

**SPECIFICATIONS  
FOR  
MASONRY RESTORATION  
AND  
ROOF, PAVING & SKYLIGHT REPLACEMENT**

**REHABILITATION OF THE TERRACE & RELATED FEATURES**

**THE EXPLORERS CLUB  
46 E. 70TH STREET  
NEW YORK, NY**

**OWNER:  
THE EXPLORERS CLUB  
46 E. 70TH STREET  
NEW YORK, NY**

**KAITSEN WOO ARCHITECT, P.C.  
611 BROADWAY  
NEW YORK, NY 10012**

**16 JANUARY 2012**

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**TABLE OF CONTENTS**

**INVITATION TO BID**

**BID FORM**

**SPECIFICATIONS**

**Division 1 GENERAL CONDITIONS**

Section 01010: Summary of Work

01010-1 to 01010-6

**Division 2 SITE WORK**

Section 02060: Selective Demolition and Temporary Shoring

02060-1 to 02060-5

**Division 3 CONCRETE**

Section 03300: Cast-in-Place Concrete

03300-1 to 03300-2

**Division 4 MASONRY**

Section 04510: Masonry Restoration

Section 02170: Unit Stone Pavers

04510-1 to 04510-12

02170-1 to 02170-11

**Division 5 METALS**

Section 05500: Architectural Metals

05500-1 to 05500-4

**Division 6 WOOD**

Section 06105: Rough Carpentry

06105-1 to 06105-3

**Division 7 MOISTURE PROTECTION**

Section 07100: PUR Waterproofing

Section 07271: Firestopping

Section 07310: Slate Roof

Section 07500: Copper Flashing & Drainage

Section 07900: Sealants and Caulking

07100-1 to 07100-21

07271-1 to 07271-6

07310-1 to 07310-4

07500-1 to 07500-7

07900-1 to 07900-2

**Division 8 WINDOWS AND DOORS**

Section 08630: Aluminum Skylight

08630-1 to 08630-12

**Division 9 FINISHES**

Section 09900: Painting

09900-1 to 09900-8

## SECTION 01010 - SUMMARY OF WORK

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. General provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

#### 1.2 PROJECT DESCRIPTION

The Base Scope of Work encompasses all materials and labor to complete the following exterior work:

A. General:

1. Provide scaffolding and permits as required by New York City Building Code for performance of work.

B. Demolition and Sitework (See Section 02060):

1. General Conditions, Permits & Insurances
2. Scaffolding & Temporary Protection Plan

C. Demolition and Shoring

1. Remove existing slate tiles of arcade roof (100%)
2. Remove/dispose all deteriorated sheathing and roofing of arcade roof
3. Remove/dispose all deteriorated flashings as indicated on drawings, install shoring of arcade, as indicated.
4. Remove concrete pavers and roofing membrane over terrace to expose concrete substrate.
5. Remove brick masonry, as indicated, for new lighting conduit.
6. Remove existing skylight, laylight and skylight structure, as indicated on drawings.

7. Cut out limestone lintel and non-matching brick, as indicated on drawings.
8. Provide/install temporary protection as required.
9. Provide/erect temporary shoring/bracing of arcade as indicated.

D. Concrete

1. Patch terrace concrete slab to sound smooth surface.
2. Cast new concrete drains, as indicated on drawings.

E. Masonry

1. Replace select non-matching brick on masonry and limestone façade, as indicated on drawings.
2. Repoint brick and limestone facades, 100%, as indicated on drawings.
3. Replace cracked limestone lintel with new limestone, as indicated on drawings, allow 2 units.
4. Restore chipped and deteriorated limestone trim with composite patching.
5. Repair cracked limestone lintels and trim with micro-pinning as indicated on drawings.
6. Rebuild brick section where new electrical conduits lighting are installed, as indicated.
7. Construct new brick wall for new skylight support, as indicated.
8. Repair cracked and missing brick at terrace, as indicated.
9. Install 2 expansion joints at arcade, as indicated.
10. Install new stone pavers for terrace, as indicated on drawings.

F. Metal Work

1. Furnish/install new steel anchors for arcade.

**G. Carpentry**

1. Reconstruct roof structure, brackets, framing and sheathing to match original arcade, 100%.
2. Provide blocking and framing for new skylight

**H. Moisture Protection**

1. Replace slate tile for arcade roof.
2. Furnish/install new PUR roofing membrane on terrace concrete slab, 100% as indicated in the drawings.
3. Furnish/install new PUR lining flashing on parapets for new skylights.
4. Restore existing copper drainage system for terrace, including re-anchoring/re-connecting leaders, and scappers and furnishing/installing new components to replace deteriorated/missing/non-original components (gutters, scuppers, leaders, strainers, ties)
5. Furnish/install new / repair existing copper flashings, base flashing for terrace roof
6. Replace sealant & backer rod; allow 1,500 ln. ft. replacement
7. Furnish/install new copper cap/roof over terrace alcove, as indicated.
8. Install new trench drains for terrace
9. Sealant and caulking.

**I. Windows and Doors**

1. Fabricate and install new skylights, as indicated.
2. Furnish/install panic hardware at metal egress door.

**J. Finishes**

1. Prime and paint new steel frame and existing steel lintels with epoxy paint
2. Scrape/prime/paint other ornamental metal, work and grilles, 100%
3. Install new plaster wall finish for new skylight enclosure.
4. Restore decorative metal trellis and railings, as indicated.

**K. Fire Suppression**

1. Modify sprinkler pipes and sprinkler heads, as indicated.

**L. Electrical**

1. Install new wiring and conduit for existing and new exterior lighting and fire alarm system.
2. Install new and existing lighting fixtures and connect existing fire alarm devices, as indicated on drawings.
3. Old Fixture?

**1.3 GENERAL REQUIREMENTS**

- A. The Contractor shall obtain and pay for all permits and fees required.
- B. The Contractor shall verify all information pertaining to existing conditions by actual measurement and observation on the site. All discrepancies between actual conditions and those shown in the contract documents shall be reported to the Architect for evaluation before the affected construction is put in place. Failure to notify the Architect will not relieve the Contractor of the responsibility to perform the work as intended in the Contract Documents.
- C. Do all cutting, patching, and repairing as required to perform all of the work as may be required to complete the job.

- D. Maintain the structural stability and integrity of existing structure during the construction operations.

#### 1.4 CONTRACTOR USE OF PREMISES

- A. General: Limit use of the premises to construction activities in areas indicated; allow for full Owner occupancy.
- B. Owner Occupancy: The Owner will occupy the site during the entire construction period. Cooperate with the Owner during construction operations to minimize conflicts and facilitate Owner usage.
- C. The Work will be sequenced in such a way as to provide the least possible interference to the activities of the Owner and to permit continued use of areas not under construction.
- D. Be responsible for keeping the site free of rubbish and debris, and in a neat orderly condition at all times. Clean up and remove all accumulated rubbish and debris for all trades on a daily basis.

#### 1.5 TEMPORARY PROTECTION

- A. While work under this contract is in progress, protect existing building, grounds, contents, passersby and occupants, including those on adjacent property, whether public or private, from damage or harm due to the work under this contract. Provide temporary protection, bridging, safety netting and other acceptable methods to protect persons and property from harm. Comply with laws, ordinances, regulations, and requirements of the agencies of New York having jurisdiction. At no additional cost, satisfactorily repair or replace, to architect's and owner's satisfaction, marred or damaged elements and surfaces.
- B. Where existing construction is removed provide adequate enclosure, tarpaulin or other temporary waterproof covers to protect against the elements. Remove protection only when new construction provides weather tight seal.
- C. Protect existing building fabric with securely anchored and maintained protection materials. At no additional cost, satisfactorily repair or replace, to architect's and owner's satisfaction, marred or damaged elements and surfaces.
- D. Remove temporary protection promptly on completion of construction activities when no longer needed.

#### 1.6 TEMPORARY SCAFFOLDS

- A. Contractor shall provide chutes, scaffolding, staging, rigging, sidewalk bridges, stairs, platforms, railings, and similar items for proper execution of the work. Such apparatus, equipment, construction, and use shall meet applicable requirements of labor laws, codes, and regulations of authorities having jurisdiction.

#### 1.7 UTILITY SERVICES

- A. Contractor shall not interrupt any utility service such as water, gas, steam, sewers, electricity, or fire protection serving the building or neighboring properties without written approval of the owner(s) and other authorities having jurisdiction.

#### 1.8 INSURANCE REQUIREMENTS

##### A. Comprehensive General Liability Policy:

- 1. \$1,000,000 per occurrence
- 2. \$2,000,000 annual aggregate
- 3. Policy to include bodily injury, property damage, products, and completed operations coverage.
- 4. Owner and Architect to be named as additional insured.

##### B. Worker's Compensation:

- 1. Owner to be listed as a certificate holder.

**PART 2 - PRODUCTS** (Not Applicable)

**PART 3 - EXECUTION** (Not Applicable)

END OF SECTION 01010

## SECTION 02060: SELECTIVE DEMOLITION AND TEMPORARY SHORING

### PART 1: GENERAL

#### 1.1 SCOPE OF WORK

- A. This Section includes administrative and procedural requirements for the following work:
1. Provide/erect/maintain temporary shoring/bracing for arcade, as indicated on drawings.
  2. Provide and maintain temporary protection of adjacent surfaces, features and interiors that are not in the scope of work.
  3. Remove and dispose of flat roof membranes, underlayment, flashings, and select deteriorated sheathing.
  4. Remove existing concrete pavers and water proofing membrane.
  5. Remove concrete substrate, as needed, at concrete terrace slab for new trench drain / basin.
  6. Remove existing skylight, laylight and structure, as indicated, for new skylight.
  7. Remove masonry wall, as indicated, for installation of new electrical conduit and lighting.
  8. Recycling and disposing non-hazardous construction and demolition waste.
  9. Providing and installing temporary protection to ensure water tightness.
  10. Providing temporary bracing and shoring as required for non-arcade work.

#### 1.2 DEFINITIONS

- A. Construction Waste: Building materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

- E. Salvage and Reuse: Recovery of removed construction materials and subsequent re-incorporation into the Work.

### 1.3 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. The work described in this section is related to work described in the following Sections:
  - 1. Section 04510 - Masonry Restoration
  - 2. Section 06105 - Rough Carpentry
  - 3. Section 07100 - PUR Waterproofing
  - 4. Section 07500 - Copper Flashing and Drainage
  - 5. Section 07510 - Slate Roof
  - 6. Section 09900 - Painting
  - 7. Section xxxxx - Electrical

### 1.4 SUBMITTALS

- A. Shop Drawings: Indicate demolition and removal sequence, location and construction of temporary work, protection and waterproofing.
  - 1. Submit shoring plans designed and sealed by a New York State Licensed Professional Engineer for Architect's and Conservator's review and approval prior to installation of shoring.
- B. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, type of waste, means of recovery, and handling and transportation procedures.
  - 1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work,
  - 2. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
  - 3. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
  - 4. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling,

and designated location on Project site where materials separation will be located.

### **1.5 REGULATORY REQUIREMENTS**

- A. Conform to applicable code for demolition work, dust control and safety of public. See Subchapter 19 of Title 27 of the Building Code of the City of New York ("Safety of Public and Property During Construction Operations").
- B. Obtain required permits from authorities.
- C. Do not close or obstruct egress width to any building or site exit.
- D. Do not disable or disrupt building fire or life safety systems.
- E. Conform to procedures applicable when hazardous or contained materials are discovered.

### **1.6 PROJECT CONDITIONS**

- A. Conduct demolition to minimize interference with adjacent and occupied building areas.
- B. Cease operations immediately if structure appears to be in danger and notify Architect/Engineer. Do not resume operations until directed.

## **PART 2: PRODUCTS**

### **2.1 MATERIALS FOR SHORING**

- A. See Drawings A201.00, A401.00 and A402.00

## **PART 3: EXECUTION**

### **3.1 PREPARATION**

- A. Erect and maintain weatherproof closures for exterior openings.
- B. Protect existing materials and finishes which are not to be demolished or salvaged.
- C. Prevent movement of structure; provide bracing and shoring as required.

- D. No temporary shoring of arcade shall be erected before Architect's approval of shoring plans and sequence.

### **3.2 TEMPORARY SHORING**

- A. Assemble shoring in accordance with Drawings A201.00, A401.00 and A402.00 or alternate means approved by the Architect and Conservator.
- B. Remove all shoring from site at conclusion of work.

### **3.3 WASTE MANAGEMENT**

- A. **General:** Implement waste reduction management plan as approved by Architect. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
- B. **Site Access and Temporary Controls:** Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
  - 1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.

### **3.3 DEMOLITION**

- A. Demolish in an orderly and careful manner. Protect existing supporting structural members, waterproofing and finishes to remain.
- B. Remove demolition and construction waste from site except where specifically noted otherwise. Do not burn or bury materials on site.
- C. Remove materials as Work progresses according to waste reduction management plan. Upon completion of Work, leave areas in clean condition.
- D. Remove temporary Work.

### **3.4 SALVAGING REMOVED MATERIAL**

- A. **Salvaged Items for Reuse in the Work:**
  - 1. Clean salvaged items.
  - 2. Pack or crate items after cleaning. Identify contents of containers.
  - 3. Store items in a secure area until installation.

4. Protect items from damage during transport and storage.
5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

### 3.5 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

- A. General: Recycle paper and beverage containers used by on-site workers.
- B. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.

### 3.6 RECYCLING DEMOLITION WASTE

- A. Masonry: Stack large clean pieces on wood pallets and store in a designated location.
- B. Metal: Reduce flashings to straight or rolled lengths and store by type.

### 3.7 RECYCLING CONSTRUCTION WASTE

- A. Packaging:
  1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
  2. Polystyrene Packaging: Separate and bag materials.
  3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
  4. Paint Containers (metal or HDPE): Clean waste residues and separate from containers prior to recycling.

### 3.8 DISPOSAL OF WASTE

- A. General: Except for items or materials to be salvaged, recycled or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
  1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
  2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

END OF SECTION

## SECTION 02170 - UNIT STONE PAVERS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Stone pavers set in mortar setting bed, as indicated on drawings.
- B. Related Sections include the following:
  - 1. Section 03300, Concrete
  - 2. Section 07100, PUR Waterproofing
  - 3. Section 07500, Copper Flashing

#### 1.3 SUBMITTALS

- A. Product Data: For the following:
  - 1. Each type of stone paver.
  - 2. Mortar and grout materials.
  - 3. Sealant for mortar joints.
- B. Shop Drawings
  - 1. Show fabrication and installation for stone, including dimensions and profiles.
- C. Samples for Initial Selection: Manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available for each type of unit paver indicated.
  - 1. Include similar Samples of material for joints and accessories involving color selection.

- D. Samples for Verification: Full-size units of each type of unit paver indicated; in sets for each color, texture, and pattern specified, showing the full range of variations expected in these characteristics.
  - 1. Provide Samples with joints grouted, cured and sealed showing the full range of colors to be expected in the completed Work.
  - 2. Include Samples of exposed edge restraints.
- E. Preliminary Test Results: Submit test reports for proposed stones prior to final stone selection
  - 1. Testing of production stone is required in addition to preliminary test reports.
- F. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience of fabricator and installer. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- G. Compatibility and Adhesion Test Reports: From latex-additive manufacturer indicating the following:
  - 1. Mortar and grout containing latex additives have been tested with pavers for compatibility and adhesion.
  - 2. Interpretation of test results relative to mortar and grout performance and written recommendations for installation practices needed for adhesion.

#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed unit paver installations similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Source Limitations: Obtain each type of unit paver, joint material, and setting material from one source with resources to provide materials and products of consistent quality in appearance and physical properties.
- C. Preconstruction Stone Testing: Engage an independent testing agency to perform the following testing for each stone variety:
  - 1. Dry Seal Property Tests: ASTM Standards.

2. Flexural Strength Tests: ASTM C880.

D. Preconstruction Compatibility and Adhesion Testing: Submit to latex-additive manufacturer, for testing indicated below, samples of paving materials that will contact or affect mortar and grout that contain latex additives.

1. Use manufacturer's standard test methods to determine whether mortar and grout materials are required to obtain optimum adhesion with, and will be nonstaining to, installed pavers and other materials constituting paver installation.
2. Submit a sufficient number of pavers and other materials involved in installation to allow comprehensive testing.
3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
4. For materials failing tests, obtain mortar and grout manufacturer's written instructions for corrective measures, including the use of alternative materials to obtain optimum bond and prevent staining.

E. Mockups: Before installing unit pavers, build mockups for each form and pattern of unit pavers required to verify selections made under sample Submittals and to demonstrate aesthetic effects and qualities of materials and execution. Build mockups to comply with the following requirements, using materials indicated for the completed Work, including same base construction, special features for expansion joints, and contiguous work as indicated:

1. Build mockups in the location and of the size indicated or, if not indicated, as directed by Architect.
2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain Architect's approval of mockups before starting unit paver installation.
5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
6. Demolish and remove mockups when directed.
7. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect unit pavers and aggregate during storage and construction against soiling or contamination from earth and other materials.
  - 1. Cover pavers with plastic or use other packaging materials that will prevent rust marks from steel strapping.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store liquids in tightly closed containers protected from freezing.
- D. Store asphalt cement and other bituminous materials in tightly closed containers.

