SECTION 04 25 00
TERRA COTTA

PART 1 – GENERAL

1.01 REFERENCE STANDARDS

A. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

B. ASTM B248 - Standard Specification for General Requirements for Wrought Copper and Copper-Alloy Plate, Sheet, Strip, and Rolled Bar; 2022.

C. ASTM C1126 - Standard Specification for Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation; 2019.

D. ASTM C1364 - Standard Specification for Architectural Cast Stone; 2025.

1.02 1.01 DESCRIPTION OF WORK

A. Provide terra cotta as indicated on the drawings
   1. Provide custom terra cotta spandrel at roof spandrel above top floor lintel.
   2. Detail, furnish, and install all support, anchorage, and connection devices and coordinate size and configuration with all other elements of the Work.
   3. The following requirements are applicable to all terra cotta pieces.

1.02 RELATED SECTIONS

A. Section 01 35 33 Site Safety and Security

B. Section 01 43 39 Sample Installations

C. Section 01 56 00 Dust Control

D. Section 02 41 19 Selective Demolition and Removals

E. Section 02 82 13 Asbestos Abatement

F. Section 03 74 00 Migrating Corrosion Inhibitor

G. Section 04 20 00 Unit Masonry and Unit Masonry Repair

H. Section 05 00 00 Structural Steel and Miscellaneous Metals

I. Section 05 73 00 Roof Railings

J. Section 07 27 20 Spray Applied Membrane

K. Section 07 52 00 Temporary Torch Applied Asphalt Roofing

L. Section 07 52 16 Hybrid Bituminous Membrane Roofing

M. Section 07 62 00 Sheet Metal Flashing and Trim

N. Section 07 92 00 Joint Sealants

1.03 REFERENCES AND INDUSTRY STANDARDS

A. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM).

1. A240 Standard Specification for Chromium and Chromium Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels and General Applications.
2. C67 Standard Methods of Sampling and Testing Brick and Structural Clay Tile.
3. C126 Standard Specification for Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units.
4. C144 Standard Specification for Aggregate for Masonry Mortar.

C150 STANDARD SPECIFICATION FOR PORTLAND CEMENT.

1. C207 Standard Specification for Hydrated Lime for Masonry Purposes.
2. C212 Standard Specification for Structural Facing Tile
3. C270 Standard Specification for Mortar for Unit Masonry.
4. C404 Standard Specification for Aggregates for Masonry Grout.

5. C476 Standard Specification for Grout for Reinforced and Nonreinforced Masonry.
    a. A.I.A. File No. 9 - Public Works Specifications, Ceramic Veneer.
        1) 1.04 DESIGN REQUIREMENTS:
        2) Terra cotta is to consist of hand-pressed, ram-pressed, or slip cast structural fired clay pieces attached to structural substrate to form a weather-tight ornamentation and/or structural element. All units are to have web and wall pieces to maintain unit integrity and allow for attachment to anchorage system. At holes and slots, maintain at least 1¼" wall thickness around the perforations. The use of extruded units is not permitted.
        3) Anchorage details are shown schematically. Contractor is to engage an Engineer licensed in the state of New York to verify anchorage and modify as required to the Building Code. The method of attachment to each type of substrate shall be designed to adequately resist wind pressure, uplift, and other loads for project location.
        4) Method of installation and expansion joints shall accommodate stresses caused by deflection, settlement, wind pressure, and temperature changes without failure of joints, undue stress on fasteners, or other detrimental effects.

D. UNITS THAT ARE CRACKED IN ANY WAY OR WHICH HAVE BEEN REPAIRED WILL NOT BE ACCEPTED.

1.05 SUBMITTALS

PRODUCT DATA

SUBMIT MANUFACTURER'S SPECIFICATIONS, INCLUDING INSTALLATION INSTRUCTIONS AND INSTRUCTIONS FOR HANDLING AND STORAGE OF TERRA COTTA.

