

PROJECT MANUAL INDEX

FOR

CONTINUING CONTRACT TO MAINTAIN WATERPROOFING AT VARIOUS FACILITIES:

FOR

**ORANGE COUNTY GOVERNMENT
ADMINISTRATIVE SERVICES FISCAL AND OPERATIONAL SUPPORT**
400 E. South Street, 5th FL
Orlando, FL 32801

PREPARED BY:

A/R/C ASSOCIATES, INCORPORATED
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Date: December 10, 2015

A/R/C Project No: 15036.01

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Division and Section Numbers listed in the Table of Contents and items of work included in each section conform in general with the CSI Master format. Section numbers listed are merely for identification and may not be consecutive. The Contractor shall check the pages with the index completeness. If any pages are missing or illegible, request replacements.

PROJECT DRAWING INDEX

FOR

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DETAILS (8-1/2 x 11 Format)

1. **Section M – Pressure Washing and Cleaning (No Details for This Section)**
2. **Section N - Concrete Restoration**
N.101 Concrete Repair No. 1
3. **Section P - Stucco Repair**
P2.01 Stucco Installation at Elevation Overhang
P2.02 Stucco Installation at Field of Elevation Detail
P2.03 Stucco Installation at Existing Coping Detail
P2.04 Stucco Installation at Existing Stucco Transition
P9.01 Typical Waterproof Barrier Installation Details
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P9.03 Rectangular & Circular Penetration Flashing
4. **Section Q - E.I.F.S. Repair (No Details for This Section)**
5. **Section R - Masonry Repair**
R.101 Brick Masonry Tuck Pointing Details

6. **Section S - Replace Metal Handrails**
- S.101 Handrail Stanchion Base Repair (Embedded)
S.102 Flush Mounted Stanchion Base Repair
7. **Section T - Wood and Timber Repair and Replacement (No Details for This Section)**
8. **Section U - Waterproof Coating Systems**
- U.101 Wall Coating Details
U.102 Waterproof Deck Coating Details
9. **Section V - Clear Penetrating Sealer on Concrete (No Details for This Section)**
10. **Section W - Expansion Joint Repair**
- W.101 Parking Deck Expansion Joint repair
W.102 Perimeter Expansion Joint Repair
W.103 Stucco and Concrete Expansion Joint Details
11. **Section X - Joint Sealant and Sealant for Openings**
- X.101 Parking Deck Control Joint Repair
X.102 Saw Cut Joint Repair
X.103 Crack and Construction Joint Repair
X.104 Perimeter Sealant Details
X.105 Perimeter Sealant Details
X.106 Cove Sealant Replacement
X.107 Typical Edge Detail w/ Horizontal Joint
X.108 Typical Horizontal Joint
X.109 Typical Snap Covers
X.110 Typical Vertical Corner and Rafters
12. **Section Y - Paint Metal, Doors, Frames, Walls & Ceilings (No Details This Section)**
13. **Section Z - Miscellaneous Maintenance Fees & Costs (No Details for This Section)**

Detail numbers listed are merely for identification and may not be consecutive. The Contractor shall check the pages with the Index for completeness. If any pages are missing or illegible; request replacements.

CONTRACT MODIFICATION PROCEDURES / CHANGE ORDERS
SECTION 01 26 00

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Architect's Supplemental Instructions
 - 2. Construction Change Directives
 - 3. Proposal Requests
 - 4. Change Orders

- B. Related Sections:
 - 1. Agreement Form, General Conditions and Supplementary Conditions
 - 2. Section 01 29 00 – Payment Application Procedures
 - 3. Section 01 33 00 – Submittals
 - 4. Section 01 60 00 – Product Substitution Procedures
 - 5. Section 01 70 00 – Closeout Requirements

1.2 DEFINITIONS

- A. **Architects Supplemental Instructions:** Supplemental instructions or interpretations of an order for minor modification in the Work wherein there is **no** change in the Contract Time or Contract Price.

- B. **Construction Change Directive:** Authorizes a change based upon an understanding concerning changes in Contract Time and/or Contract Sum which is issued expeditiously to avoid delay.

- C. **Proposal Request:** Requests an itemized quotation for proposed changes in Contract Sum or Contract Time but which is neither a directive, or authorization nor a change order.

- D. **Change Order:** Authorizes a change to the Contract which may involve a change in Contract Sum or Contract Time.

1.3 SUBMITTALS

- A. Responsible Individual: Submit the name of the individual authorized to accept changes and who is responsible for informing others in Contractor's employ of the Changes in Work.

- B. Schedule of Values Revisions: Revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust Contract Sum and re-submit.

- C. Progress Schedule Revisions: Revise Progress Schedules to reflect any change in Contract Time, revise subcontractor schedules to adjust times for other items of work affected by the change and re-submit.

CONTRACT MODIFICATION PROCEDURES / CHANGE ORDERS
SECTION 01 26 00

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.1 ARCHITECT'S SUPPLEMENTAL INSTRUCTIONS

- A. The Architect may issue supplemental instructions, interpretations or minor modifications in the Work, with supplementary or revised Drawings and Specifications, for acceptance by the Contractor pursuant to Definitions.
- B. Should later circumstances produce changes to Contract Sum or Contract Time, procedures for a Change Orders shall be followed.
- C. The Architect will advise the Contractor of minor changes by issuing supplemental instructions on **AIA Form G710, "Architect's Supplemental Instructions"**.

3.2 CONSTRUCTION CHANGE DIRECTIVE

- A. The architect may issue a Construction Change Directive signed by the Owner, with supplementary or revised Drawings and Specifications, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
- B. The Directive will describe changes in the Work and will designate method of determining any change in Contract Sum or Contract Time.
- C. The Architect will substantiate instructions on **AIA G714, "Construction Change Directive"**.
- D. Contractor shall promptly execute changes.

3.3 CHANGE ORDER PROPOSALS

- A. The Architect may submit a "Proposal Request" which includes a detailed description of a proposed change with supplementary or revised Drawings and Specifications, projected time for executing the change, a stipulation of any overtime work required, and period of time during which requested price will be considered valid.
- B. The Architect will initiate the proposal request on **AIA Form G709, "Proposal Request"**.
- C. The Contractor may propose changes by submitting a request for change to the Architect describing the reason for the proposed change and its full effect on the Work. Include a statement describing the effect on the Contract Sum and Contract Time with full documentation. **Document any substitutions requested in accordance with Section 01 60 00 – Product Requirements.**

CONTRACT MODIFICATION PROCEDURES / CHANGE ORDERS
SECTION 01 26 00

3.4 DOCUMENTATION OF CHANGE IN CONTRACT SUM AND CONTRACT TIME

- A. Document each quotation for a change in contract cost or time with sufficient data to allow evaluation of the quotation by the Owner and the Architect.
- B. On request, provide additional data to support computations:
 - 1. Quantities and costs of products, labor and equipment.
 - 2. Taxes, insurance and bonds.
 - 3. Overhead and profit.
 - 4. Justification for any change in Contract Time.
 - 5. Credit for any deletions from Contract, similarly documented.

3.5 CHANGE ORDER

- A. The Change Order amount/time will be based upon one or more of the following:
 - 1. (Change in Scope) Stipulated sum based upon an approved "Proposal Request".
 - 2. (Change in Scope) Stipulated sum or Unit Cost sum resulting from Construction Change Directive.
 - 3. (Change in Scope) Time and Material
 - a. Contractor to submit itemized account and supporting data after completion of change, within time limits indicated in Conditions of Contract.
 - b. Architect will determine change allowable in Contract Sum and Contract Time as provided in Contract Documents.
 - 4. (Reconciliation of Unit Costs) Fixed unit price basis for unit costs or quantities of units of work which are reconciled upon substantial completion of the contract work.
- B. Execution of Change Order
 - 1. The Architect will issue the change order on **AIA Form G701, "Change Order"** for signatures of parties as provided in the Conditions of the Contract.
- C. Correlation of Contractor Submittals
 - 1. Upon execution of Change Order the Contractor shall promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as separate line item and adjust Contract Sum.
 - 2. Contractor shall promptly revise progress schedules to reflect change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
 - 3. The Contractor shall promptly enter changes in Project Record Documents.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Procedures for preparation and submittal of applications for payment.
- B. Related Sections
 - 1. Agreement: Contract Sum and unit prices, amounts of progress payments and retainages and time schedule for submittals.
 - 2. General Conditions: Progress payments and final payment.
 - 3. Section 01 26 00 – Contract Modification Procedures – Change Orders: Procedures for changes in the Work.
 - 4. Section 01 33 00 – Submittal Procedures
 - 5. Section 01 70 00 – Project Closeout Requirements: Final Payment

1.2 FORMAT

- A. **AIA G702 – Application and Certificate for Payment** (Current Edition)
- B. **AIA G703 – Continuation Sheet** (Current Edition)
- C. Contractors may purchase Application Forms on-line directly from the AIA. Link to the following: <https://documentsondemand.aia.org/>.

1.3 PREPARATION OF APPLICATIONS

- A. Present required information in handwritten form for field verification by the Architect. Once approved, supply in typewritten form.
- B. Each Application and Certificate for Payment must have authentic signatures and seals of all parties signing the document. Photocopies of signatures or seals will not be accepted.
- C. Application Form:
 - 1. Printed Application for Payment: One of the **AIA G702** and **AIA G703** forms must be an original printed document with a red label. The completed original application may be copied as required prior to signing and sealing.
 - 2. Electronic Documents: Electronic documents must be produced under license from The American Institute of Architects and may be photocopied as required prior to signing and sealing. Include registration number on submitted document.
 - 3. Electronic copies, computer reproductions, or photocopies of authentic documents will not be accepted.
- D. Execute certification by signature of authorized officer.

PAYMENT APPLICATION PROCEDURES
SECTION 01 29 00

- E. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
- F. List each authorized Change Order as an extension on **AIA G703 – Continuation Sheet**, listing Change Order number and dollar amount as an original item of work.
- G. Retainage: Unless otherwise stipulated, an amount equal to ten (10) per cent of the total completed work and stored materials shall be retained by the Owner until the project has been completed.
- H. Final Payment: Prepare Application for Final Payment as specified above and in Section 01 70 00 – Project Closeout Requirements. Final payment shall include completed work value plus retainage.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.1 SUBMITTAL PROCEDURES

- A. Submit five copies of each Application for Payment to the Architect for Certification.
- B. Submit an updated construction schedule with each Application for Payment.
- C. Submit a fully completed Project Rain Day Form and revised Project schedule with each Application for Payment. Each full or partial Rain Day claimed must be certified by the designated on-site representative for the Owner, as well as the Contractor. **Rain days will only be allowed for the period of work of the current Application for Payment, requests for approval of rain days of prior Application for Payment periods will not be considered.**
- D. Payment Period: Submit on the 25th of each month.
- E. Submit with transmittal letter as specified in Section 01 33 00 – Submittals.
- F. Submit waivers and release of liens.

3.2 SUBSTANTIATING DATA

- A. When Architect requires substantiating information, submit data justifying dollar amounts in question.
- B. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

END OF SECTION

ADMINISTRATIVE REQUIREMENTS & PROJECT COORDINATION
SECTION 01 30 00

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Coordination and project conditions.
 - 2. Coordination with Owner Requirements
 - 3. Preconstruction meeting.
 - 4. Site mobilization meeting.
 - 5. Progress meetings.
 - 6. Pre-installation meetings.
 - 7. General Installation provisions
 - 8. Cutting and patching.
 - 9. Special procedures.
 - 10. Cleaning and protection

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

1.2 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and Work of various sections of Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

- B. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, operating equipment.

- C. Coordinate space requirements, supports, and installation of and electrical Work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

- D. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within construction. Coordinate locations of fixtures and outlets with finish elements.

- E. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion and for portions of Work designated for Owner's occupancy.

ADMINISTRATIVE REQUIREMENTS & PROJECT COORDINATION
SECTION 01 30 00

- F. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.3 COORDINATION WITH OWNER REQUIREMENTS

- A. The Owner will be occupying the building during the work. All existing exits and any existing fire protection/life safety systems shall be continuously maintained and operational unless other measures are taken which provide equivalent safety per the Florida Building Code requirements. The contractor is to submit a "Construction Safety Plan" depicting how they will keep exit ways protected and in a safe condition while the buildings are occupied. Stipulate how the fresh air and exhaust fans will be kept in continued use while the buildings are occupied.
- B. Working period: The normal work hours for the Owner(s) inspector(s) are defined as any 10-hour period between 7:00 a.m. and 7:00 p.m., Monday through Friday. Any work outside the 10-hour period shall be paid for by the Contractor and requested in writing 48 hours in advance. Weekends, County Holidays, all overtime, and weekend work shall be at the rate of \$150/hour and shall be deducted from payments due the Contractor on a monthly basis.
- C. Stipulate in the "Construction Safety Plan" how the contractor will keep the building(s) occupied during the roof replacement operations.
- D. Roof loading and overhead crane operations shall be scheduled as much as practicable during times the facilities are unoccupied.
- E. Contractor shall consult with local governing authorities having jurisdiction regarding noise abatement requirements and construction operations, if applicable.
- F. A copy of all required city, county and state licenses that are applicable to this project shall be supplied to the Owner's representative prior to the appropriate work commencing.
- G. The Contractor shall perform any trimming, pruning or relocation of trees or significant landscape materials as needed to fulfill the requirements of work on this project. Failure to adequately protect the existing landscaping material will require replacement of these materials at no additional cost to the Owner.
- H. The Contractor and contractor personnel shall observe the following rules of conduct prescribed by the owner in regard to work on this project. They include but are not limited to:
 - 1. Workmen are not to traverse any walkway between buildings or buildings that are not included in this contract as well as new work that has been completed.
 - 2. All contractor and subcontractor vehicles are to be parked in designated areas only. This will be determined during the pre-construction meeting.
 - 3. No smoking is permitted on the project site.
 - 4. Radios, tape or CD players ("boom boxes") are not to be utilized at the site.