## 1.6 PROJECT CONDITIONS

- A. Cold-Weather Protection: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen subgrade or setting beds. Remove and replace unit paver work damaged by frost or freezing.
- B. Weather Limitations for Mortar and Grout: Comply with the following requirements:
  - 1. Cold-Weather Requirements: Protect unit paver work against freezing when atmospheric temperature is 40 deg F and falling. Heat materials to provide mortar and grout temperatures between 40 and 120 deg F. Provide the following protection for completed portions of work for 24 hours after installation when the mean daily air temperature is as indicated: below 40 deg F, cover with weather-resistant membrane; below 25 deg F, cover with insulating blankets; below 20 deg F, provide enclosure and temporary heat to maintain temperature above 32 deg F.
  - 2. Hot-Weather Requirements: Protect unit paver work when temperature and humidity conditions produce excessive evaporation of setting beds and grout. Provide artificial shade and windbreaks and use cooled materials as required. Do not apply mortar to substrates with temperatures of 100 deg F and higher.
    - a. When ambient temperature exceeds 90 deg F with a wind velocity greater than 8 mph, set pavers within 1 minute of spreading setting-bed mortar.

## PART 2 - PRODUCTS

## 2.1 DISTRIBUTORS

- A. Subject to compliance with requirements, distributors offering stone pavers that may be incorporated into the Work include, but are not limited to:

Stone Source  
215 Park Avenue South  
New York, NY 10003  
212-979-6400

- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

### 1. Stone Pavers:

	<u>Name</u>	<u>Finish</u>
a.	Stone Source "Time Worn Grey"/Limestone	Polished
b.	Stone Source "Baycliff Caulfield"/Burlington	Honed
c.	Stone Source "Green River"/Alternative	Velvet
d.	Stone Source "Corinthian Granite"/Granite	Sandblasted

## 2.2 PORTLAND CEMENT MORTAR SETTING-BED MATERIALS

- A. Portland Cement: ASTM C 150, Type I or II.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Aggregate: ASTM C 144.
- D. Latex Additive water emulsion serving as replacement for part or all of gaging water, of type specifically recommended by manufacturer for use with job-mixed portland cement and aggregate, and not containing a retarder.
- E. Water: Potable.

## 2.3 GROUT MATERIALS

- A. Latex-Portland Cement Grout: ANSI A118.6, composition as follows:
1. Packaged, dry grout mix consisting of portland cement, graded aggregate, and ethylene vinyl acetate in the form of a reemulsifiable powder to which only water is added at Project site.

2. Dry grout mixture indicated below combined at Project site with water emulsion serving as replacement for part or all of gaging water.
  - a. Dry Grout Mixture: Factory-mixed, sanded grout complying with ANSI A118.6 and recommended by latex-additive manufacturer; in color indicated. Use latex additive without retarder with dry-set grout.
  - b. Dry Grout Mixture: Factory-mixed or job-mixed sanded grout consisting of the following:
    - 1) Portland Cement: ASTM C 150, Type I or II, of natural color or white as required to produce color indicated.
    - 2) Aggregate: ASTM C 144, graded to comply with latex-additive manufacturer's requirements.
      - a) White Aggregate: Natural white sand or ground white stone.
      - b) Colored Aggregate: Ground marble, granite, or other sound stone; selected to produce required grout color.
    - 3) Colored Mortar Pigments for Grout: Natural and synthetic iron and chromium oxides, compounded for use in mortar and grout mixes. Use only pigments that have proved through testing and experience to be satisfactory for use in portland cement grout.

B. Water: Potable.

## 2.4 JOINT SEALANT

A. As recommended by manufacturer of grout and cement products.

## 2.5 MORTAR AND GROUT MIXES

- A. General: Comply with referenced standards and with manufacturers' written instructions for mix proportions, mixing equipment, mixer speeds, mixing containers, mixing times, and other procedures needed to produce setting-bed and joint materials of uniform quality and with optimum performance characteristics. Discard mortars and grout when they have reached their initial set.
- B. Cement-Paste Bond Coat: Mix bond coat to a consistency similar to that of thick cream and consisting of either neat cement and water or cement, sand, and water.

1. For latex-modified portland cement setting-bed mortar, substitute latex admixture for part or all of water per directions of latex-additive manufacturer.
- C. Portland Cement-Lime Setting-Bed Mortar: Type M complying with ASTM C 270, Proportion Specification.
- D. Latex-Modified Portland Cement Setting-Bed Mortar: Proportion and mix portland cement, aggregate, and latex additive for setting bed to comply with directions of latex-additive manufacturer and as necessary to produce stiff mixture with a moist surface when bed is ready to receive pavers.
- E. Latex-Modified Portland Cement Slurry Bond Coat: Proportion and mix portland cement, aggregate, and latex additive for slurry bond coat to comply with directions of latex-additive manufacturer.
- F. Latex-Modified Portland Cement Grout: Add latex additive to dry grout mix in proportion and concentration recommended by latex-additive manufacturer. Proportion cement and aggregate to comply with directions of latex-additive manufacturer.
  1. Job-Mixed, Pigmented Grout: Select and proportion pigments with other ingredients to produce color required. Do not exceed pigment-to-cement ratio of 1 to 10, by weight.
  2. Job-Mixed, Colored-Aggregate Grout: Produce color required by combining colored aggregates with portland cement of selected color.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas indicated to receive paving, 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.
  1. Where pavers are to be installed over waterproofing, examine waterproofing installation, with waterproofing Installer present, for protection from paving operations. Examine areas where waterproofing system is turned up or flashed against vertical surfaces and horizontal waterproofing. Proceed with installation only after protection is in place.

### 3.2 PREPARATION

- A. Vacuum clean concrete substrates to remove dirt, dust, debris, and loose particles.
- B. Remove substances, from concrete substrates, that could impair mortar bond, including curing and sealing compounds, form oil, and laitance.
- C. Proof-roll prepared subgrade surface to check for unstable areas and areas requiring additional compaction. Proceed with unit paver installation only after deficient subgrades have been corrected and are ready to receive subbase for unit pavers.

### 3.3 INSTALLATION, GENERAL

- A. Do not use unit pavers with chips, cracks, voids, discolorations, and other defects that might be visible or cause staining in finished work.
- B. Mix pavers from several pallets or cubes, as they are placed, to produce uniform blend of colors and textures.
- C. Do necessary field cutting as stone is set.
  - 1. Cut unit pavers with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Scribe and field cut units as necessary to fit adjoining work neatly. Use full units without cutting where possible. Hammer cutting is not acceptable.
- D. Joint Pattern: Set stone to comply with Drawings and Shop Drawings.
- E. Pavers over Waterproofing: Exercise care in placing pavers and setting materials over waterproofing so protection materials are not displaced and waterproofing is not punctured or otherwise damaged. Carefully replace protection materials that become displaced and arrange for repair of damaged waterproofing before covering with paving.
  - 1. Provide joint filler, where indicated, at waterproofing that is turned up on vertical surfaces; or, if not indicated, provide temporary filler or protection until paver installation is complete.
- F. Expansion and Control Joints: Provide for sealant-filled joints at locations and of widths indicated. Provide joint filler as backing for sealant-filled joints where

indicated. Install joint filler before setting pavers. Sealant materials and installation are specified in Division 7 Section "Joint Sealants."

- G. Expansion and Control Joints: Provide joint filler at locations and of widths indicated. Install joint filler before setting pavers. Make top of joint filler flush with top of pavers.

### 3.4 INSTALLATION TOLERANCES

- A. Variation in Line: Do not exceed 3/8" maximum.
- B. Variation in Joint Width: Do not vary joint thicknesses more than 1/4 (one-quarter) of nominal joint width
- C. Variation in Surface Plane: Do not exceed 1/4" in 20 feet.
- D. Variation in Plane Between Adjacent Units (Lipping): Do not exceed 1/32" difference between planes of adjacent units.

### 3.5 INSTALLATION OF STONE OVER MEMBRANE

- A. See Division 7 water proofing section for installation of PUR membrane.
- B. Follow manufacturer's explicit recommendations for installation of stone over membrane.
- C. Apply mortar bed over membrane in accordance with PUR manufacturer's recommendations. Spread and screed setting bed to uniform thickness at subgrade elevations required for accurate setting of pavers to finished grades indicated.
- D. Mix and place only that amount of mortar bed that can be covered with pavers before initial set. Cut back, bevel edge, remove, and discard setting-bed material that has reached initial set before placing pavers.
- E. Wet stone pavers before laying if the initial rate of absorption exceeds 30 g/30 sq. in. per minute when tested per ASTM C 67. Allow units to absorb water so they are damp but not wet at the time of laying.
- F. Carefully place pavers and setting material over membrane before initial set of cement occurs. Immediately before placing pavers on setting bed, apply uniform 1/16-inch- thick, slurry bond coat to bed or to back of each paver with a flat trowel.

- G. Tamp and beat pavers with a wooden block or rubber mallet to obtain full contact with setting bed and to bring finished surfaces within indicated tolerances. Set each paver in a single operation before initial set of mortar; do not return to areas already set and disturb pavers for purposes of realigning finished surfaces or adjusting joints.
- H. Spaced Joint Widths: Provide [3/8 inch] nominal joint width.
- I. Grout joints as soon as possible after initial set of setting bed. Force grout into joints, taking care not to smear grout on adjoining pavers and other surfaces. After initial set of grout, finish joints by tooling to produce a slightly concave polished joint, free from drying cracks.
- J. Cure grout by maintaining in a damp condition for seven days, unless otherwise recommended by latex-additive manufacturer.

### 3.6 REPAIR, POINTING, CLEANING, AND PROTECTION

- A. Remove and replace unit pavers that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units as intended. Provide new units to match adjoining units and install in same manner as original units, with same joint treatment and with no evidence of replacement.
- B. Remove and replace stone not matching the final samples and mock-ups, or otherwise not complying with this project's requirements.
  - 1. Replace non-complying stone to match final samples and mock-ups. Replacement stone shall show no evidence of replacement.
- C. Pointing: During tooling of joints, enlarge voids or holes and completely fill with mortar or grout. Point up joints at sealant joints to provide a neat, uniform appearance, properly prepared for sealant application.
- D. Cleaning: Remove excess grout from exposed paver surfaces before tooling joints; wash and scrub clean.
  - 1. Remove protective coating as recommended by protective coating manufacturer and acceptable to unit paver and grout manufacturer. Trap and remove coating to prevent it from clogging drains.
  - 2. Clean stone as work progresses
  - 3. Final cleaning: Clean stone as recommended by fabricator or stone producer.
  - 4. Do not use acid or other caustic materials to clean stone.

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46 E. 70th Street  
New York, NY**

**16 January 2012**

**E. Protection**

- 1. Prohibit traffic from installed stone for 72 hours**
- 2. Protect during construction with non-staining kraft paper, and cover with a layer of untreated plywood where adjoining areas require access for construction work.**

**END OF SECTION 02170**

## SECTION 03300 - CONCRETE

### PART 1: GENERAL

#### 1.01 SCOPE OF WORK

- A. Provide all materials, labor, equipment, and perform all operations for the complete installation of the work of this section. Work shall include but not be limited to the following:
1. Verification of condition of existing concrete slab (under terrace).
  2. Repair/patch existing concrete slab, as needed for new PUR membrane.
  3. Cast new concrete trench drain, as indicated.

#### 1.02 RELATED WORK IN OTHER SECTIONS

- A. Section 02061: Selective Demolition and Shoring
- B. Section 02170: Unit Stone Pavers
- C. Section 07100: PUR Waterproofing

#### 1.03 QUALITY CONTROL

- A. Comply with the requirements of the City of New York Building Code amended to date.
- B. All concrete work shall comply with AC 301 and ACI 318 as modified by NYC Building Code.

### PART 2: PRODUCTS

- A. All concrete shall be normal concrete with a minimum ultimate compressive strength of 3,500 psi at 28 days.
- B. Portland Cement: Type I, conforming to ASTM C-150.
- C. Coarse Aggregate: Conforming to ASTM C33, size 67.

- D. Fine aggregates: Conforming to ASTM C33. Clean, durable, uncoated grains free from deleterious substances.
- E. Water: Clean and free of deleterious impurities, acids, alkalies, or organic matter. Water shall be potable, from city mains.
- F. Water Reducing Agent: Conforming to ASTM C494.

**PART 3: EXECUTION**

- A. Verify that surfaces are acceptable for application of this work.
- B. Provide and maintain effective non-staining protection for adjacent surfaces during the performance of this work.
- C. All concrete work shall conform to the ACI "Building Code Requirements for Reinforced Concrete" (ACI 318), latest edition.
- D. Provide water reducing agent in all concrete.
- E. Concrete shall be cured with membrane curing compounds conforming to ASTM C-309.
- F. Contractor to submit concrete design mixes for Owner's review prior to placing concrete, in accordance with NYC Building Code.

**END OF SECTION 03300**

## SECTION 04510 - MASONRY RESTORATION

### PART 1- GENERAL

#### 1.01 GENERAL REQUIREMENTS:

- A. Work in this Section, as shown or specified, shall be in accordance with the requirements of the contract documents.
- B. All work shall comply with the provisions of the New York City Building Code.
- C. The intent of this Section is to provide watertight and stable assemblies at brick and stone surfaces.
- D. Provide all materials, labor, equipment, and perform all operations for the complete installation of work in this section. Work shall include but not be limited to the following:
  - 1. Repoint brick and limestone 100%.
  - 2. Replace select non-original brick.
  - 3. Replace select limestone lintel/mullion, allow 2 limestone units.
  - 4. Repair select limestone copings and trim components in place by micro-pinning.

#### 1.02 RELATED WORK OF OTHER SECTIONS

- A. Section 02061-Selective Demolition and Shoring
- B. Section 02170-Unit Stone Pavers
- C. Section 05510-Structural Metals
- D. Section 07900-Caulking and Sealants
- E. Section XXXXX-Electrical

#### 1.03 REFERENCES

- A. ANSI A41.1 Building Code Requirements for Masonry
- B. American Society for Testing & Materials (ASTM)
  - 1. ASTM C62-85a - Specifications for Building Brick
  - 2. ASTM C67-85 - Specifications for Testing Brick and Structural Clay Tile

3. ASTM C97 - Standard Test Method for Absorption and Bulk Specific Gravity of Dimension Stone
4. ASTM C150-85a - Specification for Portland Cement
5. ASTM C170 - Standard Test Method for Compressive Strength of Dimension Stone
6. ASTM C207-79 - Specification for Hydrated Lime for Masonry Purposes
7. ASTM C216-85a - Specification for Face Brick
8. ASTM C270-86 - Specification for Mortar for Unit Masonry
9. ASTM C568 - Standard Specification for Limestone Dimension Stone

C. Portland Cement Association (PCA)

D. Brick Institute of America

#### 1.04 QUALITY ASSURANCE

- A. The work of this section shall be accomplished by a Contractor with a minimum of five (5) years experience in work of this type.
- B. The Contractor shall provide one crew of mechanics for the duration of the project. It is essential that the same workmen start and complete the project. Substitutions and additions of work force shall be permitted with Architect's consent as long as there is not adverse effect in quality or performance of work.
- C. The Contractor shall obtain, maintain, and pay for all permits and licenses necessary for the execution of the work.
- D. The Contractor shall acquaint himself with all aspects of the building and requirements of the work so that his bid will reflect as closely as possible the true cost of the work.
- E. ***The Contractor shall strictly follow manufacturer's directions and local EPA, DEP, and all regulating agencies' requirements for any paint coating, dispersion of coatings, rinsing, waste collecting, and disposal of chemicals, to insure that no damage shall occur to surface of brick and safety of occupants.***

#### 1.05 SAMPLES /MOCK UPS

- A. All samples and mock ups shall be subject to review and approval of Architect and NYC Landmarks Preservation Commission (LPC).

- B. Submit samples of limestone and bricks to match existing for approval by Architect and LPC.
- C. On approval of brick, provide one sample panel approximately 1' x 1' indicating brick, bond pattern, mortar color, and joint type to match existing.
- D. Prior to executing work, provide, in situ, samples of repointing for approval by the Architect and LPC. Samples shall be executed according to the methods and materials herein specified. The sample areas shall be a minimum size of 1' X 1'. Sample area must be approved by the Architect before work commences. Repointing mortar shall be set and dry before sample may be approved. If result is not acceptable to Architect or LPC, provide additional samples until result is accepted at no additional cost to Owner.
- E. Prior to executing work, provide, in situ, sample of replacement brick installation for approval by the Architect and LPC. Samples shall be executed according to the methods and materials herein specified. The sample area shall be a minimum size of 2' X 2'. Sample area must be approved by the Architect before work commences. Setting mortar shall be set and dry before sample may be approved. If result is not acceptable to Architect or LPC, provide additional samples until result is accepted at no additional cost to Owner.
- F. Approved samples and methods of procedure will become the standard of Work of this Section.

#### 1.06 DELIVERY, STORAGE AND HANDLING

- A. All materials shall be delivered to the job site in factory sealed containers clearly labeled as to product, manufacturer, color, and/or other pertinent characteristics.
- B. All materials for use in the work of this Section shall be stored under environmental conditions recommended by the manufacturer.
- C. Arrangement shall be made with the Owner to store equipment and materials in designated areas. The Owner shall not be responsible for damaged or stolen materials or equipment left on the premises by the Contractor.
- D. The building and surrounding area shall be kept free of all surplus materials, dirt, and rubbish at all times. All debris shall be disposed of in a legal manner off the site. Work areas shall be swept clean after every workday.

#### 1.07 ENVIRONMENTAL REQUIREMENTS

- A. Strictly adhere to manufacturer's directions unless more stringent requirements are contained herein.
- B. Do not lay masonry or stonework, caulk, wash down or wet surfaces when temperature may drop below 40 degrees F. within 24 hours.
- C. Masonry restoration work may only be performed as long as the temperature remains above forty (40) degrees Fahrenheit. If in a given twenty four (24) hour period the temperature drops or is expected to drop below forty (40) degrees Fahrenheit, exterior masonry work must stop. In the event that the temperature falls below forty (40 ) degrees F. at any time, work will not recommence until a constant temperature of forty (40) degrees F. is projected for a minimum period of seventy-two (72) hours. Once stopped for reason of temperature, work will recommence only on approval of the Architect.
- D. Materials shall be used only at the Manufacturer's recommended temperature tolerance.
- E. Masonry work shall be protected during the hot weather from premature or rapid curing by the use of dampened fabric covering.