B. SHOP DRAWINGS

1. Provide Shop, fabrication, and Drawings showing sections, dimensions, supports, anchors, reglets, flashing, installation details, etc. Shop drawings shall indicate all contiguous materials in contact with the terra cotta. Do not fabricate until shop drawings are approved.

C. SAMPLES

1. Submit 3 samples, size 12" x 12", showing color, surface finish and gloss of surface glaze.
2. Submit 3 samples of each type of anchoring devices.
3. Full size prototype with ceramic finish of each major terra cotta piece.

D. QUALITY CONTROL SUBMITTALS

1. Certificates
    a. Furnish notarized Building Department affidavit from masonry manufacturer (Form 10H) stating materials delivered to project comply with the Specification requirements.
    b. Furnish notarized Building Department affidavit from masonry supplier (Form 10J) stating materials delivered to project comply with the Specification requirements.
        1) Test Reports:
            (a) Submit test reports of terra cotta material characteristics as specified in Article 2.02 from regularly performed quality control testing. These tests will be acceptable as the means of approving the material for production.
    c. Submit test reports of terra cotta material characteristics as specified in Article 2.02 from production units made for this Project. The freeze-thaw test requirement on production units is waived if regularly performed quality control test results on units made from the same clay and glazes used on this project are no more than two years old. In lieu of the production run test, the quality control test results and a signed certification that the units are made from the same materials will be accepted.
        1) Contractor Qualifications: Provide proof of Manufacturer, Installer, Mechanics, and Engineer qualifications specified under "Quality Assurance".
2. Mock-up: Provide mock-ups as indicated under Quality Assurance.

1) Design Calculations: prepared, signed and sealed by a NYS licensed P.E.

3. Structural Safety Design Documents
   a. As part of its obligation under BC 1704.19 Structural Safety During Construction, the contractor shall employ a PE licensed to practice in the state of NY to provide signed and sealed calculations for the review of the Special Inspector and the Design Profession of Record. Such calculations shall be provided at the contractor's sole expense and shall comply with the requirements of BC 1704.19. 2. Calculations shall demonstrate that loading of the roof structure during all construction operations shall not exceed the lesser of 40 PSF or the allowable design live load of the roof.
      1) Sequence for railing and roof edge installation and protection
         (a) The contractor shall submit to the Authority a written Sequence for Railing and Roof Edge Installation and Protection. Means and methods are the responsibility of the contractor. The following is a sample provided for the contractor's use and information in preparation of this submittal.
      2) Set up protection.
      3) Protect roof edge with 20 mil plastic tarp- wrap over past window heads and extend four feet onto existing roof.
      4) Install plywood protection strip over tarp and roofing with outriggers as required.
      5) Maintain tarp protection.
      6) Abatement, see Sections 02 82 13 & 02 82 14.
      7) Abate roof edge and roof area to be removed under tarp
      8) Maintain tarp protection
      9) Removal of existing gravel stop/fascia
      10) Remove existing fencing
      11) Maintain tarp protection
      12) Removal of existing Roofing System (4' perimeter from roof edge)
      13) Cut and remove 4 ft of existing roofing, slag and gravel
      14) Maintain tarp protection
      15) Installation of temporary roofing system
      16) Install 4 ft of temporary roofing plus overlap existing by 1 feet
      17) Maintain tarp protection
      18) Install new railing
      19) Install new gravel stop/fascia
      20) Maintain tarp protection
      21) Removal of temporary roofing system
      22) Remove temporary roofing system
      23) Remove One foot additional old roofing where temporary has overlapped old
      24) Maintain tarp protection
      25) Installation of permanent roofing system
      26) Maintain tarp protection during installation
      27) Remove after installation and successful testing

1.06 QUALITY ASSURANCE

A. QUALIFICATIONS

1) Manufacturer: Company specializing in the manufacture of architectural terra cotta materials to be used in this Contract shall have a minimum of 10 years experience.
2) Installer: Company specializing in the installation of terra cotta shall have a minimum of five years' experience and shall have worked on at least two projects with similar quantities of materials used. Mechanics installing the work shall have a minimum of three years' experience installing terra cotta.

