

SPECIFICATIONS FOR THE RESTORATION

*of the*

**SANFORD TRAIN DEPOT**

106 Charlotte Avenue

*for the*

**City of Sanford, North Carolina**

June 5, 2023



TRAUB ARCHITECTURE + DESIGN, Inc.

PRESERVATION - REUSE - PLANNING - REHABILITATION

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0100 GENERAL CONDITIONS

0110 American Institute of Architects Document A104-2017.

The AIA's General Conditions of the Contract for Construction are included in the Contract between the Owner and the Contractor.

0120 SUPPLEMENTAL GENERAL CONDITIONS

Preconstruction Meeting. Prior to construction the General Contractor shall arrange a meeting with his primary subcontractors, the owner's representative, and the architect. The General Contractor shall be prepared to discuss the schedule of construction, methods of construction, his subcontractors, safety, access to the building, and security.

0130 Shop drawings shall be submitted for the following work under this contract:

- 0600 All built-in Cabinets and Counters and Shelving
- 0900 Suspended Ceiling Systems and Grid Plan
- 1500 Fabrication Drawings for any Special Equipment
- 1600 Drawings for any Main Service Panels and Buss Arrangements, if other than as shown on the Contract Documents.

Shop drawings shall be to scale, and complete enough to show configuration of installation, details of attachment, and finish schedule. Any variations from the architect's plans shall be highlighted.

0140 Manufacturer's "cut sheets" shall be submitted for the following items:

- 0500 Light Gauge Framing Materials
- 0800 Doors
  - New Wood Doors
  - Door Hardware
- 1100 Kitchenette equipment and Appliances
- 1500 Mechanical
  - All HVAC equipment
  - Plumbing Fixtures
- 1600 Electrical
  - Interior and Exterior Light Fixtures
  - Panels and any switchgear

0150 Samples.

- 0500 Millwork. Full size samples of cabinet doors in finish specified.  
Full size mockup of wainscot and chair rail.

SECTION 0173 - CUTTING AND PATCHING

GENERAL

## RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

## SUMMARY

This Section includes procedural requirements for cutting and patching.

Related Sections include the following:

Division 1 Section "Selective Demolition" for demolition of selected portions of the building.

Divisions 2 through 16 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

## DEFINITIONS

**Cutting:** Removal of in-place construction necessary to permit installation or performance of other Work.

**Patching:** Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

## QUALITY ASSURANCE

This Article contains requirements that expand provisions contained in AIA Document A201.

**Structural Elements:** Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

**Operational Elements:** Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operating elements include the following:

Primary operational systems and equipment.

Communication systems.

Electrical wiring systems.

## MATERIALS

**In-Place Materials:** Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

## EXAMINATION

Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

**Compatibility:** Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.

Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

## PREPARATION

Temporary Support: Provide temporary support of Work to be cut.

Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption.

## PERFORMANCE

General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction.

In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.

Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.

Excavating and Backfilling: Comply with requirements in applicable Division 2 Sections where required by cutting and patching operations.

Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.

Proceed with patching after construction operations requiring cutting are complete.

Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.

Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

Clean piping, conduit, and similar features before applying paint or other finishing materials.

Restore damaged pipe covering to its original condition.

Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

## SECTION 01732 - SELECTIVE DEMOLITION

### GENERAL

### RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

### SUMMARY

This Section includes the following:

- Demolition and removal of selected portions of building or structure.
- Salvage of existing items to be reused or recycled.

Related Sections include the following:

- Division 1 Section "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for selective demolition operations.
- Division 1 Section "Cutting and Patching" for cutting and patching procedures.

### DEFINITIONS

Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

### MATERIALS OWNERSHIP

Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered during selective demolition remain Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.

### QUALITY ASSURANCE

Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

Standards: Comply with ANSI A10.6 and NFPA 241.

## PROJECT CONDITIONS

Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

Hazardous Materials: It is unknown whether hazardous materials will be encountered in the Work.

If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner.

Storage or sale of removed items or materials on-site is not permitted.

Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

Maintain fire-protection facilities in service during selective demolition operations.

## EXAMINATION

Verify that utilities have been disconnected and capped.

Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly notify the Architect of any conditions that may require adjustments to the plans.

## UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.

Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

## PREPARATION

Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

Comply with requirements for access and protection specified in Division 1 Section "Temporary Facilities and Controls."



Controls."

Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.

Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.

Cover and protect furniture, furnishings, and equipment that have not been removed.

Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Division 1 Section "Temporary Facilities and Controls."

## SELECTIVE DEMOLITION, GENERAL

General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.

Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.

Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.

Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.

Maintain adequate ventilation when using cutting torches.

Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.

Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.

Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

Dispose of demolished items and materials promptly.

Reuse of Building Elements: Project has been designed to result in end-of-Project rates for reuse of building elements as follows. Do not demolish building elements beyond what is indicated on Drawings without Architect's approval.

Removed and Salvaged Items:

Clean salvaged items.

Pack or crate items after cleaning. Identify contents of containers.

Store items in a secure area until delivery to Owner.

Transport items to Owner's storage area designated by Owner.

Protect items from damage during transport and storage.

Removed and Reinstalled Items:

Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.

Pack or crate items after cleaning and repairing. Identify contents of containers.

Protect items from damage during transport and storage.

Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.

Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.

## DISPOSAL OF DEMOLISHED MATERIALS

General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.

Do not allow demolished materials to accumulate on-site.

Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

Comply with requirements specified in Division 1 Section "Construction Waste Management."

Burning: Do not burn demolished materials.

Disposal: Transport demolished materials off Owner's property and legally dispose of them.

## CLEANING

Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

## END OF SECTION 01732

## 0180 - TEMPORARY FACILITIES AND CONTROLS

### GENERAL

### RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

## SUMMARY

This Section includes requirements for temporary facilities and controls, including temporary utilities, support facilities, and security and protection facilities.

Temporary utilities include, but are not limited to, the following:

- Sanitary facilities, including toilets, wash facilities, and drinking-water facilities.
- Electric power service.
- Lighting.

Support facilities include, but are not limited to, the following:

- Dewatering facilities and drains.
- Project identification and temporary signs.
- Field offices.
- Construction aids and miscellaneous services and facilities.
- Temporary Asphalt curb and flexible drain pipe.

Security and protection facilities include, but are not limited to, the following:

- Environmental protection.
- Stormwater control.
- Tree and plant protection.
- Site enclosure fence.
- Barricades, warning signs, and lights.
- Temporary enclosures.
- Temporary partitions.
- Fire protection.

## USE CHARGES

**General:** Cost or use charges for temporary facilities are not chargeable to Owner or Architect and shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, the following:

**Electric Power Service:** If the electrical contractor determines that temporary service will be required, he shall provide a temporary pole and power drop in the parking lot area for construction use.

**Sewer Service:** There is active sewer service in the building, and it may be used by all parties engaged in construction, at Project site.

**Water Service:** There is water service to the property and the contractors may use water from Owner's existing water system without metering and without payment of use charges.

## PROJECT CONDITIONS

**Temporary Utilities:** At earliest feasible time, when acceptable to Owner, change over from use of temporary service to use of permanent service.

**Temporary Use of Permanent Facilities:** Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its

use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

Conditions of Use: The following conditions apply to use of temporary services and facilities by all parties engaged in the Work:

Keep temporary services and facilities clean and neat.  
Relocate temporary services and facilities as required by progress of the Work.

Portable Chain-Link Fencing: Minimum 2-inch 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Provide [concrete] [galvanized steel] bases for supporting posts.

Tarpaulins: Fire-resistive labeled with flame-spread rating of 15 or less.

Water: Potable.

## EQUIPMENT

Fire Extinguishers: Hand carried, portable, UL rated. Provide class and extinguishing agent as indicated or a combination of extinguishers of NFPA-recommended classes for exposures.

Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

Self-Contained Toilet Units: Single-occupant units of chemical, aerated recirculation, or combustion type; vented; fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.

Power Distribution System Circuits: Where permitted and overhead and exposed for surveillance, wiring circuits, not exceeding 125-V ac, 20-A rating, and lighting circuits may be nonmetallic sheathed cable.

## INSTALLATION, GENERAL

Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

## TEMPORARY UTILITY INSTALLATION

General: Engage appropriate local utility company to install temporary service or connect to existing service. Where utility company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with utility company recommendations.

Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

Provide adequate capacity at each stage of construction. Before temporary utility is available, provide trucked-in services.

**Sewers and Drainage:** If sewers are available, provide temporary connections to remove effluent that can be discharged lawfully. If sewers are not available or cannot be used, provide drainage ditches, dry wells, stabilization ponds, and similar facilities. If neither sewers nor drainage facilities can be lawfully used for discharge of effluent, provide containers to remove and dispose of effluent off-site in a lawful manner.

Maintain temporary sewers and drainage facilities in a clean, sanitary condition. After heavy use, restore normal conditions promptly.

**Water Service:** Use of Owner's existing water service facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

Provide rubber hoses as necessary to serve Project site.

**Sanitary Facilities:** Provide temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities.

**Disposable Supplies:** Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Maintain adequate supply. Provide covered waste containers for disposal of used material.

**Toilets:** Install self-contained toilet units. Shield toilets to ensure privacy  
**Drinking-Water Facilities:** Provide bottled-water, drinking-water units.

**Heating and Cooling:** Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment from that specified that will not have a harmful effect on completed installations or elements being installed.

Maintain a minimum temperature of 50 deg in permanently enclosed portions of building for normal construction activities, and 65 deg F for finishing activities and areas where finished Work has been installed.

**Ventilation and Humidity Control:** Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment from that specified that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

**Electric Power Service:** Use of Owner's existing electric power service will be permitted, as long as equipment is maintained in a condition acceptable to Owner.

**Electric Distribution:** Provide receptacle outlets adequate for connection of power tools and equipment.

Provide waterproof connectors to connect separate lengths of electrical power cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.

Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations and traffic conditions.

Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course according to Division 2 Section "Hot-Mix Asphalt Paving."

Dewatering Facilities and Drains: Comply with requirements in applicable Division 2 Sections for temporary drainage and dewatering facilities and operations not directly associated with construction activities included in individual Sections. Where feasible, use same facilities. Maintain Project site, excavations, and construction free of water.

Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining property nor endanger permanent Work or temporary facilities.

Before connection and operation of permanent drainage piping system, provide temporary drainage where roofing or similar waterproof deck construction is completed.

Project Identification and Temporary Signs: Prepare Project identification and other signs in sizes indicated. Install signs where indicated to inform public and persons seeking entrance to Project. Do not permit installation of unauthorized signs.

Engage an experienced sign painter to apply graphics for Project identification signs. Comply with details indicated.

Construct signs of exterior-type Grade B-B high-density concrete form overlay plywood in sizes and thicknesses indicated. Support on posts or framing of preservative-treated wood or steel.

Paint sign panel and applied graphics with exterior-grade alkyd gloss enamel over exterior primer.

Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Containerize and clearly label hazardous, dangerous, or unsanitary waste materials separately from other waste. Comply with Division 1 Section "Execution Requirements" for progress cleaning requirements.

## SECURITY AND PROTECTION FACILITIES INSTALLATION

Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects. Avoid using tools and equipment that produce harmful noise. Restrict use of noisemaking tools and equipment to hours that will minimize complaints from persons or firms near Project site.

Stormwater Control: Provide earthen embankments and similar barriers in and around excavations and subgrade construction, sufficient to prevent flooding by runoff of stormwater from heavy rains.

Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from construction damage. Protect tree root systems from damage, flooding, and erosion.

Tree and Plant Protection: Comply with requirements in Division 2 Section "Tree Protection and Trimming."

Pest Control: Before deep foundation work has been completed, retain a local exterminator or pest-control company to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests. Engage this pest-control service to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Obtain extended warranty for Owner. Perform control operations lawfully, using environmentally safe materials.

Site Enclosure Fence: Before construction operations begin install portable chain-link enclosure fence with lockable entrance gates. Locate where indicated, or enclose entire Project site or portion determined sufficient to accommodate construction operations. Install in a manner that will prevent people, dogs, and other animals from easily entering site except by entrance gates.

Set fence posts in compacted mixture of gravel and earth.

Provide gates in sizes and at locations necessary to accommodate delivery vehicles and other construction operations.

Maintain security by limiting number of keys and restricting distribution to authorized personnel.

Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erecting structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and public of possible hazard. Where appropriate and needed, provide lighting, including flashing red or amber lights.

Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.

Provide fire extinguishers, installed on walls on mounting brackets, visible and accessible from space being served, with sign mounted above.

Locate fire extinguishers where convenient and effective for their intended purpose; provide not less than one extinguisher on each floor at or near each usable stairwell.

Store combustible materials in containers in fire-safe locations.

Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for firefighting. Prohibit smoking in hazardous fire-exposure areas.

Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition.

## OPERATION, TERMINATION, AND REMOVAL

Maintenance: Maintain facilities in good operating condition until removal. Protect from damage caused by freezing temperatures and similar elements.

Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

Materials and facilities that constitute temporary facilities are the property of Contractor. Owner reserves right to take possession of Project identification signs.

Remove temporary paving not intended for or acceptable for integration into permanent paving.

Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.

At Substantial Completion, clean and renovate permanent facilities used during construction period. Review final draft of this Section with Owner. Advise Owner that any exceptions to its provisions might translate into costs borne by Owner. END OF SECTION 0180



0300 CONCRETE

0301 General

These specifications shall be used in conjunction with the specifications on the structural drawings.

Exposed concrete shall be finished work.

Wherever concrete is poured against existing work, a latex bonding agent shall be used.

0320 Concrete

Concrete shall be proportioned, mixed, and placed in accordance with ACI 318, "Building Code Requirements for Reinforced Concrete", and ACI 301, "Specifications for Structural Concrete for Buildings". Any admixtures must be approved by the structural engineer.

Design mixes shall be based on a maximum slump of 4", except for masonry grout, which will be 8" slump or less. Masonry grout shall be a # 78 small stone coarse aggregate. Minimum 28-day compressive strength of concrete shall be 3000 or 4000 psi, depending on use

Visqueen shall be placed on all fresh concrete for a period of not less than 7 days from pouring. Do not cast concrete in water or on frozen ground.

A device for vibrating concrete shall be on the job site for all pours, and used wherever the possibility for voids exists.

All flat surfaces shall be true to within 1/8" in 10 feet, unless otherwise indicated on drawings for floor drains or pitching of walks.

0330 Reinforcing Steel

All detailing, fabrication and placing of reinforcing steel shall be in accordance with the latest "Manual of Standard Practice for Detailing Reinforced Concrete Structures", ACI 315.

Reinforcing bars shall be new billet steel conforming to ASTM A 615, grade 60. Clear concrete cover over bars shall be 3" for footings.

All slabs on grade shall be reinforced with 6 x 6 W 1.4 x 1.4 W.W.F. placed 1" below top of slab.

Lap all splices as specifically called for, but at least 36 bar diameters (12 " minimum) for tension or 24 bar diameters for compression, unless noted otherwise.

Provide dowels in wall footings equivalent in size and number to vertical steel extending 24 bar diameters into footing and 24 bar diameters into wall, unless noted otherwise.

0350 Cast Stone

This specification encompasses basic requirements for Cast Stone, a building stone manufactured from a mixture of Portland cement and carefully graded clean aggregates, to simulate natural stone. Cast Stone is generally used as a masonry product, as an architectural feature, trim, ornament, or facing for buildings or other structures.

Materials and processes used for manufacturing Cast Stone vary widely according to the aggregates locally available to the manufacturers and the processes and techniques used by the manufacturers to obtain the desired appearance and physical properties. Of paramount importance in moulding Cast Stone is the need to employ a properly proportioned mixture of white and/or grey cements, manufactured or natural sands, carefully selected crushed stone or well graded natural gravel and mineral coloring pigments to achieve the desired appearance while maintaining durable physical properties.

Although a variety of casting methods are used, production conforming to this standard will exceed minimum requirements for compressive strength and weathering qualities essential for normal installations as a suitable replacement for natural cut limestone, brownstone, sandstone, bluestone, granite, slate, keystone, travertine and other natural building stones.

## 1. PART 1 - GENERAL

## 1.1. SECTION INCLUDES - Architectural Cast Stone.

- A. Scope - All labor, materials and equipment to provide the Cast Stone shown on architectural drawings and as described in this specification.
  - 1. Manufacturer shall furnish Cast Stone covered by this specification.
  - 2. Installing contractor shall unload, store, furnish all anchors, set, patch, clean and seal (optional) the Cast Stone as required.

## 1.2. RELATED SECTIONS

- A. Section - 01330 – Submittals.
- B. Section - 04065 – Mortar and Grout.
- C. Section - 04810 – Unit Masonry Assemblies.
- D. Section - 04820 – Reinforcing Unit Masonry Assemblies.
- E. Section - 07900 – Joint Sealers.

## 1.3. REFERENCES

- A. ACI 318 – Building Code Requirements for Reinforced Concrete.
- B. ASTM A 82 - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
- C. ASTM A 615/A 615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Reinforced Concrete.
- D. ASTM C 33 – Standard Specification for Concrete Aggregates.
- E. ASTM C 150 - Standard Specification for Portland Cement.

- F. ASTM C 173 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volume Method.
- G. ASTM C 231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
- H. ASTM C 260 - Standard Specification for Air-Entrained Admixtures for Concrete.
- I. ASTM C 270 - Standard Specification for Mortar for Unit Masonry.
- J. ASTM C 494 - Standard Specification for Chemical Admixtures for Concrete.
- K. ASTM C 618 – Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
- L. ASTM C 642 - Standard Test Method for Specific Gravity, Absorption, and Voids in Hardened Concrete.
- M. ASTM C 666 – Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing.
- N. ASTM C 979 - Standard Specification for Coloring Pigments for Integrally Pigmented Concrete.
- O. ASTM C 989 – Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete.
- P. ASTM C 1194 - Standard Test Method for Compressive Strength of Architectural Cast Stone.
- Q. ASTM C 1195 - Standard Test Method for Absorption of Architectural Cast Stone.
- R. ASTM C 1364 - Standard Specification for Architectural Cast Stone.
- S. ASTM D 2244 – Standard Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.
- T. Cast Stone Institute Technical Manual (Current Edition)

#### 1.4. DEFINITIONS

- A. Cast Stone - an architectural precast concrete building unit intended to simulate natural cut stone.
  - 1. Dry Cast Concrete Products – manufactured from zero slump concrete.
    - a. Vibrant Dry Tamp (VDT) casting method: Vibratory ramming of earth moist, zero-slump concrete against a rigid mould until it is densely compacted.
  - 2. Wet Cast Concrete Products – manufactured from measurable slump concrete.
    - a. Wet casting method: manufactured from measurable slump concrete and vibrated into a mould until it becomes densely consolidated.

#### 1.5. SUBMITTALS

- A. Comply with Section 01330 – Submittal Procedures.
- B. Samples: Submit pieces of the Cast Stone that are representative of the general range of finish and color proposed to be furnished for the project.
- C. Test results: Submit manufacturers test results of Cast Stone previously made by the manufacturer.

- D. Shop Drawings: Submit manufacturers shop drawings including profiles, cross-sections, reinforcement, exposed faces, arrangement of joints (optional for standard or semi-custom installations), anchoring methods, anchors (if required), annotation of stone types and their location.

#### 1.6. QUALITY ASSURANCE

##### A. Manufacturer Qualifications:

1. Manufacturer shall have sufficient plant facilities to produce the shapes, quantities and size of Cast Stone required in accordance with the project schedule.
2. Manufacturer shall submit a written list of projects similar in scope and at least three (3) years of age, along with owner, architect and contractor references.

- B. Standards: Comply with the requirements of the Cast Stone Institute Technical Manual and the project specifications. Where a conflict may occur, the contract documents shall prevail.

- C. Mock-up (Optional) Provide full size unit(s) for use in construction of sample wall. The approved mock-up shall become the standard for appearance and workmanship for the project.

## 2. PART 2 - PRODUCTS

### 2.1. ARCHITECTURAL CAST STONE

#### A. Physical properties: Provide the following:

1. Compressive Strength - ASTM C 1194: 6,500 psi (45 Mpa) minimum for products at 28 days.
2. Absorption - ASTM C 1195: 6% maximum by the cold water method, or 10% maximum by the boiling method for products at 28 days.
3. Air Content – ASTM C173 or C 231, for wet cast product shall be 4-6% for units used in a freeze-thaw environment.

- B. Job site testing – One (1) sample from production units may be selected at random from the field for each 500 cubic feet (14 m<sup>3</sup>) delivered to the job site.

1. Three (3) field cut cube specimens from each of these samples shall have an average minimum compressive strength of not less than 80% of design strength or as allowed by ACI 318.
2. Three (3) field cut cube specimens from each of these samples shall have an average maximum cold-water absorption of 6%.
3. Field specimens shall be tested in accordance with ASTM C 1194 and C 1195.

### 2.2. RAW MATERIALS

- A. Portland cement – Type I or Type III, white and/or grey, ASTM C 150.
- B. Coarse aggregates - Granite, quartz or limestone, ASTM C 33, except for gradation, and are optional for the VDT casting method.
- C. Fine aggregates - Manufactured or natural sands, ASTM C 33, except for gradation.