#### 1.08 PROTECTION AND SCAFFOLDING

- A. The Contractor shall take extreme care in protecting the surrounding materials, buildings, vehicles, and pedestrians. It is the Contractor's responsibility to ensure that protective measures are in place, and are adequate for the work being performed.
- B. Promptly as work proceeds and upon completion, remove excess mortar, smears, and droppings. Clean adjacent and adjoining surface of marks arising out of execution of the work of this Section.
- C. Scaffold work required to accomplish restoration work will be the responsibility of the Contractor and will be made available to all required trades without charge and will be adequately and safely maintained. All scaffolding, staging and appurtenances shall comply, in total, to the requirements of Safety and Health Regulations for Construction, and all other government agencies having jurisdiction. The most stringent requirements shall govern.

- D. Contractor shall provide temporary shoring, sheeting, and bracing and make safe all floors, roofs, walls and adjacent property as project conditions require. Contractor shall replace any items damaged in the course of the work at no extra cost to the Owner.

#### 1.09 SCHEDULING

- A. The Contractor shall submit a schedule for proposed project execution. Work is to be performed on a daily basis, without interruption from the start of testing thorough project completion, unless weather conditions prohibit the performance of work or unless directed otherwise by Owner or Architect.
- B. Disruption of building use and service, including blocking entrances, sidewalks, etc., shall not be permitted without prior arrangement of the Owner.

### PART 2: PRODUCTS

#### 2.01 STONE

- A. Replacement stone shall be Indiana Limestone (Select Grade).
1. Limestone shall conform to ASTM C568 "Standard Specification for Limestone Dimension Stone.
  2. Limestone shall match existing in color, grade, and finish, and in sizes, and profiles to match existing stone.
  3. Limestone shall have minimum compressive strength of 4000 psi as determined by ASTM C170 "Standard Test Method for Compressive Strength of Dimension Stone."
  4. Limestone shall have maximum absorption of 7.5 percent as determined by ASTM C97 "Standard Test Method for Absorption and Bulk Specific Gravity of Dimension Stone."
  5. Use only one source for each type of stone throughout the entire Project.
- B. Finishes: Provide the following finishes in accordance with industry standards:
1. Exposed surfaces shall have a honed finish. Edges shall be sawn.

C. Size and Dimension: Stone shall be of the sizes and dimensions indicated on the Drawings.

1. All faces shall be at right angles to the plane of the top.
2. Stone shall be cut accurately to required shapes and dimensions, as indicated on drawings.

## 2.02 BRICK

A. Bricks

1. Replacement face brick shall be manufactured by Glen-Gery Co., Elgin-Butler or equivalent.
2. New brick shall be selected from manufacturer's standard brick product line and match the existing in color, texture and size.
  - a. Brick selection shall be subject to Architect's approval.
3. Bricks shall conform to ASTM C216 grade SW, Type - FBX.

## 2.03 SETTING AND POINTING MORTAR

A. Setting and pointing mortar shall match existing mortar in color, texture and profile.

B. Materials

1. Water: Clean and free of deleterious impurities, acids, alkalies, or organic matter. Water shall be potable, from city mains.
2. Sand: ASTM C-144 clean, hard, sharp, durable particles, containing not more than 5% by volume of loam, mica, clay or other deleterious substances, free from organic matter. Sand color and texture should match the original as closely as possible.
3. Cement: ASTM C-150 grey or white non-staining Portland Cement, Type I.

4. Lime: ASTM C-207 hydrated mason's lime, Type S.
- C. Mixture shall conform to strength requirements of ASTM C270-86A Type N binder in the following proportions:
1. Portland Cement: 2 parts by volume.
  2. Hydrated Lime: 2 -2.5 parts by volume.
  3. Aggregate: 6 parts sand by volume.

#### 2.05 PATCHING MORTAR

- A. Finish mortar used to fill cracks and surface penetrations for pins shall match the color, texture and reflectance of the natural stone material.
- B. Materials
1. Binder: Cement/Lime blend. Portland cement and Type S lime.
  2. Aggregate: Sand and/or crushed stone.
  3. Pigments: To achieve color matching. Do not use heavily pigmented mix.
- C. Mixture: Slurry Coat
1. Portland cement: 1 part by volume
  2. Hydrated lime type "S": 2 parts by volume
  3. Aggregate: 6 parts by volume
- D. Mixture: Finish Coat
1. Portland cement: 1 part by volume
  2. Hydrated lime type "S": 1 part by volume
  3. Aggregate: 2/3 part by volume

4. Pigment: not to exceed 10% of matrix by volume.

E. Etching Solution

1. Hydrochloric acid: 1 part by volume
2. Water: minimum 3 parts water

2.06 ADHESIVE

A. Approved manufacturers

1. Powers USA (800-524-3244).
2. SIKA Corporation (800-933-SIKA).

2.07 PINS, DOWELS AND ANCHORS FOR STONE

- A. For re-anchoring limestone, provide pins, dowels, or anchors appropriate to the back-up conditions and attachment requirements.

B. Approved Manufacturers:

1. Hohmann & Barnard, Inc., 30 Rasons Court, Happaug, NY 11788 (631) 234-0600.
2. Hilti (866) 445-8827.
3. HeliFix North America Corporation, 110 Maplecrete Road, Concord, Ontario, Canada, (888) 992-9989.

C. All anchors and attachment hardware shall be stainless steel Type 316 or 304.

1. Wire ties: 1/4" diameter stainless steel wire, grade 304.
2. Clips and straps: 1/4" x 1 1/2" stainless steel, grade 304.
3. Anchor rod: 3/8" and 3/4" diameter stainless steel rods, grade 304.

4. Hangers: 5/8" and 1/2" diameter stainless steel rods, grade 304.
5. Pins and Dowels:
  - a. Dowels: 1/2" stainless steel rods, grade 304.
  - b. Tying to adjacent units: Hohmann & Barnard HB C-3 anchors or approved equal, concealed front anchors, stainless steel two-part anchor with sleeve, 1/2" diameter dowel, 2" length of half dowel, and 3/8" minimum joint thickness.
  - c. Pinning-in place: HeliFix "CemTie" grade 316 stainless steel wall ties in "HeliBond" cementitious grout.
  - d. Power-actuated pins: Hilti ENK 19 S12 Pins minimum .145" diameter by 3/4" long.
  - e. Epoxy anchors: Hilti 3/8" diameter epoxy anchors.
6. All other ties, clips, rods, channels, hangers, nuts, bolts and anchors to be stainless steel, grade 304 by Hohmann and Barnard, Inc.
7. Rolled steel shapes and plates shall comply with ASTM A-276, grade 316 stainless steel specifications.
8. Welding electrodes for ASTM A-276 stainless steel grade 316 shall conform to AWS A5.4 for shielded metal arc welding, electrode class E316; or to AWS A5.9 for gas metal arc welding, electrode class ER316, (ft=70Ksi). All welding to be done in shop.

## 2.08 TIES, PINS AND ANCHORS FOR BRICK

- A. Approved Manufacturer: HeliFix North America Corporation, 110 Maplecrete Road, Concord, Ontario, Canada, (888-992-9989).
  1. Ties: replacement brick
    - a. HeliFix "TurboTie" grade 316 stainless steel wall ties.
  2. Anchors: existing brickwork
    - a. HeliFix "DryFix" grade 316 stainless steel masonry anchors.

## **2.09 LIGHT FIXTURES**

### **A. For the stairwell:**

1. ConTech Track Lighting – LED – OPTICA SERIES - Dimmable wide flood LED trackhead at 2700K; Product Code: CTL802818LH-F-27-D-B
2. ConTech Track BOM – 10' x 4' one circuit square – pendant mounted with aircraft cables from new skylight; Product Code: LT-6 – B (TRACK), LT-4 – B (TRACK), LAC-48 (AIRCRAFT CABLE KIT PLUS ALL ACCESSORIES)

### **B. For the terrace:**

1. Under column area: Luminii – LED Linear Fixture; Product Code: SL7-78-F-SA-MC-SL7-EC-SL-H2
2. Fountain (one on each side): Luminii – LED Linear Fixture; Product Code: SL7-39-F-SA-MC-SL7-EC-SL-H2

### **C. For the planter:**

1. Ecosense LED Mini flood; Product Code: ES06-MF-27-120-45-BK-STD
2. Ecosense – LED Accent Light; Product Code: 07A-27-120-22-BK

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Inspect areas to receive work and determine that conditions are satisfactory and within acceptable tolerances.**

### **3.02 SETTING NEW BRICK AND STONE**

- A. All masonry setting shall be done by competent masons under adequate supervision and in accordance with the approved shop drawings.**
- B. Stone and brick units with chips, cracks, stains, or other defects which might be visible in the finished work shall not be used.**
- C. Before setting, stone and brick shall be clean and free of dirt and foreign matter on all sides.**

- D. Stone shall be set true to the required lines and grades. Joints shall be uniform in thickness and as indicated on the Drawings.
  - 1. Lay brick or stonework to keep cutting to a minimum.
  - 2. Form openings for other trades.
  - 3. Cut units to fit closely at intersections and at penetrations, using power saw with proper cutoff wheel.
- E. Exposed surfaces shall be kept free of mortar at all times. Any mortar smears shall be immediately removed with a clean sponge and clean water.
- F. Install ties for new brickwork in accordance with manufacturer's explicit instructions.
- G. Moisten open joints prior to the application of mortar. Avoid ponding.
- H. Apply pointing mortar so that the face layer is a maximum 1/2 inch deep and compacted thoroughly.
- I. Allow previous layers to become thumb print dry before the face layer is applied.
- J. Allow mortar to cure for a minimum of 72 hours before tooling joints.

### 3.03 REPOINTING MASONRY

- A. Remove all defective and deteriorated mortar with hand tools. Care must be taken not to damage any adjacent surface.
- B. For joints less than 3/8" thick, rake joints to a minimum depth of 1/2"; for wider joints, rake to a minimum depth of 1". In all cases, weathered and loose material shall be removed; rake joints to sound mortar.
- C. Remove all loose debris and dirt from raked joints and cracks; use a stiff natural bristle brush or compressed air to remove granular particles and dust. Leave square corners at back of joint cut.
- D. Dampen bricks (surface dry) prior to repointing. No freestanding water shall be in joints during pointing operation.
- E. Measure and proportion all materials to ensure uniformity of batches.

- F. Pack joints and cracks with new mortar leaving no voids. If existing mortar has been removed to a depth greater than one (1) inch, the new mortar should be compacted in several layers. Allow each layer time to lose much of the water and become stiff before next layer is applied.
- H. Recess the surface of the pointing slightly. Do not allow the mortar to extend over the edges of the stone. As soon as the mortar has taken its initial set (thumbprint hard), tool the joint to match the original configuration.
- I. Keep pointing damp for at least 48 hours, or until surface has cured. No direct stream of water shall be directed at any joint for at least 24 hours after the mortar has been placed.
- J. Clean masonry prior to final setting of mortar. Remove excess mortar from the edge of the joints with dry, stiff brushes. Remove any mortar droppings from adjacent surfaces. After mortar has cured, perform final cleaning, using only clean water and stiff fiber brushes.

### 3.04 PINNING AND RE-ANCHORING EXISTING BRICK AND STONE

#### A. Pinning Stone Units

- 1. Install pin ties in accordance with manufacturer's explicit written instructions.
- 2. The ends of pins shall be sealed with closed cell foam cap in front of face of pin and filled with mortar to match terra cotta, in accordance with the project detail.

#### B. Re-anchoring Existing Brickwork

- 1. Install masonry anchors as needed in accordance with manufacturer's explicit written instructions.
  - a. Introduce all new anchors within existing mortar joints prior to repointing.
  - b. Fully embed new anchors within mortar beds.

### 3.05 CLEAN-UP

- A. After setting and pointing masonry, work shall be carefully cleaned, removing all dirt, excess mortar, stains and other defacements.
  - 1. Use mild abrasive cleaners that contain no harsh or caustic ingredients, with fiber brooms or brushes and clear water. Wire brushes, steel wool, and acids or other solutions, which may cause discoloration, are expressly prohibited.
- B. Upon completion of masonry work, surfaces shall be left in a clean, unsoiled condition, acceptable to the Architect and Owner.

### **3.09 PROTECTION**

- A. All masonry work shall be properly and adequately protected under the responsibility of the Contractor, until final acceptance of the Project by Owner.

**END OF SECTION 04510**

## SECTION 05500 ARCHITECTURAL METAL RESTORATION

### PART 1 - GENERAL

#### 1.01 SCOPE OF WORK

- A. Provide all materials, labor, equipment, and perform all operations for the complete installation of work in this section. The work shall include:
1. Restore and repair all existing metalwork, including ornamental metal trellis, grille, fences, gates, and brackets, as indicated on drawings..

#### 1.02 QUALITY ASSURANCE

- A. The Work of this Section shall be accomplished by a Contractor with a minimum of five (5) years experience in work of this type. All ironwork shall be fabricated and installed by mechanics experienced and skilled in the fabrication and installation of ironwork
- B. The Architect and Owner shall obtain a permit for work from the New York City Landmarks Preservation Commission. The Contractor shall obtain, maintain, and pay for all other permits and licenses necessary for execution of the Work.
- C. The Contractor shall inspect and examine existing conditions prior to starting any work. He/she shall report to the Architect any conditions, which may affect his/her work adversely. Failure to make such a report will mean that the Contractor finds the Work acceptable.

#### 1.03 FIELD MEASUREMENTS

- A. The Contractor shall take all necessary field measurements prior to fabrication and installation of work and shall assume complete responsibility for accuracy of same.

#### 1.04 SAMPLES/SUBMITTALS

- A. Prior to commencement of work, the Contractor shall provide a sample of repaired section of fence including new elements. Such samples must be approved by the Architect, and any work executed shall conform to the approved samples.

#### 1.05 DELIVERY, STORAGE & HANDLING

- A. Exercise proper care in handling of all work so as not to injure the finished surfaces, and take proper precautions to protect the work from damage after it is in place.
- B. All materials shall be delivered to the job site in factory sealed containers clearly labeled as to product, manufacturer, color and/or other pertinent characteristics.
- C. All materials for use in the work of this Section shall be stored under environmental conditions recommended by the Manufacturer.
- D. The Contractor shall be fully responsible for the storage of equipment and materials in designated areas. The Owner shall not be responsible for damaged or stolen materials or equipment left on the building premises by the Contractor.
- E. The building and surrounding area shall be kept free of all surplus materials, dirt, and rubbish at all times. All debris shall be disposed of in a legal manner off the site. Work areas shall be swept clean after every work day.

#### **1.06 ENVIRONMENTAL REQUIREMENTS**

- A. Materials shall be used only at the Manufacturer's recommended temperature tolerances.
- B. Do not apply paint at surface and air temperature below 40 degrees F. or when the relative humidity is above 80%. Strictly adhere to manufacturer 's directions.

#### **1.07 PROTECTION**

- A. The Contractor shall provide safeguards to protect workmen and the general public against injury or damage.
- B. All work shall comply with all applicable local and OSHA code requirements and will be done by workmen skilled in the trade. The work shall be executed in a safe, orderly manner.
- C. Contractor shall carefully protect all foliage and landscape features to full extent possible during all operations.

#### **1.08 SCHEDULING**

- A. Disruption of building use and services, including blocking entrances, sidewalks, etc., shall not be permitted without prior arrangement of the Owner.

PART 2 - PRODUCTS

- A. Provide missing architectural metalwork to match original ornamental and structural elements.
- B. Furnish fasteners of basic metal and alloy, matching finished color and texture as the metal being fastened, unless otherwise indicated, to match original.
- C. New ironwork and steel shall be sound and free of warp, pits, cracks, blowholes, and other defects which impair strength or appearance.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Make a thorough examination of existing conditions. Before starting the installation, notify the Architect of any defects, which would affect the satisfactory completion of the work of this Section.

3.02 PREPARATION

- A. Examine Contract Documents in order to ensure that the completeness of work required under this Section. Supplementary parts, necessary to complete all architectural metal work, though not specifically indicated on drawings or specified herein, shall be provided.
- B. Verify all measurements and dimensions at job site and cooperate in the coordination and scheduling of the work of this Section with the work of related trades; with particular attention given to the installation of items embedded in masonry so as not to delay job progress.
- C. Remove remnants of damaged or missing elements which are being replaced, and straps, brackets, and anchoring devices which cannot be reused.
- D. Remove existing attachments to bluestone copings. If removal causes damage to ironwork, replace ironwork as required.

3.03 METAL REPAIR

- A. All metal work shall be repaired in a thorough and workmanlike manner by skilled workmen to the complete satisfaction of the Architect.

- B. Filler compounds containing iron particles in an epoxy resin binder may be used to patch superficial, non-structural cracks and small defects in cast iron.. Polyester-based putties, e.g. auto body putties, are acceptable fillers for small holes.
- C. Welding cast-iron in field shall only be undertaken by very experienced welders.
- D. Replace deteriorated cast-iron sections with new castings, rather than splicing or reinforcing.
- E. Tighten all bolts and screws.
- F. Replace all screws with stripped threads and seriously rusted bolts.
- G. Provide appropriately sized stainless steel bolts or screws.
- H. If any cast-iron elements have been previously filled with concrete, remove all concrete prior to repair and rust removal.