ADMINISTRATIVE REQUIREMENTS & PROJECT COORDINATION
SECTION 01 30 00

- 5. No firearms or other weapons are to be brought to the site
 - 6. Contractor shall coordinate project access, parking and egress of all personnel and tradesmen with the Owner and the Owner's administrative personnel.
- I. Lack of coordination as specified in this and other sections of the contract documents are in grounds for assessment of back charges and/or termination in order to remediate the situation

1.4 PRECONSTRUCTION MEETING

- A. Owner will schedule meeting after Notice of Award.
- B. Attendance Required: Owner, Architect/Engineer, Contractor and any subcontractors and suppliers the contractor may wish to include.
- C. At the Preconstruction meeting submit a list of the Contractor's principal staff assignments, including the Superintendent and other personnel in attendance at the site; identify individuals, their duties and responsibilities; list their addresses and telephone numbers
- D. Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Submission of list of Subcontractors, list of products, schedule of values, and progress schedule.
 - 5. Designation of personnel representing parties in Contract, and Architect/Engineer.
 - 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal requests, Change Orders, and Contract closeout.
 - 7. Scheduling.
- E. Contractor shall record minutes and distribute copies within three days after meeting to participants, with two copies to Architect/Engineer, Owner, and those affected by decisions made.

1.5 SITE MOBILIZATION MEETING

- A. Owner will schedule meeting at Project site prior to Contractor occupancy.
- B. Attendance Required: Owner, Architect/Engineer, Special Consultants, Contractor, Contractor's Superintendent, and major Subcontractors.
- C. Agenda:
 - 1. Use of premises by Owner and Contractor.
 - 2. Owner's requirements and occupancy.
 - 3. Construction facilities and controls provided by Owner.

ADMINISTRATIVE REQUIREMENTS & PROJECT COORDINATION
SECTION 01 30 00

4. Temporary utilities provided by Owner.
5. Security and housekeeping procedures.
6. Schedules.
7. Application for payment procedures.
8. Procedures for testing.
9. Procedures for maintaining record documents.

D. Contractor shall record minutes and distribute copies within three days after meeting to participants, with two copies to Architect/Engineer, Owner, and those affected by decisions made.

1.6 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at maximum bi-weekly intervals.
- B. Contractor shall make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- C. Attendance Required: Job superintendent, major subcontractors and suppliers, Owner, Architect/Engineer, as appropriate to agenda topics for each meeting.

D. Agenda:

1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems impeding planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of off-site fabrication and delivery schedules.
7. Maintenance of progress schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on progress schedule and coordination.
13. Other business relating to Work.

E. Contractor shall record minutes and distribute copies within three days after meeting to participants, with two copies to Architect/Engineer, Owner, and those affected by decisions made.

1.7 PRE-INSTALLATION MEETINGS

- A. When required in individual specification sections, convene pre-installation meetings at Project site prior to commencing work of specific section.
- B. Require attendance of parties directly affecting, or affected by, Work of specific section.

ADMINISTRATIVE REQUIREMENTS & PROJECT COORDINATION
SECTION 01 30 00

- C. Notify Architect/Engineer four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of installation, preparation and installation procedures.
 - 2. Review coordination with related work.
- E. Record minutes and distribute copies within three days after meeting to participants, with two copies to Architect/Engineer, Owner, and those affected by decisions made.

PART 2 PRODUCTS – (Not Used)

PART 3 EXECUTION

3.1 GENERAL INSTALLATION PROVISIONS

- A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
- B. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.
- C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.
- D. Provide attachment and connection devices and methods necessary for securing work. Secure work true to line and level. Allow for expansion and building movement.
- E. Visual Effects: Provide uniform joint widths in exposed work. Arrange joints in exposed work to obtain the best visual effect. Refer questionable choices to Project Manager for final decision.
- F. Recheck measurements and dimensions, before starting each installation.
- G. Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.
- H. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.
- I. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Architect/Project Manager for final decision.

ADMINISTRATIVE REQUIREMENTS & PROJECT COORDINATION
SECTION 01 30 00

3.2 CUTTING AND PATCHING

- A. Employ skilled and experienced personnel to perform cutting and patching.
- B. Submit written request in advance of cutting or altering elements affecting:
 - 1. Structural integrity of element.
 - 2. Integrity of weather-exposed or moisture-resistant elements.
 - 3. Efficiency, maintenance, or safety of element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of Owner or separate contractor.
- C. Execute cutting, fitting, and patching to complete Work, and to:
 - 1. Fit the several parts together, to integrate with other Work.
 - 2. Uncover Work to install or correct ill-timed Work.
 - 3. Remove and replace defective and non-conforming Work.
 - 4. Remove samples of installed Work for testing.
 - 5. Provide openings in elements of Work for penetrations of electrical Work.
- D. Execute work by methods to avoid damage to other Work, and to provide proper surfaces to receive patching and finishing.
- E. Cut masonry and concrete materials using masonry saw or core drill.
- F. Restore Work with new products in accordance with requirements of Contract Documents.
- G. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- H. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.
- I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material to full thickness of penetrated element.
- J. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit.
- K. Identify hazardous substances or conditions exposed during the Work to Architect/Engineer for decision or remedy.

3.3 SPECIAL PROCEDURES

- A. Materials: As specified in product sections; match existing with new products for patching and extending work.
- B. Employ skilled and experienced personnel to perform alteration work.

ADMINISTRATIVE REQUIREMENTS & PROJECT COORDINATION
SECTION 01 30 00

- C. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.
- D. Remove unsuitable material not marked for salvage, including rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.
- E. Remove debris and abandoned items from area and from concealed spaces.
- F. Prepare surface and remove surface finishes to permit installation of new work and finishes.
- G. Close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity.
- H. Remove, cut, and patch Work in manner to minimize damage and to permit restoring products and finishes to original or specified condition.
- I. Where new Work abuts or aligns with existing, provide smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.
- J. When finished surfaces are cut so that smooth transition with new Work is not possible, terminate existing surface along straight line at natural line of division and submit recommendation to Architect/Engineer for review.
- K. Where change of plane of 1/4 inch or more occurs, submit recommendation for providing smooth transition; to Architect/Engineer for review. Request instructions from Architect/Engineer.
- L. Trim existing doors to clear new floor finish. Refinish trim to original or specified condition.
- M. Patch or replace portions of existing surfaces which are damaged, lifted, discolored, or showing other imperfections.
- N. Finish surfaces as specified in individual product sections.

3.4 CLEANING AND PROTECTION

- A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- B. Clean and maintain completed construction as directed by the Project Manager and as frequently as necessary to ensure its integrity and safety through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

ADMINISTRATIVE REQUIREMENTS & PROJECT COORDINATION
SECTION 01 30 00

- C. Limiting Exposures: Supervise construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where the applicable, such exposures include, but are not limited to, the following:
1. Excessive static or dynamic loading.
 2. Excessively high or low temperatures
 3. Excessively high or low humidity
 4. Air contamination or pollution
 5. Water
 6. Solvents
 7. Chemicals
 8. Soiling, staining and corrosion
 9. Rodent and insect infestation
 10. Combustion
 11. Destructive testing
 12. Misalignment
 13. Excessive weathering
 14. Unprotected storage
 15. Improper shipping or handling
 16. Theft
 17. Vandalism

END OF SECTION 01040

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Submittal procedures.
 - 2. Construction Progress Schedules
 - 3. Product Data
 - 4. Shop Drawings
 - 5. Samples
 - 6. Manufacturer's Certificates
 - 7. Manufacturer's Instructions
 - 8. Manufacturer's Field Reports
 - 9. Schedule of Values

- B. Related Sections:
 - 1. Section 01 29 00 - Application for Payment – Schedule of Values associated with application for payment.
 - 2. Section 01 40 00 - Quality Control: Manufacturer's Field Services and Test Reports.
 - 3. Section 01 70 00 – Contract Closeout: Contract warranties, bonds, manufacturers' certificates and closeout submittals.

1.2 SUBMITTAL PROCEDURES

- A. The following submittals shall be received and approved by the Architect/Engineer prior to the commencement of any project work:
 - 1. Construction Progress Schedule
 - 2. Product Data
 - 3. Shop Drawings
 - 4. Samples
 - 5. Manufacturer's Installation Instructions
 - 6. Manufacturer's Certification
 - 7. Schedule of Values

- B. Submittals shall be electronically by email to the Project Architect as an 'attachment'. The 'attachment' shall be in a **.pdf** format.

- C. The "Submittal Cover Form" will be required for each submitted item within the submittal package as if they were submitted individually.

- D. The Project Architect will review the submitted documents and returned to the Contractor via email the reviewed documents along with a current copy of the **Submittal Record** with comments.

SUBMITTAL PROCEDURES
SECTION 01 33 00

- E. Appropriate distributions to the Owner will be made by the Architect via email. The Contractor is responsible for distribution to subcontractors and suppliers.
- F. A fully completed “**Submittal Cover Form**” shall be attached to each individual submittal item indicating the following information: (A copy of the “**Submittal Cover Form**” is included at the end of this Section)
 - 1. Submittal Number
 - 2. Project Identification, Project Number
 - 3. Contractor
 - 4. Subcontractor/Supplier/Manufacturer
 - 5. Pertinent Drawing and Detail Number
 - 6. Specification Section
 - 7. Signature or initial of contractor certifying that review, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and contract documents.
- G. Sequentially number transmittal forms as indicated by the “**Submittal Record (checklist/log)**” (attached at the end of this Section). Revised submittals shall be re-submitted with original number and sequential alphabetic suffix.
- H. For each submittal for review, allow **15 days** excluding delivery time to and from Contractor.
- I. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of completed Work.
- J. Reviewed submittals shall be returned electronically with the attached “**Submittal Cover Form**” indicating review action. Comments, if applicable, shall be provided in the appropriate spaces on the “**Submittal Cover Form**”. A copy of the “**Submittal Record (checklist/log)**” will accompany the reviewed submittals indicating current status of all submittals and include additional comments as appropriate. Review Action Codes are as follows:
 - 1. **APP** – Approved (as submitted) – No variance permitted.
 - 2. **A/C** – Approved with Comments or Corrections – Contractor accepts the noted revisions if work proceeds – No variance permitted.
 - 3. **R/R** – Revise and Resubmit – No work may proceed until data is revised as noted or discussed, reviewed and approved.
 - 4. **REJ** – Rejected, Not Approved – No work may proceed, revise and resubmit as appropriate.
- K. When submittals are revised for resubmission, identify changes made since previous submission. Resubmit as described above.
- L. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.
- M. Submittals not requested will not be recognized or processed.

1.3 SUBMITTALS

A. Construction Progress Schedules

1. Submit initial schedules within 15 days after date established in Notice to Proceed. After review, resubmit required revised data within ten days.
2. Submit revised Progress Schedules with each Application for Payment.
3. Distribute copies of reviewed schedules to Project site file, subcontractors, suppliers, and other concerned parties.
4. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.
5. Submit computer generated horizontal bar chart with separate line for each major portion of Work or operation, identifying first work day of each week.
6. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate early and late start, early and late finish, float dates, and duration.
7. Indicate estimated percentage of completion for each item of Work at each submission.
8. Submit separate schedule of submittal dates for shop drawings, product data, and samples, including Owner furnished products and products identified under Allowances.

B. Product Data:

1. Submit Product Data to Architect/Engineer for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
2. Mark the submittal to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
3. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
4. After receipt of reviewed submittals from the Architect, the Contractor shall produce copies and distribute as required in accordance with SUBMITTAL PROCEDURES article and for record documents described in Section 01 70 00 - Execution and Closeout Requirements.

C. Shop Drawings:

1. Submit scaled plans (shop drawings) for review. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
2. When required by individual specification sections, provide shop drawings signed and sealed by professional engineer responsible for designing components shown on shop drawings.
 - a. Include signed and sealed calculations to support design.
 - b. Submit drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
 - c. Make revisions and provide additional information when required by authorities having jurisdiction.

SUBMITTAL PROCEDURES
SECTION 01 33 00

3. Submit number of opaque reproductions Contractor requires, plus two copies Architect/Engineer will retain.
 4. After receipt of reviewed submittals from the Architect, the Contractor shall produce copies and distribute as required in accordance with SUBMITTAL PROCEDURES article and for record documents described in Section 01 70 00 - Execution and Closeout Requirements.
- D. Samples:
1. Submit Samples to Architect/Engineer for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
 2. Submit samples to illustrate functional and aesthetic characteristics of Products, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
 3. Include identification on each sample, with full Project information.
 4. Submit number of samples specified in individual specification sections; Architect/Engineer will retain sample.
 5. Reviewed samples which may be used in the Work are indicated in individual specification sections.
- E. Manufacturer's Installation Instructions:
1. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to Architect/Engineer for delivery to Owner in quantities specified for Product Data.
 2. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- F. Manufacturer's Certificates:
1. When specified in individual specification sections, submit certification by manufacturer, installation/application subcontractor, or Contractor to Architect/Engineer, in quantities specified for Product Data.
 2. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
 3. Certificates may be recent or previous test results on material or Product, but must be acceptable to Architect/Engineer.
- G. Manufacturer's Field Reports:
1. Submit reports for Architect/Engineer's benefit as contract administrator or for Owner.
 2. Submit report in duplicate within 5 days of observation to Architect/Engineer for information.
 3. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.
- H. Schedule of Values:
1. Submit typed Schedule of Values on **AIA Form G703**.

