exterior Windows, Curtain Walls and Doors by Uniform and Cyclical Static Air Pressure Difference.
- C. Manufacturer's Qualifications: Provide exterior wall system manufactured by a firm experienced in manufacturing systems that are similar to those indicated for this project and have a record of successful in-service performance.
- D. Qualifications and Installers:
1. The cladding installer shall be approved by the manufacturer of the cladding.
 2. The installer will have experience with 50,000 Sq. Ft. of rainscreen installation and 20,000 Sq. Ft. of terracotta rainscreen installation.
 3. For actual installation of cladding, use only competent and skilled mechanics completely familiar with the products and the manufacturer's currently recommended methods of installation.
- E. Source Responsibility:
1. The rainscreen system, including the tiles and the hanging system will be supplied by the same company.
 2. The entire terracotta rainscreen system, with all its components, will have been used for at least 10 years and in more than 30 projects.
- F. Mock-Up:
1. Provide a completely assembled, typical wall area installed with all related accessories, in composite configurations designed to fulfill the performance criteria, and representative of the design as shown on the drawings.
 2. Extent of mock-up shall be the same as that which will be provided in the final work.
 3. Mock-up shall be installed simulating actual construction conditions, including actual structural supports and connections. Using methods and techniques and tools proposed for final installation.
 4. Personnel assembling mock-up shall be the same personnel that will perform the actual final units or work at the project site.
 5. Mock-up shall be subjected to testing criteria specified for final installation.

1.07 PRE-CONSTRUCTION

- A. Pre-Installation Conference: Prior to start of cladding work, and at General Contractor's direction, meet at site and review installation procedures and coordinate with other work.
 - 1. Meeting shall include General Contractor, Architect, material manufacturers and installers whose work must be coordinated with cladding work.
- B. Installer shall examine parts of supporting structure and conditions under which cladding work is installed.
- C. Notify Contractor in writing of conditions detrimental to proper and timely completion of work
- D. Do not proceed until unsatisfactory conditions have been corrected in manner acceptable to installer.

1.08 DELIVERY, STORAGE AND HANDLING

- A. Deliver components, terracotta tiles, and other manufactured items so as not to be damaged or deformed. Package terracotta tile for protection during transportation and handling.
- B. Unload, store, and erect aluminum subgirt framing system and terracotta tiles in a manner to prevent bending, warping, twisting and surface damage.
- C. Stack terracotta tiles horizontally on platforms or pallets covered with suitable weather tight and ventilated covering. Store tiles to ensure dryness with positive slope for drainage of water. Do not store tiles in contact with other materials that might cause staining, cracking or other surface damage. Tiles should be protected from prolonged exposure to sun and elements.

1.09 WARRANTY

- A. Ten years from date of Substantial Completion.
- B. Two years workmanship from installer.

PART 2 – MATERIALS

2.01 MANUFACTURERS

- A. Basis of Design: Subject to compliance with requirements, provide products by Telling Architectural Systems; or comparable products by one of the following: Argeton.
Argeton Terracotta Rainscreen Cladding System
Telling Architectural Systems Facade Systems Inc
125 High Rock Ave 1300 Bay Street, Suite 400
Saratoga Springs, NY 12866 Toronto, On M5R 2C4
 Blair Davies (647)923-8967
- B. Product Substitution Procedures: Other manufacturers may be submitted for review 10 days prior to bid and shall show evidence of compliance with specification including experience and quality requirements. Architect reserves right to reject substitution request based on available sizes, color or surface finish even though fabrication, materials, and performance are equivalent.

2.02 TERRACOTTA PANEL CLADDING SYSTEM

- A. Type: Exterior wall cladding system utilizing the rainscreen principle consisting of double-skin, terracotta panels hung on vertical extruded aluminum framing sections.
- B. Cladding support: Terracotta panels installed with aluminum clips attached to aluminum vertical framing sections anchored with brackets to wall substrate.

2.03 TERRACOTTA PANELS

- A. Exterior Rainscreen Assembly complying with the following requirements:
 - 1. Terracotta clay tiles comply with ASTM C 67:
 - a. Back ventilated tiles, with self-draining open joint system. Double leaf construction and labyrinth top and bottom returns to prevent easy water excess behind tiles.
 - B. Material: Kiln fired double skin clay tiles.
 - 1. Overall panel size/dimension
 - a. Thickness: 30 mm minimum
 - b. Height and Length: As shown on drawings
 - 2. Surface Texture: as selected from manufacturer’s full range of textures and finishes.
 - a. [Flat, Terzo, Lineo, Raked, Custom]
 - 3. Color: as selected from manufacturers full range of colors
 - a. Englobe custom color options from sample.