**END OF SECTION 05500**

SECTION 06105 - ROUGH CARPENTRY

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. The extent of the rough carpentry is shown on the Drawings and described in this Section. Provide all woodwork complete, in place, as shown, scheduled, specified here or as required for a proper repair and restoration job. Without limitation, work specified here includes:

1. Reconstruct framing for arcade roof to match original, including sheathing, brackets, beams, moldings and blocks, 100%.

1.02 RELATED WORK SPECIFIED ELSEWHERE

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

- B. The work described in this section is related to work described in the following Sections:

- |    |               |                                  |
|----|---------------|----------------------------------|
| 1. | Section 02060 | Selective Demolition and Shoring |
| 2. | Section 07100 | PUR Waterproofing                |
| 3. | Section 07500 | Copper Flashing and Drainage     |
| 4. | Section 07310 | Slate Roof                       |

### 1.03 QUALITY ASSURANCE

- A. Reference Standards: Provide materials and workmanship meeting the specified standards of the National Woodwork Manufacturer's Association.
- B. Restoration Specialist: All rough carpentry to be installed by qualified carpenters having not less than five (5) years successful experience in work of comparable scope and quantity.
- C. Weather Conditions: Proceed with exterior carpentry only when existing and forecasted weather conditions will permit exterior work to be installed in compliance with manufacturer's recommendations and when substrate is completely dry.

### 1.04 PROJECT CONDITIONS

- A. Field Measurement: Check actual wood sizes and conditions before fabrication of custom components. Coordinate fabrication with construction progress to avoid delay. Where necessary, proceed with fabrication without measurements, and coordinate tolerances to ensure proper fit of all elements.

### 1.05 SUBMITTALS

- A. In accordance with Division 1 requirements, submit:
  - 1. Manufacturer's certifications of preservative treatment.

## PART 2 - PRODUCTS

### 2.01 MATERIALS FOR WOOD WORK

- A. General: Where scheduled or where required to replace existing deteriorated wood, provide wood replacement fabricated to meet NWMA Industry Standard I.S. 2-73.
- B. Plywood: Exterior grade Douglas fir, conforming to U.S. Product Standard P.S. 1-87. Roof sheathing shall be fastened with roofing company approved fasteners and plates and PA S grade stamped for specified span, made with exterior glue, with index stamp visible on all sheets.

## PART 3 - EXECUTION

### 3.01 INSPECTION AND PREPARATION (GENERAL)

- A. Examine existing wood elements and substrates. Report any problems to the Architect. Do not proceed with installation until unsatisfactory conditions are corrected.
- B. Clean substrates of projections and substances detrimental to application.
- C. Condition finish carpentry to average prevailing humidity conditions in installation areas before installation for a minimum of 24 hours unless longer conditioning recommended by manufacturer.
- D. Back prime lumber for painted finish exposed on the exterior. Comply with requirements for surface preparation and application in Section 09900, Painting.
- E. Protect the public from dust, spillage and debris resulting from the work of this Section.

### 3.2 INSTALLATION (GENERAL)

- A. Do not use plywood with defective surfaces, sizes, or patterns.
- B. Install carpentry plumb, level, true, and aligned with adjacent materials. Use concealed shims where required for alignment.
- C. Scribe and cut carpentry to fit adjoining work. Refinish and seal cuts.
- D. Install to tolerance of 1/8-inch in 8 feet for plumb and level. Install adjoining finish carpentry with 1/16-inch maximum offset for flush installation and 1/8-inch maximum offset for reveal installation.
- E. Coordinate finish carpentry with materials and systems that may be in or adjacent to wood elements. Provide cutouts for mechanical and electrical items that penetrate exposed surfaces of wood elements. Finish in accordance with specified requirements.

### 3.3 ADJUSTING & CLEANING

- A. Clean finish carpentry on exposed and semi-exposed surfaces. Touch-up factory-applied finishes to restore damaged or solid areas.

END OF SECTION 06200

## SECTION 07100 -- PUR WATERPROOFING SYSTEM

### PART 1 GENERAL

#### 1.1 DESCRIPTION OF WORK

- A. Provide all labor, materials, equipment, and services necessary for executing a cold fluid-applied reinforced polyurethane waterproofing membrane
  - 1. New PUR membrane roof over terrace and trench drains.
  - 2. New PUR membrane roofing and flashing, as indicated on drawings, for new skylight

#### 1.2 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. The work described in this section is related to work described in the following Sections:
  - 1. Section 02061 Selective Demolition
  - 2. Section 06105 Rough Carpentry
  - 3. Section 07310 Slate Roof
  - 4. Section 07500 Copper Flashing and Drainage

#### 1.3 REFERENCES

- A. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual.
- B. American Concrete Institute (ACI) ACI-308 - Recommended Practice for Curing

Concrete.

- C. American Society for Testing and Materials (ASTM)
  - 1. ASTM - D638 - Test Methods for Tensile Properties of Plastics
  - 2. ASTM - D4258 - Standard Practice for Surface Cleaning Concrete for Coatings
  - 3. ASTM - D4259 - Standard Practice for Abrading Concrete
  - 4. ASTM - D4541 - Method for Pull-Off Strength of Coatings using Portable Adhesion Tester
  - 5. ASTM - E96(A) - Test Methods of Moisture Transmission of Material
  - 6. ASTM E-108, ANSI/UL 790 for fire resistance.
  - 7. ASTM C 836 Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane.
- D. International Concrete Repair Institute (ICRI) Guideline 03732 Concrete Surface Preparation
- E. Steel Structures Painting Council (SSPC)

#### 1.4 SUBMITTALS FOR REVIEW

- A. Membrane System Product Data: Provide current standard printed product literature indicating characteristics of membrane materials, flashing materials, components, and accessories product specification and installation.
- B. Product Samples: Submit product samples of membrane and flashing materials showing color, texture, thickness and surfacing representative of the proposed system for review and approval by the Owners Representative.
- C. Submit sample copies of both the Manufacturer and Applicator warranties for the periods stipulated. Each specimen must be a preprinted representative sample of the issuing company's standard warranty for the system specified.
- D. Submit copies of current Material Safety Data Sheets (MSDS) for all components of the work.
- E. Membrane Shop Drawings: Submit shop drawings of cold fluid-applied reinforced polyurethane showing all a project plan, size, flashing details, and

attachment for review and approval by the Owners Representative and Membrane Manufacturer.

## 1.5 QUALITY ASSURANCE

- A. Membrane Manufacturer: Company specializing in manufacturing the products specified in this section with ten (10) years documented experience in the United States. Membrane Manufacturer shall submit the following certifications for review:
1. Substrates and conditions are acceptable for purpose of providing specified warranty.
  2. Materials supplied shall meet the specified requirements.
- B. Applicator: Company specializing in performing the work of this section with (3) years documented experience and **approved by system manufacturer for warranted membrane installation**. Applicator shall submit the following certification for review:
1. Applicator shall submit documentation from the membrane manufacturer to verify contractor's status as an approved applicator for warranted installations.
- C. Evaluate moisture content of substrate materials. Constructor shall determine substrate moisture content throughout the work and record with Daily Inspection Reports or other form of reporting acceptable to the Owner or designated Representative, and Membrane Manufacturer.
- D. Random tests to determine tensile bond strength of membrane to substrate shall be conducted by the Contractor at the job site using an Elcometer Adhesion Tester Model 106 or similar device, or by the performance of a manual pull test. Contractor shall perform tests at the beginning of the Work, and at intervals as required to assure specified adhesion with a minimum of three (3) tests per 5000 square feet. Smaller areas shall receive a minimum of three (3) tests. Test results shall be submitted to the Owner or his designated Representative and the Membrane Manufacturer. Contractor shall immediately notify the Owner or his designated Representative and Membrane Manufacturer in the event tensile bond test results are below specified values.
1. Adequate surface preparation will be indicated by tensile bond strength of membrane to substrate greater than or equal to 220 psi (1.5 N/mm<sup>2</sup>) for pedestrian traffic and 300 psi (2.0 n/mm<sup>2</sup>) for vehicular (low speed) traffic and water flow/containment, as determined by use of an adhesion tester.

2. Adequate surface preparation will be indicated by 135° peel bond strength of membrane to substrate such that cohesive failure of substrate occurs before adhesive failure of membrane/substrate interface.
  3. In the event the bond strengths are less than the minimum specified, additional substrate preparation is required. Repeat testing to verify suitability of substrate preparation.
- E. Monitor quantities of installed materials. Monitor application of resin mixture, reinforcing fleece and flashing. Perform Work in accordance with manufacturer's instructions.
- F. Mock-up areas shall be used to determine required methods and tools to obtain degree of substrate preparation required by the membrane manufacturer. Conduct tests as required to verify that substrate preparation meets specified requirements. Tests shall include, but are not limited to, tensile bond strength and moisture content of substrate.
1. Prepare and clean a three (3) foot (0.9 m) by three (3) foot (0.9 m) area of each substrate material type.
  2. Submit findings in writing to Owner or his designated Representative and Membrane Manufacturer.
  3. Mock-up areas shall be maintained for quality control for the entire project.

#### 1.6 REGULATORY REQUIREMENTS

- A. Conform to applicable building and jurisdictional codes for waterproofing assembly and fire resistance requirements.
- B. Comply with requirements of OSHA, NIOSH or local governing authority for work place safety.
- C. Comply with authority or agency "Confined Space Policy" during and throughout all work to be performed.

#### 1.7 PRE-INSTALLATION MEETING

- A. Convene a pre-installation meeting at the job site (1) week before starting work of this section. Require attendance of parties directly affecting work of this section, including but not limited to, Architect, Engineer, Waterproofing/Flooring Consultant, Owner's Representative, Waterproofing Contractor, and Membrane Manufacturer's Representative. Review waterproofing preparation and installation procedures, coordination and scheduling required with related work, and condition and structural loading limitations of deck/substrate.

#### 1.8 FIELD INSPECTION SERVICES

- A. Manufacturer's technical representative shall provide the following inspections of the membrane application:
  - 1. Jobstart inspection at the beginning of each phase of the project, to review special detailing conditions and substrate preparation.
  - 2. Periodic in-progress inspections throughout duration of the project to evaluate membrane and flashing application.
  - 3. Final punch-list inspection at the completion of each phase of the project prior to installation of any surfacing or overburden materials.
  - 4. Warranty inspection to confirm completion of all punch list items, surfacing, and overburden application.

#### 1.9 DELIVERY, STORAGE, AND PROTECTION

- A. The Contractor together with the Owner or his designated Representative shall define a storage area for all components. The area shall be cool, dry, out of direct sunlight, and in accordance with manufacturer's recommendations and relevant regulatory agencies. Materials shall not be stored in quantities that will exceed design loads, damage substrate materials, hinder installation or drainage.
- B. Store solvent-bearing solutions, resins, additives, inhibitors or adhesives in accordance with the MSDS and/or local fire authority. After partial use of materials replace lids promptly and tightly to prevent contamination.
- C. Roll goods shall be stored horizontally on platforms sufficiently elevated to

prevent contact with water and other contaminants. DO NOT use rolls that are wet, dirty or have damaged ends.

- D. Waterproofing materials must be kept dry at all times. If stored outside, raise materials above ground or roof level on pallets and cover with a tarpaulin or other waterproof material. Plastic wrapping installed at the factory should **not** be used as outside storage covers.
- E. Follow manufacturer's directions for protection of materials prior to and during installation. Do not use materials that have been damaged to the point that they will not perform as specified. Fleece reinforcing materials must be clean, dry and free of all contaminants.
- F. Copies of all current MSDS for all components shall be kept on site. Provide any and all crew members with appropriate safety data information and training as it relates to the specific chemical compound he or she may be expected to deal with. Each crew member shall be fully aware of first-aid measures to be undertaken in case of incidents. Comply with requirements of OSHA, NIOSH or local governing authority for work place safety.

#### 1.10 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply waterproofing membrane during or with the threat of inclement weather.
- B. Application of cold fluid-applied reinforced polyurethane waterproofing membrane may proceed while air temperature is between 40°F (5°C) and 85°F (30°C) providing the substrate is a minimum of 5°F above the dew point.
- C. When ambient temperatures are at or expected to fall below 50°F (10°C), or reach 85°F (30°C) or higher, follow Membrane System Manufacturer's recommendations for weather related additives and application procedures.
- D. Ensure that substrate materials are dry and free of contaminants. DO NOT commence with the application unless substrate conditions are suitable. Contractor shall demonstrate that substrate conditions are suitable for the

application of the materials.

- E. Odor control measures are not typically necessary, but where required by the Owner or his designated Representative, Contractor shall implement odor control and elimination measures prior to and during the application of the roofing/waterproofing materials. Control/elimination measures shall be field tested at off-hours and typically consists of one (1) or a multiple of the following measures:
1. Sealing of air intakes with activated carbon filters. Install filters in accordance with requirements and recommendations of the filter manufacturer. Seal filters at joints and against building exterior walls to prevent leakage of unfiltered air where required due to size of intake opening. Provide track system to secure filters.
  2. Erection and use of moveable enclosure(s) sized to accommodate work area(s) and stationary enclosure for resin mixing station. Enclosure shall be field constructed or pre-manufactured of fire retardant materials in compliance with local code requirements in accordance with requirements of the Owner or his designated Representative. Equipment enclosure(s) with mechanical air intake/exhaust openings and Odor Control Air Cleaners, as required to clean enclosed air volume and to prevent odor migration outside the enclosure. Exhaust opening shall be sealed with activated carbon filter.
  3. Placement of odor elimination stations inside and outside of the enclosure(s) as required by field condition, in coordination with the Owner or his designated Representative.
  4. Protection of Contractor personnel and occupants of the structure and surrounding buildings as necessary to comply with requirements of OSHA, NIOSH and/or governing local authority.
  5. When disposing of all refuse or unused materials, observe all EPA, OSHA or local disposal requirements.

#### 1.11 COORDINATION & PROTECTION

- A. Coordinate the work with the installation of other work in project as the work of this section proceeds.
- B. Building components shall be protected adequately (with tarp or other suitable

material) from soil, stains, or spills at all hoisting points and areas of application. Contractor shall be responsible for preventing damage from any operation under its Contract. Any such damage shall be repaired at Contractor's expense to Owner's satisfaction or be restored to original condition.

- C. Provide barricades, retaining ropes, safety elements (active/passive) and any appropriate signage required by OSHA, NIOSH, and NSC and/or the Owner or designated Representative.
- D. Protect finished waterproofing membrane from damage by other trades. Do not allow waste products containing petroleum, grease, acid, solvents, vegetable or mineral oil, animal oil, animal fat, etc. or direct steam venting to come into direct contact with the membrane.

#### 1.12 WARRANTY

- A. **Manufacturer's Material Warranty:** Provide 10 year manufacturer's material only warranty under provisions of this section. This warranty provides for supply of membrane only, limited to amounts necessary to effect repairs necessitated solely by material defective in content and composition.
- B. **Manufacturer's Standard Warranty:** Provide 20 year manufacturer's standard warranty under provisions of this section. This warranty provides for cost of labor and materials for loss of watertightness, limited to amounts necessary to effect repairs necessitated by either defective material or defects in related installation workmanship, with total expenditure limited to the original installed cost of Kemperol materials, and prorated equally over the duration of the warranty.
- C. **Manufacturer's Premier Warranty:** Provide 20 year manufacturer's premier warranty under provisions of this section. This warranty provides for cost of labor and materials for loss of watertightness, limited to amounts necessary to effect repairs necessitated by either defective material or defects in related installation workmanship, with no dollar limitation ("NDL").
- D. **Waterproofing Contractor's Warranty:** Provide 5 year "Applicator Maintenance Warranty" covering workmanship for all work of this section including installation of membrane, flashings, metal work, and roofing/waterproofing accessories.
- E. Submit (2) executed copies of both the manufacturer and applicator warranties for the periods stipulated, starting from the date of substantial completion.

Each warranty must be signed by an authorized representative of the issuing company.

1.13 MATERIAL SUBSTITUTIONS

- A. Materials proposed for use in the performance of the work that are not specified herein must be submitted to the Owner/Owner's Representative for evaluation no later than ten days prior to bid.

PART 2 PRODUCTS

2.1 GENERAL

- A. The products herein specified are totally pre-engineered products of the listed manufacturer and establish criteria for the approval of substitutions. Products must be part of a pre-engineered system, equivalent in function, quality, composition and method of application to be considered for approval as an "Approved Substitute". Substitute materials must meet or exceed the physical performance characteristics of the specified materials.

2.2 MANUFACTURERS - MEMBRANE

- A. Membrane: Two-component, cold fluid-applied reinforced polyurethane waterproofing membrane with a 360 degree needle punched non-woven 165 polyester reinforcing fleece, for a finished dry film membrane thickness of .070 inch nominal per ply; conforming to ASTM C 836. Provide products manufactured and supplied by the following:

- 1. Kemper System's 2K-PUR resin for use in an adhered waterproofing system.

- B. Physical Properties:

Property	Value	Test Method
Color	Gray	-
Physical state	Cures to solid	-
Nominal thickness (165 fleece)	70 mils	-
Tensile strength @ break	> 1200 psi	ASTM D-412
Elongation	> 62%	ASTM D-412
Tear resistance	>1100 lbf	ASTM D-624
Water vapor transmission	0.45 Perms	ASTM E-96
Water absorption	< 1%	ASTM D-570
Impact resistance	Shore A 68	ASTM D-2240
Usage time*	30 minutes	-
Rainproof after*	6 hours	-

Solid to walk on after*	24 hours	-
Solid to drive on with air rubber tires after*	48 hours	-
Overburden may be applied after	2 days	-
Completely hardened after	3 days	-
Crack spanning	2mm/0.08 inch	-
Resistance to temperatures up to (short term)	250°C/482°F	-
*all times are approximate and depend upon wind, humidity and temperature.		