2. Engineer: Preparation of details of the terra-cotta anchorage system shall be under the direct supervision of and bear the seal of a Licensed Professional Engineer of the State of New York experienced in the design of such work.

B. LABORATORY TESTING

1. Test reports showing manufacturer's materials meet the specifications are to be by an independent testing laboratory.
2. n addition to regularly scheduled quality control testing performed on the manufacturer's clay source and glazing used, the Manufacturer shall have production run samples tested for the performance characteristics specified in Part 2 of this Section by a recognized testing laboratory, approved in advance by the Authority. The samples shall be selected at the manufacturer's plant by the laboratory from the production run of the terra cotta to be used in the Project. A certification report indicating compliance with Specifications requirements shall be submitted to the Authority's Representative before the terra cotta materials are installed in the Project.
3. The Authority reserves the right to have its own lab perform tests and shall be granted access to the manufacturer's plant to perform such tests if required.

C. REGULATORY REQUIREMENTS

1. Building Code: Work of this Section shall conform to all requirements of the NYC Building Code and all applicable regulations of governmental authorities having jurisdiction, including safety, health, noise, and anti-pollution regulations. Where more severe requirements than those contained in the Building Code are given in this Section, the requirements of this Section shall govern.
2. NYC Board of Standards and Appeals (BSA) approvals, NYC Materials and Equipment Acceptance (MEA) approvals or Office of Technical Certification and Research (OTCR)

D. CERTIFICATIONS

17.01 MASONRY CONSTRUCTION SHALL CONFORM TO THE MATERIAL ACCEPTANCE, CERTIFICATION AND INSPECTION REQUIREMENTS OF SECTION BC 1701 OF THE 2008 NYC BUILDING CODE.

1) Mock-Ups
2) Mock-ups, including on-the-ground samples, and in-place samples that may remain in place as part of the project, if approved, are to be provided in accordance with Section 01 43 39 "Sample Installations".

1.07 DELIVERY, STORAGE AND HANDLING

A. DELIVER MATERIALS TO PROJECT SITE IN UNDAMAGED CONDITION. STORE IN AN ENCLOSED LOCATION OR OFF THE GROUND WITH WATERPROOF COVERING AS NEEDED TO PROTECT ALL MATERIALS FROM MOISTURE, CONTAMINANTS, CORROSION, DELETERIOUS TEMPERATURE CHANGES, AND OTHER HARMFUL CONDITIONS.

1) The Contractor is to inspect the terra cotta units immediately upon arrival and reject any damaged items.

2. Keep terra cotta units in their storage containers until ready for installation. Protect units from the weather to prevent staining.

B. PACKAGED PRODUCTS

1. Deliver materials to the site in manufacturer's original, sealed containers. Do not deliver materials that have exceeded shelf life limitation set forth by the manufacturer. Material containers shall bear the manufacturer's label indicating manufacturer's name, trade name of product, lot number, shelf life of product, and mix ratio (if applicable).
    (a) Comply with manufacturer's printed instructions for storing and protecting materials.

1.08 ENVIRONMENTAL REQUIREMENTS

A. COLD WEATHER CONSTRUCTION REQUIREMENTS

22.01 SALT OR OTHER CHEMICALS FOR LOWERING THE FREEZING TEMPERATURE OF THE MORTAR SHALL NOT BE USED.

22.02 MASONRY UNITS, MORTAR, AND GROUT SHALL BE PRECONDITIONED AND MASONRY PROTECTED FOR THE FOLLOWING COLD WEATHER CONDITIONS PER SECTION 2104.3 OF THE 2008 NYC BUILDING CODE:

1. Air temperature 40oF to 32oF:
    a. Heat mixing water or sand to minimum of 70oF and to maximum of 140oF.
    b. Mortar and grout temperature shall be between 40oF and 120oF at the time of mixing.
2. Air temperature 32oF to 25oF:
    a. Heat mixing water and sand to minimum of 70oF and to maximum of 140oF.
    b. Mortar and grout temperature shall be between 70oF and 120oF at the time of mixing. Grout temperature shall be maintained above 70oF at the time of grout placement.
    c. Provide heat source to maintain a minimum air temperature 32°F on each side of masonry construction.
3. Air temperature 25°F to 20°F:
    a. Heat mixing water and sand to minimum of 70oF and to maximum of 120oF.
    b. Provide heat source to maintain a minimum air temperature of 32° on each side of masonry construction.
    c. Provide wind breaks for wind in excess of 15 miles per hour.
    d. Keep temperature of masonry units a minimum of 40oF when laid and prior to grout placement.
4. Air temperature 20oF and Below:
    a. Heat mixing water and sand to a minimum of 70oF and to maximum of 120oF.
    b. Provide enclosures and heat source to maintain a minimum air temperature of 32oF on each side of masonry construction during construction.
    c. Keep temperature of masonry units a minimum of 40oF when laid and prior to grout placement.

B. COLD WEATHER PROTECTION REQUIREMENTS

1. Mean Daily Air Temperature of 40°F to 32°F:
    a. Protect masonry with weather resistive membrane from rain or snow for 24 hours.
2. Mean Daily Air Temperature of 32°F and Below:
    a. Protect masonry with weather resistive membrane from rain or snow for 24 hours.
    b. An air temperature of at least 32°F shall be maintained on each side of masonry for a period of at least 48 hours if Type M or S mortar is used and at least 72 hours if Type N or O mortar is used.

C. HOT WEATHER CONSTRUCTION

24.01 FOLLOW THE REQUIREMENTS OF BC 2104.4. WHEN TEMPERATURES EXCEED 100OF, OR 90OF WITH A WIND SPEED OF 8 MPH, PROVIDE NECESSARY CONDITIONS AND EQUIPMENT TO PRODUCE MORTAR HAVING A TEMPERATURE BELOW 120OF AND TO MAINTAIN THE MORTAR AND GROUT BELOW 120OF.

D. WETTING OF CLAY MASONRY UNITS

25.01 PROVIDE PREWETTING OF MASONRY FOR UNITS WITH INITIAL RATES OF ABSORPTION THAT REQUIRE THEIR WETTING BEFORE LAYING (21.42 GRAMS PER 30 SQUARE INCHES OR 0.025 OUNCE PSI). IN COLD WEATHER REQUIREMENTS, FOLLOW THE FOLLOWING REQUIREMENTS:

1. If surface temperatures are above 32oF, use water heated to about 70oF.
2. If surface temperatures are below 32oF, use water heated to about 120oF.

PART 2 - PRODUCTS

26.01 MANUFACTURERS

A. TERRA COTTA

1) Boston Valley Terra Cotta, Orchard Park, N.Y. 14127.

2. GLADDING, MCBEAN CO., LINCOLN, CA.

1. Shaws of Darwen, Waterside, Darwen, Lancashire BB3 3NX, England represented by Swanson Products, Princeton Junction, NJ

B. REINFORCEMENT AND TIES

1. Hohmann & Barnard, Inc., Hauppage, N.Y.

2. DUR-O-WALL, ARLINGTON HEIGHTS, IL.

C. ADHESIVE ANCHORS

1. HILTI

2. ITW/RAMSET

2.02 MATERIAL

A. TERRA COTTA

1. Process: Provide units manufactured only by the hand pressed, ram pressed, or slip cast process of forming.
2. Terra Cotta units shall be tested for listed characteristics and properties in compliance with the following ASTM procedures by an independent laboratory. Test values under criteria are based on an average of 10 samples:

TEST METHOD CRITERIA

COMPRESSIVE STRENGTH ASTM C67 8000 PSI

MINIMUM (NO INDIV. UNIT LESS THAN 5000 PSI)

