

SECTION 074229

TERRA COTTA WALL PANELS AND BAGUETTES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Terra cotta rainscreen wall panels.
 - 2. Terra cotta wall cladding attachment.
 - 3. Terra cotta baguettes and attachments.
 - 4. Mechanical anchors and fasteners utilized for the installation of the system.
- B. Related Requirements:
 - 1. Section 051213 "Architecturally Exposed Structural Steel."
 - 2. Section 054000 "Cold-formed Metal Framing."
 - 3. Section 061600 "Sheathing."
 - 4. Section 072100 "Building Insulation."
 - 5. Section 076200 "Sheet Metal Flashing and Trim."

1.3 PREINSTALLATION CONFERENCE

- A. Preinstallation conference: Conduct conference at Project site.
 - 1. Meet with Owner, Architect, Owner's insurer if applicable, terra cotta panel rainscreen wall system Installer, structural-support Installer, and installers whose work interfaces with or affects terra cotta wall panel rainscreen wall system.
 - 2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 3. Review methods and procedures related to terra cotta panel rainscreen wall system installation, including manufacturer's written instructions.
 - 4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
 - 5. Review flashings, special details, penetrations, openings, and condition of other construction that affect the terra cotta panel rainscreen wall system.
 - 6. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
 - 7. Review temporary protection requirements for the terra cotta panel rainscreen wall system, during and after installation.

8. Review procedures for replacement of terra cotta panels damaged after installation.
9. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.
- B. Shop Drawings:
 1. Include fabrication and installation layouts of terra cotta panel rainscreen wall system components; details of edge conditions, joints, panel profiles, corners, anchorages, and attachment components; and special and unique details.
 2. Accessories: Include details of the flashing, trim and anchorage at a scale of not less than 1-1/2 inches per 12 inches. Indicate metal trims, flashings, closures, and accessories that are furnished by other trades to provide dimensional requirements that may affect the terra cotta panel rainscreen system.
- C. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.
 1. Terra Cotta Panels: Actual terra cotta panel in size and color specified for the project; unless the panel is custom made for the project, which then requires submission of terra cotta panel for size specified and terra cotta color specified produced in the same fashion as the terra cotta panel. Include installation support framing, fasteners, and other metal accessories furnished by the terra cotta manufacturer for the terra cotta panel rainscreen wall system.
- D. LEED Submittals:
 1. Complete the LEED Material Buyout Form (MBoF) with all materials provided to the project. A complete submittal includes providing all material costs in the MBoF and all of the supporting documentation for the following credits:
 - a. MRc3 - Sourcing of Raw Materials - Recycled Content: Provide product data for pre- and post- consumer recycled content.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For each product, tests performed by a qualified testing agency.
- C. Field quality-control reports.
- D. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For terra cotta panels to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by the manufacturer.
- B. Fire-Test-Response Characteristics: Provide terra cotta panels and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test methodology defined by UL or another testing and inspections agency acceptable to Authorities Having Jurisdiction.
 - 1. Exterior Fire-Test Exposure: Class A.
- C. Source Limitations: All primary products specified in this section will be supplied by a single manufacturer, experienced in designing and manufacturing terra cotta panel rainscreen wall systems.
- D. Mockups: Build mockups as detailed and shown in the Contract Documents to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
 - 1. Build mockup of typical terra cotta panel rainscreen wall system, including, supports, attachments, and accessories.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, terra cotta panels, and other manufactured items so as not to be damaged or deformed. Package metal terra cotta panels for protection during transportation and handling.
- B. Unload, store, and erect terra cotta panel rainscreen wall system in a manner to prevent breakage, chipping, and surface damage.
- C. Store products in manufacturer's unopened packaging, covered with suitable weathertight and ventilated covering, until ready for installation. Do not store terra cotta panel rainscreen wall system components in contact with other materials that might cause staining, chipping, breakage, or other surface damage.

1.9 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of terra cotta panel rainscreen wall system to be performed according to manufacturers' written instructions and warranty requirements.

1.10 COORDINATION

- A. Coordinate terra cotta panel rainscreen wall system installation with moisture drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a ventilated, secure, and noncorrosive installation while maintaining the continuity of the weather barrier.

1.11 WARRANTY

- A. Special Material Warranty: Manufacturer's standard form in which manufacturer agrees to furnish components of the terra cotta panel rainscreen wall system that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including aspects of terra cotta performance defined in ASTM C67.
 - b. Deterioration of terra cotta and other materials beyond normal weathering.
- B. Special Project Warranty: Installer's Warranty, covering Work of this Section, in which the Installer agrees to repair or replace components of the terra cotta rainscreen cladding system that fails in materials or workmanship within the following warranty period:
 - 1. Warranty Period: 5 years from the date of Substantial Completion.