### 2.3 FLASHINGS

- A. **Membrane Flashings:** A composite of the same resin material as field membrane with 165 fleece reinforcement; [colored aggregate topcoat surfacing or approved coating][to complement the floor finish].

### 2.4 ACCESSORIES

- A. **Polyurethane Primer:** Two-component, solvent-free, high solids polyurethane resin for use in improving adhesion of membrane to wood, metal and bituminous substrate surfaces. Monitor application rate and adjust depending on substrate absorbency.
- B. **Epoxy Primer:** Two-component, solvent-free epoxy coating for use in improving adhesion of membrane to cementitious/masonry substrate surfaces. Monitor application rate and adjust depending on substrate absorbency.
- C. **Accelerator:** Additive specifically designed to accelerate the resin reaction time at ambient temperatures below 50°F (10°C). Accelerator to be used with cream resin Component A prior to mixing of multi-component resin. Continuously monitor substrate surface temperatures.
- D. **Tools, Accessories, and Cleaners:** Supplied and/or approved by membrane manufacturer for product installation.
- E. **Separation Layer:** 0.015" Polyolefin film one (1) ply with six (6) inch minimum taped joints.
- F. **Leveling and Patching Aggregate:** Silica sand shall be washed, kiln-dried, and dust-free, suitable for troweling or pourable self-leveling, round grain or angular with the following size specification:
1. For voids less than ¼" in depth: 0.45 - 0.55 mm

2. For voids ¼" to 2" in depth: 0.7 - 1.2 mm

Mixing Proportions shall be a ratio of resin to sand at 1:2 by volume or as approved by membrane manufacturer.

- G. **Backer Rod:** Expanded, closed-cell polyethylene foam designed for use with cold-applied joint sealant.
- H. **Caulking:** Single component, non-sag elastomeric polyurethane sealant, as recommended or supplied by membrane manufacturer for use in making airtight and watertight seals where required.
- I. **Miscellaneous Fasteners:** Appropriate for purpose intended and approved by fastener manufacturer; length required for thickness of material [with metal washers]; as supplied or approved by membrane manufacturer.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Verify that surfaces and site conditions are ready to receive work.
- B. Verify substrate openings, curbs, and protrusions through substrate and reglets are in place and solidly set.
- C. Verify substrate is structurally supported, secure and sound.

#### 3.2 PREPARATION OF SUBSTRATE

- A. **General:** Surfaces to be prepared as a substrate for the new waterproofing system as follows:
1. The contractor shall determine the condition of the existing structural substrate. All defects in the substrate shall be corrected before new waterproofing work commences. Areas of deteriorated deck/substrate, porous or other affected materials must be removed and replaced with new to match existing.
  2. Prepare flashing substrates as required for application of new waterproofing membrane flashings.

3. Inspect substrates, and correct defects before application of new waterproofing. Fill all surface voids greater than 1/8 inch wide with an acceptable fill material.
4. The final substrate for waterproofing shall be clean, dry, free of loose, spalled or weak material including coatings, mineral aggregate, and flood coat/gravel surfacing, oil, grease, contaminants, abrupt changes in level, waterproofing agents, curing compounds, and free of projections which could damage membrane materials.

**B. Masonry:**

1. Areas of soft or scaling brick or masonry, faulty mortar joints shall be repaired in accordance with the requirements of the Owner or his designated Representative and Flashing Membrane Manufacturer.

**C. Finish Leveling, Patching and Crack Preparation:**

1. General: EP primer/sand mix is the preferred material for all substrate finish leveling, crack and wall preparation and patching. EP primer/sand patching mix provides a set time of approximately twelve (12) hours and does not require surface grinding. Kemperol primer/sand mix is typically applied in conjunction with general surface priming.
2. Substrate Leveling & Patching: Substrate conditions are to be evaluated by the Contractor, the Owner, or his designated Representative, and Membrane manufacturer. Perform leveling and patching operations as follows:
  - a) Level uneven surfaces with a leveling mixture of primer and approved kiln-dried silica sand in a 1:2 primer to sand ratio by volume. Spread and plane this compound with a squeegee and trowel to achieve a flat surface.
  - b) Fill cavities with a patching mixture of primer and approved kiln-dried sand in a 1:3/1:3.5 primer to sand ratio by volume.
  - c) Silica sand must be kept absolutely dry during storage and handling.

- d) Any surface to be leveled or filled must first be primed with an appropriate primer.
3. Joint and Crack Preparation: Joints, cracks and fractures in the structural substrate shall be prepared as defined below prior to installation of the waterproofing membrane. Note: Joints, cracks, and fractures may telegraph through the waterproofing membrane.
- a) Non-Moving Cracks: Determine that crack is non-moving. Clean out crack by brushing and oil-free compressed air. Fill crack with polyurethane sealant. Allow for a minimum of twelve (12) hours cure or as required by sealant Manufacturer.
  - b) Moving Cracks: Determine that crack is moving. Clean out crack by brushing and oil-free compressed air. Fill crack with polyurethane sealant. Allow for a minimum of twelve (12) hours cure or as required by sealant Manufacturer. Apply resin and 4 inch (10 cm) wide strip of membrane (resin and fleece) in strict accordance with Membrane manufacturer's written instructions.

### 3.3 PRIMER APPLICATION

#### A. General:

- 1. Mix and apply two-component primer in strict accordance with written instructions of Membrane Manufacturer. Use only proprietary materials, as supplied by the membrane manufacturer.
- 2. The substrate surface must be dry, with any remaining dust or loose particles removed using clean, dry, oil-free compressed air, industrial vacuum, cloth wipe or a combination of methods.
- 3. Do not install primer on any substrate containing newly applied and/or active asphalt, coal-tar pitch, creosote or penta-based materials unless approved in writing by Membrane Manufacturer. Some substrates may require additional preparation before applying primer.

#### B. Mixing of Standard EP and D Primers:

- 1. Premix primer Component A thoroughly with a spiral agitator or stir stick. Pour primer Component B into Component A and mix the components for approximately 2 minutes with a clean spiral agitator on slow speed or stir stick without creating any bubbles or streaks. DO NOT AERATE. The

Primer solution should be a uniform color, with no light or dark streaks present.

2. Do not thin primer. Determine required primer coverage for each substrate material/condition and apply in strict accordance with written instructions of Membrane Manufacturer.
3. Mix only that amount of primer components A & B that can be used in 30 minutes.

C. Mixing of Quick-Dry D Primer:

1. Premix primer Component A thoroughly with a spiral agitator or stir stick. Pour primer Component B into Component A and mix the components for approximately 2 minutes with a clean spiral agitator on slow speed or stir stick without creating any bubbles or streaks. DO NOT AERATE. The Primer solution should be a uniform color, with no light or dark streaks present.
2. Add one 80 gram can of 2K-PUR Accelerator to one full workpack of mixed Components A & B. Mix for an additional 1 minute with a clean spiral agitator on slow speed or stir stick without creating any bubbles or streaks. DO NOT AERATE.
3. Do not thin primer. Determine required primer coverage for each substrate material/condition and apply in strict accordance with written instructions of Membrane Manufacturer.
4. Mix only that amount of primer components A & B that can be used in 15 minutes.

D. Mixing of Quick-Dry EP Primer:

1. Premix primer Component A thoroughly with a spiral agitator or stir stick. Pour primer Component B into Component A and mix the components for approximately 2 minutes with a clean spiral agitator on slow speed or stir stick without creating any bubbles or streaks. DO NOT AERATE. The Primer solution should be a uniform color, with no light or dark streaks present.
2. Do not thin primer. Determine required primer coverage for each substrate material/condition and apply in strict accordance with written instructions of Membrane Manufacturer.
3. Mix only that amount of primer components A & B that can be used in 15

minutes.

E. Mixing of Quick-Dry R Primer:

1. Premix primer Component A within clear pouch to obtain consistent appearance. Remove separation cord. Knead primer Component B into Component A and mix the components for approximately 1 minute. The Primer solution should be a uniform color, with no light or dark streaks present.
2. Do not thin primer. Determine required primer coverage for each substrate material/condition and apply in strict accordance with written instructions of Membrane Manufacturer.
3. Primer must be applied within 5 minutes of mixing.

F. Application of Primer:

1. Apply primer at the rate of approximately 0.7 - 1.4 gallons (2.65-5.30L) per 100 square feet (9 m<sup>2</sup>).
2. Roll or brush the primer evenly onto the surface to fully saturate the substrate in one application. Do not allow primer to pond or collect in low areas.
3. Apply primer only up to the edge of the membrane flashing terminations. Primer application past the membrane terminations requires surfacing with an approved material.
4. For EP primer applications over cementitious substrates where protection from substrate wetness is required, apply primer coat at a heavier application rate until pore saturation is achieved.
5. For all EP primer applications, apply kiln-dried sand into the final coat of EP primer while still wet at the rate of 30 lbs. per 100 square feet.
6. Allow standard primers to cure for a minimum of twelve (12) hours before membrane application. Allow urethane-based and epoxy-based quick-dry primers to cure for a minimum of three (3) hours before membrane

application. Membrane must be applied to primer only when completely dry and without tack.

7. Exposure of the primer in excess of eight (8) days or premature exposure to moisture may require removal and application of new primer. DO NOT apply new primer over exposed primer older than eight (8) days, primer prematurely exposed to moisture, or primer used as temporary waterproofing, unless approved in writing by the Membrane Manufacturer.

G. Disposal of Primer:

1. Cured primer may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components.
2. Uncured primer is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulation. Do not through uncured resin away.

3.4 MEMBRANE APPLICATION

A. General:

1. Mix and apply cold fluid-applied reinforced polyurethane waterproofing membrane in strict accordance with written instructions of Membrane Manufacturer. Use only proprietary membrane resins and materials, as supplied by the membrane manufacturer.
2. The primed substrate surface shall be dry, with any remaining dust or loose particles removed using clean, dry, oil-free compressed air, industrial vacuum, cloth-wipe or a combination.
3. Protect all areas where membrane has been installed. Do not work off installed membrane during application of remaining work before forty-eight (48) hours of curing. Movement of materials and equipment across installed membrane is not acceptable. If movement is necessary, provide complete protection of affected areas.
4. Closely follow the Membrane Manufacturer's recommendation for hot and cold weather application. Monitor surface and ambient temperatures,

including the effects of wind chill.

**B. Mixing of Resin:**

1. Mix resin Component A (cream formulation) with a spiral agitator until the liquid is a uniform cream color. If the ambient temperature is below 50°F (10°C), then a weather related additive should be combined and mixed into the Component A.
  - a) Accelerator should be added to resin Component A when the ambient temperature is 50°F (10°C) and below. The accelerator should be mixed with the spiral agitator for 5 minutes or until both liquids are thoroughly blended.
2. Mix resin Component B (dark brown formulation) with a separate spiral agitator until the color is a uniform dark syrup color.
3. Pour resin Component A and Component B into a third clean bucket at a 4:1 ratio (by weight) and thoroughly mix the components with a clean spiral agitator. The Resin solution should be a uniform color, with no light or dark streaks present.
4. Mix only that amount of resin components A & B that can be used in 30 minutes.

**C. Application of Resin/Fleece**

1. Apply mixed resin to the prepared surface at the approximate rate of 4.5 gallons (16.9L) per 100 square feet (9 m<sup>2</sup>). The resin should be rolled or brushed liberally and evenly onto the surface using a broad, even stroke. Cover one working area at a time, between 15 - 20 ft.<sup>2</sup> (1.4 - 1.9 m<sup>2</sup>).
2. Roll out dry polyester fleece onto the liquid resin mix, making sure the SMOOTH SIDE IS FACING UP (natural unrolling procedure), avoiding any folds and wrinkles. The fleece will begin to rapidly saturate with the liquid resin mix. Use a medium nap roller or brush to work the resin into the fleece, saturating from the bottom up, and eliminating air bubbles, wrinkles, etc. The appearance of the saturated fleece should be light opaque amber with no white spots. White spots are indications of unsaturated fleece or lack of adhesion. It is important to correct these faults before the resin cures.
3. Apply additional liquid resin mix on top of fleece at the approximate rate of 2 gallons (7.5L) per 100 square feet (9 m<sup>2</sup>) to finish the saturation of the fleece. Roll this final coating into the fleece, which will result in a glossy appearance. The fleece can only hold so much resin and all excess should be rolled forward to the unsaturated fleece, eliminating ponding or excessive build-up of the resin. Any excess resin left on the top of the fleece will weather and peel off. The correct amount of resin will leave no whiteness in fleece and there will be a slightly fibrous surface texture. The final resin coating should be smooth and uniform.

4. Prevent contact between mixed/unmixed resin and new/existing membrane. If any unmixed resin contacts membrane surface remove immediately and clean thoroughly with a cloth rag.
5. At all fleece seams, allow a 2" (5 cm) overlap for all side joints and a 4" (10 cm) overlap for all end joints.
6. At membrane tie-offs, clean in-place membrane with MEK (methyl ethyl ketone) solvent once resin has cured. Allow solvents to fully evaporate before application of new resin.

D. Disposal of Resin:

1. Cured resin may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components.
2. Uncured resin is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulation. Do not throw uncured resin away.

### 3.5 FLASHING

A. Metal Flashing - General:

1. Metal flashings shall be fabricated in accordance with the current recommendations of SMACNA and in accordance with standard drawings and project details.
2. Metal flashing flanges to which membrane is to be bonded shall be a minimum of four (4) inches in width, and secured to the substrate six (6) inches on center staggered with fasteners appropriate to the substrate type. The flanges shall be provided with a roughened surface that has been cleaned of all oil and other residue.
3. Metal edges that will be overlaid with membrane shall be provided with a 1/4" min. hemmed edge.
4. Apply primer, resin and fleece to metal flange, extending membrane to outside face of metal edging, and to vertical face of metal base/curb flashing.

B. Membrane Flashing - General:

1. Membrane flashings shall be fabricated with primer appropriate for the substrate surface, resin of the same base chemical type as the field membrane, and fleece of the same weight as the field membrane unless

specified otherwise.

2. Primer, resin, and fleece mixing and application methods as specified for field membranes are also suitable for membrane flashing.
3. Fleece shall overlap 2" (5 cm) minimum for all joints. Fleece shall be cut neatly to fit all flashing conditions without a buildup of multiple fleece layers. Work wet membrane with a brush or roller to eliminate blisters, openings, or lifting at corners, junctions, and transitions.

C. Walls, Curbs and Base Flashings:

1. Wall, curb and base flashings shall be installed to solid substrate surfaces only. Adhering to gypsum-based panels, cementitious stucco, synthetic stucco, wood or metal siding, and other similar materials is not acceptable.
2. Flash all walls, curbs and base flashings using cold fluid-applied reinforced polyurethane waterproofing membrane. Flashing material shall be the same resin used in the field membrane with 165 fleece reinforcement.
3. Reinforce all transition locations and other potential wear areas with a four (4) inch wide 165 polyester fleece bottom layer evenly positioned over the transition prior to installing the exposed flashing layer.
4. Reinforce all inside and outside corners with a four (4) inch diameter conical piece of 165 fleece prior to installing the exposed flashing layer.
5. All pins, dowels and other fixation elements shall be flashed separately with a vertical flashing component prior to installing the exposed flashing layer.
6. Extend flashing a minimum of four (4) inches onto the field substrate surface.

D. Field Fabricated Control or Expansion Joint Flashing:

1. Control or expansion joints in excess of two (2) inches in width require the use of a separate engineered joint system.
2. Control or expansion joints two (2) inches or less in width may be

flashed with two layers of cold fluid-applied reinforced polyurethane waterproofing membrane and a compressible foam or rubber insert. Use a 165 polyester reinforcing fleece bottom layer and 165 polyester fleece top layer.

3. Grind or otherwise bevel the inside edges of the joint opening to provide a smooth transition edge for the fleece.
4. Flashing typically consists of a 165 polyester reinforcing fleece bottom layer looped into the joint as a cradle, a compressible foam or rubber insert at 25% compression fitted into the joint, and a 165 polyester fleece top layer applied over the joint. Extend both fleece layers four (4) inches minimum onto the field substrate on both sides of the joint.
5. Apply the field membrane over the entire joint area.

E. Electrical Conduit, Gas Lines and Lightning Protection

1. Supports for electrical conduit and gas lines greater than one (1) inch in diameter require the use of a separate engineered support system.
2. Supports for electrical conduit and gas lines one (1) inch or less in diameter, and bases for lightning protection rods and cable, can be adhered directly to the membrane surface with a single-component, high quality polyurethane sealant.

3.6 PROTECTION

- A. Upon completion of waterproofing and flashings (including all associated work), institute appropriate procedures for surveillance and protection of waterproofing during remainder of construction period. Protect all areas where membrane has been installed.

3.7 FLOOD TEST

- A. A flood test of the completed membrane and flashing system shall be conducted prior to backfilling trench. The flood test shall be of a 24 hr. minimum duration, and shall apply a water head of 2" over the entire application area. Any incidents of water entry shall be evaluated and all necessary repairs conducted, followed by an additional flood test.

3.8 CLOSEOUT

- A. Correction of Work:
1. Work that does not conform to specified requirements including

tolerances, slopes, and finishes shall be corrected and/or replaced. Any deficiencies of membrane application, termination and/or protection as noted during the Membrane Manufacturer's inspections shall be corrected and/or replaced at Contractor's expense.

B. Clean-Up:

1. Site clean-up, including both interior and exterior building areas that have been affected by construction, shall be restored to preconstruction condition.