- D. Colors - Inorganic iron oxide pigments, ASTM C 979 except that carbon black pigments shall not be used.
- E. Admixtures- Comply with the following:
  - 1. ASTM C 260 for air-entraining admixtures.
  - 2. ASTM C 494 for water reducing, retarding or accelerating admixtures.
  - 3. Other admixtures: integral water repellents and other chemicals for which no ASTM Standard exists, shall be previously established as suitable for use in concrete by proven field performance or through laboratory testing.
  - 4. ASTM C 618 mineral admixtures of dark and variable colors shall not be used in surfaces intended to be exposed to view.
  - 5. ASTM C 989 granulated blast furnace slag may be used to improve physical properties. Tests are required to verify these features.
- F. Water – Potable
- G. Reinforcing bars:
  - 1. ASTM A 615/A 615M. Galvanized or epoxy coated when cover is less than 1-1/2 inches (37 mm).
  - 2. Welded Wire Fabric: ASTM A 82 where applicable for wet cast units.
- H. All anchors, dowels and other anchoring devices and shims shall be standard building stone anchors commercially available in a non-corrosive material such as zinc plated, galvanized steel, brass, or stainless steel Type 302 or 304.

### 2.3. COLOR AND FINISH

- A. Match sample on file in architect's office.
- B. All surfaces intended to be exposed to view shall have a fine-grained texture similar to natural stone, with no air voids in excess of 1/32 in (0.8 mm) and the density of such voids shall be less than 3 occurrences per any 1 in. (25 mm<sup>2</sup>) and not obvious under direct daylight illumination at a 5 ft (1.5m) distance.
- C. Units shall exhibit a texture approximately equal to the approved sample when viewed under direct daylight illumination at a 10 ft (3 m) distance.
  - 1. ASTM D 2244 permissible variation in color between units of comparable age subjected to similar weathering exposure.
    - a. Total color difference – not greater than 6 units.
    - b. Total hue difference – not greater than 2 units.
- D. Minor chipping resulting from shipment and delivery shall not be grounds for rejection. Minor chips shall not be obvious under direct daylight illumination from a 20-ft (6 m) distance.

### 2.4. REINFORCING

- A. Reinforce the units as required by the drawings and for safe handling and structural stress.
- B. Minimum reinforcing shall be 0.25 percent of the cross section area.
- C. Panels, soffits and similar stones greater than 12 in. (300 mm) wide shall be reinforced along their length and width.
- D. Welded wire fabric reinforcing shall not be used in dry cast products.

### 2.5. CURING

- A. Cure units in a warm curing chamber at 95 percent relative humidity for approximately 18 hours, or yard cure for 350 degree-days (i.e. 7 days @ 50°F (10°C) or 5 days @ 70°F (21°C)) prior to shipping.
- B. Remove cement film from exposed surfaces prior to packaging for shipment.

#### 2.6. MANUFACTURING TOLERANCES

- A. Cross section dimensions shall not deviate by more than  $\pm 1/8$  inch (3 mm) from approved dimensions.
- B. Length of units shall not deviate by more than length/ 360 or  $\pm 1/8$  inch (3 mm), whichever is greater, not to exceed  $\pm 1/4$  inch (6 mm).
  - 1. Maximum length of any unit shall not exceed 15 times the average thickness of such unit unless otherwise agreed by the manufacturer.
- C. Warp, bow or twist of units shall not exceed length/ 360 or  $\pm 1/8$  inch (3 mm), whichever is greater.
- D. Location of dowel holes, anchor slots, flashing grooves, false joints and similar features – On formed sides of unit, 1/8 inch (3 mm), on unformed sides of unit, 3/8 inch (9 mm) maximum deviation.

#### 2.7. PRODUCTION QUALITY CONTROL

- A. Testing.
  - 1. Test compressive strength and absorption from specimens selected at random from plant production.
  - 2. Samples shall be taken from every 500 (14 m<sup>2</sup>) cubic feet of product produced.
  - 3. Perform tests in accordance ASTM C 1194 and C 1195.
  - 4. New and existing mix designs shall be tested for strength and absorption compliance prior to producing units.

#### 2.8. DELIVERY, STORAGE AND HANDLING

- A. Mark production units with the identification marks as shown on the shop drawings.
- B. Package units and protect them from staining or damage during shipping and storage.
- C. Provide an itemized list of product to support the bill of lading.

### 3. PART 3 EXECUTION

#### 3.1. EXAMINATION

- A. Installing contractor shall check Cast Stone materials for fit and finish prior to installation. Do not set unacceptable units.

#### 3.2. SETTING TOLERANCES

- A. Comply with Cast Stone Institute Technical Manual.
- B. Set stones 1/8 inch (3 mm) or less, within the plane of adjacent units.
- C. Joints, plus - 1/16 inch (1.5 mm), minus - 1/8 inch (3 mm).

## 3.3. JOINTING

## A. Joint size:

1. At stone/brick joints 3/8 inch (9.5 cm).
2. At stone/stone joints in vertical position  $\frac{1}{8}$  inch (6 mm) (3/8 inch (9.5 mm) optional).
3. Stone/stone joints exposed on top 3/8 inch (9.5 mm).

## B. Joint materials:

1. Mortar, Type N, ASTM C 270.
2. Use a full bed of mortar at all bed joints.
3. Flush vertical joints full with mortar.
4. Leave all joints with exposed tops or under relieving angles open for sealant.
5. Leave head joints in copings and projecting components open for sealant.

## C. Location of joints:

1. As shown on shop drawings.
2. At control and expansion joints unless otherwise shown.

## 3.4. SETTING

- A. Drench units with clean water prior to setting.
- B. Fill dowel holes and anchor slots completely with mortar or non-shrink grout.
- C. Set units in full bed of mortar, unless otherwise detailed.
- D. Rake mortar joints  $\frac{1}{8}$  (18 mm) inch for pointing.
- E. Remove excess mortar from unit faces immediately after setting.
- F. Tuck point unit joints to a slight concave profile.

## 3.5. JOINT SEALANT

- A. Comply with requirements of Section 07900.
- B. Prime ends of units, insert properly sized backing rod and install required sealant.

## 3.6. REPAIR AND CLEANING

- A. Repair chips with touchup materials furnished by manufacturer.
- B. Saturate units to be cleaned prior to applying an approved masonry cleaner.
- C. Consult with manufacturer for appropriate cleaners.

## 3.7. INSPECTION AND ACCEPTANCE

- A. Inspect finished installation according to Bulletin #36.
- B. Do not field apply water repellent until repair, cleaning, inspection and acceptance is completed.

0400 MASONRY

These specifications shall be used in conjunction with the specifications on the structural drawings.

No exterior masonry work shall be done below 40 degrees F. unless with heated materials, and no work shall be done when colder than 28 degrees F.

After 3:00 pm no work shall be done when colder than 40 degrees F.

Masonry work shall be plumb, true to line, with courses level. Build in all metal items and anchors as work progresses.

0410 Concrete Masonry Units

Concrete masonry units shall be erected as load bearing concrete masonry. Comply with the National Concrete Masonry Association specification for the design and construction of load-bearing concrete masonry for materials, methods, and workmanship.

Where "split face" units are called for on the drawings, they shall be of the dimensions shown with an integral water repellant admixture.

Concrete masonry units shall conform to ASTM specifications for hollow load-bearing concrete masonry units (ASTM C90, ASA A79.1). Mortar shall conform to the requirements of ASTM Standard Specifications for Mortar for Unit Masonry (ATSM C270). Minimum compressive strength,  $f'm = 1550$  psi.

Provide horizontal joint reinforcement at 16" o.c. in all CMU walls. Longitudinal wires shall be a minimum of (2) No. 9 gage. Locate joint reinforcement in first and second bed joints, 8" apart immediately above lintels and below sills at openings. Reinforcement shall not extend through vertical masonry control joints.

All new openings through existing masonry walls shall be cut only after the insertion of a temporary angle lintel on both faces of the wall. This lintel shall be a minimum of 3/8" x 4" x 6" steel stock. After the opening has been cut, new steel lintel angle or shall be built-in solid with a minimum of 8" bearing at both ends.

Where interior concrete masonry partitions meet other interior partitions or exterior walls, provide a control joint with metal strap anchors between walls.

0420 Brick Masonry

The brick masonry work consists of repairs and new openings. When performing repairs, the mason will be expected to find a local brick that is an exact substitute for the brick that was used in the original construction. Submit samples for the architect's approval before beginning the work.

All repairs that require the insertion of bricks into existing work shall be toothed into the original, not butted on a cut line. Prior to inserting new bricks, the adjacent work shall be thoroughly wet. New brick shall be fully buttered with mortar.



New openings shall match adjacent openings in size and style. Head treatment of openings shall match height, and radius.

#### 0430 Mortar

Mortar shall be made from clean sand conforming to ASTM C-144, lime conforming to ASTM C-207, Type S, Special Hydrated Lime, and potable water. It is imperative that the mortar mix be as soft or softer than the original brick and mortar. Submit a proposed mortar mix formula, and a cured sample of the mortar to the architect for approval.

#### 0450 MASONRY RESTORATION

##### 1.2 SYSTEM DESCRIPTION

Perform work complying with applicable federal, state, and local laws and regulations, and with the ACCIDENT PREVENTION PLAN, including the Activity Hazard Analysis, specified in the CONTRACT CLAUSES. The Activity Hazard Analysis shall include analyses of the potential impact of cleaning operations on personnel and on others involved in and adjacent to the work zone. Perform work in conformance with ACI C-20. Non-historic masonry work, including materials, procedures, and requirements shall conform to Section 04 20 00 MASONRY, except as otherwise specified herein.

##### 1.2.1 Design Strength

Each class or mixture of mortar shall have a 28-day compressive strength matching the compressive strength of the original existing mortar in the structure as determined by ASTM C 109/C 109M for mortar. Take test specimens of existing mortar from a sound and intact representative portion of the structure, at locations indicated.

##### 1.2.2 Special Properties

Mortar may contain admixtures, such as pigments, to match the characteristics of the original mortar. Use of all admixtures shall be subject to approval.

##### 1.2.3 Cementitious Content of Mortar

Each class or mixture of mortar shall have a cement content matching the cement content of the original existing mortar in order to provide uniform strength, weathering characteristics, and appearance of repaired surfaces in relation to existing surfaces.

##### 1.2.4 Environmental Protection

The work shall comply with the requirements of State of North Carolina DHHR.

##### 1.2.5 General Protection

Protect persons, motor vehicles, adjacent surfaces, surrounding buildings, equipment, and landscape materials from chemicals used and runoff from cleaning and paint removal operations. Erect temporary protection covers, which will remain in operation during the course of the work,

over pedestrian walkways and at personnel and vehicular points of entrance and exit. 1.2.5.1 Interior Protection Protect the interior of buildings from the weather, cleaning, and repair operations at all times.

#### 1.2.5.2 Worker Exposures

Exposure of workers to chemical substances shall not exceed the limits established by ACGIH 0100Doc, or those required by a more stringent applicable regulation.

#### 1.2.5.3 Training

Inform workers, having access to an affected work area, of the contents of the applicable material safety data sheets, of potential health and safety hazard, and of protective controls associated with materials used on the project. An affected work area is one which may receive dust, mists, and odors from the surface preparation operations. Workers involved in masonry cleaning shall be trained in the safe handling and application, and the exposure limit, of each material to be used in the project. Personnel having a need to use respirators and masks shall be instructed in the use and maintenance of such equipment.

#### 1.2.5.4 Coordination

Coordinate the work to minimize exposure of building occupants, other Contractor personnel, and visitors to mists and odors from surface preparation, cleaning, and repair operations.

#### 1.2.6 Cleaning and Restoration Methods

Submit for approval the cleaning and restoration methods organized in sequence from preparation through completion of the work, and materials selected for a specific structure, before work starts, taking into account the total construction system of the building to be worked upon, including different masonry and mortar materials, as well as non-masonry elements which may be affected by the work. Include schedule showing estimated time, in calendar days, for completion of each phase of the work. 1.2.7 Ionic Cleaners Use ionic chemical cleaners as specified, in accordance with the manufacturer's instructions, and only upon the direction of the Contracting Officer. Ionic cleaners shall be used only after gentler cleaning methods have been determined to be ineffective through the use of test panels.

#### Materials

### 1.4 QUALITY ASSURANCE

Submit documentation showing Contractor's experience of 5 consecutive years in masonry restoration, plus a list of similar jobs to the one specified herein. Submit required qualifications for workers trained and experienced in restoration of masonry in historic structures, and furnish documentation of 5 consecutive years of work of this type. A list of similar jobs shall be provided identifying when, where, and for whom the work was done. Submit for approval Sample Masonry Panels of each procedure proposed for use in the work and samples of the materials listed below; indicating sizes, shapes, finishes, color, and pertinent accessories. No masonry or mortar shall be used in the work until the samples and the represented mixture have been approved. Submit drawings showing location of masonry elements in the work, building elevations, interface with adjacent materials, and special placing instructions, in sufficient detail to cover fabrication, placement, and finishing.

## 1.5 DELIVERY, STORAGE, AND HANDLING

Furnish cement in suitable bags used for packaging cements. Labeling of packages shall clearly define contents, manufacturer, and batch identification. Detergents, masonry cleaners, paint removers, solvents, epoxies and other chemicals used for masonry cleaning shall be in sealed containers that legibly show the designated name, formula or specification number, quantity, date of manufacture, manufacturer's formulation number, manufacturer's directions including any warnings and special precautions, and name of manufacturer. Store materials in weathertight structures which will exclude moisture and contaminants. Accessories shall be stored avoiding contamination and deterioration. Admixtures which have been in storage onsite for six months or longer, or which have been subjected to freezing, shall not be used unless retested and proven to meet the specified requirements.

## 1.6 ENVIRONMENTAL REQUIREMENTS

Masonry, mortar, and epoxy adhesives shall not be placed when weather conditions detrimentally affect the quality of the finished product. No masonry or mortar shall be placed when the air temperature is below 5 degrees C 40 degrees F in the shade. When air temperature is likely to exceed 35 degrees C 90 degrees F masonry and mortar shall have a temperature not exceeding 35 degrees C 90 degrees F when deposited. Materials to be used in the work shall be neither produced nor placed during periods of rain or other precipitation. Stop material placements, and protect all in-place material from exposure, during periods of rain or other precipitation. Masonry surfaces shall be cleaned only when air temperatures are above 5 degrees C 40 degrees F and will remain so until Masonry has dried out, but for not less than 7 days after completion of the work.

## 1.7 WARRANTIES

### 1.7.1 Cleaning Warranty

Cleaning procedures shall be warranted for a period of two years against harm to substrate (masonry and mortar) or to adjacent materials including, but not limited to, discoloration of substrate from improper procedures or damage from improper procedures.

### 1.7.2 Repair Warranty

Repair procedures, including repointing, shall be warranted for a period of two years against: discoloration or mismatch of new mortar to adjacent original historic mortar, discoloration or damage to masonry from improper mortar clean-up, loss of bond between masonry and mortar, fracturing of masonry edges from improper mortar joint preparation procedures or improper mortar formulation, and occurrence of efflorescence.

## PART 2 PRODUCTS

### 2.1 MATERIALS

Materials, physical and chemical properties, and composition of masonry and mortar used in renovation work shall match that of original existing masonry and mortar to be repaired, unless samples and testing determine that existing mixtures and materials are faulty or non-performing. Submit certificates of compliance attesting that the materials, equipment, and cleaning agents (chemicals, detergents, etc.) to be used in the work meet the specified requirements.

## 2.2 CLEANING AGENTS

### 2.2.1 Paint Removers

Provide chemical paint removers which are manufacturer's water soluble, low toxicity products, effective for removal of paint on masonry without altering, damaging, or discoloring the masonry surface.

### 2.2.2 Detergent Cleaners

Detergent cleaners shall be in accordance with manufacturer's recommendations.

### 2.2.3 Ionic Cleaners

Ionic cleaners shall be as recommended by the manufacturer.

#### 2.2.3.1 Alkaline Prewash Cleaner

Alkaline prewash cleaners shall be as recommended by the manufacturer.

#### 2.2.3.2 One-Part Masonry Cleaner

One-part masonry cleaners shall be the standard, acid formulation recommended by the manufacturer.

#### 2.2.3.3 Two-Part Limestone Cleaner

Two-part limestone cleaners shall be manufacturer's standard, two-part masonry cleaning system consisting of an alkaline prewash cleaner followed by acidic afterwash rinse.

#### 2.2.3.4 Standard Strength Acidic Cleaner

Acidic cleaners shall be manufacturer's standard strength, acidic masonry restoration cleaner composed of hydrofluoric acid blended with other acids and combined with special wetting systems and inhibitors.

#### 2.2.3.5 Extra Strength Acidic Cleaner

Masonry restoration extra strength acidic cleaners shall be as recommended by the manufacturer.

### 2.2.4 Liquid Strippable Masking Agent

Liquid strippable masking agent shall be manufacturer's standard liquid, film-forming, strippable masking material for protecting glass, metal, and polished stone surfaces from the damaging effect of acidic and alkaline masonry cleaners.

### 2.2.5 Cleaning Implements

Furnish brushes that have natural or nylon fiber bristles only. Wire brushes shall not be used. Scrapers and application paddles shall be made of wood with rounded edges. Metallic tools shall not be used.

### 2.2.6 Water

Obtain potable water from a local source and shall be filtered to remove minerals resulting in a neutral pH, prior to application. Provide backflow prevention devices at the point of connection to the water supply.

## 2.3 EQUIPMENT AND TECHNIQUES DEMONSTRATION

Demonstrate equipment and techniques of operation in an approved location and subject to approval. Dependable and sufficient equipment, appropriate and adequate to accomplish the work specified, shall be assembled at the work site in sufficient lead time before the start of the work to permit inspection, calibration of weighing and measuring devices, adjustment of parts, and the making of any repairs that may be required. Maintain the equipment in good working condition throughout the project.

### 2.3.1 Cleaning Equipment

Cleaning equipment shall not cause staining, erosion, marring, or other damage or changes in the appearance of the surfaces to be cleaned.

#### 2.3.1.1 Sandblasting

Sandblasting equipment will not be allowed for cleaning masonry surfaces.

### 2.3.6 Material Handling and Associated Equipment

#### 2.3.6.1 Mixing, Transporting, and Placing Job Materials

Provide equipment used for mixing, transporting, placing, and confining masonry and mortar placements capable of satisfactorily mixing material and supporting placement operations in an uninterrupted manner. Defects and deficiencies in operation or capacity shall be resolved prior to use in the work. Equipment used for mixing, conveying, and placing of materials shall be clean, free of old materials and contaminants, and shall conform to the material manufacturer's recommendations.

#### 2.3.6.2 Associated Equipment

Provide associated equipment, such as mixer timing equipment, valves, pressure gauges, pressure hoses, other hardware, and tools, as required to ensure a continuous supply of material and operation control.

## 2.4 REPAIR MATERIALS

### 2.4.1 Masonry and Mortar

Masonry and mortar materials used for repair and renovation shall match the original existing historic materials as closely as possible in composition, color, texture, strength, size, finishing and porosity.

### 2.4.2 Cementitious Materials

Cementitious materials shall be of one type and from one source, when used in mortar which will have surfaces exposed in the finished structure. Cement composition shall match that of cement used in existing mortar to be repaired, as determined by samples and testing, and shall conform to the basic requirements of ASTM C 150/C 150M, Type [I] [II] [low alkali].

#### 2.4.3 Epoxy Anchor Adhesives

An epoxy-resin grout shall be used to bond steel anchors to masonry, and shall be a 100 percent solids, moisture insensitive, low creep, structural adhesive. The epoxy shall conform to ASTM C 881/C 881M, Type IV; Grade and Class selected to conform to the manufacturer's recommendations for the application.

#### 2.4.4 Metal attachments

Anchors for spall repairs shall be threaded stainless steel, size as indicated. Other plates, angles, anchors, and embedments shall conform to ASTM A36/A36M, and shall be prime painted with inorganic zinc primer.

### PART 3 EXECUTION

#### 3.1 EVALUATION AND ANALYSIS

Masonry renovation shall be undertaken only after complete evaluation and analysis of the areas to be repaired are completed; including sampling and testing of the existing mortar to determine its composition and qualities. No repair work shall be undertaken until conditions that have caused masonry deterioration have been identified; such conditions shall be corrected, if possible, prior to start of the work.

#### 3.2 MASONRY CLEANING

Historic materials shall not be damaged or marred in the process of cleaning. Cleaning shall conform to [ASTM C 1515] [BIA Tech Note 20]. Temporarily caulk or otherwise protect open joints to prevent water and cleaner intrusion into the interior of the structure from pressure spraying. Protect non-masonry materials and severely deteriorated masonry by approved methods prior to initiation of cleaning operations. Masonry cleaning shall remove all organic and inorganic contaminants from the surface and pores of the substrate, returning the masonry to its natural color. Surfaces shall be evenly cleaned with no evidence of streaking or bleaching. The cleaning process shall not affect the density, porosity, or color of the masonry or mortar. Cleaned masonry shall have a neutral pH. Use the gentlest methods possible for cleaning historic masonry to achieve the desired results. Make test patches to determine a satisfactory cleaning result. Cleaning shall proceed in an orderly manner, working from top to bottom of each scaffold width and from one end of each elevation to the other. Perform cleaning in a manner which results in uniform coverage of all surfaces, including corners, moldings, interstices and which produces an even effect without streaking or damage to masonry. The cleaning materials, equipment, and methods shall not result in staining, erosion, marring, or other damage to the surfaces of the structure. Following an initial inspection and evaluation of the structure and surfaces, give the structure a surface cleaning which shall be completed prior to start of repair work, and sampling and testing of mortars. The work shall provide for the complete cleaning of all exterior masonry surfaces of the structures, removing all traces of moss, dirt, and other contaminants to allow determination of the masonry's color and shades, finish and texture, and other properties. Following completion of the surface cleaning of the structure (or side of structure) the masonry shall be dried prior to the start of any repair work.