SUBMITTAL PROCEDURES
SECTION 01 33 00

2. Refer to Schedule of Values format attached to Section 01 29 00- Application for Payment.
3. Submit for approval prior to submitting first Application for Payment.

PART 2 PRODUCTS - (Not Used)

PART 3 EXECUTION - (Not Used)

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Quality Control and Control of Installation.
 - 2. Tolerances'
 - 3. References
 - 4. Mock-up Requirements
 - 5. Testing and Inspection Services
 - 6. Manufacturer's Field Services
 - 7. Examination
 - 8. Preparation.

1.2 QUALITY CONTROL AND CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. When manufacturers' instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work by persons qualified to produce required and specified quality.
- F. Verify field measurements are as indicated on Shop Drawings or as instructed by manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.3 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. When manufacturers' tolerances conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

QUALITY REQUIREMENTS / REFERENCES
SECTION 01 40 00

1.4 REFERENCES

- A. For products or workmanship specified by associations, trades, or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on [date of Contract Documents,] except where specific date is established by code.
- C. The roof system shall include all affiliated electrical, mechanical, architectural and structural work, meeting the following Building Codes:
 - 1. The **2014 Fifth Edition Florida Building Code**
 - 2. The **Florida Fire Prevention Code**
 - 3. Any local amendments to these codes which can be obtained from the **Florida Department of Community Affairs**, the **Florida Department of Insurance**, and/or the **State Fire Marshall**, respectively.
 - 4. The following Building Codes are hereby incorporated by reference and made a part of this rule. If there should be conflicting requirements between these codes the more or most stringent requirement shall apply.
 - a. **AHERA** Asbestos Hazard Emergency Response Act, 40 CFR, Part 763, October 30, 1987.
 - b. **ANSI** American National Standards Institute. References shall be the latest edition of the ANSI Standards
 - c. **ASCE** American Society of Civil Engineers. References shall be the latest edition listed in the current "Florida Building Code"
 - d. **ASHRAE** American Society of Heating, Refrigeration, and Air Conditioning Engineers.
 - e. **ASTM** American Society for Testing Materials. References shall be the latest edition of the ASTM Standards.
 - f. **FEMA** Federal Emergency Management Agency. Rules and Regulations 44 CFR, Parts 59 and 60, dated October 1, 1989, for flood plain criteria governing insurability of facilities constructed in flood plain.
 - g. **NEC** National Electrical Code
 - h. **NFPA** National Fire Protection Association. References shall be the latest edition of the National Fire Protection Association code.
 - i. **NRCA** National Roofing Contractors Association. References shall be to the latest edition of the NRCA Roofing and Waterproofing Manual.
 - j. **SMACNA** Sheet Metal and Air Conditioning Contractors National Association. References shall be made to the latest edition of the SMACNA Architectural Sheet Metal Manual.
 - k. **TMS** The Masonry Society
- D. Obtain copies of standards where required by product specification sections or as necessary to complete the work properly. Maintain copies at project site during submittals, planning and progress of the specific work, until Substantial Completion.

QUALITY REQUIREMENTS / REFERENCES
SECTION 01 40 00

- E. When specified reference standards conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- F. The contractual relationships, duties, or responsibilities of parties in the Contract or those of the Architect/Engineer shall not be altered from the Contract Documents by mention or inference otherwise in reference documents.

1.5 MOCK-UP REQUIREMENTS

- A. Tests will be performed under provisions identified in this section and identified in respective product specification sections.
- B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- C. Accepted mock-ups shall be comparison standard for remaining Work.
- D. Where mock-up has been accepted by Architect/Engineer and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so by Architect/Engineer.

1.6 TESTING AND INSPECTION SERVICES

- A. Owner will employ and pay for specified services of an independent firm to perform testing and inspection.
- B. The independent firm will perform tests, inspections and other services specified in individual specification sections and as may be required by Owner.
 - 1. Laboratory: Authorized to operate at Project location.
 - 2. Laboratory Staff: Maintain full time specialist on staff to review services.
 - 3. Testing Equipment: Calibrated at reasonable intervals with devices of accuracy traceable to National Bureau of Standards or accepted values of natural physical constants.
- C. Testing, inspections and source quality control may occur on or off project site. Perform off-site testing as required by Architect/Engineer or Owner.
- D. Reports will be submitted by independent firm to Architect/Engineer, Contractor, and authority having jurisdiction, in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
 - 1. Submit final report indicating correction of Work previously reported as non-compliant.
- E. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
 - 1. Notify Architect/Engineer and independent firm [24] hours prior to expected time for operations requiring services.

QUALITY REQUIREMENTS / REFERENCES
SECTION 01 40 00

2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
- F. Testing and employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- G. Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by same independent firm on instructions by Architect/Engineer. Payment for re-testing or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.
- H. Agency Responsibilities:
1. Test samples of mixes submitted by Contractor.
 2. Provide qualified personnel at site. Cooperate with Architect/Engineer and Contractor in performance of services.
 3. Perform specified sampling and testing of products in accordance with specified standards.
 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 5. Promptly notify Architect/Engineer and Contractor of observed irregularities or non-conformance of Work or products.
 6. Perform additional tests required by Architect/Engineer.
 7. Attend preconstruction meetings and progress meetings.
- I. Agency Reports: After each test, promptly submit [two] copies of report to Architect/Engineer, Contractor, and authority having jurisdiction. When requested by Architect/Engineer, provide interpretation of test results. Include the following:
1. Date issued.
 2. Project title and number.
 3. Name of inspector.
 4. Date and time of sampling or inspection.
 5. Identification of product and specifications section.
 6. Location in Project.
 7. Type of inspection or test.
 8. Date of test.
 9. Results of tests.
 10. Conformance with Contract Documents.
- J. Limits On Testing Authority:
1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 2. Agency or laboratory may not approve or accept any portion of the Work.
 3. Agency or laboratory may not assume duties of Contractor.
 4. Agency or laboratory has no authority to stop the Work.

QUALITY REQUIREMENTS / REFERENCES
SECTION 01 40 00

1.7 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Architect/Engineer [30] days in advance of required observations.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- D. Refer to Section 01 33 00 - Submittal Procedures, MANUFACTURERS' FIELD REPORTS article.

PART 2 PRODUCTS - (Not Used)

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Verify utility services are available, of correct characteristics, and in correct locations.

3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

END OF SECTION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for cutting and patching.
- B. Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
 - 1. Requirements of this Section apply to electrical installations. Refer to Division-23 and Division-26 Sections for other requirements and limitations applicable to cutting and patching electrical installations.

1.3 SUBMITTALS

- A. Cutting and Patching Proposal: Where approval of procedures for cutting and patching are required before proceeding, submit a proposal describing procedures well in advance of the time cutting and patching will be performed and request approval to proceed. Include the following information, as applicable, in the proposal:
 - 1. Describe the extent of cutting and patching required and how it is to be performed; indicate why it cannot be avoided.
 - 2. Describe anticipated results in terms of changes to existing construction; include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
 - 3. List products to be used and firms or entities that will perform Work.
 - 4. Indicate dates when cutting and patching is to be performed.
 - 5. List utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
 - 6. Where cutting and patching involves addition of reinforcement to structural elements, submit details and engineering calculations to show how reinforcement is integrated with the original structure.
 - 7. Approval by the Architect to proceed with cutting and patching does not waive the Architect's right to later require complete removal and replacement of a part of the Work found to be unsatisfactory.

1.4 QUALITY ASSURANCE

CUTTING AND PATCHING SECTION 01 45 00

- A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load carrying capacity or load-deflection ratio.
1. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements.
 - a. Foundation construction
 - b. Bearing and retaining walls
 - c. Structural concrete
 - d. Structural steel
 - e. Lintels
 - f. Timber and primary wood framing
 - g. Structural decking
 - h. Miscellaneous structural metals
 - i. Stair systems
 - j. Exterior curtain wall construction
 - k. Equipment supports
 - l. Piping, ductwork, vessels and equipment
 - m. Structural systems of special construction in Division 13.
- B. Operational and Safety Limitations: Do not cut and patch operating elements or safety related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety. Refer to Divisions 23 and 26 regarding Fire Rated Penetrations.
1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems.
 - a. Shoring, bracing and sheeting
 - b. Primary operational systems and equipment
 - c. Air or smoke barriers
 - d. Water, moisture, or vapor barriers
 - e. Membranes and flashings
 - f. Fire protection systems
 - g. Noise and vibration control elements and systems
 - h. Control systems
 - i. Communication systems
 - j. Conveying systems
 - k. Electrical wiring systems
 - l. Special construction specified by Division-13 Sections
- C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching. Remove and replace work cut and patched in a visually unsatisfactory

manner.

1. If possible retain the original installer or fabricator to cut and patch the following categories of exposed work, or if it is not possible to engage the original installer or fabricator, engage another recognized experienced and specialized firm:
 - a. Processed concrete finishes
 - b. Preformed metal panels
 - c. Window wall system
 - d. Stucco and ornamental plaster
 - e. Acoustical ceilings
 - f. Carpeting
 - g. Wall covering
 - l. Roofing systems

PART 2 PRODUCTS

2.1 MATERIALS

- A. Use materials that are identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect unless otherwise indicated by Architect/Owner. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 EXECUTION

3.1 INSPECTION

- A. Before cutting examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.
 1. Before proceeding, meet at the site with all parties involved in cutting and patching, including electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

3.2 PREPARATION

- A. Temporary Support: Provide temporary support of work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.

- C. Avoid interference with use of adjoining areas and interruption of free passage to adjoining areas.
- D. Take all precautions necessary to avoid cutting existing pipe, conduit or ductwork serving the building, but scheduled to be removed or relocated until provisions have been made to bypass them.

3.3 PERFORMANCE

- A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.
 - 1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible review proposed procedures with the original installer; comply with the original installer's recommendations.
 - 1. In general, where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Cut through concrete and masonry using a cutting machine such as carborundum saw or diamond core drill.
 - 4. Comply with requirements of applicable Sections of Division-2 where cutting and patching required excavating and backfilling.
 - 5. By-pass utility services such as pipe or conduit, before cutting, where services are shown or required to be removed. Cap, valve or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.
- C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
 - 1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
 - 2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - 3. Where removal of walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space to

CUTTING AND PATCHING
SECTION 01 45 00

provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials if necessary to achieve uniform color and appearance.

- a. Where patching occurs in smooth painted surfaces, extend final coat over entire unbroken surfaces containing the patch, after the patched area has received primer and second coat.

3.4 CLEANING

- A. Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove completely paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged materials to their original condition.

END OF SECTION 01 45 00

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Temporary Utilities:
 - 1. Temporary electricity.
 - 2. Temporary lighting for construction purposes.
 - 3. Temporary heating and cooling.
 - 4. Temporary ventilation.
 - 5. Telephone service.
 - 6. Temporary water service.
 - 7. Temporary sanitary facilities.

- B. Construction Facilities:
 - 1. Field offices and sheds.
 - 2. Vehicular access.
 - 3. Parking.
 - 4. Progress cleaning and waste removal.
 - 5. Project identification.
 - 6. Fire prevention facilities.

- C. Temporary Controls:
 - 1. Barriers.
 - 2. Enclosures and fencing.
 - 3. Security.
 - 4. Water control.
 - 5. Noise control.

- D. Removal of utilities, facilities, and controls.

1.2 TEMPORARY ELECTRICITY

- A. Owner will pay cost of energy used. Exercise measures to conserve energy. Utilize Owner's existing power service.

- B. Provide temporary electric feeder from existing building or electrical service at location as directed by Owner. Do not disrupt Owner's use of service.

- C. Complement existing power service capacity and characteristics as required for construction operations.

- D. Provide power outlets, with branch wiring and distribution boxes located as required for construction operations. Provide GFI protected flexible power cords as required for portable construction tools and equipment.

- E. Provide main service disconnect and over-current protection at convenient location.

TEMPORARY FACILITIES AND CONTROLS
SECTION 01 50 00

- F. Permanent convenience receptacles may be utilized during construction.
- G. Provide distribution equipment, wiring, and outlets to provide single phase branch circuits for power and lighting.
 - 1. Provide 20 ampere duplex outlets, single phase circuits for power tools for every active work area.
 - 2. Provide 20 ampere, single phase branch circuits for lighting.

1.3 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. Provide and maintain adequate lighting for construction operations.
- B. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.
- C. Maintain lighting and provide routine repairs.
- D. Permanent building lighting may not be utilized during construction.

1.4 TEMPORARY HEATING AND COOLING

- A. When required by the Owner, provide heating and cooling devices needed to maintain existing conditions in buildings. The Owner will pay cost of energy used. Exercise measures to conserve energy.
- B. Prior to operation of permanent equipment for temporary heating and cooling purposes, verify installation is approved for operation, equipment is lubricated and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.

1.5 TEMPORARY VENTILATION

- A. Ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- B. Utilize existing ventilation equipment. Extend and supplement equipment with temporary fan units as required to maintain clean air for construction operations.

1.6 TELEPHONE SERVICE

- A. If a field office is required provide, maintain, and pay for telephone service to contractor's field office at time of project mobilization.
- B. If a field office is not required establish a continuous cellular phone connection with site personnel during construction operations.

TEMPORARY FACILITIES AND CONTROLS
SECTION 01 50 00

1.7 TEMPORARY WATER SERVICE

- A. Owner will pay cost of temporary water used except for water required for use in mixing of construction materials or flushing of equipment and systems. Exercise measures to conserve water.
- B. Contractor shall provide metering device acceptable to the Owner at the Owner's designated location.
- C. Extend branch piping with outlets located so water is available by hoses with threaded connections.