END OF SECTION

SECTION 07271 - FIRESTOPPING

PART 1: GENERAL

1.01 GENERAL REQUIREMENTS

- A. Work of this section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.02 SCOPE OF WORK

- A. Provide all materials, labor, equipment, and perform all operations for the complete installation of firestops and smoke seals through fire-rated assemblies. Work shall include but not be limited to the following:

1. Voids around:
  - a) Pipes
  - b) Conduits
  - c) Cables and wires
  - d) Structural members
2. Intersection points between walls, floors, and ceilings of rated systems.
3. Other openings as required by New York City Building Code.

1.03 RELATED WORK OF OTHER SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. The work described in this section is related to work described in the following Sections:
- |     |               |                              |
|-----|---------------|------------------------------|
| 1.  | Section 01061 | Selective Demolition         |
| 3.  | Section 04510 | Masonry Restoration          |
| 5.  | Section 06105 | Rough Carpentry              |
| 6.  | Section 07100 | PUR Waterproofing            |
| 8.  | Section 07500 | Copper Flashing and Drainage |
| 9.  | Section 07310 | Slate Roof                   |
| 10. | Section 07900 | Sealants and Caulking        |
| 11. | Section 09900 | Painting                     |

#### 1.04 REFERENCES

- A. American Society for Testing and Materials (ASTM) Publications:
1. E814-83: Standard Method of Fire Tests of Through-Penetration Fire Stops
  2. E119-83: Methods of Fire Tests of Building Construction and Materials
  3. E84-84: Standard Test Method for Surface Burning Characteristics of Building Materials
  4. C719-86: Adhesion and Cohesion of Elastomeric Joint Sealants under Cyclic Movements
  5. C920-86: Standard Specifications for Elastomeric Joint Sealants
- B. Underwriters Laboratories Inc. (UL) Publications:
1. UL1479: Fire Tests of Through-Penetration Firestops
  2. UL263: Fire Tests of Building Construction and Materials
  3. UL723: Surface Burning Characteristics of Building Materials
  4. Underwriters Laboratories "Fire Resistance Directory" (Current Year)
- C. Factory Mutual Corporation (FM) Publications
1. Factory Mutual Approval Guide (Current Year)

#### 1.05 DEFINITION

- A. Fire Rated Assembly: Includes all fire rated walls, floors, floor/ceiling, and roof system assemblies. Ratings shall be per ASTM E119-83 or UL263.
- B. Firestop System: Through penetration firestop systems are designed to prevent the spread of fire through openings in fire rated assemblies for a specified period of time. Incorporating the use of specific products installed in a specific manner, they shall only be installed in configurations for which they have been specifically tested and listed by Underwriters Laboratories (UL) or Factory Mutual (FM) per ASTM E814 or UL 1479.
- C. Flame Spread/Smoke Developed Ratings: Numerical Value of a material when tested in accordance with E84-84.

#### 1.06 SUBMITTALS

- A. Drawings: Submit applicable UL or FM system numbers for each Firestop System and location to be installed.
- B. Installation Instructions: Submit Manufacturer's installation instructions for firestop systems to be installed.
- C. Product Data: Submit Manufacturer's printed data sheet for all products used in the firestop system, indicating product characteristics, performance, and any limiting criteria.
- D. Manufacturer's Letters: For installations or configurations not covered by a firestop system, a recommendation shall be obtained from the Manufacturer, in writing, for the specific application.

#### 1.07 QUALITY ASSURANCE

- A. Manufacturer: Use firestop system for the entire project, from a single manufacturer to the greatest extent possible. For installations or configurations not covered by a tested firestop system, a recommendation shall be obtained from the Manufacturer for the specific application.
- B. Material used must have B.S.A. or M.E.A. approval for use in New York City.

#### 1.08 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to the site in manufacturer's original, unopened containers with labels indicating brand and type, and bearing UL label.
- B. Storage: Store materials in accordance with the Manufacturer's directions and recommendations.
- C. Material Safety Data Sheets will be available on the job site for all materials. Follow Manufacturer's guidelines for use and handling.

#### 1.09 PROJECT CONDITIONS

- A. Do not proceed with installation of firestop systems when job site conditions are outside the limits permitted by the Manufacturer.
- B. Do not use materials that show signs of damage.
- C. Do not use materials that are beyond their shelf life.

## 1.10 SEQUENCING AND SCHEDULING

- A. Sequence: Perform work of this and other sections in proper sequence to prevent damage to the firestop systems and to ensure that their installation will occur prior to enclosing or concealing work.
- B. Install all firestop systems after voids and joints are prepared sufficiently to accept the applicable firestop system.
- C. Do not cover firestop systems until they have been properly inspected and accepted by the authority having jurisdiction and/or Architect.

## PART 2: PRODUCTS

### 2.01 FIRESTOP SYSTEM LIMITATIONS:

- A. Compatibility: Provide firestop systems that are compatible with one another and with substrates under conditions of application and service, as demonstrated by Manufacturer, based on testing and field experience.
- B. Structural Considerations: Firestop systems do not re-establish the structural integrity of a load-bearing assembly. Consult the Architect and Structural Engineer prior to drilling or coring operations in any load-bearing assembly. Firestop systems may not support live loads and traffic. Contractor shall notify Architect and Structural Engineer if Contractor has reason to believe the integrity of any load-bearing assembly has been violated.
- C. All sealant materials for use in firestop systems applied to construction joints and in voids subject to movement shall meet the requirements of ASTM C719-86 and ASTM C920-86.
- D. Use firestop systems meeting the requirements of ASTM E814-83 or UL 1479. For installations or configurations not covered by a firestop system, an engineered judgment shall be obtained from the Manufacturer for the specific application.
- E. All firestop systems shall comply with the interior finish flame spread and smoke developed requirements, for the area in which they are installed, per ASTM E84-84 in addition to ASTM E814-83. Interior finish requirements are specified by applicable building codes governing this project.

- F. Painting or coating of installed firestop systems: Follow firestop system manufacturer's recommendations for painting or coating.
- G. All products shall be free of Asbestos.

## 2.02 ACCEPTABLE FIRESTOP SYSTEM MANUFACTURERS

- A. Manufacturers, subject to meeting all firestop system requirements of this specification, are:
  - 1. Dow Corning Corporation
  - 2. General Signal
  - 3. Bio-Fireshield
  - 4. Hilti
  - 5. U.S. Gypsum
  - 6. Specified Technologies Inc.

## PART 3: EXECUTION

### 3.01 EXAMINATION

- A. Examine Openings, Voids, or joints where firestop systems are to be installed and verify that are in accordance with Manufacturer's drawings. Do not proceed until unacceptable conditions are corrected.

### 3.02 PREPARATION

- A. Follow the Manufacturer's instructions and guidelines for surface preparation prior to installation of the firestop system.
- B. Provide masking and drop cloths to prevent firestopping materials from contaminating any adjacent surfaces. Remove masking materials promptly following product application.

### 3.03 INSTALLATION

- A. Firestop systems: Installation shall be in accordance with the appropriate Manufacturer's instructions and drawings.
- B. Protection: Protect installed Firestop Systems to prevent contact with contaminating substances or damage from other trades.

**3.04 FIELD QUALITY CONTROL**

- A. Contractor should inform Architect when firestop system is completely installed so that a Controlled Inspection date can be set up.

**3.05 CLEANING**

- A. The Contractor is responsible for maintaining the work area in an orderly manner and for cleaning up the work area daily.
- B. The Contractor is responsible for disposing of all waste materials in compliance with regulatory requirements.
- C. The Contractor is responsible for removing equipment, materials, and debris. The Contractor shall leave the area in a clean and undamaged condition.
- D. The Contractor is responsible for removing any excess firestopping material from surfaces not required to be firestopped.

**END OF SECTION 07271**

## SECTION 07310 - SLATE ROOF

### PART 1: GENERAL

#### 1.01 DESCRIPTION

- A. The General Conditions of the contract are hereby made a part of the contract and the roofing contractor shall examine these general Conditions and Conditions are thoroughly acquaint himself with all the requirements therein contained.
- B. Provide all materials, labor, equipment and services, and perform all operations in connection with the furnishing and installing of slate roofing, complete, in accordance with the Drawings and Specifications and including, but not limited to, the following:
  - 1. Install new slate roof above arcade, as indicated on the drawings, to match original 100%.

#### 1.02 RELATED WORK OF OTHER SECTIONS

- A. Section 02060 Selective Demolition
- B. Section 06100 Rough Carpentry
- C. Section 07500 Copper Roofing & Flashing

#### 1.03 SAMPLES/SUBMITTALS

- A. Samples: Samples of materials specified shall be submitted for approval, and approval obtained before materials are delivered to site.
- B. Slate samples shall show the maximum range of color, and all work shall be within the approved range. Sizes of slate shall be actual sized of slate shingles intended for installation.
- C. Product Data: Copies of manufacturer's latest published literature for materials specified herein shall be submitted for approval, and approval obtained before materials are delivered to the site.
- D. Shop Drawings: Showing fastening method and typical details, etc.

#### 1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver all packaged materials in original unopened containers. Containers shall be labeled with manufacturer's name, brand name, installation instructions and identification of various items.
- B. Store materials in dry area and protect. Damaged materials shall be replaced at Contractor's expense.

#### 1.05 QUALITY ASSURANCE

- A. Roofing contractor shall be experienced in application of slate roofing and shall be a member of the National Slate Association.
- B. Installation shall conform to all recommendations of the National Slate Association as set forth in the Publication "Slate Roofs," latest edition.
- C. A certificate shall be furnished to the roofing contractor by the Quarrier certifying that the roofing slate furnished are in accordance with the specifications.

#### PART 2: PRODUCTS

- A. Underlayment: Bituthene Underlayment, 60 mil, as manufactured by Quaker, or approved equal.
  - 1. Quaker Bituthene Underlayment is warranted to be free of defects in manufacture.
- B. Joint Sealer: for felt overlap at joints, cold applied roofing cement shall be used.
- C. Slate: Genuine unfading Grade A.
  - 1. All slate shall be hard, dense, sound rock, pre-punched for two nails each. All exposed corners shall be practically full. No broken or cracked slates shall be used.
    - a) The slate shall match adjacent, in size, color, and thickness..
    - b) Average absorption of less than .02%.
  - 2. Elastic Cement: Cement shall be an approved brand of watertight elastic slaters cement colored to match as nearly as possible the general color of the slate.

3. Nails:

- a) All slate shall be fastened with two large-head slaters' solid copper nails. Use 3d (1-1/4") nails for slates 18" or less in length, 4d (1-1/2") for 20" or longer, and 6d (2") for slates on hips and ridges.

PART 3: EXECUTION

3.01 JOB CONDITIONS

- A. Inspection of Job Conditions: The contractor shall inspect all surfaces prepared for slating by other trades, point out to the Architect all defects, and shall not proceed with the laying of felt, flashing or slate until the necessary corrections have been made.
- B. Surfaces receiving the work of this Section shall be dry, clean and free from foreign substances and projections which may impair the performance of the work of this Section.
- C. Verify by measurements taken and replace at job site, those dimensions affecting the work.

3.02 INSTALLATION/SLATE

- A. The entire surfaces so indicated on the drawings, shall be covered with slate in a proper and watertight manner.
- B. The slate shall project 2" at the eaves, and shall be laid in horizontal courses with 3" headlap, and each course shall break joints with the preceding one by at least 3". Slates at the eaves or cornice line shall be doubled using same thickness slate for undereaves at first exposed course. Under eave slate to be approximately 3" longer than exposure of first course.
- C. Slates overlapping sheetmetal work shall have the nails so placed as to avoid puncturing the sheet metal. Exposed nails shall be permissible only in top courses where unavoidable.
- D. Neatly fit slate around all pipes, ventilators, and other vertical surfaces.

- E. Nails shall not be driven so far as to produce a strain on the slate.
- F. Cover all exposed nailheads with elastic cement. Hip slates and ridge slates shall be laid in elastic cement spread thickly over unexposed surface of under courses of slate, nailed securely in place and carefully pointed with elastic cement.
- G. Build in and place all flashing pieces etc.
- H. Upon completion, all slate must be sound, whole, clean and the roof shall be left watertight and neat in every respect, and subject to the architect's approval.

**END OF SECTION 07510**

## SECTION 07500 – COPPER FLASHING & DRAINAGE

### PART 1: GENERAL

#### 1.01 SCOPE OF WORK

- A. Provide all labor, materials and equipment necessary to complete installation of work in this section. Work shall include but not be limited to the following copper elements:
1. New copper drainage system (scuppers, downspouts and straps) by replacing all non-original and missing components to match originals, re-soldering as needed, and re-attaching loose connections and seams.
  2. Furnish and install new copper flashing (stepped and counter flashing, crickets, valleys, ridges) as indicated in the drawings.
  3. Furnish and install new coping cap at light well of terrace, as indicated.
  4. Furnish and install new copper cladding and flashing for reconstructed arcade roof, as indicated.
  5. Furnish and install new copper flashing for new skylight and parapet.
  6. Furnish and install new lead-coated copper caps over gargoyle brackets.
  7. Furnish/install new lead-coated copper cap/roof over terrace alcove, as indicated.

#### 1.02 RELATED WORK

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. The work described in this section is related to work described in the following Sections:
1. Section 02060 Selective Demolition and Shoring
  2. Section 02170 Unit Stone Pavers
  3. Section 04510 Masonry Restoration
  4. Section 07310 Slate Roof
  5. Section 06105 Rough Carpentry

6. Section 07100 PUR Waterproofing

### 1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM)
  1. B32 Standard Specification for Solder Metal
- B. Copper Development Association (CDA)
  - 1, CDA "Copper in Architecture Handbook," latest edition.
- C. Copper and Brass Research Association
  1. "Modern Applications of Sheet Copper" manual, latest edition.
- D. Revere Copper Products, Rome, New York
  1. "Copper & Common Sense: Sheet Copper Design Principles and Construction Techniques," latest edition.

### 1.04 QUALITY ASSURANCE

- A. SPECIAL EXPERIENCE REQUIREMENTS: The Contractor or subcontractor who will perform the work specified in this section must, within the last ten (10) consecutive years, have successfully completed in a timely fashion at least three (3) projects similar in scope and type to the required work, involving facilities determined to be of landmark quality and/or historical significance. Such projects must have been completed and in service for a minimum of two seasonal cycles (winter/summer).
- B. FIELD MEASUREMENTS: Prior to fabrication, take field measurements of structure and substrates to receive system. Allow for trimming units where final dimensions cannot be established prior to fabrication.
- C. Contractor shall replace work judged as defective, at no additional expense to Owner.
  1. The following types of failure will be adjudged as defective work:
    - a. Presence of non-uniform seams, buckles, or warps in sheet metal.

- b. Failure to provide flashings as indicated on the Drawings, and as required.
  - c. Failure to provide weather-tightness.
  - d. Failure to provide separation of metals or corrosive fastenings.
  - e. Failure to provide proper gauge of roofing material.
- D. Coordinate work with new and existing adjoining work for proper installation sequencing.
- 1. All copper work shall be fabricated and installed in accordance with "Modern Applications of Sheet Copper" of the Copper and Brass Research Association, latest edition; and in conformance with "Copper & Common Sense: Sheet Copper Design Principles and Construction Techniques," Revere Copper Products, Rome, New York, latest edition.

#### 1.05 SAMPLES/SUBMITTALS

- A. Manufacturer's Literature: Material description and recommended installation procedures for copper.
- B. Sample of all roofing materials and fasteners, minimum dimension 1 foot by 1 foot.
- C. Shop Drawings for copper roof, gutter, skylight, and ridge cap.
  - 1. Shop drawings shall include flashing and expansion joint details.

#### 1.06 DELIVERY, STORAGE, HANDLING AND PROTECTION

- A. Deliver materials with manufacturer's labels intact and legible.
- B. Store and handle materials in accordance with manufacturer's guidelines.
- C. Roofers engaged in soldering shall be trained in the safe operation of their equipment, construction safety, the safe use of the tools, and emergency procedures.
- D. Temporary closures must be used to prevent water from flowing beneath the roofing system or into openings during the installation of the roofing system and accessories.

- E. Take care when moving, transporting, handling, etc. to avoid sources of punctures and physical damage to materials.

## PART 2: PRODUCTS

### 2.01 COPPER

- A. Copper: Shall be red sheet copper, 20 oz. cold rolled, as manufactured by Revere Copper and Brass Co., or approved equal.
- B. Lead-Coated Copper: 20 oz. cold rolled, as manufactured by Revere Copper and Brass Co., or approved equal.
- C. Fasteners: Nails used for fastening copper shall be copper. Screws and bolts used for fastening copper shall be copper, bronze, brass or stainless steel (passive).
- D. Solder for use on plain copper: Solder composition shall be 50% block tin and 50% pig lead. Solder shall conform to ASTM specification B32.
- E. Flux shall be muriatic acid killed with zinc, or approved brand of soldering flux. Acid shall be thoroughly washed off after soldering is completed.
- F. Underlayment: Bituthene Underlayment, 60 mil, as manufactured by Quaker, or approved equal that is warranted to be free of defects in manufacture.
- G. Cleats: 2" wide by 3" long and made of 20 oz. cold rolled copper.
- H. Expansion Joint Sealant: For hooked-type expansion joints, which must be free to move, provide nonsetting, nonhardening, nonmigrating heavy-bodied polyisobutylene mastic sealant.
- I. Paper Slip Sheet: Minimum 4-lb. rosin-sized building paper.

## PART 3: EXECUTION

### 3.01 PREPARATION

- A. The Contractor shall examine all substrates on which work is to be applied, and shall notify the Architect in writing prior to starting the Work of any defects which he considers detrimental to the proper installation of his materials. Do not start work until unsatisfactory conditions are corrected.