1.12 EXTRA MATERIALS

- A. Furnish extra materials that match the products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Terra cotta panels: For each surface texture and/or color, the lesser quantity of 60 or 2% of the installed quantity. The panels shall be provided in the longest length dimension installed on the project.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide terra cotta panel rainscreen wall system capable of withstanding the effects of the following loads, based on testing according to ASTM E330:
 - 1. Wind Loads: As indicated on Drawings.
 - 2. Other Design Loads: As indicated on Drawings.
 - 3. Loads stipulated by the Authorities and Building Codes having Jurisdiction.
 - 4. Deflection Limits: For wind loads, no greater than 1/600 of the span.
- B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 100 deg F, ambient; 180 deg F, material surfaces.

2.2 TERRACOTTA PANEL RAINSCREEN WALL SYSTEM PANELS

- A. Terracotta Panel System: Provide factory-extruded double wall/hollow core terracotta panels formed into profile for installation method indicated. Include attachment assembly components and accessories required.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include the following:
 - a. **Basis-of-Design: NBK, as approved by Architect Terreal North America LLC, A Subsidiary of Ludowici Roof Tile, (telephone: 888-582-9052) (Addendum-03)**
 - b. Boston Valley Terra Cotta USA, as approved by Architect.
 - c. **NBK, as approved by Architect Agrob Buchtal "Kera Twin" system. (Addendum-03)**
- B. Basis-of Design Terracotta Wall Panels: Terreal Piterak XS terracotta.
1. Panel Thickness: 0.708 inch. (18mm)
 2. Panel Vertical Module Dimension: As indicated on Drawings.
 3. Panel Horizontal Module Dimension: As indicated on Drawings.
 4. Panel Weight: 6.5 pounds per square foot.
 5. Vertical Joint Type: Open joint without metal trims or gaskets.
 6. Horizontal Joint Type: Overlapping, ship-lap type.
 7. Panel Configuration: Double wall with hollow cores per manufacturer's standard extruding process.
 8. Panel End Configuration:
 - a. Field of Wall: Factory square cut panel ends
 - b. Building Corners: Factory quirk miter cut with a 5mm square return prior to the start of miter cut on panel end. Factory quirk miter cut panels shall be furnished 3 inches longer than shop drawing identified lengths to allow for installation maintaining a consistent width reveal at the quirk miter – panels shall be field square cut on end opposite quirk miter to allow for consistent review widths during installation.
 9. Finish Panel Production Tolerances:
 - a. Squareness: +/- 3mm.
 - b. Straightness of Panel's Top Edge: Color: +/- 3mm.
 - c. Flatness of Panel Height: +/- 2mm.
 - d. Flatness of Panel Length: +/- 3mm.
 10. Color: Custom as selected by Architect.
 11. Exterior Finish/Texture: As selected by Architect.
- C. Attachment Assembly: Rainscreen principle system.

2.3 TERRACOTTA WALL PANEL ATTACHMENT COMPONENTS

- A. General: All metal supporting members shall be fabricated from 304 Stainless Steel or 6063 T6 Aluminum for resistance to corrosion.
- B. Horizontal Support Profile:
1. Material: 304 Stainless Steel, 6063 T5 Aluminum, or 6063 T6 Aluminum

2. Thickness: As required for structural performance of the terracotta panel rainscreen wall system, 0.050 minimum.
3. Finish: Manufacturer's standard.
4. Configuration: Zee or Hat Channel shape
5. Member Depth: As indicated on Drawings
6. Member Vertical Spacing: As required for structural performance of the terracotta panel rainscreen wall system.

C. Vertical Aluminum Support Profile:

1. Material: 6063 T5 Aluminum or 6063 T6 Aluminum.
2. Thickness: 0.125 inch minimum.
3. Finish: Painted flat black with manufacturer's standard paint finish.
4. Configuration: Hat Channel shape with registration extensions on open face.
5. Member Depth: As indicated on Drawings
6. Member Horizontal Spacing: At every vertical open terracotta panel joint and at manufacturer's standard distance from openings in the terracotta panel rainscreen wall system.