1.8 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Existing facility use is not permitted. Provide facilities at time of project mobilization.

1.9 FIELD OFFICES AND SHEDS

- A. When separate construction Office facilities are required provide: Weather tight facility, with lighting, electrical outlets, heating/cooling/ and ventilating equipment, and equipped with sturdy furniture drawing rack, and drawing display table.
- B. Location of offices and sheds shall be coordinated with the Owner at the Pre-Construction meeting. When possible maintain a minimum distance of minimum distance of 30 feet from existing structures.
- C. When permanent facilities are enclosed with operable utilities, relocate offices and storage into building, with written agreement of Owner, and remove temporary buildings.
- D. Storage Areas And Sheds (when required): Size to storage requirements for products of individual Sections, allowing for access and orderly provision for maintenance and for inspection of products to requirements of Section 01 60 00 - Product Requirements.
- E. Removal: At completion of Work remove temporary buildings, utility services, and debris. Restore areas.

1.10 VEHICULAR ACCESS

- A. Extend and relocate vehicular access as Work progress requires, provide detours as necessary for unimpeded traffic flow.
- B. Provide unimpeded access for emergency vehicles.
- C. Provide and maintain access to fire hydrants and control valves free of obstructions.

1.11 PARKING

- A. Arrange with Owner for temporary parking areas to accommodate construction personnel.
- B. Locate as approved by Owner.
- C. When site space is not adequate, provide additional off-site parking.

1.12 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site and roof areas in clean and orderly condition.
- B. Collect and remove waste materials, debris, and rubbish from site periodically and dispose off-site.
- C. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.
- D. Contractor shall provide portable trash containers for construction debris. Use of Owner's on-site containers is prohibited.

1.13 PROJECT IDENTIFICATION

- A. At Owner's option, Contractor shall provide a Project Identification Sign with the following characteristics:
 - 1. Size: 4'x8' (maximum)
 - 2. Material: Three-quarter inch exterior grade plywood and wood frame construction.
 - 3. Finish and Lettering: Painted with exhibit lettering by professional sign painter or die-cut vinyl self-adhesive letters and self-adhesive corporate logo. Design and colors shall be approved by the Architect.
 - 4. Content:
 - a. Project title, logo and name of Owner as indicated on Contract Documents.
 - b. Names and titles of authorities.
 - c. Names and titles of Architect/Engineer and Consultants.
 - d. Name of Prime Contractor and major Subcontractors.
- B. Maintenance: Maintain signs and supports clean, repair deterioration and damage.
- C. Removal: Remove signs, framing, supports, and foundations at completion of Project and restore area.

1.14 FIRE PREVENTION FACILITIES

- A. Prohibit smoking within construction areas.

TEMPORARY FACILITIES AND CONTROLS
SECTION 01 50 00

- B. If allowed by Owner, a designated smoking area on site where smoking is permitted may be established. Provide approved ashtrays in designated smoking areas.
- C. Establish fire watch for cutting and welding and other hazardous operations capable of starting fires. Maintain fire watch before, during, and after hazardous operations until threat of fire does not exist.
- D. Standpipes: Maintain existing standpipes in usable condition in all active construction areas.
- E. Portable Fire Extinguishers: NFPA 10; 10 pound capacity, 4A-60B: C UL rating.
 - 1. Provide one fire extinguisher for each active construction area.
 - 2. Provide minimum one fire extinguisher in every construction trailer and storage shed.
 - 3. Provide minimum one fire extinguisher on roof during roofing operations using heat producing equipment.

1.15 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades and covered walkways required by authorities having jurisdiction for public rights-of-way and for public access to existing buildings.
- C. Provide protection for trees and landscaping designated to remain. Replace damaged trees and landscaping.
- D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.16 ENCLOSURES AND FENCING

- A. Provide security fencing, six (6) feet high, around staging areas and storage locations; equip the fence enclosure with vehicular and pedestrian gates with locks.
- B. Fence Construction: Nine (9) gage galvanized commercial grade two (2) inch chain link fabric, knuckle down, top and bottom. Provide tension bars and one and five eighths (1 5/8) inch top rails, two (2) inch line posts and three (3) inch corner and gate posts.

1.17 SECURITY

- A. Security Program:
 - 1. Protect Work premises and Owner's operations from theft, vandalism, and unauthorized entry.
 - 2. Initiate program in coordination with Owner's existing security system at project mobilization.

TEMPORARY FACILITIES AND CONTROLS
SECTION 01 50 00

3. Maintain program throughout construction period until Owner acceptance precludes need for Contractor security.
- B. Entry Control:
1. Restrict entrance of persons and vehicles into Project site.
 2. Allow entrance only to authorized persons with proper identification.
 3. Maintain daily log of workers and visitors, make available to Owner on request.
 4. Coordinate access of Owner's personnel to site in coordination with Owner's security forces.
- C. Personnel Identification:
1. Provide identification badge to each person authorized to enter premises.
 2. Badge to Include: Personal photograph, name expiration date and employer.
 3. Maintain list of accredited persons, submit copy to Owner on request.
 4. Require return of badges at expiration of their employment on the Work.

1.18 WATER CONTROL

- A. Maintain site drainage affected by construction operations. Grade site to drain as required.
- B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

1.19 NOISE CONTROL

- A. Provide methods, means, and facilities to minimize noise produced by construction operations.

1.20 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to Substantial Completion inspection.
- B. Clean and repair damage caused by installation or use of temporary work.
- C. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Products.
 - 2. Transportation and Handling
 - 3. Storage and Protection
 - 4. Product Options
 - 5. Substitutions
 - 6. Product Substitution Request Form and Product Substitution Information Form

1.2 PRODUCTS

- A. Furnish products of qualified manufacturers suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise.
- B. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
- C. Provide interchangeable components of the same manufacture, for components being replaced.

1.3 TRANSPORTATION AND HANDLING

- A. Transport and handle Products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure that Products comply with requirements, quantities are correct, and Products are undamaged.
- C. Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.

1.4 STORAGE AND PROTECTION

- A. Store and protect Products in accordance with manufacturers' instructions, with seals and labels intact and legible.
- B. Store sensitive Products in weather tight, climate controlled enclosures.
- C. For exterior storage of fabricated Products, place on sloped supports, above ground.
- D. Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation or potential degradation of Product.

- E. Store loose granular materials on solid flat surfaces in a well drained area. Prevent mixing with foreign matter.
- F. Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.
- G. Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.

1.5 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any Product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Products of manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named in accordance with the following article.

1.6 SUBSTITUTIONS

- A. Architect/Engineer will consider requests for Substitutions only within **15 days** after date established in Notice to Proceed.
- B. Substitutions may be considered when a Product becomes unavailable through no fault of the Contractor.
- C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- D. A request constitutes a representation that the Contractor or Bidder:
 - 1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
 - 2. Will provide the same warranty for the Substitution as for the specified Product.
 - 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extension which may subsequently become apparent.
 - 5. Will reimburse Owner and Architect for review or redesign services associated with substitution.
- E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

**PRODUCT REQUIREMENTS
SECTION 01 60 00**

- F. Substitution Submittal Procedure:
1. Submit three (3) copies of request for Substitution for consideration. Limit each request to one proposed Substitution.
 2. Submit shop drawings, product data, and certified test results attesting to the proposed Product equivalence. Burden of proof is on proposer.
 3. The Architect will notify Contractor in writing of decision to accept or reject request.
 4. See "Substitution Request Forms" attached to this section

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.1 SUBSTITUTION REQUEST FORMS (ATTACHED)

- A. Product Substitution Request Form
- B. Product Substitution Information Form

END OF SECTION

Product Substitution Request

To: _____

We hereby submit for your consideration the following product in lieu of that specified for this project:

DRAWING NO. _____ DRAWING NAME _____

SPEC. SECTION	SPEC NAME	PARAGRAPH	SPECIFIED ITEM
---------------	-----------	-----------	----------------

Proposed Substitution: _____

Why Substitution Requested: _____

Attach complete information on changes to Drawings or Specifications which proposed substitution will require for its proper installation.

Submit with request necessary samples and substantiating data to prove equal quality and performance to that which is specified. Clearly mark manufacturer's literature to indicate equality in performance.

The undersigned certifies that the function, appearance and quality are of equal performance and assumes liability for equal performance, equal design and compatibility with adjacent materials.

Submitted by: _____	_____
Signature (Contractor)	Title Date
_____	_____
Firm	Telephone
_____	_____
Address	Fax Number

Signature shall be by person having authority to legally bind the Contractor to the above terms, failure to provide legally binding signature will result in retraction of approval.

<p>For use by the Architect:</p> <p><input type="checkbox"/> Recommended <input type="checkbox"/> Recommended as Noted</p> <p><input type="checkbox"/> Not Recommended <input type="checkbox"/> Received too late</p> <p><input type="checkbox"/> Insufficient data received</p> <p>By _____</p> <p>Date _____</p>	<p>For use by the Owner:</p> <p><input type="checkbox"/> Approved</p> <p><input type="checkbox"/> Not Approved</p> <p><input type="checkbox"/> Approved as noted</p> <p>By _____</p> <p>Date _____</p>
--	--

Product Substitution Information

Fill in blanks below:

- A. Does the substitution affect dimensions shown on Drawings?
Yes _____ No _____ If yes, clearly indicate changes.

- B. Will the undersigned pay for changes to the building design, including engineering and detailing costs caused by the requested substitutions?
Yes _____ No _____ If no, fully explain:

- C. What effect does substitution have on other Contracts or other trades?

- D. What effect does substitution have an construction schedule?

- E. Manufacturer's warranties of the proposed and specified items are:
_____ Same _____ Different. If different, fully explain:

- F. Reason for Request:

- G. Itemized comparison of specified item(s) with the proposed substitution; list significant variations:

- H. This substitution will amount to a credit to the Owner of:
_____ dollars (\$ _____)

- I. Designation of maintenance services and sources:

- J. Attachments: (Attach additional sheets if required.)

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Closeout procedures.
 - a. Substantial Completion
 - b. Final Cleaning
 - c. Adjusting
 - d. Final Completion
 - 2. Project Record Documents
 - 3. Closeout Submittal
 - 4. Final Change Order
 - 5. Final Application for Payment
- B. Related Sections
 - 1. Section 01 29 00 – Payment Application Procedures
 - 2. Section 01 50 00 – Temporary Facilities and Controls: Progress Cleaning and Waste Removal

1.2 CLOSEOUT PROCEDURES

- A. Substantial Completion
 - 1. At such time that the project is considered substantially complete the Contractor shall request, in writing, that a substantial completion inspection be scheduled.
 - 2. If the contract work is deemed to be substantially complete the contractor shall receive a certification of substantial completion with, if applicable, a list of deficient items yet to be completed. **AIA Document G704 “Certification of Substantial Completion”** is to be issued unless another standard form is required by the Owner.
 - 3. The Owner will occupy all of the building as specified in Section 01 11 00 – Summary of Work.
- B. Final Cleaning
 - 1. Execute final cleaning prior to final project acceptance.
 - 2. Clean interior and exterior surfaces and finishes soiled by construction work. Replace any materials or finishes unable to be cleaned to its original condition.
 - 3. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
 - 4. Clean debris from roofs, gutters, downspouts and interior roof drainage systems.
 - 5. Clean site, sweep paved areas, rake clean landscaped surfaces.
 - 6. Remove waste and surplus materials, rubbish and construction facilities from site.
- C. Adjusting

PROJECT CLOSEOUT REQUIREMENTS
SECTION 01 70 00

1. Adjust operating products and equipment to ensure smooth and unhindered operation.
- D. Final Completion
1. Upon completion of the specific requirements set forth during the Substantial Completion Inspection and all other requirements of the contract documents, the Contractor shall submit written certification (on Contractor's letterhead) that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with contract requirements and is ready for the Architect's review.
 2. Schedule a final walk-thru inspection with the Architect and Owner.

1.3 FINAL SUBMITTALS

- A. Project Record Documents
1. Project Record Documents include the following:
 - a. Drawings
 - b. Specifications.
 - c. Addenda.
 - d. Change Orders and other modifications to the Contract.
 - e. Reviewed Shop Drawings, Product Data and Samples.
 - f. Manufacturer's Instruction for assembly, installation, and adjusting.
 2. Maintain on site, one (1) set of the above record documents; record actual revisions to the Work.
 3. Ensure entries are complete and accurate, enabling future reference by Owner.
 4. Store record documents separate from documents used for construction.
 5. Record information concurrent with construction progress.
 6. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 - a. Manufacturer's name and product model and number.
 - b. Product substitutions or alternates utilized.
 - c. Changes made by Addenda and modifications.
 7. Record Documents and Shop Drawings: Legibly mark each item to record actual construction including:
 - a. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - b. All modifications, additions, deletions, etc. to construction which are at variance with or in addition to the information shown on the original drawings.
 - c. All modifications, additions, deletions, etc. to utilities, pipes, conduits, etc. for all site work and construction which are at variance with or in addition to the information shown on the original drawings.
 - d. Field changes of dimension and detail.
 - e. Details not on original Contract drawings.
 8. Upon completion of the work and as a prerequisite to Final Payment, the Contractor shall submit to the Architect one (1) set of drawings showing all exact and appropriate information as noted above.