- B. Ensure that the substrate and framing is firmly seated and attached to the existing structure.
- C. The surface to receive the roof systems shall be smooth, dry, clean, and free of sharp projections and depressions.

### 3.02 UNDERLAYMENT

- A. Precautions and Limitations: Apply bituthene according to manufacturer's instructions only in fair at air temperatures of 40 degrees Fahrenheit or higher. Surfacing material must also be placed at temperatures of 40 degrees Fahrenheit or higher.
- B. Do not leave underlayment membrane permanently exposed to sunlight. Covered 100% with copper or membrane roofing materials.
- C. Adhere underlayment directly to the structural deck, never directly to insulation or old roofing materials.
  - 1. Remove any dust, dirt, loose nails or any other protrusions from deck. Provide clean, dry surface.
- D. Membrane Application: For ice dam protection, apply underlayment to reach a point above the highest expected level of ice dams.
  - 1. Install with side laps a minimum of 3 1/2" and end laps 6".
  - 2. Do not fold membrane onto an exposed face of the roof edge.
- E. Install rosin paper between underlayment and copper.

### 3.03 SHOP FABRICATED UNITS

- A. Shop fabricate work to greatest extent possible. Comply with details shown and with applicable requirements of CDA "Copper in Architecture Handbook" and other recognized industry standards.
- B. Fabricate for waterproof and weather-resistant performance with expansion provisions for running work, sufficient to permanently prevent leakage, damage, or deterioration of the work.
- C. Form work to fit substrate. Comply with material manufacturer's instructions and recommendations for forming material.

- D. Form exposed copper work without oil-canning, buckling, and tool marks, true to line and levels indicated, with exposed edges folded backs to form hems.

### 3.04 INSTALLATION

- A. Install underlayment and paper slip sheet on substrate under copper. Paper slip sheets must be installed over the underlayment.
- B. Form and fabricate sheets, seams, strips, cleats, ridges, edge treatments, integral flashings and other components to profiles, patterns, and drainage arrangements shown and as required for permanently leak proof construction.
- C. Provide for thermal expansion and contraction of the work. Seal joints for leak proof construction.
- D. Sealant-Type Joints: Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1" into sealant. Form joints to conceal sealant completely.
- E. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
- F. Clean exposed metal surfaces of substances that would interfere with uniform oxidation and weathering.

### 3.05 FLASHING, GUTTER AND ACCESSORIES

- A. Provide metal flashing, where indicated on drawings and as required to ensure watertight installation. Install flashing and drainage systems in accordance with appropriate technical manuals and manufacturer's specifications.
  - 1. All joints, laps, splices, and connections shall be made as to shed water in the direction of the flow. All work shall be securely fastened and anchored.
  - 2. Sufficient provision shall be made for movement of the metal under thermal changes. Details of expansion joints shall be submitted for approval.
  - 3. All work shall be securely fastened and anchored.
- B. Provide strainers at all outlet tubes of leaders. Strainers shall be wire basket type, compatible with adjacent metal, and shall fill snugly in outlet tube.

- C. Provide and install copper gutters, using 20 oz. cold rolled copper, as indicated on drawings, including hangers 18" on center. Ends of each length shall be joined by 1" lapped, riveted and soldered seams. Rivets shall be 3/16" in diameter with copper burrs, placed 2" apart.
- D. Outer edge of gutter shall be folded over brass or copper stiffening bar. Rear edge shall extend up on roof slope under copper at least 6". Rear edge shall be at least 1" higher than front edge of gutter.
- E. Provide and install transverse gutter braces, attached with rivets and solder across gutter and spaced 3' apart.
- F. Straps shall be spaced 3' apart and extend up on roof deck 4" under roofing. They shall be attached to the roof deck by two countersunk brass screws, and riveted or bolted either to gutter brace or outer edge of gutter.

**END OF SECTION 07500**

## SECTION 07900 -SEALANTS AND CAULKING

### PART 1: GENERAL

#### 1.01 SCOPE OF WORK

A. Provide all materials, labor, equipment, and perform all operations for the complete installation of work in this section:

1. Renew caulk in areas of roofs and walls where existing caulking and sealants are disturbed or new work.

#### 1.02 RELATED SECTIONS

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

B. The work described in this section is related to work described in the following Sections:

- |    |               |                              |
|----|---------------|------------------------------|
| 1. | Section 04510 | Masonry Restoration          |
| 2. | Section 06200 | Rough Carpentry              |
| 3. | Section 07100 | PUR Waterproofing            |
| 4. | Section 07310 | Slate Roof                   |
| 5. | Section 07500 | Copper Flashing and Drainage |

#### 1.02 SAMPLES/SUBMITTALS

A. Manufacturer's Data: Submit copies of manufacturer's specifications, recommendations and installation instructions for sealants. Sample of caulking for Architect's approval.

#### 1.03 DELIVERY, STORAGE, HANDLING AND PROTECTION

A. All materials shall be delivered to the job site in factory-sealed containers clearly labeled as to product, manufacturer, color, and/or other pertinent characteristics.

B. All materials for use in the work of this Section shall be stored under environmental conditions recommended by the manufacturer.

#### 1.04 ENVIRONMENTAL REQUIREMENTS

- A. Materials shall be used only at the manufacturer's recommended temperature tolerances.

## PART 2: PRODUCTS

- A. Compatibility: Sealant shall be compatible with joint surfaces, joint fillers and other materials in joint system. Provide only manufacturer's recommended materials which are known to be fully compatible with the actual installation condition, as shown by manufacturers' published data or certification.
- B. Color: Provide manufacturer's standard colors as selected by Architect.
- C. Polyurethane Sealant: Non-staining, non-sagging, gun-grade, flexible, durable, polyurethane compound of approved manufacture. "Sikaflex 1A" manufactured by Sika Corp., Lyndhurst, N.J. or approved equal.

## PART 3 - EXECUTION

- A. Clean joint surfaces immediately before installation of sealant. Remove dirt, old caulking, insecure coatings, moisture, and other substances which would interfere with bond of sealant. Joints and spaces to receive sealant shall be thoroughly dry before installation.
- B. Employ only proven installation techniques, which will ensure that sealants will be deposited in uniform, continuous ribbons without gaps or air pockets.
- C. Do not allow sealants or compound to overflow or spill onto adjoining surfaces, or to migrate into voids.
- D. Cure sealant compound in compliance with manufacturer's instructions, in order to obtain cohesive strength and surface durability.
- E. All work and adjacent surfaces shall be left in a clean and undamaged condition.

**END OF SECTION 07900**

## SECTION 08630 -ALUMINUM SKYLIGHT

### PART 1: GENERAL

#### 1.01 SECTION INCLUDES

- A. Engineering and drafting of production documents, including structural calculations of the entire skylight system.
- B. Fabrication and erection of skylight frames.
- C. Fabrication and erection of the aluminum gutter system including, when applicable, insulation and pitched liners.
- D. Applied finish of aluminum extrusions and sheet.
- E. Skylight glass and glazing.
- F. Skylight related flashings.

#### 1.02 RELATED SECTIONS

- A. Structural Steel: *Division 05*
- B. Space Frames: *Division 05*
- C. Metal Fabrications: *Division 05*
- D. Flashing and Sheet Metal: *Division 07*
- E. Glazing: *Division 08*
- F. Glazed Curtain Walls: *Division 08*
- G. Roofing: *Division 07*
- H. Sealants: *Division 07*

#### 1.03 REFERENCES

- A. Aluminum Association Incorporated (AA):SAS-30 Specifications for Aluminum Structures.
- B. American Architectural Manufacturers Association (AAMA):
  - 1. 501.1: Standard Test Method for Metal Curtain Walls for Water Penetration Using Dynamic Pressure.
  - 2. 501.2: Field Check of Metal Curtain Walls for Water Leakage.
  - 3. 501.3: Field Check of Water Penetration Through Installed Exterior Windows, Curtain Walls and Doors by Uniform Air Pressure Difference.
  - 4. 603.8: Performance Requirements and Test Procedures for Pigmented Organic Coatings on Extruded Aluminum.

5. 605.2: Specification for High Performance Organic Coatings on Architectural Extrusions and Panels.
  6. 606.1: Voluntary Guide Specification and Inspection Methods for Integral Color Anodic Finishes for Architectural Aluminum.
  7. 607.1: Voluntary Guide Specification and Inspection Methods for Clear Anodic Finishes for Architectural Aluminum.
- C. American National Standards Institute (ANSI): Z 97.1 -2004- Safety Glazing Materials Used in Buildings -Safety Performance Specifications and Methods of Test.
- D. American Society for Testing and Materials (ASTM):
1. A193: Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High Temperature Service.
  2. A307: Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
  3. B209: Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
  4. B211: Specification for Aluminum-Alloy Bar, Rod and Wire.
  5. B221: Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes and Tubes.
  6. B316: Specification for Aluminum and Aluminum-Alloy Rivet and Cold-Heading Wire and Rods.
  7. C719: Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cycle Movement.
  8. C794: Test Method for Adhesion-In-Peel of Elastomeric Joint Sealants.
  9. C1036: Specification for Flat Glass.
  10. C1048: Specification for Heat-Treated Flat Glass-Kind HS, Kind FT Coated and Uncoated Glass.
  11. D395: Test Methods for Rubber Property -Compression Set.
  12. D412: Test Methods for Rubber Properties in Tension.
  13. D1171: Test Method for Rubber Deterioration -Surface Ozone Cracking Outdoors or Chamber (Triangular Specimens).
  14. D2240: Test Method for Rubber Property -Durometer Hardness.
  15. E283: Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors.
  16. E330: Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.
  17. E331: Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.
  18. E773: Test Method for Seal Durability of Sealed Insulating Glass Units.
  19. E774: Specification for Sealed Insulating Glass Units.
  20. E783: Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors.

- E. Consumer Product Safety Commission (CPSC): 16CFR 1201 - Architectural Glazing Standards and Related Material.
- F. Flat Glass Manufacturers Association (FGMA): Glazing Manual.
- G. Insulating Glass Certification Council (IGCC): Classification of Insulating Glass Units.

#### 1.04 SYSTEM DESCRIPTION

##### A. Design Requirements:

1. Extruded aluminum members with a system of alternate serrations for attachment of exterior glass retainers with 1/4-in. x 20 stainless steel screws and snap-on beauty caps.
2. Condensation guttering system integral with skylight framing members for positive drainage of condensation.
3. Flush glazed exterior horizontal joints with field applied structural silicone.
4. Full silicone wet seals along both sides of all exterior glass retainers.
5. *Optional* aluminum rain gutters, with insulation and pitched liners, when applicable.
6. *Optional* "4-sided", or "total flushed glazed system", with fully concealed mechanical fasteners and factory applied structural silicone.

##### B. Performance Requirements:

1. Structural Members: Of sufficient sizes to support design loads as prescribed by governing building codes.
2. The deflection of the framing member in a direction normal to the plane of glass when subjected to a uniform load deflection test in accordance with ASTM E330, and per the above specified loads, shall not exceed L/175, up to 1-in. maximum, for clear spans under 20-ft., or L/240 for clear spans greater than 20-ft.
3. The deflection of a framing member in a direction parallel to the plane of glass, when carrying its full dead load, shall not exceed an amount which will reduce the glass or panel bite below 75% of the design dimension and the member shall have a 1/8-in. minimum clearance between itself and the edge of the fixed panel, glass, or component immediately adjacent, nor shall it impair the function of or damage any joint seals.
4. Water Penetration: No water penetration shall occur when the system is tested in accordance with ASTM E331 using a differential static pressure of (20% of the inward acting design wind load pressure, but not less than (12 psf). Water penetration is defined as the appearance of uncontrolled water other than condensation on the interior surface of any part of the skylight.

- i. Drain water penetrating at joints, as well as condensation occurring within the system to exterior face of the work.
5. Thermal Movement: Provide for expansion and contraction of component materials as will be caused by an exterior surface temperature range of (+/-) 85 °F, ranging from -20 °F to 150 °F, and an interior surface temperature range of (+/-) 40 °F, ranging from 40 °F to 120 °F. Adjustments in the exterior and interior temperature ranges should be made, based on specific project locations and conditions. The skylight system should allow for thermal movements without buckling, sealant failure, undue material stress, and other detrimental affects.
6. Where permitted by code, a 1/3 increase in allowable stress for wind or seismic load shall be acceptable, but not in combination with any reduction applied to combined loads. In no case shall allowable values exceed the yield stress.
7. Compression flanges of flexural members may be assumed to receive effective lateral bracing only from anchors to the building structure and horizontal glazing bars or interior trim which are in contact with 50% of the member's total depth.
8. Skylight framing is designed to be self-supporting between the support construction. The skylight(s) will impose reactions to the support construction. All adjacent and support construction must support the transfer of all loads including horizontal and vertical, exerted by the skylight(s). Design or structural engineering services for the supporting structure or building components not included in the skylight scope are not included under this section.
9. *Optional limited reaction design*: The skylight framing is to be designed to exert no horizontal reactions under vertical gravity type loads, (dead, snow, live). Unbalanced live loads, (wind, seismic, etc.), acting upon the skylight will produce horizontal reactions that cannot be controlled by the skylights, but must be resisted by the support structure.
10. *Optional Hurricane and Impact Resistant Skylight Systems*: If the project is located in or near coastal areas, an impact resistant skylight design may be required. Manufacturer to provide tested system, in compliance with the IBC, Florida Building Code and Miami-Dade County requirements having Notice of Acceptance Numbers;
  - i. Large and Small Missile Impact [insulated glass] [laminated glass].
  - ii. Small Missile Impact [insulated glass] [laminated glass].

#### 1.05 SUBMITTALS

- A. Submit [\_\_\_\_] copies of shop drawings showing plans, elevations and sections as required to fully describe the skylight construction for the Architect's approval prior

- to starting fabrication.
- B. Submit structural calculations prepared in accordance with the Aluminum Association's Specifications for Aluminum Structures (SAS30) by a [civil] [\_\_\_\_] engineer qualified in the design of self-supporting sloped glazed systems licensed in (state where skylight is to be installed) [\_\_\_\_].
  - C. With regard to structural silicone joinery, submit, only if specifically requested:
    - 1. Certification that adhesion of sealant to samples of metal and glass is adequate when tested in accordance with ASTM C794.
    - 2. Certification that materials in contact with sealant are compatible with sealant after being exposed to 2,000-4,000 micro watt ultra-violet radiation for twenty-one (21) days.
    - 3. Statement that stress on each detailed sealant joint will not exceed design stress of sealant when exposed to specified wind loads.
  - D. Submit [\_\_\_\_] 12-in. x 12-in. samples of each type of glass.
  - E. Submit [\_\_\_\_] manufacturer's samples of each type of sealant.
  - F. Submit [\_\_\_\_] 6-in. long samples of extrusions (with appropriate finish).
  - G. Submit [\_\_\_\_] sets of as-built drawings and cleaning and maintenance manuals upon completion of skylight installation.
  - H. Certification that insulating glass units will withstand specified design loads.

#### 1.06 QUALITY ASSURANCE

- A. Work of this Section, including design, engineering, fabrication, finishing, preparation at the job site, erection and glazing of the skylight system shall be the responsibility of the skylight manufacturer. The manufacturer shall be regularly engaged in the preceding phases of construction of skylights and able to demonstrate that he has performed successfully on comparably sized projects and of comparable design complexity over at least the previous ten (10) years.

#### 1.07 WARRANTY

- A. Submit manufacturer's warranty certifying that skylight work was furnished and installed in accordance with the Contract Documents.
- B. Certify that skylight frame is free of defects in design, material, and construction for a period of ten (10) years from the Date of Skylight Completion.
- C. Warrant glass against defective materials, delamination, seal failure, and defects in manufacture per the glass manufacturer's standard warranties. Glass breakage is not warranted.
- D. Warrant structural sealant for a period of ten (10) years per sealant manufacturer's standard warranty of merchantable quality. Warranty shall certify that cured

sealant:

1. Will not become brittle or crack due to weathering or normal expansion and contraction of adjacent surfaces.
  2. Will not harden beyond a Shore A durometer of 50, nor soften below a minimum of 10 points.
  3. Will not change color significantly when used with compatible back-up materials.
  4. Will not bleed significantly.
- E. Warrant finish per the manufacturer's standard warranties.
- F. Optional extended warranties may be available on some products at an additional cost.
- G. Warranty service becomes effective only following payment in full for the contract amount.

## PART 2: PRODUCTS

### 2.01 MANUFACTURERS

- A. Contract documents are based on products manufactured by Super Sky Products, Inc.; 10301 N. Enterprise Drive; Mequon, WI 53092; Phone (800) 558-0457, (262) 242-2000; Fax (262) 242-7409; [www.supersky.com](http://www.supersky.com).
- B. Other manufacturers will be considered when the following conditions have been met.
1. Optional manufacturers must pre-qualify to bid not less than fourteen (14) days prior to the bid closing date.
  2. Complete details are submitted for review by the Architect showing compliance to the drawings and Contract Documents.
  3. Structural calculations, showing sizes of framing members and loads applied to the support structure, based on the design loads of this specification are submitted for review.
  4. Prospective manufacturers submit notarized certification that they have successfully performed in the phases of design, manufacture and installation of skylight projects comparable in nature over at least the previous ten (10) years.

### 2.02 MATERIALS

- A. Framework:

1. Principal Supporting Members: .125-in. minimum thickness extruded aluminum, alloy 6005-T5 or 6061-T6 per ASTM B221. Sizes, shapes and profiles (as per Super Sky Products' standard components) (as indicated on the Contract Drawings).
2. Snap-on Covers and Miscellaneous Non-supporting Trim: .062-in. minimum thickness extruded aluminum, alloy 6063-T5 per ASTM B221.
3. Supporting aluminum gutters: thickness as prescribed by skylight engineer, based on skylight reactions and applied design loads.
4. Principal Formed Metal Members: .125-in. minimum thickness aluminum, alloy [5052] [6061-T6] per ASTM B209.