The following sequence of methods shall be used to determine the least aggressive, effective cleaning method:

1. Water with brushes
2. Water with mild soap
3. Water with stronger soap
4. Water with stronger soap plus ammonia
5. Water with stronger soap plus vinegar (but not on calcareous masonry)
6. Stronger chemical cleaners, only when above methods are determined

to be ineffective by the Contracting Officer

### 3.2.1 Chemical Cleaners

Acidic chemical cleaners shall not be used on limestone, marble, concrete and other calcareous (calcium containing) masonry materials. If chemical cleaners are used on such materials, they shall be alkaline based and utilized with neutralizing afterwashes.

### 3.2.2 Test Patches

The materials, equipment, and methods to be used in cleaning shall be demonstrated in a test section approximately 1 by 1 m 3 by 3 ft square. The location of the test section, and the completed test section shall be subject to approval. Adjust the cleaning process as required and the test section rerun until an acceptable process is obtained. Test patches shall be located in inconspicuous areas of the building. The areas tested shall exhibit soiling characteristics representative of those larger areas to be cleaned. Also conduct tests on areas to be stripped of paint. Tested areas shall be allowed to dry before a determination is made on the effectiveness of a particular treatment.

### 3.2.3 Paint Removal

Remove paint and other coatings from masonry surfaces in areas indicated prior to general cleaning. Masonry shall not be damaged or marred in the process of paint removal. Areas where paint is to be removed shall first be cleaned with water and detergent solution to remove surface dirt, rinsed, and allowed to dry. Apply chemical paint removers in accordance with manufacturer's instructions. Surrounding painted surfaces to remain intact shall be protected from exposure to chemical paint removers to avoid damage. Remove paint containing lead in accordance NC DHHR requirements.

### 3.2.4 Water Cleaning

#### 3.2.4.1 Pressure Spraying

Spray apply water to masonry surfaces to comply with requirements indicated by test patches for location, purpose, water temperature, pressure, volume, and equipment. Unless otherwise indicated, the surface washing shall be done with clean, low pressure water (pressure of less than 0.38 MPa 55 psi and 9.5 to 11.4 L/m 2.5 to 3 gpm discharge) and the spray nozzle shall not be held

less than 300 mm 12 inches from surface of masonry. Water shall be applied side to side in overlapping bands to produce uniform coverage.

#### 3.2.4.2 Handscrubbing

Pre-wetted surfaces shall be scrubbed using hand-held natural bristle or nylon brushes. Wire brushes shall not be used. Surfaces to be cleaned shall be scrubbed to remove surface contaminants.

#### 3.2.4.3 Rinsing

Scrubbed surfaces shall be rinsed clean of all contaminants and cleaning solutions with water in a low-to-moderate pressure spray, working upwards from bottom to top of each treated area. The rinsing cycle shall remove all traces of contaminants and cleaning solutions.

#### 3.2.5 Chemical Cleaning

Chemical cleaning of historic masonry shall use the gentlest means possible to achieve the desired result as determined by test patches. Chemical cleaning shall be the use of any product in addition to water, including detergents, ammonia, vinegar, and bleach. Cleaning shall proceed in an orderly manner, working from top to bottom of each scaffold width and from one end of each elevation to the other. Cleaning shall result in uniform coverage of all surfaces, including corners, moldings, interstices and shall produce an even effect without streaking or damage to masonry. Chemical cleaners shall not be applied to the same masonry surfaces more than twice.

##### 3.2.5.1 Surface Prewetting

Masonry surfaces to be cleaned with chemical cleaners shall be wetted with water using a low pressure spray before application of any cleaner. 3.2.5.2 Acidic Chemical Cleaning Apply acidic chemical cleaners according to manufacturer's instructions. Acidic chemical cleaners shall not be applied to masonry with high calcium content (e.g. marble, limestone). Apply acidic cleaners to masonry surfaces by low pressure spray 0.35 MPa 50 psi max., roller, or brush. Cleaner shall remain on masonry surface for the time period recommended by manufacturer. Manual scrubbing by brushes shall be employed as indicated by test patches for the specific location. Cleaned surfaces shall be rinsed with a low-to-moderate pressure spray of water to remove all traces of chemical cleaner.

##### 3.2.5.3 Alkaline Chemical Cleaning - Prewash Phase

Apply alkaline chemical cleaners to masonry surfaces according to manufacturer's instructions, by low pressure spray 0.35 MPa 50 psi max., roller, or brush. Cleaner shall remain on masonry surface for the time period recommended by the manufacturer. Manual scrubbing by brushes shall be employed as indicated by test patches for the specific location. Cleaned surfaces shall be rinsed with a low-to-moderate pressure spray of water.

##### 3.2.5.4 Alkaline Chemical Cleaning - Afterwash Phase

Immediately after rinsing of alkaline cleaned surfaces, apply a neutralizing afterwash to the cleaned masonry areas. Neutralizing afterwash shall be applied according to manufacturer's instructions, by low pressure spray 0.35 MPa 50 psi max., roller, or brush. Afterwash shall remain



on masonry surface for the time period recommended by manufacturer. Cleaned surfaces shall be rinsed with a low-to-moderate pressure spray of water to remove all traces of chemical cleaners.

#### 3.2.5.5 pH Testing

Masonry surfaces which have been chemically cleaned shall be pH tested using pH monitoring pencils or papers. Chemically cleaned masonry shall be rinsed of all chemical residues until a neutral pH (7) reading is obtained from the masonry surface.

### 3.3 MASONRY REPAIR

Repaired surfaces shall match adjacent existing surfaces in all respects. Masonry repair shall proceed only after the cause of deterioration has been identified and corrected. Masonry repair shall conform to ACI C-20. Masonry repair shall proceed only after the area to be repaired has been cleaned. The materials, methods and equipment proposed for use in the repair work shall be demonstrated in test panels. The location, number, size and completed test panels shall be subject to approval. Use products in accordance with the manufacturer's instructions.

#### 3.3.1 Repointing

Repointing work shall be as directed by the Owner. Old caulking, grout, or mortar shall be removed from previously repaired cracks where it is failing. Remove loose particles from cracks. Cracks shall be cleaned, rinsed with water followed by blowing with filtered, dry, compressed air.

##### 3.3.1.1 Mortar Analysis

Analyze existing original historic mortar before repointing in order to provide a match with the new repointing mortar. Historic mortars are usually softer than newer mortars, often using lime as a binder rather than cement. Lime for repointing mortar shall conform to ASTM C 207, Type S, unless otherwise specified. Full laboratory analysis of the existing mortar shall conform to ASTM C 1324. Field analysis of the existing mortar shall be as specified below.

##### 3.3.1.2 Taking and Preparation of Samples

Take and analyze samples of unweathered original historic mortar and different type of mortar in the structure in order to match the new mortar to be used for repointing. Three or four samples of each type of mortar to be matched shall be removed with a hand chisel from several locations on the building. Set aside the largest sample for comparison with the repointing mortar. The remaining samples shall be broken apart with a wooden mallet, powdering them into their constituent parts.

##### 3.3.1.3 Binder Analysis

A part of the sample shall be stirred into diluted hydrochloric acid. If a vigorous chemical reaction (bubbling) occurs and most of the binder disappears, leaving clean aggregate, the binder was lime. A Portland cement binder will result in a murky liquid and will dissolve very slowly over several days.

##### 3.3.1.4 Aggregate Analysis

Separate aggregate of the mortar sample from the binder by taking the crushed mortar sample and either gently blowing away the fine binder material, placing the crushed sample in a centrifuge, or chemically separating the aggregate from the binder. The separated aggregate shall be rinsed clean with water and dried. Examine the aggregate with a magnifying glass, and record the component materials as to range of materials, sizes, colors, as well as the presence of other materials.

### 3.3.2 Mechanical Repair

Repair or replace original historic masonry materials only if surfaces are extensively deteriorated (surface missing to a depth of 100 mm 4 inches or more) or are threatening the safety of the structure or individuals. Deteriorated surfaces shall be removed and repaired or replaced only upon approval. Repairs and replacements shall match the materials, colors, and finish of the existing historic masonry as closely as possible.

#### 3.3.2.1 Areas To Be Removed

Remove unsound, weak, or damaged masonry and mortar in areas as indicated. Loose particles, laitance, spalling, cracked, or debonded masonry and mortar and foreign materials shall be removed with hand tools unless otherwise noted. Surfaces prepared for repair shall be cleaned free of dust, dirt, masonry chips, oil or other contaminants, rinsed with water, and dried before repair work is begun. Protect surfaces of the structure, and surfaces adjacent to the work area from damage which may result from removal, cleaning, and repair operations.

#### 3.3.2.2 Application of Masonry and Mortar

Place masonry and mortar to rebuild spalled or damaged areas to match the original surface finish, level, texture, and color. The finished appearance of the patch shall match the adjacent existing surface.

#### 3.3.2.3 Patch Anchors

Provide patch anchors to ensure that the patch is tied to the existing masonry structure at a frequency of at least one patch anchor per 93 square mm square foot of patch plan surface area; specific locations for patch anchors shall be as indicated. Use small handheld, low-speed rotary masonry drills to produce holes in the existing masonry, within the limits for the patch anchor installation.

#### 3.3.2.4 Holes

Drill holes into the existing substrate material of the masonry using rotary (non-hammer) drills. Holes shall have a diameter of 3 mm 1/8 inch larger than the anchor diameter. The holes shall be drilled to a depth of 100 mm 4 inches, except as otherwise indicated or directed. Drill holes shall not penetrate completely through the masonry, and shall provide at least 25 mm 1 inch of cover around the drill hole. Holes shall be cleaned by water blasting to remove drill dust and other debris and then blown dry with filtered, dry, compressed air. Drill holes shall be conditioned in accordance with the epoxy adhesive manufacturer's recommendations.

#### 3.3.2.5 Anchor Installation

Clean anchors to remove all contaminants which may hinder epoxy bond. Epoxy adhesive shall be pressure injected into the back of the drilled holes. The epoxy shall fill the holes without spilling

excess epoxy when the anchors are inserted. Insert anchors immediately into the holes. The anchors shall be set back from the exterior face at least 25 mm 1 inch. Install anchors without breaking or chipping the exposed masonry surface.

#### 3.3.2.6 Cleanup

Remove excess epoxy and spills from the surface of the masonry. The surface of the masonry shall be left in a clean and uncontaminated condition. Spills on adjacent surfaces shall also be removed and surfaces repaired as required.

#### 3.3.2.7 Dutchman Repairs

The piecing-in of small patches of masonry to repair or replace damaged areas (Dutchman repair) shall be used in areas indicated. Repair pieces shall be held in place with epoxy with the joint between the new and old materials kept as narrow as possible to maintain the appearance of a continuous surface. Make repairs to blend in with the surrounding original materials as closely as possible.

### 3.4 EPOXY-RESIN GROUT

The epoxy adhesive shall be conditioned, proportioned, mixed, applied, protected, and cured in accordance with the manufacturer's recommendations, except as otherwise specified herein or indicated on the drawings. Maintain the adjacent surfaces and ambient conditions within the manufacturer's recommendations. The patch anchors and epoxy adhesive shall be protected from displacement and disturbances.

#### 3.4.1 Mixing Epoxy-Resin Grout Components

Mix epoxy-resin grout components in the proportions recommended by the manufacturer. The components shall be conditioned within 20 to 30 degrees C 70 to 85 degrees F for 48 hours prior to mixing. Mix the two epoxy components with a power-driven, explosion-proof stirring device in a metal or polyethylene container having a hemispherical bottom. The polysulfide curing agent component shall be added gradually to the epoxy-resin component with constant stirring until a uniform mixture is obtained. The rate of stirring shall be such that the entrained air is at a minimum.

#### 3.4.2 Tools and Equipment

Clean tools and equipment to be used again in the work before the epoxy-resin grout sets.

#### 3.4.3 Health and Safety Precautions

Provide full-face shields for mixing, blending, and placing operations as required and protective coveralls and neoprene-coated gloves for workers engaged in the operations. Supply protective creams of a suitable nature for the operation. Adequate fire protection shall be maintained at mixing and placing operations. Smoking or the use of spark- or flame-producing devices shall be prohibited within 15 m 50 feet of mixing and placing operations. The mixing, placing, or storage of epoxy-resin grout or solvent shall be prohibited within 15 m 50 feet of any vehicle, equipment, aircraft, or machinery that could be damaged from fire or could ignite vapors from the material.

### 3.5 MASONRY REPLACEMENT

Replace masonry with material that matches the original in terms of composition, color, texture, strength, finishing, and porosity as closely as possible. If a few isolated masonry units are to be replaced, remove each without disturbing the surrounding masonry. Deteriorated masonry units and mortar requiring replacement shall be removed by hand chiseling. Adjoining masonry units shall not be damaged during the removal of deteriorated units and mortar. Test the new element for fitting into its space without mortar. If wedges are used to support and align the new unit, they shall be covered with at least 38 mm 1-1/2 inches of mortar when pointing is complete. Cover the four sides and back of the space with sufficient mortar to ensure that there will be no air spaces when the new unit is set. The new unit shall be lined up and set by tapping it into place with a wooden or rubber mallet. Align face of new unit with that of existing masonry. Joints shall be repointed to match the rest of the wall after new units have been properly installed and adjusted. Clean replacement areas with a non-metallic brush and water to remove excess mortar

### 3.6 MASONRY AND MORTAR FINISHES AND COLOR

The exposed surfaces of masonry and mortar repair shall match the finish, color, texture, and surface detail of the original surface. Mechanical finishing and texturing may be required to produce the required finish and appearance. The finishing and texturing shall conceal bond lines between the repaired area and adjacent surfaces. The texturing shall provide replication of all surface details, including tooling and machine marks. The equipment used in finishing and texturing shall be a low-impact energy type which will not weaken the patch or damage the patch bond and the adjacent concrete.

### 3.7 JOINT SEALING

Provide joint sealing as specified in Section 07 92 00 JOINT SEALANTS.

### 3.8 FINAL CLEANING

No sooner than 72 hours after completion of the repair work and after joints are sealed, faces and other exposed surfaces of masonry shall be washed down with water applied with a soft bristle brush, then rinsed with clean water. Discolorations which cannot be removed by these procedures, shall be considered defective work. Perform cleaning work when temperature and humidity conditions allow the surfaces to dry rapidly. Protect adjacent surfaces from damage during cleaning operations.

### 3.9 PROTECTION OF WORK

Protect work against damage from subsequent operations.

### 3.10 DEFECTIVE WORK

Defective work shall be repaired or replaced, as directed, using approved procedures.

### 3.11 FINAL INSPECTION

Following completion of the work, inspect the structure for damage, staining, and other distresses. The patches shall be inspected for cracking, crazing, delamination, unsoundness, staining and other defects. the finish, texture, color and shade, and surface tolerances of the patches shall be inspected to verify that all requirements have been met. Repair surfaces exhibiting defects as directed.

**0500 Metals**

0520 Structural Shapes

*These specifications shall be used in conjunction with the specifications on the Structural Drawings.*

Light Gage Metal Studs: Metal studs for partition walls shall be 20 gauge cold formed steel, 3-5/8” deep, with 1-5/8” flange. Studs for bearing walls shall be 16 gauge, 3-5/8” deep with 2” flange. Studs shall be similar to Dale Industries, Gold Bond Building Products, or Superior Steel Studs, Inc.

Wall and partition framing: Unless otherwise shown, space studs 16 inches o.c. Double studs at openings. Construct partition corners of not less than three full members. Walls and bearing partitions shall have double top plates. Plates resting on masonry or concrete shall be anchored with bolts.

Structural lintels: Lintels shall bear on 8" minimum of masonry unless otherwise noted. Lintels shall be minimum 3/8"x4"x6" steel. Lintels shall be required in all masonry openings that are not built with masonry arches.

Expansion anchor bolts shall be installed in grout filled masonry cores (unless anchors are designed to be installed in hollow cores) or solid concrete. They shall provide the following minimum working loads:

| Pullout Size | Shear lbs | Min lbs | Min Spacing | Edge Distance | Min Embed |
|--------------|-----------|---------|-------------|---------------|-----------|
| 1/2" Dia.    | 665       | 1710    | 5"          | 2 1/2"        | 2 3/4"    |
| 3/4" Dia.    | 935       | 3050    | 7 1/2"      | 4"            | 3 1/4"    |

0540 Aluminum Decorative Metal Fences and Gates

PART 1 – GENERAL:

SECTION INCLUDES

A. Decorative aluminum fencing, gates, and accessories.

1.01 SYSTEM DESCRIPTION

A. The manufacturer shall supply a total ornamental aluminum fence system of the style, strength, size, and color defined herein. The system shall include all components (pickets, posts, rails, gates, hardware, and accessories) as required, and shall be fabricated, coated, and assembled in the United States.

1.02 QUALITY ASSURANCE

A. The contractor shall provide laborers and supervisors who are familiar with the type of construction involved, and the materials and techniques specified.

B. Manufacturer of fence system must have ten (10) years of documented experience in manufacturing the products specified in this section.

#### 1.03 REFERENCES

A. AAMA 2604 – Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels

B. AAMA 2603 – Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels

C. ASTM B117 – Practice for Operating Salt Spray (Fog) Apparatus

D. ASTM D2247 – Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity

E. ASTM B221 – Specification for Aluminum Alloy Extruded Bars, Shapes, and Tubes

F. ASTM B85 – Standard Specification for Aluminum-Alloy Die Castings

#### 1.04 SUBMITTALS

A. Manufacturer's submittal package shall be provided prior to installation.

B. Changes in specification may not be made after the bid date.

C. Samples of assembled materials, components, hardware, accessories, and/or colors, if requested.

#### 1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Upon receipt, materials should be checked for damage that may have occurred in shipping to the job site.

B. Each package shall bear the name of the manufacturer.

C. Store products in manufacturer's unopened packaging.

D. Store materials in a secure and dry area to protect against damage, weather, vandalism, and theft.

E. Transport, handle and store products with care to protect against damage before installation.

### PART 2 – PRODUCTS:

#### 2.01 MANUFACTURER

A. The fencing system shall be Industrial Strength Aluminum Ornamental Fence as manufactured by Jerith Manufacturing Co., Inc., 14400 McNulty Road, Philadelphia, PA 19154. Telephone: 800-344-2242; Fax: 215-676-9756; email: sales@jerith.com.

B. The fencing system shall be Jerith 202 Style..

C. Nominal fence height of 48", inches.

D. Color shall be Black.

## 2.02 MATERIALS

A. Aluminum Extrusions: All posts and rails used in the fence system shall be extruded from HS-35™ aluminum alloy having a minimum yield strength of 35,000 psi. All pickets shall have a minimum yield strength of 25,000 psi. 6063-T5 and 6063-T52 Alloys (in accordance with ASTM B221) are not acceptable for any components.

B. Fasteners: All fasteners shall be stainless steel. . Square drive screws shall be used to connect the pickets to the horizontal rails. Rail to post connections shall be made using self-drilling hex-head screws.

C. Accessories: Aluminum sand and die castings shall be used for all scrolls, post caps, finials, and miscellaneous hardware. Die castings shall be made from Alloy A360.0 as per ASTM B85 for superior corrosion resistance. Alloy A380.0 is not acceptable.

## 2.03 FINISH

A. Pretreatment: A three stage non-chrome pretreatment shall be applied. The first step shall be a chemical cleaning, followed by a water rinse. The final stage shall be a dry-in-place activator which produces a uniform chemical conversion coating for superior adhesion.

B. Coating: Fence materials shall be coated with FencCoat™, a Super-Durable TGIC polyester powder-coat finish system applied by Jerith Manufacturing Company. Epoxy powder coatings, baked enamel or acrylic paint finishes are not acceptable. The FencCoat finish shall have a cured film thickness of at least 2.0 mils.

C. Tests: The cured finish shall meet or exceed AAMA 2604, which includes the following requirements:

1. Humidity resistance of 3,000 hours using ASTM D2247.

2. Salt-spray resistance of 3,000 hours using ASTM B117.

3. Outdoor weathering shall show no adhesion loss, checking or crazing, with only slight fade and chalk when exposed for 5 years in Florida facing south at a 45 degree angle.

D. Finishes that only meet AAMA 2603 (or the previous version - AAMA 603) are not acceptable.

## 2.04 FABRICATION

A. Horizontal rails shall be 15/8" channels formed in a modified "U" shape. Pickets shall pass through holes punched in the top of the rail. The top wall shall be .070" thick and the side walls .100" thick for superior vertical load strength. There shall be 3 horizontal rails (4 rails for 8' high fence) in each section..

B. Pickets shall be fastened to the rails using painted stainless steel screws. Screws shall be used on only one side of the rail, leaving the other side with a clean appearance. Pickets shall be 1" square and have a wall thickness of .062". Welding the pickets to the rails is not permitted

C. Posts shall be 2½" square extrusions with pre-punched holes which allow the fence section rails to slide in. Posts shall be spaced 71½" on center and have .075" walls. Gate posts shall be [4" or 6"] square with .125" walls and used on both sides of a gate. Die cast aluminum caps shall be provided with all posts.

D. D. Cantilever slide gates shall be fabricated according to manufacturer's standard methods. Swing gates shall have welded frames and shall support a 300 lb. vertical load on the latch side of the gate without collapsing. Walk gates shall be self-closing and self-latching.

E. Assembled sections shall support a 1000 lb. vertical load at the midpoint of any horizontal rail.

## 2.05 WARRANTY

A. The entire fence system shall have a written Limited Lifetime Warranty against rust and defects in workmanship and materials. In addition, the FencCoat finish shall be warranted not to crack, chip, peel, or blister for the same period.