1.4 CLOSEOUT SUBMITTAL

- A. Submittal Format:
1. Submit data bound in 8-1/2 x 11 inch (A4) text pages, three D side ring binders with durable plastic covers.
 2. Prepare binder cover with printed title "CLOSEOUT DOCUMENTS", title of project, and subject matter of binder when multiple binders are required.
 3. Internally subdivide binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
 4. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
 5. Contents: Prepare Table of Contents for each volume, with each product or system description identified, typed on white paper, in three parts as follows:
 - a. **Part 1**: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, Subcontractors, and major equipment suppliers.
 - b. **Part 2**: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
 - 1) List of equipment.
 - 2) Parts list for each component.
 - 3) Operating instructions.
 - 4) Maintenance instructions for equipment and systems.
 - 5) Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
 - c. **Part 3**: Project documents and certificates, including the following:
 - 1) Project Record Documents as enumerated previously in this Section.
 - 2) Certificates.
 - 3) Originals of system and product warranties and bonds.

1.5 FINAL CHANGE ORDER

- A. Prior to submitting for final payment, if applicable to the contract, a "reconciliation" change order will be issued adjusting Unit Price quantities and any pending time extensions.
- B. Upon execution of the final change order, the final application for payment may be prepared.

1.6 FINAL APPLICATION FOR PAYMENT

- A. Submit final Application for Payment identifying the total adjusted Contract Sum, previous payments, and sum remaining due. Refer to Section 01 29 00 – Payment Application Procedures regarding application preparation.

PROJECT CLOSEOUT REQUIREMENTS
SECTION 01 70 00

- B. Attach to the final Application for Payment the following documents
1. *'Contractor's Affidavit of Payment of Debts and Claims'* – **AIA Document G706 (current edition)**.
 2. *'Contractor's Affidavit of Release of Liens'*– **AIA Document G706A (current edition)**
 3. *'Consent of Surety to Final Payment'* – **AIA Document G707 (current edition)**
- C. Printed (Copyrighted) Documents: One of each of the above forms (**AIA 706, 706A and 707**) must be prepared on an original document with a red label. The completed original application may be copied as required prior to signing and sealing.
- D. Forms may be purchased on-line directly from the AIA. Link to the following:
<https://documentsondemand.aia.org/>.
- E. Electronic Documents: An electronic version of the AIA Documents must be produced under licensed agreement from the American Institute of Architects and may be photocopied as required prior to signing and sealing.
- F. Electronic (scanned) copies, computer reproductions, or photocopies of authentic documents will not be accepted

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes: Break up and remove all deteriorated, cracked, loose or spalled concrete. All exposed rusted steel reinforcement shall be treated prior to patching. All voids shall be patched with polymer modified cementitious repair compound to provide level surfaces and/or positive drainage.
- B. Related Sections:
 - 1. Section 03 30 00: Epoxy Injection in Concrete.
 - 2. Section 07 90 03: Expansion Joint Repair
 - 3. Section 09 01 70: Pressure Washing and Cleaning.

1.02 PERFORMANCE REQUIREMENTS

- A. Provide only polymer modified cementitious repair compound that is compatible with either the interior or exterior joint sealants abutting the affected areas of repair.

1.03 SUBMITTALS

- A. Refer to DIVISION 1, Section 01 33 00 for submittal procedures and qualification requirements.
- B. Product Data: Submit manufacturer's most current technical product data indicating product testing results and compliance as indicated.
- C. Samples: Submit samples as required by the Project Manager.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Installer of polymer modified cementitious repair compound will be authorized by manufacturer with at least five years successful experience with the application of polymer modified cementitious repair compound on restoration projects of similar type and nature.
- B. Source Limitations: Obtain polymer modified cementitious repair compound through one source from a single manufacturer.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, handle and protect all products in accordance with DIVISION 1, Section 01 60 00, Product Requirements.
- B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.

- C. Deliver polymer modified cementitious repair compound materials in manufacturer's original, unopened, undamaged containers with identification labels clearly shown.
- D. Store and protect material containers from harmful weather conditions as recommended by the manufacturer. Protect from damage during construction and while stored onsite.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements: Verify surfaces, substrates and ambient air temperature at project site before, during and after application to assure compliance with manufacturer's recommendations. Surfaces shall be dry at time of installation.
 - 1. Weather Conditions: In accordance with manufacturer's instructions, do not apply polymer modified cementitious compound in rain, fog or mist or when such conditions are expected. Allow surfaces to attain dry conditions as recommended by the manufacturer before application.
 - 2. Compliance: Follow manufacturer's specific safety, health and environmental recommendations per most recent Material Safety Data Sheets, technical bulletins and instructions. Handle all solvents in compliance with EPA, OSHA and VOC requirements regarding health and safety standards.

1.07 WARRANTY

- A. Provide a one year warranty on all workmanship.
- B. Provide the maximum labor and material warranty available from the manufacturer of the selected product.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Product Options and Substitutions: Since the type of repair compound varies according to the size and location of the area to be repaired, the manufacturer must be consulted prior to the selection and application of the material to ensure that each compound is particularly suitable for the purpose intended. The Contractor is required to submit technical literature from the selected manufacturer which specifies the preferred repair compound for each different type and size of repair (e.g. overhead, vertical, horizontal, minor damage, moderate damage, severe damage, etc).
- B. Acceptable manufacturers:
 - 1. Sika
 - 2. Thoro
 - 3. MasterBuilders
 - 4. Sto

5. Tamms
6. Mameco Vulkem 2300 This Patch
7. Euclid Thin-Top Supreme
8. Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.

2.02 RELATED MATERIALS

- A. The Contractor will ensure that all polymer modified cementitious repair compound is compatible with existing and new material abutting the area of repair including sealants and caulking compounds and other waterproofing materials.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Comply with manufacturer's most recently published product data, including installation instructions, substrate testing, and surface preparation and cleaning and post installation testing.

3.02 EXAMINATION

- A. Verify area to be repaired and substrate conditions are acceptable for application of polymer modified cementitious repair compound in accordance with the manufacturer's instructions.
 1. General: Determine acceptable removal techniques for contaminants harmful to polymer modified cementitious repair compound performance, such as dust, dirt, grease, oils, curing compounds, form release agents, laitance, and previous films or water repellent materials. Prepare all surfaces in accordance with manufacturer's instructions. All surfaces must be clean, dry, frost free, and dust free.

3.03 PREPARATION

- A. If concrete must be stripped to a bare surface, completely remove all extraneous surface materials including paint, carpet, carpet glue, stain, waterproof membranes, tile, clear sealers, epoxies, skim patches, or any other material that may impede the proper application of repair materials, corrosion inhibitor or deck coatings.
- B. Remove all spalled or loose concrete by mechanical means. Do not remove sound concrete. Shoulder areas to 3/8" (three eighths of one inch). Existing exposed reinforcing bars at the demolition areas shall be free of rust, grease, or dirt by sandblasting or other mechanical means. Any reinforcing bar that is exposed by 1/2 or more of the circumference shall have the concrete removed from around the bar to a minimum distance of 3/4" (three quarter of one inch). Where a bar has lost more than 25% of its original bar diameter due to corrosion, a new bar will be

spliced in accordance with ASCI 318. All new reinforcing bar will be epoxy coated, grade 60 deformed per ASTM A625

- C. Clean the area to be resurfaced. Roughen, scarify or brush-hammer the area to be floated, removing all loose material and surface contaminants such as oil, grease, rust, form release agents, etc. Thoroughly dampen the repair area, removing any standing water prior to application.
- D. Protect adjacent work areas and finished surfaces from damage during installation of polymer modified cementitious repair compound.

3.04 APPLICATION

- A. Immediately after cleaning reinforcing bar, apply a corrosion inhibitor and/or a bonding agent as recommended by the selected product manufacturer. Forms shall be used where necessary to facilitate proper shaping and consolidation of the reinforcing bar compounds (maintain formwork construction tolerance complying with ACI 347). Treat all exposed surfaces within the repair area with a bonding agent according to the manufacturer's specifications.
- B. Apply a suitable type and mix of polymer modified cementitious repair compound as recommended by the product manufacturer for each type and location of repair. The repair compound shall have a compressive strength of 6,000 PSI in 28 days and a bond strength of 2,000 PSI in 28 days. The compound shall be placed and consolidated to form a smooth, dense repair. Match surrounding color and texture as closely as possible. Compound shall be mixed and applied in accordance with the manufacturer's specifications.
- C. Mix liquid polymer and dry powder (or latex and microsilica modified cementitious mortar) in a clean container as specified in the manufacturer's to achieve maximum workability for the application. Brush, scrub or squeegee the resurfacing compound into the pre-dampened repair area. Level the material with a straight edge and allow the material to stiffen. Finish to match surrounding concrete surfaces. Where surfaces are considered to be porous, prime the repair area with a slurry coat prior to the application of a finish coat.

3.05 FIELD QUALITY CONTROL

- A. Where required by the Project Manager, provide manufacturer's field service consisting of periodic site visits by manufacturer or their distributor representative for observation of application of polymer modified cementitious repair compound.
- B. The Owner reserves the right to complete recommended testing required by the manufacturer at the completion of the work to assure warranty requirements and contract compliance are met.

3.06 SPECIAL REQUIREMENTS

- A. If, in the process of demolition, it is considered in the opinion of the Contractor that an area of repair is structurally unsound and the extent of repair may be significantly larger than anticipated by the Owner, the condition in question shall be brought to the attention of the Owner and his representatives. The Owner, following his inspection and the receipt of recommendations from his representatives and consultants, will determine the subsequent procedure(s).
- B. Cementitious repair compound shall be applied in full accordance with the manufacturer's recommendations. Do not exceed 1" (one inch) in thickness. Manufacturer's representative is required to inspect all completed applications prior to the application of clear, penetrating sealer.
- C. A 25 (twenty five) square foot test section must be executed at an area designated by the Owner for approval prior to proceeding with the work.

END OF SECTION

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes: Using epoxy injection to restore structural integrity in static cracks in concrete slabs and supporting columns and beams.
- B. Related Sections: None

1.02 PERFORMANCE REQUIREMENTS

- A. Provide and inject epoxy resin into static cracks in concrete slabs, columns and beams as directed by the Owner and/or his representatives, as an alternative to patching with urethane or silicone sealants. Materials shall be compatible with other materials abutting the affected areas of repair.

1.03 SUBMITTALS

- A. Refer to DIVISION 1, Section 01 33 00 for submittal procedures and qualification requirements.
- B. Product Data: Submit manufacturer's most current technical product data indicating product testing results and compliance as indicated.
- C. Samples: Submit samples as required by the Project Manager.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Installer of epoxy resin will be authorized by manufacturer with at least five years successful experience with the application of epoxy resin on restoration projects of similar type and nature.
- B. Source Limitations: Obtain epoxy resin through one source from a single manufacturer.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, handle and protect all products in accordance with DIVISION 1, Section 01 60 00, Product Requirements.
- B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- C. Deliver epoxy resin in manufacturer's original, unopened, undamaged containers with identification labels clearly shown.

- D. Store and protect material containers from harmful weather conditions as recommended by the manufacturer. Protect from damage during construction and while stored onsite.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements: Verify surfaces, substrates and ambient air temperature at project site before, during and after application to assure compliance with manufacturer's recommendations. Surfaces shall be dry at time of installation.
 - 1. Weather Conditions: In accordance with manufacturer's instructions, do not apply epoxy resin when weather conditions are not within the manufacturer's prescribed limits or when such conditions are expected. Allow surfaces to attain dry conditions as recommended by the manufacturer before application.
 - 2. Compliance: Follow manufacturer's specific safety, health and environmental recommendations per most recent Material Safety Data Sheets, technical bulletins and instructions. Handle all solvents in compliance with EPA, OSHA and VOC requirements regarding health and safety standards.

1.07 WARRANTY

- A. Provide a five year warranty on all workmanship.
- B. Provide a five year manufacturer's labor and material warranty.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Product Options and Substitutions: Since the extent of repair varies according to the location of the area to be repaired, the manufacturer must be consulted prior to the selection and application of the material to ensure that it is particularly suitable for the purpose intended.
- B. Acceptable manufacturers:
 - 1. Injection resin:
 - a. Sikadur 52
 - b. Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.
 - 2. Buttering compound:
 - a. Sikadur 31

- b. Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.

2.02 RELATED MATERIALS

- A. The Contractor will ensure that all epoxy resin is compatible with existing and new material abutting the area of repair including sealants and caulking compounds and other waterproofing materials.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Comply with manufacturer's most recently published product data, including installation instructions, substrate testing and surface preparation and cleaning and post installation testing.

3.02 EXAMINATION

- A. Verify area to be repaired and substrate conditions are acceptable for epoxy injection in accordance with the manufacturer's instructions.
 - 1. General: Determine acceptable removal techniques for contaminants harmful to epoxy resin, such as dust, dirt, grease, oils, curing compounds, form release agents, laitance, and previous films or water repellent materials. Prepare all surfaces in accordance with manufacturer's instructions. All surfaces must be clean, dry, frost free, and dust free.

3.03 PREPARATION

- A. Rout out or cut out, using electric saws or grinders, all static cracks to a minimum depth of 1/4" (one quarter inch). Holes shall be drilled along the length of the crack, 6" to 12" (six inches to twelve inches) apart with diameters to correspond with injection posts (approximately 1/2") and to a depth of 1/2" to 3/4" (one half inch to three quarters of an inch). Thoroughly clean the crack with pressurized air or water and allow to dry. Blow out all dust, loose particles and other debris using oil-free and moisture-free compressed air.

3.04 APPLICATION

- A. Insert injection posts until flush with the surface of surrounding concrete. Seal the crack and injection posts with hi-mod epoxy gel to a width of 1/2" (one half inch) on either side of the crack. Allow the gel to cure and harden in accordance with the manufacturer's specifications.
- B. Inject low viscosity adhesive epoxy resin through the injection posts until the crack is full. The injection posts shall be sealed as the resin fills the length of the crack.