**B. Glazing Strips:**

1. Extruded EDPM rubber designed to comply with the following specifications:
  - i. Hardness: ASTM D2240, Type A: Durometer 50 (+/-5).
  - ii. Tensile Strength: ASTM D412. 800 psi (min.).
  - iii. Elongation: 300% (min.).
  - iv. Color: Black.
2. Compression Set: ASTM D395 Method B, 22 hours @ 212 °F: 25% (max.).
3. Heat Aging Characteristics:
  - i. 70 hours @ 212 °F.
  - ii. Hardness: ASTM D2240, Type A: Durometer 50 (+/-5).
  - iii. Tensile Change: ASTM D412. -10%.
  - iv. Elongation Change: ASTM D412: -20%.
4. ASTM D1171 Weather Resistance at 1 Part Ozone per Million, 500 hours at 20% Elongation: No cracks.
5. No visual checks, cracks or breaks after completion of tests.

**C. Setting Blocks:**

1. Extruded Type II silicone rubber designed to permit adhesion and comply with the following specifications:
  - i. Hardness: ASTM D2240, Type A: Durometer 80 (+/-5).
  - ii. Color: Black.

**D. Fasteners:**

1. For Exterior Cap Retainers: ASTM A193 B8 300 series stainless steel screws.
2. For Framework Connections: ASTM B211 2024-T4 aluminum, ASTM A193 B8 300 series stainless steel, and ASTM B316 aluminum rivets, as required by connection.

3. For Anchoring Skylight to Support Structure: ASTM A307 zinc plated steel fasteners.
4. Exposed stainless steel truss head mechanical fasteners are utilized in accordance with standard connection details.

E. Flashing:

1. [5005 H34 Aluminum] [Copper] [Stainless Steel], [.040-in.][\_\_\_\_] minimum thickness.
2. Sheet metal flashings/closures/claddings are to be furnished shop formed to profile in min. 10-ft. lengths. When lengths exceed 10-ft., field trimming of the flashing and field forming the ends is necessary to suit as-built conditions. Sheet metal ends are to overlap 6-in. to 8-in. minimum, set in a full bed of sealant and riveted if required.

F. Exposed metal finish [interior and exterior] [interior] [exterior] to comply with the following:

*The following is a listing of all types of finishes that can be specified, therefore, only those finishes that apply should be used in an individual specification.*

1. 1 High Performance Pigmented Organic Coatings: AAMA 2605-05 [2-coat] [3-coat] [4-coat] min. 70% PVDF fluropolymers [standard] [custom] [mica] [exotic] [metallic].
2. Pigmented Organic Coatings: AAMA 2604-05 [2-coat] min. 50% PVDF fluropolymers [standard] [custom] [mica].
3. Anodized Coatings:
  - i. AAMA 611-98 Architectural Class I clear anodized Type AA-M10C22A41: 215-R1.
  - ii. AAMA 611-98 Architectural Class I electrolytically deposited color anodized Type AA-M10C22A44: [light bronze] [medium bronze] [dark bronze] [black].

G. Glass:

1. Standard Certification Requirements:
  - i. Heat Treated Glass: ASTM C1048, with surface stress of 5,000 (+/-) 1500 psi.
  - ii. b. Laminated Glass: Two lites interleaved with polyvinyl butyral (PVB). Units must meet criteria of ANSI Z97.1- 1984 and CPSC 16 CFR 1201 for safety glazing. Provide PVB layer of 0.030-in. for all

- glass units unless a coating, and/or frit is applied to the inside face of the laminate thereby necessitating a 0.060-in. PVB layer.
- iii. Insulating Glass: CBA rated by the Insulating Glass Certification Council (IGCC) when tested in accordance with ASTM E773 and ASTM E774. Dual edge seals with the secondary seal being silicone. Exterior lite of [heat strengthened] [fully tempered] glass and interior lite of laminated glass.
2. Performance Requirements:
    - i. Probability of breakage not to exceed 8/1000 for vertical glass and 1/1000 for sloped glass upon first application of design wind and live load pressures. For glass selection, design wind pressure for a one minute duration. For loads of longer duration use standard engineering practices for glass selection.
    - ii. Probability of breakage due to anticipated thermal stress not to exceed 8/1000 for vertical glass and 1/1000 for sloped glass.
  3. Glazing Unit Composition:
    - i. Sloped glass units are to be [\_\_\_\_\_].
    - ii. Vertical glass units are to be [\_\_\_\_\_].
  4. For Impact Resistant Skylights, special tested glass products are required for laminated and insulated glass. Evidence of tested system, including glass to be provided.

*Specifier should consult Glass and Glazing Specification, for glass make-up, sizes and compositions. Composition breakdown goes here.*

*Specifier to designate surface of color coat.*

#### H. SEALANTS

1. 1 Structural Flush Glazed Joints: High performance silicone sealant applied in accordance with manufacturer's recommendations.
2. Non-structural Flush Glazed Joints and Weather Seal Joints: Silicone sealants applied in accordance with manufacturer's recommendations.
3. Structural silicone sealant performance requirements:
  - i. Hardness: ASTM D2240 Type A, 30 durometer.
  - ii. Ultimate Tensile Strength: ASTM D412, 170 psi.
  - iii. Tensile at 150% Elongation: ASTM D412, 80 psi.
  - iv. Joint Movement Capability after 14 Day Cure: ASTM C719, (+/-) 50%.
  - v. Peel Strength (aluminum, glass, concrete) after twenty-one (21) Day Cure: ASTM C794, 50 ppi.

4. Structural silicone shall not be used to support dead weight of vertical glass or panels.

## 2.03 FABRICATION

- A. Construct skylight(s) using extruded aluminum members.
- B. Construct skylight(s) using a continuous aluminum curb with expansion joints as required.
- C. Insofar as practicable, fit and assemble work in the manufacturer's shop. Work which cannot be permanently assembled shall be shop-assembled, marked, and disassembled before shipment to the jobsite.
- D. Design rafter bars for slide-in type spline glazing strips.
- E. Design glass retainer fasteners to resist uplift loadings. Spacing to be determined by structural calculations, when applicable.
- F. Use snap-on beauty caps to conceal glass retainers and glass retainer fasteners.
- G. Shop locate drill and bolt, or weld aluminum clips to framing members.
- H. Set glass with interior and exterior EDPM glazing strips.
- I. Use silicone setting blocks to support glass and to provide edge clearances and glass bites as outlined below, in accordance with FGMA recommendations:
  1. Set blocks not less than 6-in. from edge of glass for support unit.
  2. Glass Bite: Not less than 1/2-in. nor more than 5/8-in. on any side of glass unit.
  3. Maintain 1/4-in. edge clearance between glass and adjacent metal framework.
  4. Use rubber spacers to maintain separation of glass and adjacent metal framework.
- J. Locate weepholes in curb to positively drain condensation to exterior of skylight at each rafter connection.

## PART 3: EXECUTION

### 3.01 EXAMINATION

- A. Upon arrival to the jobsite for installation of the specified work, the manufacturer's erector is to examine the structure and substrate to determine that they are properly prepared, dimensionally accurate, and ready to receive the skylight work included herein. Report any discrepancies to the General Contractor. Correction of faulty work to be at the expense of the responsible party/s. The skylight manufacturer is not responsible for faulty structure or substrate.

### 3.02 PREPARATION

- A. Contact between aluminum and dissimilar metals shall receive a protective coating of asphaltic paint for the prevention of electrolytic action and corrosion.
- B. Skylight manufacturer and manufacturer's erector excludes all field measuring, demolition, removal, replacement, or re-work of any existing material.

### 3.03 INSTALLATION

- A. Install skylight frame, glass and accessory items as needed in accordance with manufacturer's instructions.
- B. Install skylight system under the direction of the skylight manufacturer's designated erector.
- C. Erect system plumb and true, in proper alignment and relation to established lines and grades as shown on approved shop drawings.
- D. Anchor skylight to structure in strict accordance with approved shop drawings.
- E. Use high performance silicone sealants to seal horizontal joints between glass panels and silicone sealant to wet seal joints between snap-on cap retainers and glass.
- F. Apply sealing materials in strict accordance with sealant manufacturer's instructions. Before application, remove mortar dirt, dust, moisture and other foreign matter from surfaces it will contact. Mask adjoining surfaces to maintain a clean and neat appearance. Tool sealing compounds to fill the joint and provide a smooth finish.
- G. Furnishing of temporary covering and weather-proofing of the skylight openings, if required by the General Contractor, and removal of the protective measures during and after the skylight installation is excluded by the manufacturer and the manufacturer's erector. ANY TEMPORARY COVERINGS THAT MAY BE REQUIRED ARE NOT TO OBSTRUCT OR INTERFERE WITH THE SKYLIGHT INSTALLATION IN ANYWAY.

### 3.04 TOLERANCES

- A. All parts of the work, when completed, shall be within the following tolerances:
  - 1. Maximum variation from plane or location shown on approved shop drawings: 1/8-in. per 12-ft. length, or 1/2-in. in total length.
  - 2. Maximum offset from true alignment between two members abutting end-to-end, edge-to-edge in line or separated by less than 3-in.: 1/32-in.

### 3.05 FIELD QUALITY CONTROL

- A. Water Leakage: Field check in accordance with AAMA 501.2 in proportionate areas. There shall be no uncontrolled water leakage as defined in AAMA 501.2. Water supply to the skylights, with adequate water pressure, is to be furnished by

the General Contractor. Tests are to be conducted upon completion of the installation with no remobilization or down time included to accommodate either water supply availability or witness personnel schedules. Testing is to be performed by the manufacturer's authorized personnel with a maximum of five (5) man-hours for set-up, testing and clean-up. Independent laboratory testing and reports, if required, are to be ordered and directed by the Owner and/or General Contractor.

### **3.06 CLEANING**

- A. Install skylight frame and associated metal to avoid soiling or smudging the finish.
- B. Clean glass and frame at time of installation. Final cleaning, if required, subsequent to completion of project, is not to be performed by the manufacturer.

### **3.07 PROTECTION**

- A. The skylight manufacturer does not provide, nor does it include any temporary protection to the skylight and its materials after the installation is complete. Protection of the skylight from ongoing work by other trades shall be the responsibility of the General Contractor. The manufacturer is responsible only for the damage caused by the personnel under its control and responsibility.

**END OF SECTION 08630**

## SECTION 09900 - EXTERIOR FINISHES

### PART 1 - GENERAL

#### 1.01 SUMMARY OF WORK

A. This Section includes:

1. Surface preparation and repainting exposed exterior wood and metal eaves trim. as indicated on drawings.
2. Prime and paint exposed steel lintels with epoxy paint.
3. Scrape/prime/paint select ferrous metal as shown in the drawings.
4. Scrape/prime/paint woodwork, 100%.

#### 1.02 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. The following items of related work are specified and included in other Sections of the Specifications:
1. Section 05500: Architectural Metal Restoration
  2. Section 06105: Rough Carpentry

#### 1.03 SUBMITTALS

- A. General: Submit the following according to Conditions of the Contract and Division 1 Specification Sections.
1. Product data for each paint system specified, including block fillers and primers.
  2. Color chips for each finish coat specified.

#### 1.04 QUALITY ASSURANCE

- A. **Applicator Qualifications:** Engage an experienced applicator who has completed painting system applications similar in material and extent to those indicated for the Project that have resulted in a construction record of successful in-service performance.
- B. **Single-Source Responsibility:** Provide primers and undercoat paint produced by the same manufacturer as the finish coats.

#### 1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the job site in the manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:
  - 1. Product name or title of material.
  - 2. Product description (generic classification or binder type).
  - 3. Manufacturer's stock number and date of manufacture.
  - 4. Contents by volume, for pigment and vehicle constituents.
  - 5. Thinning instructions.
  - 6. Application instructions.
  - 7. Color name and number.
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain containers used in storage in a clean condition, free of foreign materials and residue.
  - 1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

#### 1.06 JOB CONDITIONS

- A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 deg F (10 deg C) and 90 deg F (32 degC).

- B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 deg F (7 deg C) and 95 deg F (35 deg C).
- C. Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

## **PART 2 - PRODUCTS**

### **2.01 MANUFACTURERS**

- A. **Manufacturer:** Subject to compliance with requirements, provide products of one of the following:
  - 1. Benjamin Moore and Co. (Moore).
  - 2. Pratt and Lambert (P & L).
  - 3. The Sherwin-Williams Company (S-W).
  - 4. TNEMEC Company Incorporated. 6800 Corporate Drive, Kansas City, MO 64120  
TEL: 1 800 TNEMEC 1 [www.tnemec.com](http://www.tnemec.com)

### **2.02 PAINT MATERIALS, GENERAL**

- A. **Material Compatibility:** Provide block fillers, primers, finish coat materials, and related materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by the manufacturer based on testing and field experience.
- B. **Material Quality:** Provide the manufacturer's best-quality trade sale paint material of the various coating types specified. Paint material containers not displaying manufacturer's product identification will not be acceptable.
- C. **Colors:** Provide color selections made by the Architect from the manufacturer's full range of standard colors.

### **2.03 PRIMERS**

- A. Primers: Provide the manufacturer's recommended factory-formulated primers that are compatible with the substrate and finish coats indicated.
- B. Products: Subject to compliance with requirements, provide one of the following:
  - 1. Wood Primer Coating: Exterior, alkyd wood primer.
    - a. Moore: Moorwhite Primer #100.
  - 2. Ferrous Metal Primers: Synthetic, quick-drying, rust-inhibiting primers.
    - a. Moore: IronClad Retardo Rust-Inhibitive Paint #163.
  - 3. Galvanized Steel
    - a. Tnemec primer or approved equal.

#### 2.04 EXTERIOR FINISH PAINT MATERIAL

- A. Finish Paint: Provide the manufacturer's recommended factory-formulated finish-coat materials that are compatible with the substrate and undercoats indicated.
- B. Products: Subject to compliance with requirements, provide one of the following:
  - 1. Alkyd Modified Low Lustre Latex for Exterior Wood Surfaces:
    - a. Moore: MoorGard Latex House Paint #103.
  - 2. Acrylic Latex Enamel for exterior steel.
    - a. Moore: Impervex Enamel #309.
  - 3. Tnemec Endurashield for galvanized structural steel.

### PART 3 - EXECUTION

#### 3.01 EXAMINATION

- A. Examine substrates and conditions under which painting will be performed for compliance with paint application requirements. Surfaces receiving paint must be thoroughly dry before paint is applied.
  - 1. Do not begin to apply paint until unsatisfactory conditions have been corrected.
  - 2. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.

### 3.02 PREPARATION

- A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted, or provide surface-applied protection prior to surface preparation and painting. Remove these items, if necessary, to completely paint the items and adjacent surfaces. Following completion of painting operations in each space or area, have items reinstalled by workers skilled in the trades involved.
- B. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease prior to cleaning. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
- C. Surface Preparation: Clean and prepare surfaces to be painted according to the manufacturer's instructions for each particular substrate condition and as specified.
  - 1. Provide barrier coats over incompatible primers or remove and reprime. Notify Architect in writing about anticipated problems using the specified finish-coat material with substrates primed by others.
  - 2. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand all surfaces smooth and dust off.
    - a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.

- b. Prime, stain, or seal wood to be painted immediately upon delivery. Prime edges, ends, faces, undersides, and backsides of wood, including cabinets, counters, cases, and paneling.
  3. Ferrous Metals: Clean ungalvanized ferrous metal surfaces that have not been shop-coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with recommendations of the Steel Structures Painting Council (SSPC).
    - a. Clean existing ironwork surfaces using hand tools as recommended by the paint system manufacturer and according to requirements of SSPC specification SSPC-SP 2.
  4. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so that the surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.
- D. Materials Preparation: Carefully mix and prepare paint materials according to manufacturer's directions.
  1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
  2. Stir material before application to produce a mixture of uniform density; stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.
  3. Use only thinners approved by the paint manufacturer and only within recommended limits.

### 3.03 APPLICATION

- A. General: Apply paint according to manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied.
- B. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
  1. Paint colors, surface treatments, and finishes are indicated in the schedules.
  2. Provide finish coats that are compatible with primers used.

3. The number of coats and the film thickness required are the same regardless of the application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. Sand between applications where sanding is required to produce a smooth even surface according to the manufacturer's directions.
  4. Apply additional coats if undercoats, stains, or other conditions show through final coat of paint until paint film is of uniform finish, color, and appearance. Give special attention to ensure that surfaces, including edges, corners, crevices, welds, and exposed fasteners, receive a dry film thickness equivalent to that of flat surfaces.
  5. The term exposed surfaces includes areas visible when permanent or built-in fixtures, convactor covers, covers for finned tube radiation, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.
  6. Sand lightly between each succeeding enamel or varnish coat.
- C. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
1. Allow sufficient time between successive coats to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.
- D. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to the manufacturer's directions.
1. Brushes: Use brushes best suited for the material applied.
  2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.
  3. Spray Equipment: Use airless spray equipment with orifice size as recommended by the manufacturer for the material and texture required.
- E. Minimum Coating Thickness: Apply materials no thinner than the manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.

- F. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime-coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.

### 3.04 CLEANING & PROTECTION

- A. Cleanup: At the end of each work day, remove empty cans, rags, rubbish, and other discarded paint materials from the site.
- B. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as acceptable to Architect.
- C. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.
  - 1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

END OF SECTION 09900