ABSORPTION (5 HOUR BOIL) ASTM C67 11.9% MAX

ABSORPTION (24 HOUR SOAK) ASTM C67 7.9% MAX

SATURATION COEFFICIENT ASTM C67 0.69 MAX

FREEZE/THAW RESISTANCE ASTM C67 300 CYCLES WITHOUT DEGRADATION

(100 FOR PRO-DUCTION RUN)

GLAZE ABSORPTION ASTM C67 0.15% MAX

1. Terra Cotta units shall be tested for listed characteristics and properties in compliance with the following tests described in A.I.A. File No. 9 - Public Works Specifications for Ceramic Veneer procedures by an independent laboratory.
   a. Imperviousness: After test, no stain on or beneath surface, visible from a distance of 5 feet, except a slight discoloration of mottled finishes, as judged by the Project Architect/Engineer.
   b. Chemical Resistance: Glaze color shall not change under test.
   c. Crazing: Glaze shall not craze, spall, or crack when subjected to one cycle of autoclaving in the crazing test.
   d. Glaze Adhesion: After test, there shall be no clean separation of finish and body, and the finish shall have portions of the body adhering to it over the complete exposed surface.
2. Finish: Finish faces, exposed when in place, shall be free from chips, blisters, crawling, or other imperfections which, as judged by the Project Architect/Engineer, detract from the appearance of the finished work when viewed from a distance of 15 feet.
3. 5. Tolerances:
   a. Face Dimension Tolerances: To be as per Table II and III of ASTM C1126. Exposed face shall not vary from shop drawing dimensions by more than 1/8” plus or minus per linear foot.

b. Warpage Tolerances: The exposed face shall not vary from a true plane.

4. Defects: Units with cracks, spalls, or show evidence of being patched will not be accepted.

B. ANCHORS:

1. Strap Anchors for building with back-up wall or welding to existing steel: 1/8" thick minimum stainless steel, Type 304 conforming to ASTM A240. See Drawings for sizes and shapes.
2. Rod Anchors for attaching into masonry are to be Type 304 stainless steel adhesive type with screen:
   a. Hilti HY 200.
      (a) ITW/Ramset Epcon 6
3. Eye rods & pins: Type 304 stainless steel
4. Electrode for Welding to Stainless Steel to carbon steel: E309-16. Keep electrode dry. Oven dry electrode after exposing it for more than 6 hours.

C. PRE-COMPRESSIBLE FOAM, BACKER ROD AND SEALANT: SEE 07 92 00 JOINT SEALANTS.

D. WEEP TUBES

PREFORMED PLASTIC TUBE, 3/8" DIAMETER, AT APPROXIMATELY 2"-0" O.C.

2.03 NOT USED

2.04 FABRICATION

a. Not Used
b. B. Fabricate terra cotta pieces in accordance with approved shop and setting drawings.
c. C. Form clay pieces by hand pressing or ram pressing as determined by manufacturer as best method for shapes, sizes, and complexity of terra cotta. Hand finish pieces as required to produce high quality component.
d. D. Form reglets to receive flashings where reglets are required by the Drawings.
e. E. Walls of units shall not be less than 3" thick and partitions shall be of such thickness and so spaced as to perform their proper function with regard to form and structure. Necessary anchor holes and hand holes shall be provided in accordance with shop drawings so formed as to properly engage the structure. Beds shall generally not be less than 4" deep.
f. F. All joints shall be straight and true. All units shall be laid out in the factory to test it for uniformity of joint widths and overall dimensions. When necessary to secure accurate dimensions and uniform joint widths, the material shall be sized straight and true.
g. Dry pieces 3 to 14 days using regulated temperature and humidity.
h. Glaze of units shall not overlap edges to provide full bonding of mortar to the sides.
   1) SOURCE QUALITY CONTROL
      (a) Testing
         (1) Perform testing on production runs as specified under "Quality Assurance
   2) Preconstruction Testing
      (a) The Contractor shall assist the Authority's laboratory by any means necessary and shall provide the mock-up prior to beginning the installation work to allow for adjustments if necessary. Do not proceed with masonry work until the preconstruction testing is completed.
i. Inspection
   1) The Authority will assign a Special Inspector who will inspect the masonry construction under the requirements of Section BC 1704.5 of the 2008 NYC Building Code.