Allow the resin to cure for no less than 24 hours. Remove the epoxy gel and injection posts by heat scraping and mechanical grinding to leave a finish that matches the surrounding concrete as closely as possible.

3.05 FIELD QUALITY CONTROL

- A. Where required by the Project Manager, provide manufacturer's field service consisting of periodic site visits by manufacturer or their distributor representative for observation of epoxy resin injection.
- B. The Owner reserves the right to complete recommended testing required by the manufacturer at the completion of the work to assure warranty requirements and contract compliance are met.

3.06 SPECIAL REQUIREMENTS

- A. The purpose of using epoxy injection is primarily to restore structural integrity to static cracks. Larger cracks, or dynamic cracks, should be brought to the attention of the Owner and/or his representatives prior to selecting a method of repair. Dynamic cracks may require a flexible joint filler such as a urethane sealant, and where necessary, the installation of backer rod.

END OF SECTION

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes: Repair, Repointing (Tuckpointing) Brick Masonry.
- B. Related Sections: Section 09 01 70: Pressure Washing.

1.02 PERFORMANCE REQUIREMENTS

- A. Repoint (place) plastic mortar into cut or raked joints to correct defective mortar joints in brick masonry. For the purposes of this specification, the term “tuckpointing” shall be synonymous with the term, “repointing.” Conditions requiring repointing may include: (1) mortar erosion of more than 6 mm, (2) crumbling mortar, (3) hairline cracks in the mortar, and (4) cracks between the brick and mortar.

1.03 SUBMITTALS

- A. Refer to DIVISION 1, Section 01 33 00 for submittal procedures and qualification requirements.
- B. Product Data: Submit manufacturer’s most current technical product data for plastic mortar.
- C. Samples: Submit samples or manufacturer’s information as required by the Project Manager.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Contractor will have at least five years successful experience in tuckpointing masonry on restoration projects of similar type and nature. The Contractor selected should be skilled in:
 - 1. Cutting out mortar joints to the proper depth and profile with minimal damage to adjacent brick units.
 - 2. Proper preparation of the mortar for repointing.
 - 3. Proper placement of mortar by layering, compacting and tooling.
 - 4. Accurate color matching to adjacent, original mortar joints.
- B. The selected repointing Contractor shall repoint an inconspicuous section of the brick masonry for evaluation by the Owner and/or his designated representatives, prior to beginning the work.
SECTION 04 01 00

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, handle and protect all products in accordance with DIVISION 1, Section 01 60 00, Product Requirements.

- B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- C. Deliver materials undamaged, with identification labels clearly shown.
- D. Store and protect materials from damage during construction and while stored onsite.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements: Follow manufacturer's specific safety, health and environmental recommendations per most recent Material Safety Data Sheets, technical bulletins and instructions. Handle all materials in compliance with EPA and OSHA requirements regarding health and safety standards.

1.07 WARRANTY

- A. Provide a minimum five year warranty on all workmanship.
- B. Provide a five year manufacturer's labor and material warranty on all installed mortar.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Product Options and Substitutions: Since the scope of work varies according to the location of the area to be repaired and restored, the mortar manufacturer must be consulted prior to the selection and application of the material to ensure that it is particularly suitable for the purpose intended.
- B. To avoid irreparable damage to the brick, the compressive strength of the repointing mortar shall be similar to, or weaker than, the compressive strength of the original mortar. Under load, a stronger repointing mortar will deform less than the original weaker mortar, causing the load to be concentrated on the thin strip of repointing mortar, and leading to spalling of the brick face. Use only top grade repointing mortar.
- C. For most repointing operations envisioned under this specification, repointing mortar will be Type N, O or K mortar. The proportions of Portland cement and lime for Types N and O mortars should be in accordance with ASTM C 270 Standard Specification for Mortar for Unit Masonry or BIA MI-88. Type K mortar proportions are no longer included in the body of ASTM C 270 but are given in an appendix on repointing.
- D. Mortar specifications permit a range of proportions of materials for each type of mortar. However, typical proportions by volume are the following:
 - 1. Type N: 1 part portland cement, 2 parts hydrated lime, 6 parts sand.
 - 2. Type O: 1 part portland cement, 2 parts hydrated lime, 9 parts sand.
 - 3. Type K: 1 part portland cement, 4 parts hydrated lime, 15 parts sand.

2.02 RELATED MATERIALS

- A. Water for repointing mortar should be clean and potable and free of deleterious amounts of acids, alkalies or organic materials.
- B. In some cases, it may be necessary to match sand gradation with the original mortar. For example gauged brick masonry with thin mortar joints may require sand with finer maximum particle size than permitted by ASTM C 144 Standard Specification for Aggregate for Masonry Mortar. A matching gradation may be determined by analysis of the original mortar.
- C. In general, the use of chemical additives should be avoided in repointing mortar.
- D. Pigments used to color mortar to match existing mortar should be metallic oxides and not organic chemicals. Coloring additives may be added to the mix not to exceed the percent by weight of the cement in the mix.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Comply with manufacturer's most recently published product data, including surface preparation, cleaning and installation instructions.

3.02 EXAMINATION

- A. Verify areas to be repointed through visual observation and light scrapping with a metal tool to detect cracked, spalled and crumbly mortar joints. On older buildings, cleaning by light or moderate pressure water wash (not grit or chemical wash) may be required to evaluate the condition of mortar joints. It must be stressed that the purpose of the washing is not to achieve a "new looking" building.

3.03 PREPARATION

- A. Cut out and remove all loose, cracked, spalled and crumbly mortar joints. Clean out joints with light air pressure and/or stiff brushing. Where necessary, as cited above, and without causing water intrusion, pressure wash deteriorated areas as indicated in Section 09 01 70, Pressure Washing to fully reveal the extent of damage and deterioration.
- B. The depth of mortar removal should equal or exceed two times the mortar joint thickness.

3.04 APPLICATION

- A. Repointing mortar should be mixed and placed in accordance with the procedures given in Technical Notes 7F and the repointing index of ASTM C 270.
- B. Prehydration of the repointing mortar is a very important step in the process, as prehydration helps avoid excessive shrinkage of the repointing mortar.

- C. Proper layering and compaction of the repointing mortar is critical to the success of repointing by helping to develop a bond with the adjacent brick and mortar.

3.05 FIELD QUALITY CONTROL

- A. The Owner reserves the right to complete recommended testing at the completion of the work to assure warranty requirements and contract compliance are met.

3.06 SPECIAL REQUIREMENTS

- A. If the Contractor uncovers areas of excessive deterioration, beyond the envisioned scope of work, or beyond the repair and replacement capabilities of the Contractor, he shall stop work and inform the Owner immediately.
- B. Additional assistance and recommendations on repointing masonry, particularly on buildings of historical significance, are available through the Brick Institute of America and the Masonry Advisory Council, 1480 Renaissance Drive, Suite 302, Park Ridge, Illinois 60068, Telephone 847/207-6704.

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes: Removal and replacement of metal handrails.
- B. Related Sections: None

1.02 PERFORMANCE REQUIREMENTS

- A. Remove deteriorated metal handrails and replace with new materials along walkways, stairways, balconies and other locations designated by the Owner.

1.03 SUBMITTALS

- A. Refer to DIVISION 1, Section 01 33 00 for submittal procedures and qualification requirements.
- B. Product Data: Submit manufacturer's most current technical product data indicating product testing results and compliance as indicated.
- C. Samples: Submit samples as required by the Project Manager.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Installer of metal handrails will be authorized by manufacturer with at least five years successful experience with the removal and replacement of metal handrails on restoration projects of similar type and nature.
- B. Source Limitations: Obtain metal handrails through one source from a single manufacturer.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, handle and protect all products in accordance with DIVISION 1, Section 01 60 00, Product Requirements.
- B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- C. Deliver metal handrails in manufacturer's original, unopened, undamaged containers with identification labels clearly shown.
- D. Store and protect material containers from harmful weather conditions as recommended by the manufacturer. Protect from damage during construction and while stored onsite.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements: Verify surfaces, substrates and ambient air temperature at project site before, during and after application to assure compliance with manufacturer's recommendations for grout and sealant used in installing handrails. Surfaces shall be dry at time of installation.
 - 1. Weather Conditions: In accordance with manufacturer's instructions, do not apply grout and sealant when weather conditions are not within manufacturer's prescribed limits or when such conditions are expected. Allow surfaces to attain dry conditions as recommended by the manufacturer before application.
 - 2. Compliance: Follow manufacturer's specific safety, health and environmental recommendations per most recent Material Safety Data Sheets, technical bulletins and instructions. Handle all solvents in compliance with EPA, OSHA and VOC requirements regarding health and safety standards.

1.07 WARRANTY

- A. Provide a one year warranty on all workmanship.
- B. Provide a twenty year warranty on the entire system.
- C. Provide a five year manufacturer's labor and material warranty on sealant.
- D. Provide the maximum material warranty available from the manufacturer on non-shrink grout.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Product Options and Substitutions: Since the extent of replacement and the method of attaching, anchoring and sealing stanchions varies according to the location of the handrail to be replaced, the manufacturer must be consulted prior to the selection and application of materials to ensure that they are particularly suitable for the purpose intended.
- B. Acceptable Manufacturer:
 - 1. Polymer modifiers and/or epoxies: Per Section 03 01 00, Concrete Restoration.
 - 2. Non-shrink grout:
 - a. Thoro Thorogrip
 - b. Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.

3. Sealant – One or twopart urethane, non-sag:
 - a. Sika Sikaflex 1-a or 2-c.
 - b. Mameko Vulkem 116or 922
 - c. Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.
4. Handrail System: No proprietary system listed.

2.02 RELATED MATERIALS

- A. The Contractor will ensure that all grout and sealant is compatible with existing and new material abutting the area of repair and replacement including other sealants and caulking compounds and other waterproofing materials.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Comply with manufacturer's most recently published product data, including installation instructions, substrate testing and surface preparation and cleaning and post installation testing.

3.02 EXAMINATION

- A. Verify areas at stanchion locations are acceptable for proper replacement installation in accordance with the handrail manufacturer's instructions.
 1. General: Determine acceptable removal techniques for contaminants harmful to grout and sealant, such as dust, dirt, grease, oils, curing compounds, form release agents, laitance, and previous films or water repellant materials. Prepare all surfaces in accordance with manufacturer's instructions. All surfaces must be clean, dry, frost free, and dust free.

3.03 PREPARATION

- A. After removing existing deteriorated handrail, thoroughly clean and repair all locations at which new stanchions will be anchored, using polymer modified cementitious repair compound or epoxy material as recommended for the conditions by the manufacturer of the handrail and the repair compounds.
- B. At locations at which handrail supports will be anchored into masonry, stucco, wood, C.M.U.s, or other non-concrete materials, clean out anchor locations and repair as required to accept stainless steel fasteners and anchors and provide solid support.

3.04 APPLICATION

**REPLACE METAL HANDRAILS
SECTION 05 52 01**

- A. Where handrail stanchions are embedded, fill the void around the base with non-shrink grout to the finished floor level, then apply a cant bead of urethane sealant around the perimeter of the stanchion at the junction of metal to masonry. In locations at which stanchion bases are surface mounted using a metal base plate assembly, encapsulate bolts in urethane sealant and seal around the base plate at the junction of metal to masonry. Install sealant at recommended depth-to-width ratio for each application and apply in full accordance with the manufacturer's specifications.

- B. At locations at which handrail supports will be anchored into masonry, stucco, wood, C.M.U.s, or other non-concrete materials, stainless fasteners shall be embedded in sealant. Apply a bead of sealant around all anchor plates and anchoring devices.

END OF SECTION

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes: Repair of exterior wood and timber members including wood decking, wood fascia, wood siding, wood trim, decorative wood assemblies and wood frames employed as backing and/or framing for other materials.
- B. Related Sections: Section 09 01 70: Pressure Washing.

1.02 PERFORMANCE REQUIREMENTS

- A. Provide and install replacement wood and timber members to properly repaired and cleaned locations and restore the surface appearance to match the surrounding untouched areas.

1.03 SUBMITTALS

- A. Refer to DIVISION 1, Section 01 33 00 for submittal procedures and qualification requirements.
- B. Product Data: Submit manufacturer's most current technical product data for pressure treated wood.
- C. Samples: Submit samples as required by the Project Manager.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Contractor will have at least five years successful experience with the replacement of wood and timber members on restoration projects of similar type and nature.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, handle and protect all products in accordance with DIVISION 1, Section 01 60 00, Product Requirements.
- B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- C. Deliver materials undamaged, with identification labels clearly shown.
- D. Store and protect materials from damage during construction and while stored onsite.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements: Follow manufacturer's specific safety, health and environmental recommendations per most recent Material Safety Data Sheets, technical bulletins and instructions. Handle all materials in compliance with EPA and OSHA requirements regarding health and safety standards.

1.07 WARRANTY

- A. Provide a minimum two year warranty on all workmanship.
- B. Provide a five year manufacturer's labor and material warranty on all installed lumber.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Product Options and Substitutions: Since the scope of work varies according to the location of the area to be repaired and restored, the lumber manufacturer must be consulted prior to the selection and application of the material to ensure that it is particularly suitable for the purpose intended.
- B. Use only top grade pressure treated lumber.

2.02 RELATED MATERIALS

- A. The Contractor will ensure that all primer, sealer and finish coat material is compatible with applicable chemical treatment of the new material, including sealants and caulking compounds and other waterproofing materials.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Comply with manufacturer's most recently published product data, including surface preparation, cleaning, priming and installation instructions.

3.02 EXAMINATION

- A. Verify area to be repaired and replaced are acceptable for application of intended materials in accordance with the manufacturer's instructions.