## PART 3 – EXECUTION:

### 3.01 PREPARATION

A. Verify areas to receive fencing are completed to final grades and elevations.  
B. Ensure property lines and legal boundaries are clearly established.  
C. Remove any surface irregularities which may cause interference with the installation of the aluminum fence.

### 3.02 FENCE INSTALLATION

A. Install fence in accordance with the manufacturer's instructions.  
B. Excavate post holes to proper depth to suit local conditions for stability and support of the fence system without disturbing the underlying materials. Excavate deeper as required for adequate support in soft and loose soils.  
C. Set fence posts in concrete footers at 71-1/2" on center maximum. For installations on a slope, the post spacing must be measured along the grade.  
D. Insert notched horizontal rails in pre-punched holes in post and fasten in place.  
E. Center and align posts in holes to required depth. Place concrete around posts and tamp for consolidation. After tamping, check alignment of posts, and make necessary corrections before the concrete hardens.

### 3.03 GATE INSTALLATION

A. Set gate posts plumb and level for gate openings specified in construction drawings.  
B. Install gates to allow full opening without interference after concrete has hardened around gate posts. Adjust hardware for smooth operation. Install one drop rod for double gates.

### 3.04 ACCESSORIES

A. Install post caps and other accessories to complete fence.

### 3.05 CLEANING

A. Contractor shall clean site of debris and excess materials. Post hole excavations shall be scattered uniformly away from posts.  
B. If necessary, clean fence system with mild household detergent and clean water. Excess concrete must be removed from posts and other fencing material before it hardens.



0600 CARPENTRY AND MILLWORK0601 Wood Flooring

SEE DIVISION 0900 FINISHES FOR WOOD FLOORING; Section 0950

0610 General.

The Contractor shall carefully lay out and erect all structural members of rough carpentry, framing, sheathing, bridging, and other items of work as necessary to install the finished work as shown on plans or noted in the Description of Work and in this section. All members shall be properly braced, plumbed, and leveled. A sufficient number of nails, screws, and bolts shall be used to insure the rigidity of the construction.

0612 Millwork.

All millwork shall be constructed in accordance with requirements of "Custom Grade" in the American Woodwork Institute's "Architectural Woodwork Quality Standards" of interior architectural woodwork construction, finishes, and other requirements.

Base cabinets shall be supplied and installed wherever shown on the drawings. Contractor shall provide samples of standard door styles and finishes for Owner to select from.

Millwork contractor shall include the supply, fabrication, and installation of Granite countertops as shown on the drawings, and specified in Division 12, Furnishings, Stone countertops.

The millwork contractor shall submit shop drawings to the architect for all built-in and freestanding millwork for review prior to any construction or assembly. Shop drawings shall be in sufficient detail to show all sizes, materials, hardware, and connection details.

All items of millwork shall be carefully erected with tight fitting joints, carefully cut and secured. Exposed nails shall be set for putty. Backprime all millwork before installation and protect against dampness. Molds and faces shall be clean cut and true pattern. All work shall be thoroughly cleaned and sanded to receive the finish. Sharp corners of small members of finish woodwork shall be slightly rounded.

0630 Finish.

Exterior finish, trim, and door frames: Install straight, plumb, and level, and with closely fitted joints and rigidly secured. Blind nailing shall be used to the extent practicable; face nailing shall be set and stopped with a non-staining putty to match the finish. Stagger, conceal, or place joints in unobjectionable locations. Securely anchor door frames to the supporting construction.,

Interior finish, trim, and door frames: Secure work with fine finishing nails and glue where required to assure permanent, tight joints. Set wood base after finish flooring is in place.

0640. Materials.

All framing lumber placed within 4' of the finish grade at the building shall be chemically treated moisture resistant material or a species naturally water resistant such as cypress or redwood. This includes, but is not limited to interior wood stairs and elevated floor framing. All exposed wood shall be free of knots, splinters, splits and dents.

## 0700 THERMAL AND MOISTURE PROTECTION

### 0710 Clay Tile Roofing

The existing shingle roof shall be removed down to the wood sheathing and replaced with a new Clay Red tile roof using tiles that are, or equal to, Ludowici Classic 14.

The sheathing shall be inspected for structural integrity and repaired with new decking to match existing thickness where needed. The roof replacement shall be done by a roofing contractor with a proven record in the installation of clay tile roofs.

### Roof Deck

A design standard for roofing decks is to have a maximum deflection of  $L/240$  between supports. A deck will be exposed to live and dead loads. A live load is one that will only be exerting pressure on the roof deck for a short time. Example; Snow or wind loads. A dead load is one that will exert a constant pressure to the roof deck; i.e., underlayments, tile and battens.

*Fastener Pullout Resistance:* Minimum average fastener pullout resistance for clay roofing tile is 180 lbs. with no single value less than 170 lbs. Greater pullout values may be required depending upon the predicted aerodynamic moment expected for the tile shape, building shape and the proximity to the coastline. An engineer should be consulted to assure local building code compliance.

*For Board Plank Deck:* Use well-seasoned plank board (1" full thickness, maximum 6" nominal width) that is not prone to warping, cupping or twisting.

*For Plywood Deck:* APA rated plywood is required for a minimum of 3/4" thick wood decking and must be rated for structural use as roof sheathing. The expansion crack between panels shall be at least 1/16" but no greater than 1/8". H-clips are to be used when rafters are spaced greater than 16" on center to hold the side joints of the plywood together between supports. Unsupported end joints must be blocked.

### Underlayment

All decks shall be covered with two layers of No. 30# asphalt-impregnated roofing felt or one layer of No. 43# coated base sheet or one layer of Ice and Water Shield.

*NOTE: When using non-breathing Ice and Water Shield underlayments to cover the entire roof, the attic space MUST be properly ventilated to prevent moisture buildup.*

All hips, valleys, rakes and ridges shall be covered with a waterproof underlayment, example; Ice and Water Shield or two layers of No. 43# coated base sheet.

For proper ice dam protection a layer of Ice and Water Shield underlayment should be installed from the eave to a point 24" beyond the inside of the exterior wall. See page 39 for more information on ice dam protection.

*NOTE: Roofing felt should meet or exceed ASTM standards D226/D2626. Self adhered Modified should meet or exceed ASTM D1970.*

### Fastening Methods

Attachment requirements and fastener length are referenced in Chart 13.1

*Nails or Screws:* Nails are the most commonly used

fastener for attaching clay tiles. Nails for tiles and cleats must be copper or stainless steel, 11 gauge minimum, .285"-.312" head minimum and proper length to give good penetration. Screws must be stainless steel or brass, #8 or #9, with a minimum .285"-.312" diameter head.

*Thermal and Moisture Protection*

*NOTE: The use of Galvanized, Ceramic coated or any other fastener not mentioned above is not acceptable. All components of the roof should have an expected lifespan of 75+ years.*

*NOTE: Each flat Interlocking field tile is provided with (2) two fastening nail holes and French field tile with (1) one. When installing field tiles, care should be taken to fasten each tile with nails or screws in every provided fastening hole.*

For a plywood deck, use ring shank copper nails of the specified length to assure good penetration through under side of deck (see Chart 13.1).

For board plank deck, use smooth shank copper nails of the specified length. Fasteners should penetrate deck board 3/4". Do not penetrate underside of deck.

*NOTE: When using stainless steel screws, tile replacement will require the use of a hack saw to remove the screws. A slate ripper may be used with copper or brass fasteners.*

*In addition to field tiles and special shapes shown on the drawings and specified fasteners, the following items will be required:*

- Flashing: use a minimum weight of 16 oz. copper, at least 24" wide with 1/4" edge turned over and fastened with cleats for valleys. Under special circumstances, such as unusual exposure to high wind or heavy snow, this flashing weight should be increased. Lighter weight copper flashings are undesirable because they can puncture too easily and they will not provide the wear life required for a long-life roof system.
- Underlayment: two layers of No. 30# asphalt-impregnated roofing felt or one layer of No. 43# coated base sheet, doubled on rough surfaces, hips, valleys and ridges, or one layer of Ice and Water Shield.
- Roofing cement: roofing cement for gable rakes, hip rolls, ridges, stringers and other conditions should be non-running, heavy-body flashing cement composed of mineral ingredients to meet the requirements of ASTM D-4586.
- Cant strips, wood nailers and field tile nailer strips: all should be foundation grade wood.
- Mortar and mortar color to match tiles: Mortar is defined as one part Portland cement and four parts sand (to ASTM specification C-270). Contact your local brick distributor to acquire colorant.
- Silicone sealant or adhesive: the recommended sealant for exposed caulking is Dow Corning® 790 Silicone Building Sealant™ or GE® SilProof™ (ASTM C-920, low modulus). These sealants may be used as hidden adhesives. NP1 or other adhesives may be suitable as well; however, care should be taken to select for maximum durability and also for compatibility with adjacent materials. Some sealants are available in different colors to match tiles.

*NOTE: Prior to applying any roofing material, all contractor work above the roofline must be completed.*

#### Inspecting the Deck

- Ensure that the roof deck is clean, smooth and dry before roof tiles are applied.
  - Verify that there is no significant delamination, warpage, bowing or separation from the rafters or trusses. Check for deck rot.
  - If deck is APA 3/4" rated plywood, check that panels are spaced approximately 1/16" to a maximum of 1/8" apart for expansion and H-clips are used between supports when the rafter spacing exceeds 16" O.C. Unsupported end joints must be blocked.
  - Make repairs to the deck as necessary.
- Install the flashings required for ensuring watertightness:
    - Eave Flashing
    - Rake Edge Flashing (if required)
    - Valley Flashing

- Dormer and Sidewall Flashing, Chimney and Cricket Flashing
- Vent Flashing

#### Installing the Underlayment

Most problems with water-shedding roof installations occur from water that migrates through the joints of the tiles through capillary action, wind-driven rain and runoff or ice damming. Because of this possibility, the underlayment is critical to the success of the roof.

At a minimum, all decks must be covered with two layers of No. 30# asphalt-impregnated roofing felt or one layer of No. 43# coated base sheet.

*NOTE: Underlayment materials must be covered with tile as soon as possible to prevent degradation from exposure.*

If wood cant strips and nailers are nailed directly to the deck, they must be covered with waterproof underlayment. If nailed on the underlayment, they shall be pressure treated wood.

*NOTE: All roofing underlayment materials should be carried 6" up all vertical surfaces.*

*For single layer of No. 43# coated base sheet:*

Lay base sheet parallel to eave. Side lap - 2" and end lap - 6".

*For Double Layers, follow these steps:*

First apply a starter sheet of 1 layer of Ice and Water Shield underlayment per manufacturer's instructions.

Then completely cover the starter sheet with a full-width sheet of No. 43# roofing felt. Lap succeeding sheets 19" over the preceding sheets, leaving a 17" exposure (2" lap). End laps should be a minimum of 6"

**Ice Dam Protection** Ice dam protection is recommended in areas where the January mean temperature is 30° F. or less and on all pitches below the standard minimums. This protection must be installed wherever there is a possibility of ice forming along the eaves which will cause a back-up of water and may cause building and interior damage. Consider your local weather conditions.

Apply self-adhering Ice and Water Shield, or equivalent, directly to the deck according to application instructions provided with the product. Self-adhering underlayment must extend up the roof to a point at least 24" beyond the interior wall line and in areas of severe icing at least up to and above the highest water level expected to occur from ice dams (see Figure 16.2).

*Please note that the 24" point beyond the interior wall line is a minimum recommendation. Self-adhering Ice and Water Shield underlayment should be applied to all roof decking, which past history and professional experience suggest, might be subject to ice dam back-up. If considering using ice dam protection on the entire surface of the roof deck, insure that adequate ventilation is present to prevent the development of damaging condensation on the underside of the roof deck.*

If a wide eave overhang requires flashing wider than 36", the necessary 6" minimum horizontal lap must be located on the overhang outside the structure walls. End laps must be a 6" minimum. Underlayment should meet ASTM D-1970.

#### Applying Cant Strips, Wood Nailers and Battens

After lining the roof with underlayment, install wood stringers for ridges and hips, cant strips at eaves if required and battens as field tile nailer strips (required for certain applications). The heights of the stringers, battens and cant strips are determined by the tile pattern and the type of fittings to be used. Stringers for Hip and Ridge

Attached Ridge and Hip Stringers with corrosion resistant fasteners 2' O.C. (see Figure 17.1).

All wood stringers must be covered with two layers of coated base sheet or a self-adhesive Ice and Water Shield. Stringers must be pressure treated and foundation grade wood. The sizes for

stringers vary with tile and Ridge Cap type. Wood stringers must be a minimum of 1-1/2" thickness and of proper height to carry hip and ridge pieces.

Stringer height for hip and ridge vary depending on the tile profile, hip and ridge type and roof pitch. To determine proper stringer heights for your application lay field tile and hip on the roof deck in the correct configuration and measure the gap between the underside of the hip tile to the apex of the hip on the roof deck, this will be your stringer height.

*NOTE: Hip caps should just rest on the bottom edge of the field tile and run in a straight line parallel to the roof slope.*

Follow the same procedure for the ridge stringer. For Vented Ridge adjust Ridge Riser Bracket to correct height.

Even on conditions where the stringer height is minimal it is important to install them to provide a straight surface for the hip tile to rest. Do not eliminate the stringer and just let the hip tile rest on the field tile. This will produce an irregular hip that snakes up and down.

### Measuring and Chalking the Roof

Layout and chalking the roof accurately are critical to the roof's performance and appearance. If the eaves are straight and level, all horizontal lines must be parallel to the eaves and all vertical lines must be perpendicular to the eaves. Check the roof deck to determine if the deck is square prior to layout.

#### Step 1: *Determine Width and Length Exposure*

Clay tiles, depending on the style and profile, vary in exposure and recommended head lap. Interlocking tiles are laid with a minimum headlap of 3". Before chalking the roof the installer should verify the tile pattern being installed, and measure, noting average length and width exposures of the tile shipped.

*The width exposure should also include the spacing gap between tiles. Interlocking tiles are typically laid with a gap of 1/8"; however, this can be compressed or expanded slightly. The usual overhang at the eave is 2"; however, this can be compressed slightly to accommodate full courses.*

#### Step 2: *Chalking Vertical Lines*

Vertical lines are chalked first. In the case of a hip roof, the first line is struck in the center of the roof equidistant from each hip. The remaining vertical lines are then struck to the right and left at intervals equal to your average width exposure x 5. Care must be taken to ensure that all vertical lines are parallel to the water flow. For roofs with gables at both ends the horizontal exposure should be adjusted to work out to full tile or half tile to reduce cutting.

### Tile Distribution Over Deck

After all roof preparation has been completed, the tiles are evenly distributed on the roof, if pitch permits.

*NOTE: Stacking distribution will depend on the number of tiles per square and the number of tiles per stack.*

Spacing of the tiles is determined by the width of the exposed tile times the number of courses being fed per stack. If the tiles are stacked 8 tiles high and the tile exposure is 10" and the stack feeds 2 courses, then the stacks would be placed 40" O.C.

Tile stacks normally start at the third course from the eave and continue with alternate courses. The important aspect of tile loading is to evenly spread the load across all surfaces of the roof using the proper spacing to assure the proper amount of tile is loaded on the roof.

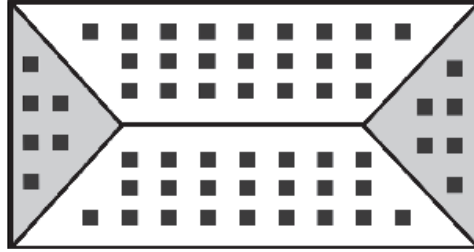


Figure 1 Distribution of Tile Over Roof

Remember to utilize the color blending instructions. Pre-loading the roof deck with tiles prior to starting the actual installation will provide convenience and faster installation, but should only be done if weather conditions permit. Use common sense so that you do not become liable for damage or personal injury.

### Cutting, Notching and Drilling

#### Cutting

*NOTE: Unnecessary cutting and drilling time can add substantial cost to the job. Carefully consider tile layout before starting the work to minimize cutting and drilling.*

Tiles should be cut wet on the job with a masonry or tile saw equipped with a diamond blade. Segmented blades will be the most efficient. Slight surface chipping will occur during the cutting operation. The sliding saw table and tub should be as large as possible to accommodate cutting the tiles diagonally.

Clay tiles are extremely hard, which provides the tiles with low moisture absorption and long life. Dry cutting techniques used on softer tile products will not work as fast with hard tile. Dry cutting with a good segmented “turbo” diamond blade is possible. Best results have been obtained using a 4" diamond tipped segmented blade mounted on a small right angle grinder motor.

#### Notching

One time saving option to drilling through the tiles is to notch it with the small 4" diamond blade saw and then nail or wire in place. If using a field tile for the starter course or ridge, “dovetail” notches are cut. Make sure cuts are wide enough for a nail or screw (see Figure 23.1).

#### Drilling

Additional nail holes may also be drilled if necessary. High torque electric drills may snap the carbide bits in the extremely hard tile. Drills should be battery-powered, adjustable clutch-driven types. To drill out holes, the tile should be set in a pan with water to extend bit life and avoid the risk of eye injury due to fragments. Expect to drill only about 6 holes per carbide bit.

#### Blending

Blending is one of the most important aspects of correctly installing a Clay Red tile roof.

*Whether installing a single color or multiple colors ALL TILE ROOFS MUST BE BLENDED.*

Colors within a given shipment of clay roof tile will vary slightly due to subtle changes in clay composition and kiln firing temperatures. Such color variances are not a defect but a natural desirable feature that gives roofs depth and character.

Unless the architect or owner specifies a pattern, there should be no visible pattern or hot spots on the roof.

The tile is not pre-blend the tile. It is the roofer’s responsibility to evaluate the tiles for color shade and range and then properly blend them to achieve a harmonious color roof without blotches, hotspots or patterns.

The person responsible for the blending of the shades of color should randomly select tiles from at least four different pallets.

After the installation of about 75-100 tiles, the roof should be inspected from the ground at a distance greater than 40 feet to determine that there are no streaks or blotches. To ensure a good range of tones, this inspection must be done at regular intervals.

*NOTE: When nearing the end of the project if its determined that additional material will be needed to complete the roof, reserve several pallets of the initial shipment to blend with later shipments to maintain a consistent range.*

*NOTE: Refer to the Tile Roof manufacturer's instructions for installation of all flashing, special Hip, Ridge, Valley and Edge tiles.*

## **END OF SECTION 0710**

### 0720 Single Ply EPDM Roofing

In addition to the tile roof, there are two small areas of flat roof that shall be replaced with EPDM sheet. This roof must be pitched so that it completely drains in less than 48 hours.

#### Part 1 General

##### 1.01 Description

The Fully Adhered EPDM Roofing System shall be an EPDM membrane in thickness of 60 mil. Approved insulation shall be attached to the substrate with either Insulation fasteners and plates or Helix® Max low-rise foam adhesives. The EPDM membrane is bonded to an approved insulation with an approved bonding adhesive. The adjoining sheets are overlapped a minimum of 3" and seamed together with tape primer and minimum 3" in-seam tape.

##### 1.02 Quality Assurance

A. The roofing system must be installed by a Warranty Eligible Applicator in accordance with installation guidelines and detail drawings as approved by the Architect. Prior written approval from the Warranty Department is required for all deviations from published specifications and details.

B. Projects requesting a Labor and Material Warranty will be inspected by a Product suppliers Representative to verify that installation and material requirements have been met.

##### 1.03 Product Delivery, Storage, and Handling

A. Deliver materials to the job site in original, unopened containers, with the manufacturer's name, brand name and installation instructions.

B. Store all materials in a dry, clean area protected from the elements, as per manufacturer's recommendations.

##### 1.04 Job Conditions

A. All existing wet or damaged roofing materials must be removed and replaced with new materials.

B. All existing phenolic insulation and sprayed-in-place urethane roofs must be removed.

C. The specifier must determine the use and placement of vapor retarders. Consult ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc.) and NRCA (National Roofing Contractors Association) publications.

E. Coordinate work between all trades to avoid traffic over completed sections of roofing.

##### 1.05 Warranty.

Fees are required for all Labor and Material (System) Warranties. System Warranties must be obtained through a Warranty Eligible Applicator. All projects requesting a System Warranty must be inspected by a Representative. Components of the roofing system must be supplied by .



Warranty covers only supplied materials. Sample warranties are available upon request. Contact Warranty Department for warranty requirements.

## Part 2 Products

### 2.01 General

A. The components of this roofing system are to be manufactured and supplied by a single manufacturer approved by the Architect.

### 2.02 Membrane

Black or White 60-mil EPDM membrane is used for this system. The membrane is available in a variety of widths up to 20' and in lengths of 100'.

### 2.03 Related Materials

Other roofing products to be used may include: Cured and un-cured Flashings, Bonding Adhesives, EPDM Lap Sealant, Insulation fasteners and discs, Pourable Sealer, All-Purpose Bar, EPDM Walkway Pad, Universal Single Ply Sealant, and other components.

## Part 3 Execution

### 3.01 General

A. Work should begin at the highest point of the roof level and proceed to the lowest point. Work should be completed on a daily basis including flashings, terminations, and daily seals.

B. Prepare the existing roof deck or substrate according to design guides and full-system specifications prior to applying the new roofing system.

### 3.02 Roof Deck Criteria

A. A proper substrate shall be provided by the building owner. The structure shall be able to withstand normal construction loads and live loads.