(a) The Authority reserves the right to perform plant inspections of the terra cotta manufacturing process. Afford the Authority's representatives access to the facility.

j. Contractor Plant Inspections
   (a) After fabrication and prior to packing for shipment, carefully inspect terra cotta pieces for chips, cracks, and other defects. Verify dimensions comply with shop drawing dimensions and finishes match approved samples.

k. Verify pieces meet fabrication tolerances:
   1) Shop assembly:
      (a) Layout terra cotta pieces in accordance with setting drawings. Verify that joints, when installed, will be straight, true, and uniform in width. Verify that decorative elements continuous from one piece to next are aligned.
      (b) Notify Architect 10 days prior to shop assembly.

2.06 ACCESSORIES

A. Anchors: Type and size indicated, fabricated from stainless steel complying with ASTM A 276 or ASTM A666/A666M, Type 304.

B. Dowels: Round stainless-steel bars complying with ASTM A 276, Type 304, 1/2-inch (12-mm) diameter.

C. Job-Mixed Detergent Solution: Solution of 1/2 cup (125 mL) of dry-measure tetrasodium polyphosphate and 1/2 cup (125 mL) of dry-measure laundry detergent dissolved in 1 gal. (4 L) of water.

D. Copper Fabric Flashing:
   1. Products of manufacturers listed below meeting indicated standards and specified manufacturer's product data characteristics, except as modified below, are acceptable for use, subject to compliance with specified requirements.
      1) York Manufacturing, Inc.; Multi-Flash 500
      2) STS Coatings, Inc.; Gorilla Flash CF
      3) Wire-Bond, Inc.; Copper Seal
         (a) Characteristics:
            (1) Type: Copper core with polymer fabric laminated to both copper faces with non-asphalt adhesive.
            (2) Copper type, ASTM B248-06: CDA Alloy 110, 060 temper.
            (3) Fabric: polymer fabric; laminated back and front face copper core with core weight manufacturer identified on product with color coded laminate or printed on the material.
            (4) Weight: 5 oz copper core, which is color coded with red polymer fabric
            (5) Size: Manufacturer's standard width rolls.
         (b) Polyether sealant:
            (1) York Manufacturing, Inc.; UniverSeal US-100
            (2) STS Coatings; GreatSeal LT-100
         (c) Corner and splice material: York Multi-Flash 500 or pre-manufactured corners.
         (d) Termination bar: stainless steel termination bar with sealant catch lip

E. Thermal Insulation:
      1) Mineral Wool Insulation Boards 24" x 48"
      2) Thickness: 2"
      3) Density 4.4lbs / ft3
      4) R-Value 2.2 /in.
      5) Manufacturer Roxul or Equal
      6) Product Curtain Rock 80
         (1) Attachment Stainless Steel Impaling Pins @ 16" o.c. horizontally and vertically.

F. Weather Cap:
    1) Weather Cap Joint Protection System at all necessary joints.
    2) Manufacturer, Weathercap, Inc., PO Box 1776, Slidell LA 70459-1776,
    3) Or Equal
    4) Style:Type A Flat Cap
    5) Size: A-4 for joints ½" or smaller.
    6) 2.07 MOLD MAKING PRODUCTS

G. Cleaner
    1) Soap and water. Water shall be clean and potable, free of oils, acids, alkalis, salts and organic matter.