3.03 PREPARATION

- A. Where possible, and without causing water intrusion, pressure wash deteriorated areas as indicated in Section 09 01 70, Pressure Washing to fully reveal the extent of damage and deterioration. Remove deteriorated, rotten, split, curled or otherwise damaged 2x4 or 2x6 deck members, 1x2, 1x4 and other dimensioned trim and fascia boards, wood framing members and supporting joists and wall studs.

- B. Remove all deteriorated wood without disturbing or damaging underlying, supporting members (e.g. undamaged runners, joists, studs, beams, etc.).

3.04 APPLICATION

- A. Replace all deteriorated wood with matching, pressure treated materials to make an exact fit. Use stainless steel #10-3" deck screws on wood decks. Use appropriate, treated nails in supporting members, fascia, trim and siding.
- B. Partially split deck boards that do not need to be replaced shall be repaired using exterior glue and deck screws. Partially curled decking shall be fastened using stainless steel #10-3" screws as listed above (pre-drill).
- C. Remove all rusted nails and screws and replace with stainless steel deck screws as listed above. Re-set nails and screws that are deemed to be in good condition. Add screws to holes or voids where missing.
- D. On occupied decks, sand rough ends and uneven joints to create an even surface.

3.05 FIELD QUALITY CONTROL

- A. The Owner reserves the right to complete recommended testing required by the manufacturer at the completion of the work to assure warranty requirements and contract compliance are met.

3.06 SPECIAL REQUIREMENTS

- A. If the Contractor uncovers areas of excessive deterioration, beyond the envisioned scope of work, or beyond the repair and replacement capabilities of the Contractor, he shall stop work and inform the Owner immediately.

END OF SECTION

PART 1 – GENERAL

1.01 SUMMARY

- A. Surface preparation and field application of elastomeric acrylic roof coatings for use over new and existing granule surfaced modified bitumen, Single-ply, Metal roofing, flashings and metal fabrications as indicated on the drawings

- B. Related Sections:
 - 1. Section 03 01 00 – Concrete Restoration
 - 2. Section 07 01 90 – Joint Sealant
 - 3. Section 07 62 00 - Sheet Metal Flashing and Trim.
 - 4. Section 09 01 70 - Pressure Washing and Cleanin
 - 5. Section 09 91 13: Painting and Coating Exterior Walls, Ceilings and Soffits.

1.02 PERFORMANCE REQUIREMENTS

- A. Provide labor, materials, equipment and supervision necessary to install elastomeric acrylic roof coating system as outlined in this specification to restore and extend the service life of the roof system. The manufacturer's application instructions and product data sheets for each product used are considered part of these specifications and should be followed at all times.

1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM C501 Standard Test Methods of Sampling and Chemical Analysis of Alkaline Detergents
 - 2. ASTM D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension
 - 3. ASTM D1475 Standard Test Method For Density of Liquid Coatings, Inks, and Related Products
 - 4. ASTM D2240 Durometer Hardness
 - 5. ASTM D2370 Properties of Organic Coatings
 - 6. ASTM G-21 Mildew & Fungi Resistance
 - 7. ASTM D522 Low Temperature Flexibility
 - 8. ASTM D794 Effect of Heat on Plastics
 - 9. Fed TTP-555B Wind Driven Rain

10. ASTM E108 Fire Test of Roof Coverings
11. ASTM D1653 Water Vapor Transmission of Materials
12. ASTM G23 Practice for Operating Light- and Water-Exposure Apparatus (Xenon Arc Type) for Exposure of Nonmetallic Materials
13. ASTM D6083 Standard Specification for Liquid Applied Acrylic Coatings
14. ASTM C1549 Solar Reflectance at Near Ambient Temperature Using a Portable Solar Reflectometer
15. ASTM C1371 Emittance of Materials at Near Room Temperature Using Portable Emissometers
16. ASTM 624 Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
17. FM 4470 Standard for Class 1: Interior Fire Resistance, Exterior Spread Of Flame, Windstorm Uplift, Hail Damage, Resistance to Foot Traffic, and Susceptibility to Leakage
18. UL790 Standard Test Methods for Fire Tests of Roof Coverings (Combustible and non-combustible decks)

1.04 SUBMITTALS

- B. Refer to DIVISION 1, Section 01 33 00 for submittal procedures and qualification requirements.
- C. Product Data: Submit manufacturer's most current technical product data indicating product testing results and compliance as indicated.
- C. Samples: Submit samples as required by the Project Manager.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Installer of sealants will be authorized by manufacturer with at least five years successful experience with the application of sealants on restoration projects of similar type and nature.
- B. There shall be no deviation made from the Project Specification or the approved shop drawings without prior written approval by the Owner
- C. The Applicator must check wet film thickness during the application of the coatings to ensure achievement of specified coverage rates.

- D. Source Limitations: Obtain sealants through one source from a single manufacturer.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, handle and protect all products in accordance with DIVISION 1, Section 01 60 00, Product Requirements.
- B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- C. Deliver sealants in manufacturer's original, unopened, undamaged containers with identification labels clearly shown.
- D. Store and protect material containers from harmful weather conditions as recommended by the manufacturer. Protect from damage during construction and while stored onsite.

1.07 PROJECT CONDITIONS

- A. The Owner's Representative and Applicator shall determine the condition of the roof system. Deteriorated decking, deteriorated materials, or wet decking/materials are to be removed and replaced.
- B. Spring scale peel adhesion tests are required when the substrate is unknown and recommended on previously coated roofs. The Applicator must conduct the spring scale peel adhesion test prior to bid to verify the adhesion of the roof coating to the substrate. Submit peel adhesion test findings to Owner, Architect and manufacturer.
- C. The Applicator shall:
 - 1. Survey the roof to determine areas where water ponds for 72 hours or more and employ methods to eliminate such ponded water conditions.
 - 2. Verify that all drain lines are connected and in good working order before starting work. Drains that are not connected or are not functioning properly shall be reported in writing to the Owner's Representative and/or design professional.
 - 3. Take necessary measures to protect unrelated work and other adjacent surfaces from overspray and spillage.
 - 4. Take necessary precautions when using roof coatings and accessories around air in-takes. The smell of the roof coatings and accessories may be a disturbance to the building owner and occupants. It is the Applicator's responsibility to notify the Owner and take the proper precautions.
 - 5. Follow all safety regulations as required by OSHA and any other applicable authority having jurisdiction.
 - 6. Take precautions to avoid overloading the roof or building structure.
 - 7. Protect the installed roof coating system and coordinate with other trades and building occupants to avoid construction traffic or equipment storage on newly installed roof coating system. The Applicator must provide all

necessary temporary protection and barriers to segregate the work area and to prevent damage. Any damage that occurs to the roof coating system is to be brought to the attention of the Owner's Representative and/or design professional and manufacturer. All damage is to be repaired according to manufacturer's recommendations. The party responsible for damage shall bear the cost of repairs.

- D. The minimum recommendations for roof coating usage are for ideal conditions. The number of gallons per square may need to increase due to uneven application, rough surface texture, wind conditions while spraying and/or other variables.
- E. Proceed with the roof coating system application only after substrate preparation is complete. Substrate must be clean, dry, structurally sound and properly prepared, the ambient temperature must be 50°F (10°C) and rising, and do not apply the roof coating system if weather conditions will not permit proper drying of the roof coating system prior to exposure to precipitation or freezing temperatures.
- F. The roof coating system shall be fully bonded to the substrate on which it is applied. Voids left under the system are not acceptable and must be repaired.
- G. If any unusual or concealed condition is discovered, stop work and notify the Owner's Representative and/or design professional and manufacturer immediately, in writing.
- H. All waste material (e.g. empty containers of coating and other accessories) shall be removed from the site by the Applicator and properly transported to a legal dumping area authorized to receive such material.
- I. All new and temporary construction, including equipment, material and accessories, shall be secured in such a manner, at all times, as to preclude wind blow-off or damage.
- J. Site cleanup, including both interior and exterior building areas in any way affected by the construction, shall be complete and to the Owner's satisfaction.
- K. Environmental Requirements: Verify surfaces, substrates and ambient air temperature at project site before, during and after application to assure compliance with manufacturer's recommendations. Surfaces shall be dry at time of installation.
 - 1. Weather Conditions: In accordance with manufacturer's instructions, do not apply sealants when weather conditions are not within the manufacturer's prescribed limits or when such conditions are expected. Allow surfaces to attain dry conditions as recommended by the manufacturer before application.
 - 2. Compliance: Follow manufacturer's specific safety, health and environmental recommendations per most recent Material Safety Data Sheets, technical bulletins and instructions. Handle all solvents in compliance with EPA, OSHA and VOC requirements regarding health and safety standards.

1.08 WARRANTY

- A. Provide a five year warranty on all workmanship.
- B. Provide a five year manufacturer's labor and material warranty.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Product Options and Substitutions: Since the extent of repair varies according to the type of repair and the location of the area to be repaired, the manufacturer must be consulted prior to the selection and application of the material to ensure that it is particularly suitable for the purpose intended.
 - 1. Meets or exceeds ASTM D6083 standard including test method D522 requirements.
 - 2. Per owner's option, reflective coatings to be used to meet energy efficiency requirements.
- B. Acceptable manufacturers: For acrylic elastomeric roof coating used as a finished coat over bituminous roof systems:
 - 1. Sika
 - 2. GAF
 - 3. JM
 - 4. polyglass
 - 5. Owner or Architect approved equal
- C. Acceptable manufacturers: For acrylic elastomeric roof coating used as a finished coat over single-ply roof systems:
 - 1. Sika
 - 2. GAF
 - 3. JM
 - 4. polyglass
 - 5. Owner or Architect approved equal
- D. Acceptable manufacturers: For acrylic elastomeric roof coating used as a finished coat over metal roof systems:
 - 1. Sika
 - 2. GAF
 - 3. JM
 - 4. polyglass
 - 5. Owner or Architect approved equal

2.02 RELATED MATERIALS

- A. The Contractor will ensure that all sealants are compatible with existing and new material abutting the area of repair including other sealants and caulking compounds, deck coatings and other waterproofing materials.
 - 1. Polyester reinforcing fabric
 - 2. Primers
 - 3. Flashings for penetrations
 - 4. Pourable sealer pockets
 - 5. Cleaning agents

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Comply with manufacturer's most recently published product data, including installation instructions, substrate testing and surface preparation and cleaning and post installation testing.

3.02 EXAMINATION

- A. Verify area to be repaired and substrate conditions are acceptable for sealant applications in accordance with the manufacturer's instructions.
 - 1. General: Determine acceptable removal techniques for contaminants harmful to sealants, such as dust, dirt, grease, oils, curing compounds, form release agents, laitance, and previous films or water repellent materials. Prepare all surfaces in accordance with manufacturer's instructions. All surfaces must be clean, dry, frost free, and dust free.
- B. Examine all surfaces to receive roof coating system to ensure they are clean, smooth, sound, properly prepared, and free of moisture, frost, ice, snow, dirt, debris, contaminants, or other conditions that may impair the application and performance of the roof coating system. Notify the Owner and copy manufacturer in writing of any such conditions. Do not commence work until all conditions are remedied.
- C. Applicator shall be responsible for acceptance or provision of proper substrate to receive roof coating system.
- D. Applicator shall verify that the work done under related sections meets the following conditions:
 - 1. Roof drains and/or scuppers are clean and in working order.
 - 2. Roof curbs, cants, edge metal, equipment supports, vents and other roof penetrations are properly secured and prepared to receive roof coating system.
 - 3. All air conditioning and air intake vents are adequately protected or closed.
 - 4. All building areas and property around the vicinity of the roof coating application and equipment are adequately protected from overspray and spillage.

3.03 PREPARATION

- A. Rout out all static cracks to a minimum depth of 1/4" x 1/4" (one quarter inch by one quarter inch) and all dynamic cracks to a minimum of 3/8" x 3/8" (three eighths inch by three eighths inch). Thoroughly clean all routed cracks and joints and remove all grease, dirt and dust prior to application. Blow out all dust, loose particles and other debris using oil-free and moisture-free compressed air. Protect adjacent areas that are not to receive sealant.
- B. Cut out and remove all existing joint material including sealant, backer rod, bond breaker tape, spalled concrete, etc. until sound concrete is exposed. Do not remove sound concrete. Pay particular attention to weld plate connections where applicable. Repair shoulder spalls using polymer modified concrete repair mortar to re-create previously existing joint width.
- C. Clean substrates of substances that could impair the bond of sealant adhesive. Non-porous surfaces should be cleaned with degreasing solvents such as toluene or xylene using the two-cloth, solvent wipe cleaning method as outlined by the sealant manufacturer.
- D. Efflorescence, mold, mildew and algae shall be neutralized and removed prior to sealant installation. Prepare previously coated surfaces according to sealant manufacturer's specific recommendations.
- E. Wash out joints using high-pressure water to remove debris, and allow joints to dry thoroughly. Blow out all dust, loose particles and other debris using oil-free and moisture-free compressed air. Protect adjacent areas that are not being repaired and/or resealed.

3.04 APPLICATION

- A. If required by the manufacturer, prime both sides of joint prior to the installation of sealant.
- B. If required by the nature of the repair, install backer rod using a blunt tool or roller to assure uniform depth without puncturing or twisting the backer rod. Closed cell backer rod shall be a minimum of 20% (twenty percent) oversized. Polyolefin backer rod shall be a minimum of 50% (fifty percent) oversized.
- C. Install bond breaker tape over weld plates where joint depth is too shallow to permit the use of backer rod.
- D. Apply a bead of sealant along the crack or joint to be sealed. Install the sealant at the manufacturer's recommended depth-to-width ratio and apply in full accordance with the manufacturer's specification. Refer to attached detail.