B. Substrate must allow for drainage so that all water is removed within 48 hours after a rain.

### 3.03 Substrate Preparation

A. Re-cover projects - All wet or damaged materials must be removed and replaced with new materials.

B. Substrate must be clean, level, and smooth so that the insulation lays flat. Fresh applications of bitumen based roof cement must be removed or covered.

### 3.04 Installation

Refer to the applicable Product Data Sheets and Material Safety Data Sheets for cautions and warnings.

#### A. Insulation Attachment

Attach roof insulation with Manufacturer supplied roofing fasteners and plates, or low-rise insulation adhesives.

Attachment rates and insulation requirements will vary depending upon substrate and desired wind uplift. Consult Warranty Department for attachment requirements.

#### B. Membrane Installation and Seaming

Place membrane over substrate with minimum 3" overlap at lap seams and positioned so that laps will shed water. Allow membrane to relax. After membrane has relaxed, fold membrane back so that half of the underside is exposed. Apply EPDM Bonding Adhesive as per manufacturer's instructions. Fold back the unbonding half of membrane and repeat bonding procedure. Seal all seams with tape primer and minimum 3" in-seam tape.

#### C. Additional Membrane Securement

The membrane must be secured at the perimeter of each individual roof area, projection, and any angle change that exceeds 2" per lineal foot. Consult 's published detail drawings.

#### D. Membrane Flashing

All existing base flashings are to be removed. Install new membrane flashings as per manufactures details and guidelines. Flashings must be terminated along top edge as per appropriate detail.

#### E. Other Related Work

1. Walkways should be provided in areas where regular rooftop traffic is expected. Walkways are considered a maintenance item and are excluded from the warranty.
2. EPDM Pads are to be installed over clean, dry surfaces, with a minimum 6" spacing over field seams. The Walkway Pad is adhered to the field membrane with pre-applied seam tape.
3. Concrete pavers may be used if installed over one layer of HP Protection Mat.
4. Copings, counter flashing and other metal work shall be fastened to resist wind uplift and prevent buckling. Metal should be sealed to prevent moisture infiltration.

## **END OF SECTION 0720**

## **0721-16 FIBERGLASS BATT INSULATION**

### **PART 1 — GENERAL**

#### **1.1 SUMMARY**

- A. Section Includes: Fiberglass batt thermal insulation for exterior envelope assemblies.

#### **1.2 SUBMITTALS**

- A. Product Data: Submit product characteristics, performance criteria, and limitations, including installation instructions.
- B. Sustainable Design: Submit manufacturer's sustainable design certifications as specified with each product.

#### **1.3 QUALITY ASSURANCE**

- A. Sustainable Design: Provide products which have received the following certifications:
1. UL Certified Environmental Product Declaration in accordance with ISO 14025.
  2. GREENGUARD Formaldehyde Free
  3. Scientific Certification Systems SCS-MC-01025, SCS Certified minimum 65% recycled glass content (with at least 41% post-consumer recycled and the balance of pre-consumer recycled glass content)
  4. Scientific Certification Systems SCS-MC-02676, SCS Certified minimum 58% recycled glass content (with at least 36% post-consumer recycled and the balance of pre-consumer recycled glass content)
- B. Mock-Up: If requested, provide a mock-up of materials proposed for use for review of workmanship. Accepted mock-ups may remain in place.
- C. Preconstruction Meeting: Convene a minimum of two weeks prior to commencing work of this section. Agenda shall include materials proposed for use, sequence of construction and coordination with installation of adjacent and covering materials

#### **1.4 DELIVERY, STORAGE, AND HANDLING**

- A. Delivery: Deliver materials to the job site in original packages, containers, or bundles bearing the brand name and manufacturer's identification.
- B. Storage: Store materials in dry locations with adequate ventilation, free from water, and in such a manner to permit easy access for inspection and handling.

- C. Handling: Handle using procedures recommended by the manufacturer for materials and personnel.

## 1.5 WARRANTY

- A. Warranty: Provide manufacturer's standard limited warranty against manufacturing defects.

## PART 2 — PRODUCTS

### 1.6 MATERIALS

- A. Fiberglas Insulation Unfaced Batt Insulation: ASTM C 665, Type I, preformed formaldehyde free glass fiber batt type, unfaced.
  1. Noncombustible per ASTM E 136.
  2. Flamespread less than 25, smoke developed less than 50 per ASTM E84.
  3. ICC Building Code Construction Classification: All types.
  4. Water vapor sorption, Maximum by weight: not more than 5 percent.
- 1. Fiberglas Insulation Kraft Faced Batt Insulation: ASTM C 665, Type II, Class C preformed formaldehyde free glass fiber batt type, Kraft paper faced one side. Includes Kraft faced Fiberglas Insulation, Kraft faced Fiberglas Sonobatts Insulation and ICC Building Code Construction Classification: III, IV, V.
  2. Perm Rating: 1 perm maximum per ASTM E96.
- B. Fiberglas Insulation Foil Faced Batt Insulation: ASTM C 665, Type III, Class C preformed formaldehyde free glass fiber batt type, foil faced one side.
  1. Flamespread less than 75, smoke developed less than 150 per ASTM E84.
  2. ICC Building Code Construction Classification: III, IV, V.
  3. Perm Rating: 0.5 perm maximum per ASTM E96.
- C. Fiberglas Flame Spread 25 Insulation: ASTM C 665, Type II (PSK facing), Class A and Type III (FSK facing), Class A preformed formaldehyde free glass fiber batt, poly/scrim/Kraft (PSK) or foil/scrim/Kraft (FSK) faced on one side.
  1. Flame spread less than 25, smoke developed index less than 50 per ASTM E84.
  2. ICC building construction classification: all types.
  3. Perm Rating: 0.5 maximum per ASTM E96.
- D. Accessories: Provide accessories per insulating system manufacturer's recommendations, including the following:
  1. Tape: Polyethylene self-adhering type for Kraft faced insulation and bright aluminum self-adhering type for foil faced insulation.
  2. Insulation Fasteners: Impale clip of galvanized steel; type recommended by insulation manufacturer for particular use intended.
  3. Mechanical Insulation Fasteners: FM approved, corrosion resistant, size required to suit application.
  4. Wire Mesh: Galvanized steel, hexagonal wire mesh.
  5. Spindle Fasteners: Corrosion-resistant wire spindles.
  6. Ventilation Baffles: Formed plastic, metal, or cardboard sized to fit full width of rafter spaces.

### 1.7 PERFORMANCE CRITERIA

- A. Wood Frame Construction - Walls, R-Value: Per ASTM C518.
  - 1. R-15, 3 1/2 inch (89mm) thickness, 15 inch (381mm) or 23 inch (584mm) width, 93 inch (2362mm) length.
- B. Wood Frame Construction - Roof/Floor/Ceiling, R-Value: Per ASTM C518.
  - 1. R-38, 12 1/4 inch (305mm) thickness, 16 inch (406mm) or 24 inch (584mm) width, 48 inch (1219mm) length.

## PART 3 — EXECUTION

### 3.1 EXAMINATION

- A. Examine the areas and conditions under which work of this section will be installed. Verify that adjacent materials are dry and ready to receive insulation. Verify mechanical and electrical services within walls have been tested and inspected.
- B. Provide written report listing conditions detrimental to performance of work in this section. Do not proceed with installation until unsatisfactory conditions have been corrected.

### 1.8 INSTALLATION

- A. Comply with manufacturer's installation instructions and ASTM C1320. Do not use unfaced insulation in exposed applications where there is potential for skin contact and irritation. Kraft and standard foil facings will burn and must not be left exposed. The facing must be installed in substantial contact with the unexposed surface of the ceiling, wall or floor finish. Protect facing from any open flame or heat source.
- B. Friction-fit blanket insulation in place, until the interior finish is applied. Install batts to fill entire stud cavity, with no gaps, voids, or areas of compression. If stud cavity is less than 8 feet in height, cut lengths to friction fit against floor and ceiling tracks. Walls with penetrations require that insulation be carefully cut to fit around outlets, junction boxes, and other irregularities.
  - 1. Do not install insulation on top of or within 3 inches of recessed light fixtures unless the fixtures are approved for such use.
- C. In crawl spaces and where the underside of floors are exposed to unconditioned space, insulation shall fill the cavity or be installed in contact with the underside of the decking. If vapor retarder is required by local code, a Kraft vapor retarder must be in contact with a 15-minute thermal barrier, typically on the bottom side of the insulation.
- D. Within exterior wall framing, install insulation between pipes and backside of sheathing. Cut or split insulation material as required to fit around wiring and plumbing.
- E. Where showers and bathtubs are located on exterior walls, typically install insulation and vapor retarder between units and exterior.
- F. If eave ventilation baffles are required, install ventilation baffles at eaves to hold insulation down from roof sheathing and provide positive ventilation from eave to attic space.
- G. Fluff insulation to full thickness for specified R-value before installation. Do not compress insulation in the cavity during installation, creating gaps or voids that could diminish thermal value.

- H. Trim insulation neatly to fit spaces. Fill miscellaneous gaps and voids with insulation.
- I. Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within the plane of insulation.
- J. For unfaced batt insulation, install with friction fit or retain in place with manufacturer's recommended fasteners or mesh.
- K. For batt insulation with factory-applied facing, install with vapor retarder membrane facing warm in the winter side of building spaces or as specified by local building code. Lap ends and side flanges of membrane over or between framing members. Tape to seal tears, cuts or misalignments in membrane.
- L. Secure insulation in place using one of the following methods: Friction fit; staple or nail facing flanges in place as needed, tape in place, retain in place with spindle fasteners, retain in place with wire mesh secured to framing members.

#### 1.9 PROTECTION

- A. Protect installed insulation from damage due to weather and physical abuse until protected by permanent construction.

End of Section 07 21 16

### **SECTION 07 21 19**

#### **OPEN-CELL SPRAY FOAM INSULATION**

##### PART 1 GENERAL

#### 1. SUMMARY

- a. Section Includes: Open-cell spray polyurethane foam insulation.

#### 2. RELATED WORK

- a. The following items are not included in this Section and are specified under the designated Sections:
  - 1) Section 07 21 16 - Fiberglass Building Insulation: Supplemental blanket, batt and roll insulation.
  - 2) Section 07 26 00 - Vapor Retarders: Vapor retarder materials.
  - 3) Section 09 20 00 - Plaster and Gypsum Board: Wall and ceiling finish and thermal barrier.

#### 3. PERFORMANCE REQUIREMENTS

- a. Conform to applicable code for flame and smoke, concealment, and over coat requirements.

#### 4. SUBMITTALS

- a. Product Data: Submit manufacturer's data sheets on each product to be used, including:
  - 1) Preparation instructions and recommendations.
  - 2) Storage and handling requirements and recommendations.
  - 3) Installation methods.
- b. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product.
- c. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

#### 5. QUALITY ASSURANCE

- a. Manufacturer Qualifications: Company specializing in manufacturing urethane foam products and systems of this section with minimum ten years documented experience.

- b. Installer Qualifications: A current Johns Manville Qualified Applicator specializing in performing Work of this section with minimum three years documented experience.
- c. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
  - 1) Finish areas designated by Architect.
  - 2) Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
  - 3) Refinish mock-up area as required to produce acceptable work.

#### 6. DELIVERY, STORAGE, AND HANDLING

- a. Store products in manufacturer's unopened packaging, clearly marked with the manufacturer's name, brand name, product identification, type of material, safety information, manufacture date, and lot numbers until ready for installation.
- b. Store spray foam materials between 65 degrees F (18 degrees C) and 85 degrees F (29 degrees C) with careful handling to prevent damage to products.
- c. Protect all materials from freezing and other damage during transit, handling, storage, and installation.

#### 7. PRE-INSTALLATION MEETINGS

- a. Convene pre-installation meeting prior to commencing work of this section.
  - 1) Attendance: Architect, Contractor, manufacturer's representative and spray insulation applicator.
  - 2) Agenda: Review installation sequence and scheduling.

#### 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 apply the polyurethane foam when substrate or ambient air temperatures are below 40 degrees F (4.4 degrees C) or above 120 degrees F (49 degrees C) and relative humidity is greater than 85 percent unless advance means and methods are recommended by the manufacturer.
- c. Do not apply polyurethane foam when wind velocity exceeds 15 miles per hour unless advance means and methods are recommended by the manufacturer. Use precautions to prevent damage to adjacent areas from fugitive overspray.

### PART 2 PRODUCTS

#### 1. OPEN-CELL SPRAY FOAM INSULATION

- a. Open Cell Spray Foam Insulation: Two-component, polyurethane cellular foam with a nominal density of 0.5 pcf shall have the following minimum physical properties when cured:
  - 1) Apparent Density: 0.5 pcf when tested in accordance with ASTM D 1622.
  - 2) R-Value (aged) when tested in accordance with ASTM C 518: 3.9 at 1 inch, 13 at 3.5 inches, 19 at 5.5 inches.
  - 3) Oxygen Index: 25 when tested in accordance with ASTM D 2863.
  - 4) Compressive Strength: 0.5 psi when tested in accordance with ASTM D 1621.
  - 5) Fungi Resistance: Zero Rating when tested in accordance with ASTM G 21.
  - 6) Air Leakage: Less than 0.02 (L/s)/m<sup>2</sup> when tested in accordance with ASTM E 283.
  - 7) Sound Transmission Coefficient: 51 (STC) when tested in accordance with ASTM E 90.
  - 8) Noise Reduction Coefficient: 0.7 (NRC) when tested in accordance with ASTM C 423.

- 9)Open Cell Content: Greater than 90 percent when tested in accordance with ASTM D 2846.
- 10)Tensile Strength: Less than 5 psi when tested in accordance with ASTM D 1623.
- 11)Shear Strength: 1.4 psi when tested in accordance with ASTM C 273.
- 12)Permeability: 21 perm-inch when tested in accordance with ASTM E 96.
- 13)Dimensional Stability: Less than 15 percent change in volume when tested in accordance with ASTM D 2126.
- 14)Surface Burning Characteristics:
  - a)Flame Spread/Smoke Developed: At maximum 4 inch (102 mm) thickness, flame spread index of less than 25 and a smoke developed index of less than 450 when tested in accordance with ASTM E 84.
  - b)Corner Test: Thickness up to 12 inches (305 mm) for wall cavities and 16 inches for ceiling cavities meets NFPA 286 when covered with 1/2 inch (13 mm) gypsum board or equivalent thermal barrier.
- b.Primer as Applicable to Substrate: A water based epoxy primer to achieve superior adhesion and penetration on concrete, masonry, metal, wood, etc.

## 2.ACCESSORIES

- a.Vapor retarder is specified in Section 07 26 00.
- b.Gypsum board assemblies providing a 15 minute fire separation thermal barrier rating are specified in Section 09 20 00.
- c.Gypsum board assemblies providing a 1 hour fire resistant rating are specified in Section 09 20 00.

## PART 3EXECUTION

### 1. EXAMINATION

- a.Do not begin installation until substrates have been properly prepared.
- b.Verify that all surfaces to receive polyurethane foam insulation are clean, dry and free of dust, dirt, debris, oil, solvents and all materials that may adversely affect the adhesion of the polyurethane foam.
- c.If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### 2. PREPARATION

- a.Clean surfaces thoroughly prior to installation.
- b.Mask and protect adjacent surfaces from over spray.
- c.Prepare surfaces using the methods recommended by the spray foam manufacturer for achieving the best result for the substrate under the project conditions.
- d.Wood:
  - 1)Plywood shall contain no more than 18 percent water, as measured in accordance with ASTM D 4449 and ASTM D 4444.
  - 2)Most untreated and unpainted wood surfaces need not be primed. The spray polyurethane foam can be applied directly to the dry wood. Priming may be required under certain conditions as recommended by the manufacturer.
- e.Concrete and Masonry: Must be cured and loose dirt and any other contaminants, including asphaltic materials removed. If primer is required, prime at the rate of one gallon per 300 square feet.
- f.Sheathing Board: Most sheathing boards need not be primed prior to the application of sprayed-in-place polyurethane foam.

### 3. PRIMER APPLICATION

- a.Prepare surfaces and apply primer in accordance with manufacturer's instructions.

- b. Apply primer to the properly prepared substrates in accordance with the manufacturer's instructions to achieve a minimum thickness of dry film thickness. Allow primer to cure 24 hours prior to application of spray polyurethane foam or other products.

#### 4.I INSTALLATION

- a. Install in spray foam in accordance with manufacturer's instructions.
- b. Spray polyurethane foam components (A) and (B) shall be processed in accordance with instructions found on the manufacturer's product datasheet.
- c. Schedule application to anticipate climatic conditions prior to application to ensure highest quality foam and to maximize yield. All substrates to be sprayed must be dry at the time of application. Moisture in the form of rain, fog, frost, dew, or high humidity greater than 85 percent R.H is not permitted unless Contractor reviews means and methods of spraying with manufacturer's representative prior to installation. Use screens, masking and other precautions to prevent damage to adjacent areas from fugitive overspray.
- d. Where spray foam system is installed within attics or crawl spaces where entry is made only for service of utilities, an ignition barrier must be installed in accordance with IBC Section 2603.4.1.6 and IRC Section R314.5.4, as applicable. The ignition barrier must be installed in a manner so that the foam plastic insulation is not exposed.
- e. Application in attics and crawlspaces with Intumescent Coating:
  - Insulation may be installed in unvented conditioned attics in accordance with IRC Section R806.4.
  - 1) In attics, spray foam insulation may be spray-applied to the underside of roof sheathing and roof rafters.
  - 2) In crawlspaces, spray foam insulation may be spray-applied to the underside of floors as described in this section.
  - 3) Thickness of open-cell foam applied to the underside of the top space must not exceed 10 inches (254 mm).
  - 4) Thickness of open-cell foam applied to vertical surfaces must not exceed 12 inches (300 mm).
  - 5) Insulation must be coated uniformly coated with intumescent coating at a coverage rate of 0.6 gallons per 100 square feet in accordance with manufacturer's instructions.
  - 6) Surfaces to be coated must be dry, clean, and free of dirt, loose debris, and any other substances that could interfere with the adhesion of the coating.
  - 7) Coating must be applied when ambient and substrate temperatures are above 50 degrees F (10 degrees C) and requires a 24-hour curing time after application.
- f. Application in attics and crawlspaces with Minimum 1/2 inch (12.7 mm) Gypsum Board.
  - 1) In attics, spray foam insulation may be spray-applied to the underside of roof sheathing and roof rafters.
  - 2) In crawlspaces, spray foam insulation may be spray-applied to the underside of floors as described in this section.
  - 3) Thickness of open-cell foam applied to horizontal surfaces must not exceed 16 inches (406 mm).
  - 4) When applied to vertical surfaces, the thickness of JM ocSPF open-cell foam must not exceed 12 inches (305 mm).
- g. **Exothermic Caution:**
  - 1) **Polyurethane foam shall be sprayed in minimum 1/2 inch (12.7 mm) thick passes or lifts. Overall thickness applied in one pass shall be limited to a maximum of 6 inches open cell foam to avoid fire hazards resulting from excessive heat generation. When applying SPF on chlorinated polyvinyl chloride the pass thickness must be limited to 6 inches. If additional thickness is required it must be applied within 15 minutes.**



- 2) **If a second pass is needed, wait 10 to 15 minutes between passes to allow reaction heat to dissipate. If more passes are needed, wait 30 minutes between passes to allow reaction heat to dissipate.**
- 3) **The exothermic reaction can cause temporary substrate thermal rises in excess of 150 degrees F, which may result in substrate thermal expansion. If the substrate then contracts when the reaction heat dissipates, substrate deformation can occur.**
- 4) **The full thickness of spray polyurethane foam to be applied within any given area should be completed in one day.**

h. Vapor Retarder Application:

- 1) When required, a vapor retarder shall be applied to the substrate to be insulated or to the finished spray polyurethane foam insulation. The predominant direction of the vapor drive determines the location of the vapor retarder relative to the spray polyurethane foam.
- 2) Apply thermal barriers and vapor retarder (if required) according to ICC recommendations.

5. ACCESSORY APPLICATION

- a. Joint Filler Foam and Caulk: Use joint filler foam and/or caulk to seal around windows, doors, chimneys, electrical raceways, sill plates, multiple studs, etc. Expansion of joint filler foam in a confined space can tighten window frames and door jambs. Use care in these areas to avoid distortion of these members.

6. FIELD QUALITY CONTROL

- a. Protect installed products until completion of project.
- b. Field inspection and testing will be performed under provisions of Section 01 40 00. Inspection will include verification of insulation and overcoat thickness and density.

7. PROTECTION

- a. Protect installed products until completion of project.
- b. After completing work, clean glass and spattered surfaces.
- c. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

**0734 GUTTERS, LEADERS and DOWNSPOUTS**

**Product Guide Specification (Half-Round Copper)**

***Before commencing any Gutter and Downspout work, the Contractor shall ensure that existing terra cotta subsurface drainage is functional with the capacity to adequately drain roof runoff at a rate of 6" of rain per hour***

**SECTION 07 71 23**

**MANUFACTURED GUTTERS AND DOWNSPOUTS**

**PART 1 GENERAL**

1.1 SECTION INCLUDES

- a. European half-round gutter and seamless downspout system.

1.2 REFERENCE STANDARDS

- a. ASTM B 370 – Standard Specification for Copper Sheet and Strip for Building Construction.

b. SMACNA Architectural Sheet Metal Manual.