2.04 SUPPORT COMPONENTS AND ACCESSORIES

- A. Panel clips: Formed from extruded aluminum with pre-drilled holes along top for rivet attachment to vertical section sections.
- B. CMU substrate – Vertical T sections with L brackets: Extruded aluminum members anchored to structurally sound CMU substrate with brackets and designed to support terracotta panels with aluminum clips riveted into pre-punched holes in T-sections.
- C. Light Gauge Steel Framing substrate: Vertical hat channels, extruded aluminum members anchored to structurally sound substrate or extruded aluminum horizontal Z channels. Vertical hat channels are designed to support terracotta panels with aluminum clips riveted into pre-drilled HAT channels.
- D. Drainage Profile Aluminum, color coated, joint profile projecting between two abutting cladding panels and behind tiles. Joint profiles conceal opening in ends of cladding panels.
- E. Horizontal Z-shaped aluminum profile attaches to metal studs sections. Channel depths to accommodate insulation thicknesses.
 - 1. Fasteners: Stainless Steel fasteners and anchors of type, size and spacing required for type of substrate and project conditions.
 - 2. Sheet metal: Provide sheet metal flashings and trim as required for cladding system in accordance with Section 07620 – Sheet Metal Flashing and Trim.

2.05 PRECONSTRUCTION TESTING OF TERRACOTTA TILES

- A. Absorption: Testing according to ASTM C 67 using 24 hour submersion and 5 hours boiling (separate sets of specimens, minimum 5 specimens each). Absorption by submersion shall not exceed 5 percent average, 7 percent individual specimen. Absorption by boiling shall not exceed: 8 percent average, 9 percent individual specimen.
- B. Freezing and Thawing: Test according to ASTM C 67 for 25 cycles minimum 5 specimens. No specimen shall lose more than 3 percent of its original dry weight. No specimen shall crack, crumble or fracture. Specimens shall conform to approved color range samples before and after testing.
- C. Compressive Strength ASTM C67: Minimum 1100 PSI.
- D. Flexural Strength: Test according to modified ASTM C880-09 (minimum 5 specimens). Supports shall be actual hardware used for this project. Apply load at mid-span between supports. Report shall include breaking load, calculated section modulus at mid-span, and calculated break stress with minimum PSI of 2100.
- E. Efflorescence ASTM C 67: Not efflorescence.

PART 3 – EXECUTION**3.01 INSPECTION**

- A. Examine walls to receive terracotta cladding. Ensure substrate is structurally sound, clean and free of contaminants which inhibit bond of air barrier.
 - 1. Maximum substrate deflection: L/360
 - 2. Maximum substrate surface variation [1/8 inch 10 feet] [3 mm in 3 m]
 - 3. Stud construction with gypsum exterior sheathing: Verify stud framing is adequately braced without deflection and sheathing is properly secured with edges over firm bearing. Ensure proper framing and supports are provided and located for secure attachment of terracotta support rails.
- B. Do not proceed with terracotta cladding installation until deficiencies have been addressed.

3.02 PREPARATION

- A. Attach horizontal aluminum Z channels, spacing not to exceed 48” OC to metal studs.
- B. Flashings: Install sheet metal flashings, pressure compartment dividers and trim as specified in Section 07620 – Sheet Metal Flashing and Trim and as positioned and detailed on drawings and approved shop drawings. Ensure flashings at bottom of wall and pressure compartments properly drain water from air cavity to exterior through weep holes. Turn up flashings [4 inches] [102 mm] minimum and seal to substrate. Lap flashing end joints [6 inches] [152 mm] and seal watertight.

3.03 CLADDING INSTALLATION

- A. Install terracotta cladding in accordance with manufacturer’s instructions and approved shop drawings.
- B. Establish level lines for panel coursing. Accurately determine and mark locations of vertical framing members.
 - 1. Framing sections: Attach vertical aluminum hat channel sections with engineered tek screws to horizontal Z sections.
 - 2. Install tile clips with stainless steel coated aluminum rivets. Adjust connection to ensure framing sections are plumb.
- C. Terracotta panels: Starting at bottom of wall, hang panels with aluminum clips riveted to framing sections. Clips shall engage and support upper cladding panel and hook and retain lower cladding panel. Ensure clips are accurately positioned such that cladding panels are level.

1. Layout work so as to avoid or minimize cuts. Site cut terracotta panels using power, wet masonry saw with diamond type blade. Prevent broken corners, edges and chips.
2. Install panels with open vertical joints [3/8 inch] [9.525 mm].
3. Tolerances: Shim and align terracotta panels to provide these tolerances:
 - a. Deviations from level or plumb alignment: [1/4 inch in 20 feet] [6 mm in 6 m] maximum, non-accumulative.
 - b. Offset of adjoining faces and alignment of matching profiles” [1/8 inch] [3 mm] maximum.
4. Install drainage channels at vertical panel joints.

3.04 CLEANING AND PROTECTION

- A. Remove and replace broken, chipped, stained or otherwise damaged panels.
- B. Immediately after installing, wash cladding with clean water and stiff bristle fiber brushes. Do not use wire brushes, metallic tools or abrasives for cleaning.
- C. Protect cladding from roof run-off, splashed water, mud, sealants, bitumen and other contaminants from remaining construction activities.
- D. Without damaging completed work, provide protective boards at exposed external corners, which may be damaged by construction activities.

END OF SECTION