H. Solution of hypo-chlorite.
    1) Product: prosoco sure-klean restoration cleaner or approved equal.

I. Brushes
    1) Fiber bristle, unless otherwise recommended by manufacturer of cleaner.

J. Remodelling material
    1) Alfa gypsum.

K. Repair glue
    1) Sikadur 32, or approved equal.

L. Resurfacer
    1) Polyvinyl acetate.

M. Mold rubber
    1) Polyurethane elastomer with high tear strength and good dimensional stability, or equal approved by owner. The mold must be able to reproduce the surface character of the terra cotta glaze and quality of detailing with great accuracy and set up free of surface air bubbles. It shall be free of plasticisers and shall not stain the white castings. Shrinkage factor shall be negligible. A separate additive shall not be used to change the durometer of the cured elastomer. This product shall not contain any 4, 4' - methylene bis (2-chloroaniline) (moca), or toluene diisocyanate (tdi).
    2) Product shall be as manufactured by Polytek Rubber Co., Lebanon, NJ, or approved equal.

N. Reinforcement mesh
    1) Cloth type, flexible fiberglass mesh.

O. Mother mold
    1) Rigid material, compatible with the mold rubber, sufficient to ensure that the form liner does not distort during storage and casting.

P. Blanket material
    1) Clay foamed plastic or similar material with no residual effect on the mother mold or mold rubber.

Q. Release agent
    1) No polyolefin or paraffinic or other petroleum based release agent shall be used.
    2) 2.08 SOURCE QUALITY CONTROL
    3) A. Employ an independent testing agency to sample and test APC units according to ASTM C1364-97 and the specific test methods specified herein.
    4) Include testing for:

2. Compressive Strength in accordance with Test Method ASTM C 1194. Test units from each 5003 feet of APC.
3. Absorption Cold Water in accordance with Test Method ASTM C 1195. Test units from each 5003 feet of APC.

4. Resistance to Freezing and Thawing in accordance with Test Method ASTM C 666. Test one unit from each APC mixture design.
    1) If test specimens fail, the specimens and the entire 5003 feet lot they came from shall be rejected and shall not be used in the project.
    2) The requirements for Source Quality Control testing, will be waived by the Authority if the casting plant is PCI Certified. See Art. 1.04,A.,3. for submittals.

PART 3 – EXECUTION – RESTORATION ASSEMBLY 8, RAILING AND ROOF EDGE RESTORATION INCLUDING NEW RELIEVING ANGLE AND SPANDREL PANEL

52.01 3.01 EXAMINATION

a. A. Examine all adjoining Work on which this Work is in anyway dependent for proper installation and workmanship. Report to the Authority any conditions that prevent the performance of this Work.

3.02 PREPARATION AND PROTECTION

A. PROTECTION

1) Protect adjacent surfaces not being restored. Protect sills, ledges, and projections from material droppings. Also, protect any painted surfaces that are not included in the Work from impact or damage.
2) Cover top of masonry wall/roof edge with waterproof plastic membrane at the end of the work period and at other times when Work needs to be protected from rain and other precipitation. Extend cover down sides as needed to thoroughly protect the Work.
3) During cold weather, do not use wet masonry units and frozen masonry units.
4) Do not use frozen materials or lay masonry on frozen materials; remove frozen materials from wall. Refer to Part 1 of this Section, "Environmental Requirements" for temperature restrictions.

B. PREPARATION

1) 1. Carefully remove existing units to be replaced, without causing damage to adjacent areas.

2. Carefully examine substrate construction before installing the work; correct as necessary to provide a plumb and true substrate to accommodate a proper installation of the terra cotta units.

3. SURFACE PREPARATION

(1) Prepare surfaces in compliance with terra cotta manufacturer’s recommendations.
(2) Remove dirt, dust, and foreign material from surfaces.

b. Where ties are to be welded to existing steel members, grind surface at weld area to shiny metal.

4. MATERIALS PREPARATION

a. Clean new units prior to setting, leaving edges and surfaces free of dirt and foreign material.
    (1) b. Soak units in a vat or box of clean water for one hour or more just prior to installation. Units shall be noticeably damp at the time of setting. Units shall be drained sufficiently to eliminate surface water.
b. Clean and degrease anchors prior to setting in epoxied holes.