#### 1.4 SUBMITTALS

a. Product Data: Submit manufacturer's product data, including installation instructions.

b. Samples:

1. Submit manufacturer's samples of gutters and downspouts, minimum 6 inches long, for each material and size specified.

2. Submit manufacturer's samples of each accessory specified.

C. Manufacturer's Certification: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.

#### 1.5 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Manufacturer regularly engaged, for past 5 years, in manufacture of gutter and downspout systems of similar type to that specified.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Acceptance Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Storage and Handling Requirements:

1. Store and handle materials in accordance with manufacturer's instructions.

2. Keep materials in manufacturer's original, unopened containers and packaging until installation.

3. Store materials in clean, dry area indoors.

4. Do not store materials directly on ground.

5. Prevent contact with other materials during storage, handling, and installation which may cause discoloration, staining, or damage.

6. Protect materials and finish during storage, handling, and installation to prevent damage.

## PART 2 PRODUCTS

### 2.1 MANUFACTURED GUTTERS AND DOWNSPOUTS

A. Gutters and Downspouts: European half-round gutter and seamless downspout system.

1. Conform to SMACNA Architectural Sheet Metal Manual for sizing components for rainfall intensity determined by a storm occurrence of 1 in 100 years and as required by local building code.

2. Material: Copper

3. Compliance:

a. Copper: ASTM B 370.

B. Half-Round Gutters:

1. Material: Copper, 18 oz (0.6 mm)

2. Size: 6 inches (333 mm)

3. Length: 20 feet (

C. Round Downspouts:

1. Material: Copper, 18 oz (0.6 mm)

2. Diameter: 4 inches (100 mm)

3. Length: 10 feet (3.05 m).

### 2.3 GUTTER ACCESSORIES (provide only items required for installation as shown)

A. Radius Gutters:

1. Material: Match gutters.

2. Size: Match gutters.

3. Length: 3.28 feet (1 m).

- B. Corners:
  - 1. Inside Corners:
    - a. Material: Match gutters.
    - b. Size: Match gutters.
  - 2. Outside Corners:
    - a. Material: Match gutters.
    - b. Size: Match gutters.
- C. Extensions:
  - 1. Circular Extensions:
    - a. Material: Match gutters.
    - b. Size: Match gutters and downspouts.
  - 2. Tri-Section Extensions:
    - a. Material: Match gutters.
    - b. Size: Match gutters and downspouts.
  - 3. Corner Extensions with Outlet:
    - a. Material: Match gutters.
    - b. Size: Match gutters and downspouts.
  - 4. Corner Extensions without Outlet:
    - a. Material: Match gutters.
    - b. Size: Match gutters.
- D. End Caps:
  - 1. Seamed End Caps:
    - a. Material: Match gutters.
    - b. Size: Match gutters.
  - 2. Soldered End Caps, Right:
    - a. Material: Match gutters.
    - b. Size: Match gutters.
  - 3. Soldered End Caps, Left:
    - a. Material: Match gutters.
    - b. Size: Match gutters.
  - 4. Flat End Caps, Right:
    - a. Material: Match gutters.
    - b. Size: Match gutters.
  - 5. Flat End Caps, Left:
    - a. Material: Match gutters.
    - b. Size: Match gutters.
  - 6. Spherical End Caps:
    - a. Material: Match gutters.
    - b. Size: Match gutters.
- E. Hangers:
  - 1. Half-Round Hangers, Roof:
    - a. Material: [Copper] [Zinc-clad steel] [Galvanized steel] [Powder-coated steel].
    - b. Size: Match gutters.
  - 2. Half-Round Hangers, Fascia:
    - a. Material: Copper
    - b. Size: Match gutters.
  - 3. Heavy-Duty Hangers:
    - a. Material: Copper-wrapped steel.
    - b. Size: 6 inches (333 mm).
    - c. Length: [18.9 inches (480 mm)] [21.6 inches (550 mm)].
  - 4. Decorative Leaf Hangers, Roof:

- a. Material: Match gutters.
  - b. Size: Match gutters.
- 5. Decorative Leaf Hangers, Fascia:
  - a. Material: Match gutters.
  - b. Size: Match gutters.
- F. Outlets:
  - 1. Half-Round Outlets:
    - a. Material: Match gutters.
    - b. Size: Match gutters and downspouts.
  - 2. Half-Round Drop Outlets:
    - a. Material: Match gutters.
    - b. Size: Match gutters and downspouts.
  - 3. Leaderheads: Material: Match gutters and downspouts.
- H. Expansion Joints:
  - 1. Half-Round Expansion Joints:
    - a. Material: Match gutters.
    - b. Size: Match gutters.
    - c. Length: 10.24 inches (260 mm).
- I. Strainers:
  - 1. Material: Stainless steel.
  - 2. Size: Match downspouts.
- 2.4 DOWNSPOUT ACCESSORIES (provide only items required for installation as shown)
- A. Brackets:
  - 1. Downspout Brackets with Square Pins:
    - a. Material: Copper
    - b. Size: Match downspouts.
  - 2. Downspout Brackets with Bolt Screws:
    - a. Material: Copper
    - b. Size: Match downspouts.
- B. Bolt Screws:
  - 1. Yellow Chromated Bolt Screws:
    - a. Size: [3.9 inches (100 mm)] [7.9 inches (200 mm)].
  - 2. Blue Chromated Bolt Screws:
    - a. Size: [3.9 inches (100 mm)] [7.9 inches (200 mm)].
- C. Elbows:
  - 1. Seamless Round Elbows, 40 degrees:
    - a. Material: Match downspouts.
    - b. Size: Match downspouts.
  - 2. Seamless Round Elbows, 72 degrees:
    - a. Material: Match downspouts.
    - b. Size: Match downspouts.
  - 3. Seamless Round Elbows, 85 degrees:
    - a. Material: Match downspouts.
    - b. Size: Match downspouts.
  - 4. Seamless Offset/Double Elbows:
    - a. Material: Match downspouts.
    - b. Size: Match downspouts.
  - 5. Swiss Elbows:
    - a. Material: Match downspouts.
    - b. Diameter: Match downspouts.
  - 6. Seamless Swan Neck Elbows:

- a. Material: Match downspouts.
- b. Size: Match downspouts.
- D. Inline Cleanouts/Dropouts:
  - 1. Material: Match downspouts.
  - 2. Size: Match downspouts.

### **PART 3 EXECUTION**

#### 3.1 EXAMINATION

- A. Examine roof, fascia board, and walls to receive half-round gutter and seamless downspout system.
- B. Examine fascia board to ensure that substrate alignment is straight, level, plumb, and adequate for fastening to transfer structural loads.
- C. Notify Architect of conditions that would adversely affect installation or subsequent use.
- D. Do not begin installation until unacceptable conditions are corrected.

#### 3.2 INSTALLATION

- A. Install half-round gutter and seamless downspout system in accordance with manufacturer's instructions at locations indicated on the Drawings.
- B. Slope gutters 1/4 inch per 20 feet toward downspouts.
- C. Install downspouts plumb and securely fasten to wall.
- D. Attach at bottom of downspouts to existing terra cotta drain.
- E. Install gutters and downspouts in lengths as long as possible, unless indicated otherwise on the Drawings.

#### 3.3 WASTE MANAGEMENT

- A. Recycling: Collect, store, and return copper scraps to local metal recycler.

#### 3.4 PROTECTION

- A. Protect installed half-round gutter and seamless downspout system to ensure that, except for normal weathering, materials will be without damage or deterioration at time of Substantial Completion.
- B. Repair or replace damaged components of gutter and downspout system.

### **END OF SECTION**

### **0792 CAULKING AND SEALING**

Elastomeric sealant shall carry a manufacturer's guarantee for twenty years. Installation shall only occur above 50° F. All application shall be a continuous smooth bead with a concave face and no spill over on adjacent surfaces.

All windows, doors, and any other wood-to-masonry or metal-to-masonry joints shall be sealed. Provide a compressible backer rod where joints are larger than 3/8" wide and more than 1/2" deep.

### **PART 1 - GENERAL**

#### 1.01 DESCRIPTION

Requirements specified in the General Conditions of the Contract and Division 1 form a part of this Section.

Provide all sealant and caulking work, complete as indicated, specified and required.

- 1. This Specification is intended to be general in scope as to locations of caulking and sealants. Contractor shall examine all Drawings and Details thoroughly and familiarize himself with the extent of the caulking and sealing involved. Only a complete and absolutely watertight and weathertight job will be accepted.

2. Additional information pertaining to sealing and/or caulking will be found in the various specific trade sections and shall be coordinated with the work of this Section.

B. Related Work Not in This Section. Concrete Work, Masonry Work, Doors and Frames, Painting, Gypsum Drywall, Weatherstripping and Sound Sealing integral to manufactured items, and caulking required for piping, conduit or other mechanical or electrical work.

### 1.02 SUBMITTALS

Prior to purchase or delivery of materials, submit the following, and obtain acceptance.

#### A. Samples and Technical Data

1. Submit technical data by all manufacturers of proposed materials.
2. Submit material manufacturers' printed preparation and application instructions to Architect and furnish copies to all trades concerned.

B. Shop Drawings and Mock-Ups. When requested, submit the following in accordance with these specifications:

1. Full-size details indicating all the necessary components for each type of joint to be sealed.
2. Observed field conditions and measurements. Mock-up units or test sections shall be also scheduled after receiving written approval of shop drawings.

### 1.03 WARRANTY

Contractor shall fully guarantee all materials and workmanship under this Section for a period of three (3) years from the date of final acceptance of the structure against all defects in both workmanship and materials and he shall promptly correct and/or replace such faulty work if so notified, at no additional cost to the Owner.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

A. Delivery. Deliver sealant and caulking compounds in unopened factory labeled containers; labels bearing statement of conformance to standards specified for each material; and bearing manufacturer's name and product designation.

B. Colors. As selected to match adjoining surfaces. Special colors may be required.

C. Sealant Compounds. Materials shall conform to Fed. Spec. TT-S-00227E(3) for multi-component sealant, or to Fed. Spec. TT-S-00230C(2) for single component sealant. Properties and adhesion of 1-part sealants shall be equal to 2-part materials. Sealants shall be Type I or Type II, as applicable. Sealants shall be limited to acceptable compounds compositions which are polysulfide, polyurethane, and silicone. For metal buildings, use Class "A" sealants, and for other locations, use Class "B" sealants each conforming with above referenced Federal Specifications or with ASTM C-920 like characteristics. Above grade sealants shall be resistant to ultra violet deteriorations.

1. For joints in water-bearing surfaces, use only polyurethane sealants certified and approved by manufacturer for continuous or intermittent submergence in water or sewage.
2. Silicone type sealant shall be used only on above grade joints which are not subject to vehicular or pedestrian traffic.
3. Acoustical Sealant. Where designated or required at interior and acoustic partitions, use: "Acoustical Sealant" produced by USG, Tremco, or equal products.
4. For Traffic (Vehicular or Pedestrian) Horizontal Sealant Joints. Sealant shall be MAMECO International's No. 45, or equal. Provide with Shore "A" Hardness Range of 25-35.

D. Primer, where required, shall be used as recommended in writing by the sealant manufacturer. Primer shall have been tested for non-staining characteristics and

durability on samples of actual surfaces to be sealed.

E. Back-up Materials and Preformed Joint Fillers. Use non-staining material, compatible with sealant and primer, and of a resilient nature, such as closed cell polyethylene rod, or elastomeric tubing or rod (neoprene, butyl, or EDPM). Materials impregnated with oil, bitumen, or similar shall not be used. Size and shape shall be as indicated by joint details in Drawings and shall be as recommended by sealant manufacturer in writing. Sealant shall not adhere to back-up material.

F. Bond Breakers, where required, shall be polyethylene tape, aluminum foil or other material as recommended by sealant manufacturer in writing.

### **PART 3 - EXECUTION**

#### **3.01 GENERAL**

A. Perform work of this Section by material manufacturer's approved applicator in strict conformance with manufacturer's printed instructions, or perform such operations under direct supervision of qualified representative of material manufacturer.

B. Applicator shall examine all surfaces and report to the General Contractor all conditions not acceptable.

#### **3.02 PREPARATION**

A. Thoroughly clean all joints, removing all foreign matter such as dust, oil, grease, water, surface dirt, frost and old caulking materials. Sealant must be applied to the base surface. Previously applied paint or primer must be entirely removed.

B. Porous materials such as concrete masonry or stone should be cleaned where necessary by grinding, blast-cleaning, mechanical abrading, acid washing or combination of these methods to provide a clean, sound base surface for sealant adhesion.

1. Laitance shall be removed by acid washing, grinding, or mechanical abrading.

2. Form oils shall be removed by blast-cleaning.

3. Loose particles present or resulting from grinding, abrading or blastcleaning shall be removed by blowing out joints with oil-free compressed air (or vacuuming) prior to application of primer or sealant.

C. Non-porous surfaces, such as metal and glass, shall be cleaned either mechanically or chemically. Protective coatings such as methacrylate lacquer on metallic surfaces shall be removed by a solvent that leaves no residue. Solvent shall be used with clean cloths or lintless paper towels. Do not allow solvent to air dry without wiping. Wipe dry with clean, dry cloth, or lintless paper towels.

D. Joint areas to be protected with masking tape or strippable films shall be cleaned before application of tape or film.

E. All joints to receive sealant shall be as indicated on shop or Project Drawings. Do not seal joints until they are in compliance with drawings or are acceptable to the Engineer.

1. Joints to receive sealant shall be a minimum of 1/4 inch wide by 1/4 inch deep, unless otherwise approved.

2. For joints in concrete, masonry, or stone: depth of the sealant may be equal to the width of joints up to 1/2 inch wide. For joints 1/2 inch to 1 inch wide: depth shall be 1/2 inch. For expansion and other joints, 1 to 2 inches wide: depth shall be no greater than 1/2 the applied sealant width. For joints exceeding 2 inches (5 cm) in width: depth shall be as directed by sealant manufacturer.

3. For joints in metal, glass, and other non-porous surfaces: sealant depth shall be a minimum of 1/2 the applied sealant width, and shall in no case exceed the applied sealant width.

F. Joints to receive sealant, back-up material or pre-formed joint filler shall be cleaned out, raked to full width and depth as required by Applicator.

G. Joints shall be of sufficient width and depth to accommodate specified back-up material or pre-formed joint filler and sealant.

### 3.03 APPLICATION

A. Install back-up material or joint filler, of type and size specified, at proper depth to provide sealant dimensions as detailed. Back-up material shall be of suitable size and shape; and compressed 25-50 percent to fit joints as required. Sealant shall not be applied without back-up material and/or bond breaker strip. When using back-up tubes avoid lengthwise stretching. Tube or rod shall not be twisted or braided.

B. Apply masking tape, where required, in continuous strips in alignment with joint edge.

C. Prime surfaces, where required, with primer as recommended by sealant manufacturer.

D. Follow sealant manufacturer's instruction regarding mixing (if required), surface preparation, priming, and application procedure.

E. Apply sealant under pressure with hand or power actuated gun or other appropriate means.

Gun shall have nozzle of proper size and provide sufficient pressure to completely fill joints as designed. All joint surfaces shall be tooled to provide the contour as indicated on Drawings.

When tooling joints, use tooling solution recommended by manufacturer. Remove masking tape immediately after joints have been tooled.

1. For sealant application when air temperature is below forty degrees (40o)Fahrenheit (four degrees (4o) Centigrade), consult sealant manufacturer for recommendations.

### 3.04 CLEAN-UP AND PROTECTION

Clean adjacent surfaces of sealant as work progresses. Use solvent or cleaning agent as recommended by sealant manufacturer. All finished work shall be left in a neat, clean condition.

### 3.05 QUALITY CONTROL

The sealant joints shall be uniformly smooth, free of wrinkles, flush with adjacent surfaces and absolutely watertight. Adjacent surfaces which have been soiled by the application of the sealing compound shall be wiped clean and be left neat. The work will be judged defective due to the sealant's hardening, cracking, crumbling, melting, shrinking, leaking, or running.

**END OF SECTION 0792**



## 0800 Doors, Windows & Glass

### 0810 Glass and Glazing.

Glass for all window repairs shall be double strength.

All Glass in doors shall be tempered safety glass.

Leave all glass clean.

### 0820 Doors

This work includes the furnishing and installing wood doors and frames as called for on the drawings and in the schedule.

Wood Doors: The wood doors shall be fabricated by an experienced mill that can demonstrate proven experience with door manufacturing. Wood doors must be guaranteed for five years by the mill. Exterior doors shall be 1-3/4" Mahogany with panels as shown on the schedule.

Label doors for all openings required by code to have them shall be provided.

### 0830 Door Hardware

Hardware shall be as shown on the schedule on the drawings and as specified herein. Finish on all hardware shall be satin stainless steel.

J-series Torino levers. (equals will be accepted provide they have the same look and are of equal or better quality). for the entire building (excluding storefront doors). Keying shall be included in pricing. Key pricing should include a separate pair of keys for each lockset and a master key.

All hardware shall meet current codes for accessibility with lever-operated latch release. Butts shall match locksets. Specialty hinges by Hager or Glynn-Johnson may be required.

The operation shall be as shown on the drawings.

### 0850 Windows

Existing windows on main floor shall be replaced with wood double hung windows.

Attic windows shall be removed and repaired, then reinstalled in a fixed waterproof frame.

Windows installation shall be complete with all sills, heads and jambs, stools, masonry stop, etc.

## Standard Construction of New Windows:

- Frames shall be 1-3/4" thick with 0.050" thick exterior cladding with mitered corners that are sealed with gaskets and mechanically fastened.
- Overall frame depth shall be confirmed in the field.
- Full 1-3/4" thick mortised and tenoned sash with 2-1/16" stile and top rail face width with 3-5/8" interlocking bottom rail face width. Exterior clad thickness is 0.050" thick.
- Removable side-load operating sash operated with block and tackle balance concealed within the sash.
- Classic styled Melron sash locks and keepers with custodial clips.
- Innovative, narrow profile, removable full or half Flexscreen.

WARRANTY: • Workmanship and materials: 10-year limited warranty (Residential and Commercial application).

- Insulating glass: 20 year limited warranty on dual insul glass; 10-year limited warranty on triple insul glass; 5 years on Specialty glass (Residential and Commercial).
- Exterior clad finish: 2604 Finish=10-years limited warranty (Residential and Commercial); 2605 Finish=30 years limited warranty (Residential), 20 years limited warranty (Commercial); Anodized= 5 year limited warranty (Residential and Commercial).
- Interior finish: 2-year limited warranty (Residential and Commercial). • Warranty Labor: 2-year limited warranty (Residential and Commercial).

ALL NEW WOOD WINDOWS SHALL BE INSTALLED FROM THE INSIDE TO AVOID BRICK DAMAGE. IT IS IMPERATIVE THAT THE SUPPLIER VISIT THE SITE TO UNDERSTAND THE RESTRAINTS THAT WILL APPLY DUE TO THE HISTORIC NATURE OF THE PROJECT AND THE CONFIGURATION OF THE BRICK JAMBS AND PRECAST HEAD AND SILL.

## PART 4 EXECUTION

## 4.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

## 4.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

## 4.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

## 4.4 PROTECTION

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

END OF SECTION

## 0900 Finishes

### 0910 Gypsum Drywall and Joint Compound

All gypsum board on this project shall be 5/8" water resistant green board (w/r or MR board) or 5/8" type "X". No damaged material will be allowed.

Screw spacing shall not exceed 8" on walls.

All joints and fasteners shall receive three coats of Durabond setting type joint compound applied over paper tape. Application shall be in a workmanlike manner so that the joints and screws are undetectable.

All walls shall be finished "ready to paint."

### 0920 Grid Ceiling Suspension System

Ceiling system shall be capable of supporting 6 pounds per linear foot. Tees and Runners shall be designed for an exposed 15/16" grid. All grid shall be supplied with a white, baked enamel finish.

Tiles to be 2' x 2' non-directional fissured with a tegular edge. Tiles in bathrooms shall be suitable for installation in a moist location.

### 0930 Painting

Adequate surface preparation is the key to successful painting in a renovation project. Careful, thorough sanding will be expected on all wood finish items that are being refinished.

Existing surfaces that are being repainted shall be washed with a mild soapy solution and rinsed, and allowed to dry for 24 hours before painting. Patched areas shall be spot primed ahead of general painting work.

Factory primed painted materials exposed to the exterior of the building will be given 2 field coats of finish paint. Surfaces which are not primed and are not protected by metallic coatings and are exposed to the exterior of the building or are finished areas will be given 1 field coat of prime coat and 2 coats of paint.

All new wood shall be primed, then painted with two coats of paint.

The finish paint on interior trim and woodwork will be semi-gloss.

Paints shall be latex based eggshell finish, commercial grade, by Pratt & Lambert, Sherwin Williams, Benjamin Moore, Glidden or equal. These materials shall be formulated specifically for the application intended.

New brick and concrete block that is to receive paint shall be painted with a coating that breathes and is guaranteed by the manufacturer for the intended use.

Concrete floors shall be stained with a concrete stain formulated specifically for this type of installation.

A schedule of the exact materials to be used on all surfaces on the job is to be submitted to the architect prior to commencing work.

### 0945 Solid Vinyl Base

4" Vinyl Base shall be installed in rooms where indicated on room finish schedule. Base shall be installed with epoxy adhesives. Base Color shall match be a standard color as shown on the finish schedule.

0950 WOOD FLOORING

Part 1 – General

1.1 WORK

A. Provide all labor and materials required to complete the wood flooring work as listed on the Scope, and as specified herein.