D. Terracotta Panel Installation Clips:

1. Material: 304, 1/8 Hard (Fb = 100,000 psi; Fy = 55,000 psi; Eo = 27,000,000 psi) ASTM 666 Stainless Steel.
2. Thickness: 0.057 inch.
3. Finish: Manufacturer's standard, unless clip is exposed to view.
4. Configuration: Manufacturer's standard with preinstalled holes for clip attachment to supporting member.
5. Depth: Manufacturer's standard.
6. Spacing: Manufacturer's standard required for structural performance of the terracotta panel rainscreen wall system.
7. Terracotta Panel Attachment Design: Clips shall be manufactured for "friction fit" to terracotta panel to prevent terracotta panels from freely moving after clip installation.

E. Fasteners:

1. Material: 304 Stainless Steel.
2. Type: Hex head, self-drilling.
3. Size: Manufacturer's standard required for structural performance of the terracotta panel rainscreen wall system.

2.4 TERRA COTTA BAGUETTES

A. General: 2 in. by 2 in. baguettes.

1. Basis-of-Design: ~~NBK Terreal North America~~ or the following equal alternates:
(Addendum-03)
 - a. ~~NBK.~~
 - a. **Agrob Buchtal "Kera Twin" system. (Addendum-03)**
 - b. Cladding Corps.
 - c. Or equal.

2.5 MISCELLANEOUS MATERIALS

- A. Flashing and Trim: Shall be aluminum material complying with the performance criteria specified and designed to allow adjustments of the system prior to being permanently installed. These items shall be shop fabricated.

2.6 FABRICATION

- A. General: Fabricate and finish terra cotta panels and accessories at the factory, by manufacturer's standard procedures and processes. Comply with indicated profiles and with dimensions and performance requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. It is the responsibility of the Installation Contractor to examine the structure scheduled to receive the terra cotta panel rainscreen wall system and verify that it is capable of supporting the loads from the Work specified in this section. Note deficiencies immediately and do not proceed with erection of terra cotta panel rainscreen wall system until such deficiencies have been corrected or addressed by the Architect.
- B. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances for the terra cotta material panel supports, and other conditions affecting performance of the Work.
 - 1. Examine wall framing to verify that girts, angles, channels, and other structural panel support members and anchorage have been installed within alignment tolerances required by terra cotta wall panel manufacturer's written installation instructions.
 - 2. Examine wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by terra cotta wall panel manufacturer's written installation instructions.
 - a. Verify that air- and/or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration prior to the commencement of work.
- C. Examine roughing-in for components and assemblies penetrating terra cotta panels to verify actual locations of penetrations relative to terra cotta panel rainscreen wall system support framing and joints before commencement of work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Coordinate terra cotta panel rainscreen wall system with rain drainage work; flashing; trim; and construction of soffits, roofing, parapets, walls, and other adjoining work to provide a secure and noncorrosive installation.

3.3 FRAMING ERECTION TOLERANCES

- A. Shim and align metal support framing to allow the plane of the framing member, at the terra cotta panel attachment, to be plumb, true, untwisted, and in assembly plane.
- B. Installation Tolerances: Measurements are taken on the final installed exposed surface to view. Installation tolerances shall be defined as:
 - 1. Plumb: 1/8" in 10 feet, 1/4" in 40 feet, non-cumulative
 - 2. Level: 1/8" in 20 feet, 1/4" in 40 feet, non-cumulative
 - 3. Alignment & Offsets: limit to 1/8"

3.4 TERRA COTTA PANEL INSTALLATION

- A. Rainscreen Systems: Install terra cotta cladding systems in relation to backup construction as indicated and as recommended by terra cotta manufacturer's written installation instructions applicable to the products and applications indicated unless more stringent requirements apply.
- B. Do not install damaged or broken terra cotta components.
- C. Installation: Attach terra cotta panels to supports at locations and spacings, with fasteners, recommended by the terra cotta panel manufacturer.
- D. Accessory Installation: Install accessories with positive anchorage to building and terra cotta panel support structure to provide to proper attachment per the terra cotta manufacturer's written installation instructions to resist positive and negative wind loading on the terra cotta rainscreen system.
- E. Coordinate installation with flashings, fenestration elements, and other components.

3.5 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect completed terra cotta panel rainscreen wall system installation, including accessories.
- B. Terra cotta panels will be considered defective if they do not pass test and inspections as defined in the manufacturer's written warrantee.
- C. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.
- D. Prepare test and inspection reports.

3.6 ADJUSTING AND CLEANING

- A. Remove and replace damaged or broken terra cotta panels and baguettes and terra cotta accessory items.

END OF SECTION