2. At the beginning of each setting day, soak surfaces to receive terra cotta with clean water. Soak again with water not more than one (1) hour before setting of unit.

3.03 NOT USED

3.04 INSTALLATION

a. A. Install terra cotta pieces in accordance with manufacturers recommended instructions and approved shop drawings.

1) Field cutting: Where cutting is required to accommodate non-standard conditions, use power saw with water-cooled abrasive or diamond blade and rigid cutting templates. Do not reduce strength of terra cotta by cutting webs and partitions.

b. Set terra cotta plumb, true, and aligned. Maintain courses to uniform dimension.

c. Projecting terra cotta shall be aligned and uniform such that shadow cast is true line.

d. Anchor installation:

1) Attach new terra cotta pieces to substrate with metal anchors as detailed on approved shop drawings.

2) Securely attach anchors, hangers, bolts, clips, rods, and pins as required for securing terra cotta pieces. Ensure items are properly sized and accurately located.

2. Where indicated, weld stainless steel anchors to steel members using E309-16 electrodes

a. As work progresses, install built-in flashings and sheet metal as indicated on approved shop and setting drawings. Seal penetrations in flashing using mastic.

1) Provide weeps as indicated on approved shop and setting drawings. Keep weep holes free of sealant, mortar and grout.

K. NOT USED

a. Expansion joints: Provide expansion joints in linear terra cotta runs, at shelf supports, and other locations indicated on approved shop drawings to accommodate deflection, thermal changes, and settlement.

2. Unless noted otherwise, the maximum distance between expansion joints shall be 25 feet

3. Install filler sealant, bond breaker tape, and sealant as indicated on approved shop drawings.

3.05 FIELD QUALITY CONTROL

A. INSPECTION

1. 1. The installation of terra cotta is subject to Masonry Special Inspection.

1) The Special Inspector will make inspections and any testing deemed necessary. The Contractor shall pay for all tests if they verify improper work. Inspections are to include, but not be limited to, the following:

b. Proper installation of reinforcement of terra cotta to existing concrete spandrel.

(a) Proper installation of weeps, flashing, drip edges, etc.

2. The Architect or Engineer of Record will analyze any results not found to be in conformance with the applicable ASTM, industry practice, and the Specifications and determine if the masonry in question is to be removed and redone.

1) Cooperate with the Special Inspector and the Testing Laboratory performing Special Inspection testing.

b. Manufacturer's field representative shall inspect installed terra cotta, identify defects, and submit report to Architect. The Contractor shall correct deficiencies identified by manufacturer's field representative.

c. The Authority will inspect the units for acceptance. The Contractor shall remove units that are found to be cracked, chipped, or otherwise damaged and do not conform to specifications.

d. PROTECTION AND CLEANING

e. Protect face of adjacent walls and surfaces from water, sealant, mortar, and grout used for terra cotta installation.

1) Clean any soiled surfaces with detergent and clean water. Use fiber brushes and cloths. Do not use metallic tools or acids. Perform a mock-up of the cleaning procedure.

2) Protect terra cotta from subsequent construction operations. If damage occurs, remove and replace damaged components as required to provide terra cotta in original, undamaged condition.

3.07 INSULATION

1) After installation of relieving angle and copper fabric flashing, install 2” mineral wool boards on stainless steel impaling pins 16” o.c. horizontally and vertically, secured to concrete spandrel with stainless steel concrete screws. Seal all penetrations in copper fabric flashing with polyether sealant.

3.08 ROOFING

1) Install permanent roof in accordance with Section 07 52 16 “Hybrid Bituminous Membrane Roofing”.

3.09 ROOF RAILINGS

1) Install roof railings in accordance with Section 05 73 00 “Roof Railings”.

END OF SECTION 04 25 00