1.2 QUALITY STANDARDS

- A. Provide experienced, well-trained workers competent to complete the work as specified.
- B. All work shall comply with manufacturer's instructions and governing building codes.
- C. Provide a certified lead abatement supervisor and certified lead abatement workers per NC Lead Dust Hazards specifications, if work will involve refinishing of wood floors or the removal and disturbance of more than 2square feet of wood flooring.

1.3 SUBMITTALS

- A. Supply Owner with samples of standard color selections.
- B. Provide a copy of the Owner's written color selection to Agency.
- C. Submit to Owner manufacturer's flooring care and cleaning instructions, and warranty.

1.4 MATERIALS HANDLING

- A. Provide all materials required to complete the work.
- B. Deliver and transport materials to avoid damage to the product or to any other work.
- C. Return any products or materials delivered in a damaged or unsatisfactory condition.
- D. Materials and products delivered will be certified by the manufacturer to be as specified.
- E. Packaging must be sealed with clear manufacturer and identification markings.
- F. Store wood flooring materials in work area for at least 72 hours prior to installation.
  - 1. Protected from weather or moisture.
  - 2. Protected from construction damage.
  - 3. Protected from occupant traffic.

PART 2 – MATERIALS

2.1 FLOORING AND ACCESSORIES

A. Wood flooring repairs:

1. Provide wood flooring in sizes, species, grades and configurations as similar as possible to the original flooring.

B. New wood flooring:

1. Select grade plain-sawn Red Oak or White Oak, 25/32" thick, 3-1/4" face width.
2. Tongue and groove, end matched.
3. Install wood nosings at landings and stair treads.
4. Install underlayments per manufacturer's recommendations.

C. Nails, screws, other fasteners as per flooring manufacturer's specifications.

1. Ring-shank flooring nails must be long enough to securely attach the flooring to substrate.
2. Where possible, nails shall be hidden from view.
3. When nails cannot be hidden, countersink nails and fill holes with manufacturer's recommended filler. • Nails must not split the flooring.

D. Install wood baseboard as listed in the Scope and as specified herein.

1. Unless otherwise listed in the Scope, wood baseboard shall match as closely as possible the architectural characteristics of the original (existing) baseboard.
2. Newly installed wood baseboard and trim shall be painted or stained to match surrounding woodwork.

E. Install shoe molding to conceal edges at vertical projections, walls, cabinets, etc.

1. Newly installed wood shoe shall be painted or stained to match flooring finish.

F. Metal transition strips (thresholds):

1. Edge strips shall be no less than 3/4" width, 1/8" thick, butt type, rounded or beveled on the exposed edge with lengths sufficient to minimize joints.
2. Standard color (i.e. silver or gold) per Owner's selection.
3. Do not reuse transition strips.

## PART 3 – INSTALLATION

### 3.1 PRECONSTRUCTION AND PREPARATION

A. Examine and verify that job conditions are satisfactory for speedy and acceptable work.

B. Prior to installation of new wood flooring:

1. Clear area or room of furniture, appliances, and other obstructions.
2. Contractor shall take all necessary precautions to minimize damage to surrounding surfaces during

3. removal and installation of flooring materials.
4. The Contractor at the Contractor's expense shall repair any surfaces damaged during removal and
5. installation of flooring materials.
6. Remove existing shoe molding, nosings, transition strips (thresholds), etc. to allow for the complete and
7. proper installation of the flooring.
8. Remove base molding only if necessary for a complete and proper installation of new flooring, or if listed
9. in Scope.
10. When removal of baseboard or shoe disturbs painted surfaces in excess of two square feet, work shall
11. be done in accordance with Section 01810 Lead Dust Hazards.
12. All debris created shall be properly disposed of by the Contractor in accordance with Section 01810
13. Lead Dust Hazards.
14. Inspect sub-floor for structural deficiencies, soundness, and make any necessary repairs.

### 3.2 FLOORING INSTALLATION

A. Flooring shall be installed per manufacturer's instructions and as specified herein.

1. Store wood flooring in work area for 72 hours prior to installation.
2. Reject warped or bent flooring material.

B. Wood floor layout:

1. Confirm direction of wood flooring strips, patterns, and borders.
2. Confirm the schedule for stripping, sanding and finishing.
3. Extend flooring into closets, recesses, toe spaces, doorways, etc.
4. Flooring shall be smooth without humps or depressions.
5. Butt flooring tightly against vertical surfaces, door jambs, casings, etc.
6. Scribe as necessary to fit around objects and at changes in floor finish materials.
7. Scribed joints must be cut neatly and square.

C. Nailing:

1. Drive diagonally.
2. Space as required.
3. Nail at ends of each strip.
4. Pre-drill as necessary to prevent splits.
5. Nail type as specified by manufacturer.

D. Joints:

1. Construct joints within tolerances required by manufacturer.

2. Cut joints: tight, straight, matched, aligned.
3. Stagger joints.
4. Do not allow end joints to occur side by side; separate by at least two strips. • Do not damage tongue and grooves before or during installation.
5. Use small or varied strips sparingly and never near one another.
6. Provide a minimum of ½” expansion joint space at all walls.

E. Install shoe molding and baseboard per Section 06200 Finish Carpentry and Millwork and as specified

herein:

1. Install wood shoe molding and baseboards tight to wall and floor.
2. Fasten baseboards and/or shoe molding to walls only, not floors, to cover expansion space.
3. Miter joints in shoe moldings and baseboard at outside corners, joints, and at ends.
4. Cope joints at inside corners of shoe molding and baseboard.
5. Install shoe molding and baseboards in adequate lengths to minimize joints.
6. Set and fill all nail holes in shoe molding and baseboard.
7. Finish (stain or paint) shoe molding and baseboard to match surrounding wood work.
8. Existing shoe molding and baseboards maybe reused if material is in good condition, free from damage, and unbroken. Contractor shall take care to prevent damage during removal and reinstallation.

F. Door clearance:

1. If necessary, Contractor shall undercut doors to allow for proper clearance over new flooring. Door shall not drag or scrape on new flooring. Contractor shall take extreme care to not scratch, mar, splinter, or otherwise doors as necessary to allow for; thresholds, weatherstripping, nosings, etc.

G. Install wood or metal transition strips only where new flooring meets a dissimilar flooring material.

1. Transition strips shall be securely installed with screws or nails per manufacturer’s instructions.
2. Transition strips shall be in sufficient lengths to minimize joints.

### 3.3 FINISHING AND REFINISHING

A. Finishing of new wood floors:

1. Sand new wood flooring consistently smooth, without lumps, depressions, and burns.
2. Before applying finish, thoroughly cleanup and vacuum all sanding dust.
3. Fill all nail holes with manufacturer’s recommended wood filler compound.
4. Apply final finish as soon as possible after final sanding is complete.
5. Apply final finish as per manufacturer’s instructions.

6. Allow at least 24 hours, or longer per manufacturer's instructions, drying time between finish coats.

SECTION 09680

CARPET TILE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. The Drawings and provisions of the General Conditions, Supplementary Conditions, and the Sections included under Division 1, General Requirements, are included as a part of this Section as though bound herein.

1.02 SUMMARY

- A. Extent, location and details of each type of carpet tile are indicated on drawings and in schedules.
- B. Work of this section includes furnishing and installation of carpet tile and accessories.

1.03 DEFINITIONS

- A. Commercial Carpet: Carpet intended for use in commercial and public spaces, with construction, fire ratings, static control and appearance appropriate for this use.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's product literature and installation instructions for each type of carpeting material and installation accessory required. Include methods of installation for each type of substrate.
  1. Submit written data (prepared by an independent test laboratory) describing physical characteristics, durability, resistance to fading, flame resistance characteristics and certificates for ISO 9000 and ISO 14001.
- B. Shop Drawings: Submit shop drawings showing carpet layout, clearly indicating types of edge strips. Indicate columns, doorways, enclosing walls/partitions, built-in cabinets, and locations where cutouts are required in carpet. Show installation details at special conditions. Shop drawings shall be prepared at 1/4" scale.
- C. Samples for Initial Selection Purposes: Submit manufacturer's standard size



samples and color yarns showing full range of colors, textures and patterns available for each type of carpet required.

- D. Samples for Verification Purposes: Submit the following:
  1. Carpet manufacturer's binder of samples of each type of carpet material required.
  2. Twelve inch (12") long samples of each type exposed edge stripping and accessory items.
- E. Prepare samples from same material to be used for the work.
- F. Purchase Order Verification: The carpet supplier shall submit confirmation of purchase from the Manufacturer clearly showing the carpet series, pile weight, type of backing, colors, and ply construction for record prior to installation.

#### 1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Firm (material producer) with not less than 5 years of production experience, whose published literature clearly indicates general compliance of products with requirements of this section.
- B. Manufacturer Environmental Requirements: Submit certificates indicating manufacturer is registered to ISO 14001 Environmental Management System and ISO 9001 Quality Management System.
- C. Installer Qualifications: Firm specializing in carpet installation with not less than 5 years of experience in installation of carpeting similar to that required for this project.
- D. Single Source Responsibility: Provide material produced by a single manufacturer for each carpet type.

#### 1.06 TESTING

- A. Test Reports: Submit certified test reports evidencing compliance with requirements for the following:
  1. Fire performance characteristics.
  2. Physical properties indicated.
  3. CRI Green Label Plus.
- B. Fire Performance Characteristics: Provide carpeting that is identical to that tested for the following fire performance requirements, according to test method indicated, by UL.
  1. Flammability:
    - a) Rating: Passing; (DOC FF #1-70) Methenamine Pill Test.

- b) Test Method: ASTM D 2859.
- 2. Critical Radiant Flux:
  - a) Rating: Not less than 0.45 watts per sq. centimeter.
  - b) Test Method: ASTM E 648.
- 3. Smoke Density:
  - a) Rating: 450 or less
  - b) Test Method: ASTM E 662.
- C. Physical Properties: Provide carpeting that is identical to that tested for the following physical properties, according to the test method indicated.
  - 1. Fade Resistance:
    - a) Rating: Maximum grey scale factor of 40 hours.
    - b) Test Method: AATCC 16E.
  - 2. Static Resistance:
    - a) Rating: 3.5 kV when tested at 20% R.H/70 deg F.
    - b) Test Method: AATCC 134.
- D. Certification: Submit manufacturer's certificate stating that materials furnished comply with specified requirements. Include supporting certified laboratory testing data indicating that material meets specified test requirements.

#### 1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to project site in original factory wrappings and containers, clearly labeled with identification of manufacturer, brand name, quality or grade, fire hazard classification, and lot number. Store materials in original undamaged packages and containers, inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, humidity; laid flat, blocked off ground to prevent sagging and warping. Maintain temperature in storage area above 40 degrees Fahrenheit.
- B. Comply with instructions and recommendations of manufacturer for special delivery, storage, and handling requirements.

#### 1.08 SEQUENCING AND SCHEDULING

- A. Sequence carpet installation with other work to minimize possibility of damage and soiling during remainder of construction period.

#### 1.09 WARRANTY

- A. Special Wear Warranty: Submit a written warranty, executed by the Contractor, Installer and the Manufacturer, agreeing to repair or replace carpeting which fails

in materials or workmanship within the specified warranty period. This warranty shall be in addition to and not a limitation of other rights the Owner may have against the Contractor under the Contract Documents.

- B. Warranty period is 15 years after the date of substantial completion.
- C. Warranty must be non-prorated. Lifetime warranty will not be accepted.
- D. Chair Pads are not required for carpet warranty coverage.

#### 1.10 MAINTENANCE

- A. Maintenance Instructions: Submit manufacturer's printed instructions for maintenance of installed work, including methods and frequency recommended for maintaining optimum condition under anticipated traffic and use conditions. Include precautions against materials and methods which may be detrimental to finishes and performance.
- B. Replacement Materials: After completion of work, deliver not less than 2% of each type, color, and pattern of carpeting, exclusive of material required to properly complete installation. Furnish accessory components as required. Furnish replacement materials from same production run as materials installed. Package replacement materials with protective covering, identified with appropriate labels.

### PART 2 - PRODUCTS

#### 2.01 MANUFACTURER

- A. The following manufacturers and carpet series will be accepted if manufactured in accordance with physical properties, fire performance characteristics, and construction requirements specified herein.
  - Interface Flooring Systems or BentleyPrinceStreet

#### 0970 Ceramic Tile

##### SUBMITTALS

Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, thresholds, and setting details.

Locate and detail expansion and control joints.

Submit color samples illustrating full color range of each type tile.  
Submit tile mock-up mounted on a plywood backer board, illustrating tile patterns and colors, grout joint width and colors, and maximum color variations anticipated. Size of mock-up to allow for at least 4 tiles (minimum of 12 by 12 inch).  
Grout: Submit manufacturer's full range of standard and designated color samples for each type for Architect's selection.]

#### QUALITY ASSURANCE

Obtain each type and color tile material required from single source.  
Obtain setting and grouting materials from one manufacturer to ensure compatibility.  
Furnish a 10 year guarantee from installation material manufacturer. The guarantee is inclusive of installation materials, finish product, and labor.  
Obtain prefabricated edge protection and transition and movement profiles from one manufacturer to ensure compatibility.  
Obtain membrane from same manufacturer as setting material or from manufacturer approved by setting material manufacturer to ensure compatibility.  
Tile: Minimum [5] years experience in manufacture of tile products.  
Setting Materials: Minimum [10] years experience in manufacture of setting and grout materials specified.  
Submit manufacturer's certifications that mortars, adhesives, and grouts are suitable for intended use.

#### FIELD SAMPLES

Install in location [as directed by Architect] [as noted on Drawings].  
Show workmanship of finished work and construction techniques.

#### WARRANTY

Warranty Period: 2 years after date of Substantial Completion.

#### EXTRA MATERIALS

One carton of each color of tile.

#### PRODUCTS

#### MANUFACTURERS

Summitville, Florida Tile.  
American Olean, Dallas, TX.  
Dal-Tile Corp., Dallas, TX.  
American Olean, Dallas, TX.

#### PRODUCTS, GENERAL

Furnish tile complying with "Standard Grade" requirements unless otherwise indicated.  
Provide selections made by Architect from manufacturer's full range of standard colors, textures, and patterns for products of type indicated.  
Provide tile trim and accessories that match color and finish of adjoining flat tile unless noted otherwise.  
Tile shall be 6" x 6" Porcelain for all floor areas on 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> floors.  
Glazed Ceramic Subway tiles shall be used at all kitchen backsplashes on 2<sup>nd</sup> and 3<sup>rd</sup> floors.  
Edge: Cushioned.  
Finish: [Glazed]  
Color: To be selected  
Base: Matching cove base units, 4 or 6 inches high, [bullnosed] [flat] top.

#### MORTAR, GROUT, AND ADHESIVE MANUFACTURERS

Custom Building Products, Seal Beach, CA.  
Laticrete International, Inc., Bethany, CT  
Mapei Corporation, Deerfield, FL.

#### MORTAR MATERIALS - THIN SET BEDS

Description: Two component system; factory prepared second generation high bond strength dry-set mortar and liquid polymer additive; complying with ANSI A118.4.

Acceptable Products:

MasterBlend™ Thin-Set Mortar mixed with CustomFlex™ Ultra-Strength Thin-Set Additive by Custom Building Products.

MasterBlend™ Thin-Set Mortar mixed with Acrylic Mortar Admix by Custom Building Products.

VersaBond™ Bonding Mortar (Dry Polymer) by Custom Building Products.

FlexBond™ Premium Flexible Bonding Mortar (Dry Polymer) by Custom Building Products.

4237 Latex Thinset Mortar Additive mixed with 211 Crete Filler Powder by Laticrete.

3701 Mortar Admix mixed with premium floor and thin set by Laticrete.

Keralastic System consisting of Keralastic polymer additive and Kerabond dry-set mortar by Mapei.

Keraply System consisting of Keraply Acrylic Latex and Keraset Dry-Set Mortar.

Grani/Rapid System consisting of Grani/Rapid powder and PRP318 latex additive by Mapei.

MEDIUM SET MORTAR

Medium Bed Mortar (Gray) by Custom Building Products.

Marble & Granite Mortar Mix (White) by Custom Building Products.

3701 Mortar Admix mixed with 220 Marble and Granite Mortar by Laticrete.

Ultra/Contact Medium-Bed Mortar by Mapei, complies with ANSI A118.4.

ORGANIC ADHESIVE

Thin-set bond type, complying with ANSI A136.1, Type [1.] [2.]

Acceptable Products:

ReliaBond™ Ceramic Tile Mastic by Custom Building Products.

AcrylPro™ Ceramic Tile Mastic by Custom Building Products.

15 Premium Multi-Mastic Adhesive by Laticrete

KER 903 Type 1 Organic Adhesive by Mapei.

EPOXY ADHESIVE

100% Solids Epoxy Mortar by Custom Building Products.

Latapoxy 300 Epoxy Adhesive by Laticrete.

Kerapoxy 410 Chemical Resistant Epoxy Mortar by Mapei.

GROUT

Description: Latex-modified, factory blended, mildew resistant, non-sanded, grout consisting of portland cement and additives; comply with ANSI A118.6.

Latex Additive: Type as recommended by latex mortar manufacturer.

Polyblend® Non-Sanded Tile Grout by Custom Building Products.

White Dry Tile Grout by Custom Building Products.

644 White Dry-Set Grout mixed with 17765 Grout Admix Plus by Laticrete.

1600 Series Tri-Poly Fortified Non Sanded Grout by Laticrete.

KER 800 polymer-modified unsanded grout by Mapei.

CEMENTITIOUS BACKER UNITS

Cementitious composition with glass fiber reinforcement.

Product specifically manufactured as substrate material for application of ceramic tile in wet areas.

Comply with ANSI A118.9.

Thickness: 1/2 inch minimum.

Fasteners: Corrosion resistant type required by board manufacturer for securing units.

Joint Reinforcement Tape:

2 inch nominal width.

Polymer coated fiberglass mesh of type recommended by board manufacturer.

Acceptable Products

½” Wonderboard® Backerboard by Custom Building

Vapor Retarder:

Comply with ASTM D 4397.

Thickness and Maximum Permeance Rating: [4.0 mils, 0.19 perms] [6.0 mils, 0.13 perms].

Vapor Retarder Tape: Pressure-sensitive tape of type required by vapor retarder manufacturer for sealing joints and penetrations in vapor retarder.

MISCELLANEOUS MATERIALS

Petroleum paraffin wax, fully refined, tasteless, odorless, containing at least 0.5 percent oil with a melting point of 120 degree F to 140 degree F per ASTM D 87.

Grout release in form of manufacturer's standard proprietary liquid coating that is specially formulated and recommended for use as a temporary protective coating for tile.

MIXING MORTAR AND GROUT

EXECUTION

EXAMINATION

Firm, dry, clean and free of oily or waxy films, mortar and soil.

Grounds, anchors, plugs, hangers, bucks, electrical and mechanical work in or behind tile installed.

PREPARATION

Flash membrane up adjacent walls and restraining surfaces.

Use preformed cove, corners, and expansion joint flashing.

Allow membrane to cure as prior to setting tile.

Do not allow construction traffic on membrane.

INSTALLATION

Place rough side out and fasten with galvanized or resin coated gypsum board screws at 8 inches on center in field of panel and at 6 inches on center at edges.

Provide 1/4 inch gap above floor or fixture lip for flexible caulking.

Maintain manufacturer's required space between board edges.

Fill joints by applying tile setting material and joint reinforcement.

Vapor Retarder:

Extend vapor retarder to extremities of areas indicated to be protected from vapor transmission.

Secure in place with mechanical fasteners or adhesives.

Extend vapor retarder to cover miscellaneous voids in insulated substrates, including those filled with loose mineral fiber insulation.

Seal vertical joints in vapor retarders over framing by lapping not less than two wall studs.

Fasten vapor retarders to framing at top, end, and bottom edges, at perimeter of wall openings, and at lap joints; space fasteners no greater than 16 inches apart.

Seal joints in vapor retarders caused by pipes, conduits, electrical boxes and similar items penetrating vapor retarders with vapor retarder tape.

Repair tears and punctures in vapor retarder immediately before concealing it with the installation of cementitious backer units.]

Install tile materials in accordance with ANSI A137.1, other referenced ANSI and TCA specifications, and TCA "Handbook for Ceramic Tile Installation", except for more stringent requirements of manufacturer or these Specifications.

Cut and fit tile tight to protrusions and vertical interruptions and treat with a compatible sealant as specified in Section 0792. Form corners and bases neatly.

Work tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joint watertight, without voids, cracks, excess mortar, or grout.

Prepare surface, fit, set, bond, grout and clean in accordance with applicable requirements of ANSI standards and Tile Council of America.

Lay out work to pattern indicated so that full tile or joint is centered on each wall and no tile of less than half width need be used. Do not interrupt pattern through openings. Lay out tile to minimize cutting and to avoid tile less than half size.

For heights stated in feet and inches, use courses of full tile to produce nearest attainable heights without cutting tile.

No staggered joints will be permitted.

Align joints in tile in both directions.

Align joints between floor and base tile.

Make joints between sheets of tile exactly same width as joints within sheet.

File edges of cut tile smooth and even.

Cut and fit tile at penetrations through tile. Do not damage visible surfaces. Carefully grind edges of tile abutting built-in items. Fit tile at outlets, piping and other penetrations so that plates, collars, or covers overlap tile.

Extend tile work into recesses and under or behind equipment and fixtures, to form complete covering without interruptions, except as otherwise indicated. Terminate work neatly at obstructions, edges and corners without disrupting pattern or joint alignments.

Accurately form intersections and returns.

Form internal angles [square] [coved] and external angles [bullnosed] [square].

Apply mortar or adhesive with notched trowel using scraping motion to work material into good contact with surface to be covered. Maintain 90 percent coverage on back of tile and fully bed all corners.

Apply only as much mortar or adhesive as can be covered within allowable windows as recommended by mortar or adhesive manufacturer or while surface is still tacky.

When installing large tiles, ceramics or mosaics, trowel small quantity of mortar or adhesive onto back of each tile or sheet of tiles.

Set tiles in place and rub or beat with small beating block.

Beat or rap tile to ensure proper bond and also to level surface of tile.

Align tile to show uniform joints and allow to set until firm.

Clean excess mortar or adhesive from surface of tile with wet cheese cloth (not a sponge) while mortar is fresh.

[Allow face mounted tile to set until firm before removing paper and before grouting.]

Sound tile after setting. Replace hollow sounding tiles.

Allow tiles to set a minimum of 48 hours before grouting.

If bonding materials are rapid setting, follow manufacturer's recommendations.

Install in accordance with grout manufacturer's recommendations and ANSI A108.10.

Pack joints full and free before mortar takes initial set.

Clean excess grout from surface with wet cheesecloth as work progresses. Do not use hydrosponges.

Cure after grouting by covering with kraft or construction paper for 72 hours.

Install sealant in vertical wall joints at interior corners.

### CLEANING

Clean excess mortar from surface with water as work progresses. Perform cleaning while mortar is fresh and before it hardens on surfaces.

Sponge and wash tile diagonally across joints. Polish with clean dry cloth

Remove grout haze following recommendation of mortar additive manufacturer. Do not use acids for cleaning.

[Remove temporary protective coating by method recommended by coating manufacturer that is acceptable to brick and grout manufacturer. Trap and remove coating to prevent it from clogging drains.]

PROTECTION

boards or Prohibit traffic from floor finish for 72 hours after installation.

Where temporary use of new floors is unavoidable, supply large, flat plywood panels for walkways over kraft paper.

Protect work so that it will be without any evidence of damage or use at time of acceptance.

END OF SECTION



1000 SPECIALTIES

1020 Toilet Accessories

Toilet accessories are an allowance item. One of each item per bathroom will be needed:

1. 18" x 36" mirror. Restroom mirrors should be fabricated by local glass shop to fit sink countertop width.
2. Jumbo Roll Toilet Tissue Dispenser – U838
3. Grab bars – Configuration A Series
4. Soap dispenser – U127.
5. Wall mounted baby changing station.

Bobrick, Bradley, Weis/Robart, or equal, surface mounted seamless construction, brushed stainless steel accessories may be used. The supplier shall submit cut sheets to the owner for approval for each item required.

END OF SECTION

SECTION 1235 - KITCHEN CABINETS AND COUNTERTOPS

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. Kitchen cabinets.
- B. Related Sections include the following:
  - 1. Section 113100 "Residential Appliances".
  - 2. Section 224000 "Plumbing Fixtures".

1.3 DEFINITIONS

- A. Exposed Surfaces of Cabinets: Surfaces visible when doors and drawers are closed, including visible surfaces in open cabinets or behind glass doors.
- B. Semi-exposed Surfaces of Cabinets: Surfaces behind opaque doors or drawer fronts, including interior faces of doors and interiors and sides of drawers. Bottoms of wall cabinets are defined as "semiexposed."
- C. Concealed Surfaces of Cabinets: Surfaces not usually visible after installation, including sleepers, web frames, dust panels, bottoms of drawers, and ends of cabinets installed directly against and completely concealed by walls or other cabinets. Tops of wall cabinets and utility cabinets are defined as "concealed."

1.4 QUALITY ASSURANCE

- A. Source Limitations for Cabinets: Obtain cabinets through one source from a single manufacturer.
- B. Product Options: Drawings indicate size, configurations, and finish material of cabinets by referencing designated manufacturer's catalog numbers. Other manufacturers' cabinets of similar sizes and door and drawer configurations, same finish material, and complying with the Specifications may be considered. Refer to Division 1 Section "Product Requirements."
- C. Quality Standards: Unless otherwise indicated, comply with the following standards:
  - 1. Cabinets: KCMA A161.1.
    - a. KCMA Certification: Provide cabinets with KCMA's "Certified Cabinet" seal affixed in a semiexposed location of each unit and showing compliance with the above standard.
  - 2. Plastic-Laminate Countertops: KCMA A161.2.

1.5 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install casework until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Established Dimensions: Where casework is indicated to fit to other construction, establish dimensions for areas where casework is to fit. Coordinate construction to ensure that actual dimensions correspond to established dimensions. Provide fillers and scribes to allow for trimming and fitting.
- C. Field Measurements: Where casework is indicated to fit to existing construction, verify dimensions of existing construction by field measurements before fabrication and indicate measurements on Shop Drawings. Provide fillers and scribes to allow for trimming and fitting.
- D. Field Measurements for Countertops: Verify dimensions of countertops by field measurements after base cabinets are installed but before countertop fabrication is complete.

1.6 COORDINATION

- A. Coordinate layout and installation of blocking and reinforcement in partitions for support of casework.
- B. Coordinate locations of utilities that will penetrate countertops or backsplashes.

PART 2 – PRODUCTS

2.1 CABINET MATERIALS

- A. General:
  - 1. Hardwood Lumber: Kiln dried to 7 percent moisture content.
  - 2. Softwood Lumber: Kiln dried to 10 percent moisture content.

3. Hardwood Plywood: HPVA HP-1.

B. Exposed Materials:

1. Exposed Wood Species: Oak or comparably priced manufacturer's standard as chosen by the Architect.

a. Select materials for compatible color and grain. Do not use two adjacent exposed surfaces that are noticeably dissimilar in color, grain, figure, or natural character markings.

b. Staining and Finish: As selected by Architect from manufacturer's full range.

2. Plywood: Hardwood plywood with face veneer of species indicated, with Grade A faces and Grade C backs of same species as faces.

a. Edge band exposed edges with minimum 1/8-inch- thick, solid-wood edging of same species as face veneer.

C. Semi-exposed Materials: Unless otherwise indicated, provide the following

1. Plywood: Hardwood plywood with Grade C faces and not less than Grade 3 backs of same species as faces. Face veneers of same species as exposed surfaces or stained to be compatible with exposed surfaces.

D. Concealed Materials: Solid wood or plywood, of any hardwood or softwood species, with no defects affecting strength or utility; particleboard; or medium-density fiberboard.

2.2 CABINET HARDWARE

A. General: Manufacturer's standard units complying with BHMA A156.9, of type, size, style, material, and

finish as indicated by manufacturer's designations.

B. Pulls: Surface-mounted decorative pulls.

C. Hinges: Semi-concealed (wraparound) butt hinges for overlay doors.

D. Drawer Guides: Epoxy-coated-metal, self-closing drawer guides; designed to prevent rebound when drawers are closed; with nylon-tired, ball-bearing rollers; and complying with BHMA A156.9, Type B05011 or B05091.

2.3 COUNTERTOP MATERIALS

A. Plastic Laminate: High-pressure decorative laminate complying with NEMA LD 3.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Formica Corp.

b. Lamin-Art.

c. Nevamar Company, LLC.

d. Panolam Industries International Incorporated.

e. Wilsonart International.

2. Grade: HGS.

3. Provide through-color plastic laminate.

4. Grade for Backer Sheet: BKL.

5. Colors, Textures, and Patterns: As selected by Architect from countertop manufacturer's full range.

B. Plywood: Exterior softwood plywood complying with DOC PS 1, Grade C-C Plugged, touch sanded.

C. Solid Wood Edges and Trim: Clear red oak lumber, free of defects, selected for compatible grain and color, and kiln dried to 7 percent moisture content.

2.4 CABINETS

A. Basis of Design Product: The design for cabinets is based on KraftMaid Passport Oak accessible cabinets in Fox Hill Roman, raised-panel style, arched at upper wall cabinet doors, or cabinet and/or manufacturer of equal style and specified quality. Subject to compliance with requirements, provide the named product or a comparable product by one of the following:

1. Craft-Maid, Reading, PA

2. Forbes Custom Cabinets, Apex, NC

3. KraftMaid Cabinetry, Middlefield, Ohio

4. Mastercraft Industries/ Hoilday Kitchens

5. Plain & Fancy Custom Cabinetry, Scheafferstown, PA

6. Other manufacturer of cabinetry of same style and meeting specifications.

B. Face Style: Flush overlay; door and drawer faces cover cabinet fronts with only enough space between faces for operating clearance.

- C. Cabinet Style: Face Frame.
- D. Door and Drawer Fronts: 1/2-inch- thick, veneer-faced plywood.
- E. Exposed Cabinet End Finish: Wood veneer.
- F. Cabinet End Construction: 1/2-inch- thick plywood.
- G. Cabinet Tops and Bottoms: 1/2-inch- thick plywood, fully supported by and secured in rabbets in end panels, front frame (if any), and back rail.
- H. Back, Top, and Bottom Rails: 3/4-by-2-1/2-inch solid wood, interlocking with end panels and rabbeted to receive top and bottom panels. Back rails secured under pressure with glue and with mechanical fasteners.
- I. Wall-Hung-Unit Back Panels: 3/16-inch- thick plywood fastened to rear edge of end panels and to top and bottom rails.
- J. Base-Unit Back Panels: 3/16-inch- thick plywood fastened to rear edge of end panels and to top and bottom rails.
- K. Front Frame Drawer Rails: 3/4-by-1-1/4-inch solid wood mortised and fastened into face frame.
- L. Drawers: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.
  - 1. Join subfronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners or glued dovetail joints.
  - 2. Subfronts, Backs, and Sides: 3/4-inch- thick solid wood.
  - 3. Bottoms: 1/4-inch- thick plywood.
- M. Shelves: 5/8 or 3/4 inch- thick plywood.
- N. Joinery: Rabbet backs flush into end panels and secure with concealed mechanical fasteners. Connect tops and bottoms of wall cabinets and bottoms and stretchers of base cabinets to ends and dividers with mechanical fasteners. Rabbet tops, bottoms, and backs into end panels.
- O. Factory Finishing: Finish cabinets at factory. Defer only final touchup until after installation.
  - 2.5 PLASTIC-LAMINATE COUNTERTOPS
    - A. Configuration: Provide countertops with the following front, cove (intersection of top with backsplash), backsplash, and endsplash style:
      - 1. Front: No drip (raised marine edge with rolled front).
      - 2. Cove: Applied (backsplash rests on top forming seam at inside corner).
      - 3. Backsplash: Curved or waterfall shape with scribe.
      - 4. Endsplash: None.
    - B. Plastic-Laminate Substrate: Grade M-2-Exterior-Glue particleboard or exterior-grade plywood not less than 3/4 inch thick.
      - 1. Build up countertop thickness to 1-1/2 inches at front, back, and ends with additional layers of particleboard laminated to top.
    - C. Backer Sheet: Provide plastic-laminate backer sheet on underside of countertop substrate.
    - D. Paper Backing: Provide paper backing on underside of countertop substrate.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install cabinets with no variations in flushness of adjoining surfaces; use concealed shims. Where cabinets abut other finished work, scribe and cut for accurate fit. Provide filler strips, scribe strips, and moldings in finish to match cabinet face.
- B. Install cabinets without distortion so doors and drawers fit openings and are aligned. Complete installation of hardware and accessories as indicated.
- C. Install cabinets and countertop level and plumb to a tolerance of 1/8 inch in 8 feet .
- D. Fasten cabinets to adjacent units and to backing.
  - 1. Fasten wall cabinets through back, near top and bottom, at ends and not less than 24 inches o.c. with No. 10 wafer-head screws sized for 1-inch penetration into wood framing, blocking, or hanging strips.
  - 2. Fasten wall cabinets through back, near top and bottom, at ends and not less than 24 inches o.c., with toggle bolts through metal backing behind gypsum board.
- E. Fasten plastic-laminate countertops by screwing through corner blocks of base units into underside of countertop. Form seams using splines to align adjacent surfaces, and secure with glue and concealed clamping devices designed for this purpose.

1. Provide cutouts for sinks and lavatories, including holes for faucets and accessories.
2. Seal edges of cutouts by saturating with varnish.

### 3.2 ADJUSTING AND CLEANING

- A. Adjust cabinets and hardware so doors and drawers are centered in openings and operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.
- B. Clean casework on exposed and semi-exposed surfaces. Touch up factory-applied finishes to restore damaged or soiled areas.

END OF SECTION 1235

## **1236 STONE COUNTERTOPS**

### **PART 1. GENERAL**

#### SUMMARY

Section includes:

- Stone countertops.
- Stone side and backsplashes.

Related Sections:

Division 05 Section "Metal Fabrications" for steel countertop supports.

#### REFERENCES

- ASTM C 119-04: Terminology Relating to Dimension Stone
- ASTM C 170-90 (1999): Test Method for Compressive Strength of Dimension Stone
- ASTM C 615-03: Specification for Granite Dimension Stone
- ASTM C 880-98: Test Method for Flexural Strength of Dimensional Stone

#### SUBMITTALS

Product Data: For granite, stone accessories, and other manufactured products.

Shop Drawings: Include plans, sections, details, and attachments to other work. Show fabrication and installation details for dimension stone cladding:

- Include dimensions and profiles of stone units.
- Show locations and details of joints.
- Show locations and details of anchors and supports.

Stone Samples: (2) Sets for each stone required, exhibiting the full range of color characteristics expected; not less than 12 inches square.

- Grout Samples: Full range of exposed color and texture.
- Sealant Samples: For each type and color of joint sealant required.

Sealant Compatibility Test Report: Submit test report from sealant manufacturer, in accordance with Division 07 Section "Joint Sealants" stating that sealants will not stain stone.

Maintenance Data: Provide maintenance manuals for stone countertops. Include stone-care products recommended by stone source. QUALITY ASSURANCE

Fabricator Qualifications: Skilled workers who custom-fabricate stone countertops similar to work of this Project.

Obtain each variety of stone from a single quarry.

Make stone slabs available for Architect to examine for appearance characteristics.

Owner will select aesthetically acceptable slabs and will indicate aesthetically unacceptable portions of slabs.

Mockup: Build mockup to demonstrate aesthetic effects and set quality standards for materials and execution.

Build mockup of typical countertop as shown on Drawings.  
Approved mockup may become part of the completed Work.

## PROJECT CONDITIONS

Field Measurements: Verify dimensions of construction to receive stone countertops by field measurements before fabrication.

## PART 2. PRODUCTS

### STONE MATERIAL

Granite: ASTM C 615.

Cut stone from one block or contiguous, matched blocks in which natural markings occur.

Match Architect's samples.

Finish:

[Polished]

Thickness: Not less than the following:

[1-3/16 inches (30 mm)]

### STONE ACCESSORIES

General: Use only adhesives formulated for stone and recommended by manufacturer for the application shown on Drawings.

Water-Cleanable Epoxy Adhesive: ANSI A118.3, with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

Water-Cleanable Epoxy Grout: ANSI A118.3, chemical-resistant, water-cleanable, tile-setting and -grouting epoxy, with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

Stone Adhesive: 2-part epoxy or polyester adhesive, formulated specifically for bonding stone to stone, with an initial set time of not more than 2 hours at 70 deg F, and with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

Color: Match stone.

Sealant for Countertops: Manufacturer's standard sealant of characteristics indicated below that comply with applicable requirements in Division 07 Section "Joint Sealants" and will not stain the stone it is applied to.

Single-component, neutral-curing silicone sealant.

Color: As selected by Owner.

Use sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

Stone Cleaner: Cleaner specifically formulated for stone types, finishes, and applications indicated, as recommended by stone producer. Do not use cleaning compounds containing acids, caustics, harsh fillers, or abrasives.

Stone Sealer: Colorless, stain-resistant sealer that does not affect color or physical properties of stone surfaces, as recommended by stone producer for application indicated.

#### STONE FABRICATION, GENERAL

General: Fabricate stone per requirements, including Drawings and Shop Drawings.

Granite: NBGQA's "Specifications for Architectural Granite."

Select stone for intended use to prevent fabricated units from containing cracks, seams, and starts that could impair structural integrity or function.

Repairs that are characteristic of the varieties specified are acceptable provided they do not impair structural integrity or function and are not aesthetically unpleasing, as judged by Architect.

Grade and mark stone for final locations to produce assembled countertop units with an overall uniform appearance.

Fabricate stone countertops in sizes and shapes required to comply with requirements indicated, including details on Drawings and Shop Drawings.

Clean sawed backs of stones to remove rust stains and iron particles.

Dress joints straight and at right angle to face, unless otherwise indicated.

Cut and drill sinkages and holes in stone for anchors, supports, and attachments.

Provide openings, reveals, and similar features as needed to accommodate adjacent work.

Fabricate molded edges with machines having abrasive shaping wheels made to reverse contour of edge profile to produce uniform shape throughout entire length of edge and with precisely formed arris slightly eased to prevent snipping, and matched at joints between units. Form corners of molded edges as indicated with outside corners slightly eased, unless otherwise indicated.

Finish exposed faces of stone to comply with requirements indicated for finish of each type of stone required and to match approved Samples and mockups. Provide matching finish on exposed edges of countertops, splashes, and cutouts.

Carefully inspect finished stone units at fabrication plant for compliance with requirements for appearance, material, and fabrication. Replace defective units.

#### STONE COUNTERTOPS

General: Comply with recommendations in MIA's "Dimension Stone - Design Manual."

Nominal Thickness: Gage backs to provide units of identical thickness.

[1-3/16 inches (30 mm)]

Edge: Straight, slightly eased at top.

Splashes: Provide 13/16 inch thick backsplashes and side splashes.

Height: As shown on Drawings.

Top-Edge Detail: As shown on Drawings

Joints: Fabricate countertops in sections for joining in field, with joints at locations shown on Drawings and as follows:

Joints: 1/16 inch in width.

Cutouts and Holes:

Undercounter Fixtures: Make cutouts for undercounter fixtures in shop using template or pattern furnished by fixture manufacturer. Form cutouts to smooth, even curves.

Counter-Mounted Fixtures: Prepare countertops in shop for field cutting openings for counter-mounted fixtures. Mark tops for cutouts and drill holes at corners of cutout locations.

Fittings: Drill countertops in shop for plumbing fittings, counter mounted soap dispensers, and similar items.

### PART 3. EXECUTION

#### EXAMINATION

Examine substrates indicated to receive stone countertops and conditions under which stone countertops will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

Proceed with installation only after unsatisfactory conditions have been corrected.

#### PREPARATION

Clean dirty or stained stone surfaces by removing soil, stains, and foreign materials before setting.

Clean stone by thoroughly scrubbing with fiber brushes and then drenching with clear water.

Use only mild cleaning compounds that contain no caustic or harsh materials or abrasives.

Allow stone to dry before installing.

#### CONSTRUCTION TOLERANCES

Variation from Plumb: For vertical lines and surfaces, do not exceed 1/16 inch in 48 inches.

Variation from Level: Do not exceed 1/8 inch in 96 inches, 1/4 inch maximum.

Variation in Joint Width: Do not vary joint thickness more than 1/4 of nominal joint width.

Variation in Plane at Joints (Lipping): Do not exceed 1/64-inch difference between planes of adjacent units.

Variation in Line of Edge at Joints (Lipping): Do not exceed 1/64-inch difference between edges of adjacent units, where edge line continues across joint.

#### INSTALLATION OF COUNTERTOPS

Install countertops over plywood subtops with full spread of water-cleanable epoxy adhesive.

Do not cut stone in field. If stone countertops or splashes require additional fabrication not specified to be performed at Project site, return to fabrication shop for adjustment.



Set stone to comply with requirements shown on Drawings and Shop Drawings. Shim and adjust stone to location shown. Install countertops with uniform joints of widths shown and with edges and faces aligned.

Bond joints with stone adhesive and draw tight as countertops are set. Mask areas of countertops adjacent to joints to prevent adhesive smears.

Space joints with 1/16-inch gap for filling with grout. Use temporary shims to ensure uniform spacing.

Install backsplash and end splash by adhering to wall with water-cleanable epoxy adhesive. Leave P gap between countertop and splash for filling with sealant. Use temporary shims to ensure uniform spacing.

Grout joints to comply with ANSI A108.10. Remove temporary shims before grouting. Tool grout uniformly and smoothly with plastic tool.

Apply sealant to joints; comply with Division 07 Section "Joint Sealants." Remove temporary shims before applying sealant.

#### ADJUSTING AND CLEANING

In-Progress Cleaning: Clean countertops as work progresses. Remove adhesive, grout, mortar, and sealant smears immediately.

Remove and replace stone countertops of the following description:

Broken, chipped, stained, or otherwise damaged stone. Stone may be repaired if methods and results are approved by Architect.

Defective countertops.

Defective joints, including misaligned joints.

Interior stone countertops and joints not matching approved Samples and mockups.

Interior stone countertops not complying with other requirements indicated.

Replace in a manner that results in stone countertops matching approved Samples and mockups, complying with other requirements, and showing no evidence of replacement.

Following installation and after sealants are cured, clean stone countertops using clean water and soft rags.

Sealer Application: Apply stone sealer to comply with stone producer's and sealer manufacturer's instructions.

END OF SECTION

1500 MECHANICAL

These specifications are on the drawings marked M-1, M-2, and M-3.

1550 PLUMBING

These specifications are on the drawings marked P-1, P-2, P-3, and P-4.

1600 ELECTRICAL

These specifications are on the drawings marked E-1, E-2, E-3, and E-4.

1800 STRUCTURAL

These specifications are on the drawings marked S100, S101, S102, & S103.