3.05 FIELD QUALITY CONTROL

- A. Where required by the Project Manager, provide manufacturer's field service consisting of periodic site visits by manufacturer or their distributor representative for observation of sealant application.
- B. The Owner reserves the right to complete recommended testing required by the manufacturer at the completion of the work to assure warranty requirements and contract compliance are met.

3.06 SPECIAL REQUIREMENTS

- A. Silicone sealants, as manufactured by Dow Corning and others, are not compatible with urethane deck coating systems. Accordingly, the Contractor will exercise caution to confirm that silicone sealants are not used on concrete decks that will receive a urethane coating, and will, instead, use a urethane sealant as specified herein.
- B. Where required by the Owner, provide manufacturer's field service consisting of site visit(s) by the manufacturer or their distributor representative for the observation of preparation and application of sealant.
- C. The Owner reserves the right to complete recommended testing at the completion of the work to assure warranty requirements are met.
- D. Prior to beginning any work on the replacement of sealant between precast concrete tees, the Contractor is required to install a mock-up of no less than 20 LF (twenty linear feet) including a minimum of 2 (two) weld plates to demonstrate appearance and workmanship for approval by the Owner.

END OF SECTION

PART 1 – GENERAL

1.01 SUMMARY

- A. Surface preparation and field application of elastomeric polyurethane roof coatings for use over new and existing granule surfaced modified bitumen, Single-ply, Metal roofing, flashings and metal fabrications as indicated on the drawings
- B. Related Sections:
 - 1. Section 03 01 00 – Concrete Restoration
 - 2. Section 07 62 00 - Sheet Metal Flashing and Trim.
 - 3. Section 07 01 90 - Joint Sealant
 - 4. Section 09 01 70 – Pressure Washing and Cleaning
 - 5. Section 09 91 13 - Painting and Coating Exterior Walls, Ceilings and Soffits.

1.02 PERFORMANCE REQUIREMENTS

- A. Provide labor, materials, equipment and supervision necessary to install elastomeric polyurethane roof coating system as outlined in this specification to restore and extend the service life of the roof system. The manufacturer's application instructions and product data sheets for each product used are considered part of these specifications and should be followed at all times.

1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM B 117 Standard Practice for Operating Salt Spray (Fog) Apparatus
 - 2. ASTM C 794 Mortar block surface preparation
 - 3. ASTM C 836 Specification for High-solids Content, Cold liquid applied elastomeric waterproofing membrane for use with separate wearing course
 - 4. ASTM D 412 Standard test methods for vulcanized rubber and thermoplastic elastomers – tension
 - 5. ASTM D 471 Standard method for rubber property – effect of liquid
 - 6. ASTM D 624 Tear Strength Testing of rubber and elastomers
 - 7. ASTM D 746 Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact
 - 8. ASTM E 96 Standard Test Methods for Water Vapor Transmission of Materials
 - 9. ASTM E 1644 Standard Test Methods for Nonvolatile Content of Varnishes

1.04 SUBMITTALS

- B. Refer to DIVISION 1, Section 01 33 00 for submittal procedures and qualification requirements.
- C. Product Data: Submit manufacturer's most current technical product data indicating product testing results and compliance as indicated.
- C. Samples: Submit samples as required by the Project Manager.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Installer of sealants will be authorized by manufacturer with at least five years successful experience with the application of sealants on restoration projects of similar type and nature.
- B. There shall be no deviation made from the Project Specification or the approved shop drawings without prior written approval by the Owner
- C. The Applicator must check wet film thickness during the application of the coatings to ensure achievement of specified coverage rates.
- D. Source Limitations: Obtain sealants through one source from a single manufacturer.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, handle and protect all products in accordance with DIVISION 1, Section 01 60 00, Product Requirements.
- B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- C. Deliver sealants in manufacturer's original, unopened, undamaged containers with identification labels clearly shown.
- D. Store and protect material containers from harmful weather conditions as recommended by the manufacturer. Protect from damage during construction and while stored onsite.

1.07 PROJECT CONDITIONS

- A. The Owner's Representative and Applicator shall determine the condition of the roof system. Deteriorated decking, deteriorated materials, or wet decking/materials are to be removed and replaced.
- B. Spring scale peel adhesion tests are required when the substrate is unknown and recommended on previously coated roofs. The Applicator must conduct the spring

scale peel adhesion test prior to bid to verify the adhesion of the roof coating to the substrate. Submit peel adhesion test findings to Owner, Architect and manufacturer.

- C. The Applicator shall:
1. Survey the roof to determine areas where water ponds for 72 hours or more and employ methods to eliminate such ponded water conditions.
 2. Verify that all drain lines are connected and in good working order before starting work. Drains that are not connected or are not functioning properly shall be reported in writing to the Owner's Representative and/or design professional.
 3. Take necessary measures to protect unrelated work and other adjacent surfaces from overspray and spillage.
 4. Take necessary precautions when using roof coatings and accessories around air in-takes. The smell of the roof coatings and accessories may be a disturbance to the building owner and occupants. It is the Applicator's responsibility to notify the Owner and take the proper precautions.
 5. Follow all safety regulations as required by OSHA and any other applicable authority having jurisdiction.
 6. Take precautions to avoid overloading the roof or building structure.
 7. Protect the installed roof coating system and coordinate with other trades and building occupants to avoid construction traffic or equipment storage on newly installed roof coating system. The Applicator must provide all necessary temporary protection and barriers to segregate the work area and to prevent damage. Any damage that occurs to the roof coating system is to be brought to the attention of the Owner's Representative and/or design professional and manufacturer. All damage is to be repaired according to manufacturer's recommendations. The party responsible for damage shall bear the cost of repairs.
- D. The minimum recommendations for roof coating usage are for ideal conditions. The number of gallons per square may need to increase due to uneven application, rough surface texture, wind conditions while spraying and/or other variables.
- E. Proceed with the roof coating system application only after substrate preparation is complete. Substrate must be clean, dry, structurally sound and properly prepared, the ambient temperature must be 50°F (10°C) and rising, and do not apply the roof coating system if weather conditions will not permit proper drying of the roof coating system prior to exposure to precipitation or freezing temperatures.
- F. The roof coating system shall be fully bonded to the substrate on which it is applied. Voids left under the system are not acceptable and must be repaired.
- G. If any unusual or concealed condition is discovered, stop work and notify the Owner's Representative and/or design professional and manufacturer immediately, in writing.

- H. All waste material (e.g. empty containers of coating and other accessories) shall be removed from the site by the Applicator and properly transported to a legal dumping area authorized to receive such material.
- I. All new and temporary construction, including equipment, material and accessories, shall be secured in such a manner, at all times, as to preclude wind blow-off or damage.
- J. Site cleanup, including both interior and exterior building areas in any way affected by the construction, shall be complete and to the Owner's satisfaction.
- K. Environmental Requirements: Verify surfaces, substrates and ambient air temperature at project site before, during and after application to assure compliance with manufacturer's recommendations. Surfaces shall be dry at time of installation.
 - 1. Weather Conditions: In accordance with manufacturer's instructions, do not apply sealants when weather conditions are not within the manufacturer's prescribed limits or when such conditions are expected. Allow surfaces to attain dry conditions as recommended by the manufacturer before application.
 - 2. Compliance: Follow manufacturer's specific safety, health and environmental recommendations per most recent Material Safety Data Sheets, technical bulletins and instructions. Handle all solvents in compliance with EPA, OSHA and VOC requirements regarding health and safety standards.

1.08 WARRANTY

- A. Provide a five year warranty on all workmanship.
- B. Provide a five year manufacturer's labor and material warranty.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Product Options and Substitutions: Since the extent of repair varies according to the type of repair and the location of the area to be repaired, the manufacturer must be consulted prior to the selection and application of the material to ensure that it is particularly suitable for the purpose intended.
 - 1. Meets or exceeds ASTM D6083 standard including test method D522 requirements.
 - 2. Per owner's option, reflective coatings to be used to meet energy efficiency requirements.
- B. Acceptable manufacturers: For polyurethane elastomeric roof coating used as a finished coat over bituminous roof systems:

1. GAF
 2. JM
 3. Soprema
 4. Uniflex
 5. Owner or Architect approved equal
- C. Acceptable manufacturers: For polyurethane elastomeric roof coating used as a finished coat over single-ply roof systems:
1. GAF
 2. JM
 3. Soprema
 4. Uniflex
 5. Owner or Architect approved equal
- D. Acceptable manufacturers: For polyurethane elastomeric roof coating used as a finished coat over metal roof systems:
1. GAF
 2. JM
 3. Soprema
 4. Uniflex
 5. Henry
 6. Owner or Architect approved equal

2.02 RELATED MATERIALS

- A. The Contractor will ensure that all sealants are compatible with existing and new material abutting the area of repair including other sealants and caulking compounds, deck coatings and other waterproofing materials.
1. Polyester reinforcing fabric
 2. Primers
 3. Flashings for penetrations
 4. Pourable sealer pockets
 5. Cleaning agents

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Comply with manufacturer's most recently published product data, including installation instructions, substrate testing and surface preparation and cleaning and post installation testing.

3.02 EXAMINATION

- A. Verify area to be repaired and substrate conditions are acceptable for sealant applications in accordance with the manufacturer's instructions.

1. General: Determine acceptable removal techniques for contaminants harmful to sealants, such as dust, dirt, grease, oils, curing compounds, form release agents, laitance, and previous films or water repellent materials. Prepare all surfaces in accordance with manufacturer's instructions. All surfaces must be clean, dry, frost free, and dust free.
- B. Examine all surfaces to receive roof coating system to ensure they are clean, smooth, sound, properly prepared, and free of moisture, frost, ice, snow, dirt, debris, contaminants, or other conditions that may impair the application and performance of the roof coating system. Notify the Owner and copy manufacturer in writing of any such conditions. Do not commence work until all conditions are remedied.
- C. Applicator shall be responsible for acceptance or provision of proper substrate to receive roof coating system.
- D. Applicator shall verify that the work done under related sections meets the following conditions:
 1. Roof drains and/or scuppers are clean and in working order.
 2. Roof curbs, cants, edge metal, equipment supports, vents and other roof penetrations are properly secured and prepared to receive roof coating system.
 3. All air conditioning and air intake vents are adequately protected or closed.
 4. All building areas and property around the vicinity of the roof coating application and equipment are adequately protected from overspray and spillage.

3.03 PREPARATION

- A. Rout out all static cracks to a minimum depth of 1/4" x 1/4" (one quarter inch by one quarter inch) and all dynamic cracks to a minimum of 3/8" x 3/8" (three eighths inch by three eighths inch). Thoroughly clean all routed cracks and joints and remove all grease, dirt and dust prior to application. Blow out all dust, loose particles and other debris using oil-free and moisture-free compressed air. Protect adjacent areas that are not to receive sealant.
- B. Cut out and remove all existing joint material including sealant, backer rod, bond breaker tape, spalled concrete, etc. until sound concrete is exposed. Do not remove sound concrete. Pay particular attention to weld plate connections where applicable. Repair shoulder spalls using polymer modified concrete repair mortar to re-create previously existing joint width.
- C. Clean substrates of substances that could impair the bond of sealant adhesive. Non-porous surfaces should be cleaned with degreasing solvents such as toluene or xylene using the two-cloth, solvent wipe cleaning method as outlined by the sealant manufacturer.

- D. Efflorescence, mold, mildew and algae shall be neutralized and removed prior to sealant installation. Prepare previously coated surfaces according to sealant manufacturer's specific recommendations.
- E. Wash out joints using high-pressure water to remove debris, and allow joints to dry thoroughly. Blow out all dust, loose particles and other debris using oil-free and moisture-free compressed air. Protect adjacent areas that are not being repaired and/or resealed.

3.04 APPLICATION

- A. If required by the manufacturer, prime both sides of joint prior to the installation of sealant.
- B. If required by the nature of the repair, install backer rod using a blunt tool or roller to assure uniform depth without puncturing or twisting the backer rod. Closed cell backer rod shall be a minimum of 20% (twenty percent) oversized. Polyolefin backer rod shall be a minimum of 50% (fifty percent) oversized.
- C. Install bond breaker tape over weld plates where joint depth is too shallow to permit the use of backer rod.
- D. Apply a bead of sealant along the crack or joint to be sealed. Install the sealant at the manufacturer's recommended depth-to-width ratio and apply in full accordance with the manufacturer's specification. Refer to attached detail.

3.05 FIELD QUALITY CONTROL

- A. Where required by the Project Manager, provide manufacturer's field service consisting of periodic site visits by manufacturer or their distributor representative for observation of sealant application.
- B. The Owner reserves the right to complete recommended testing required by the manufacturer at the completion of the work to assure warranty requirements and contract compliance are met.

3.06 SPECIAL REQUIREMENTS

- A. Silicone sealants, as manufactured by Dow Corning and others, are not compatible with urethane deck coating systems. Accordingly, the Contractor will exercise caution to confirm that silicone sealants are not used on concrete decks that will receive a urethane coating, and will, instead, use a urethane sealant as specified herein.
- B. Where required by the Owner, provide manufacturer's field service consisting of site visit(s) by the manufacturer or their distributor representative for the observation of preparation and application of sealant.

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- C. The Owner reserves the right to complete recommended testing at the completion of the work to assure warranty requirements are met.

- D. Prior to beginning any work on the replacement of sealant between precast concrete tees, the Contractor is required to install a mock-up of no less than 20 LF (twenty linear feet) including a minimum of 2 (two) weld plates to demonstrate appearance and workmanship for approval by the Owner.

END OF SECTION

PART 1 – GENERAL

1.01 SUMMARY

- A. Surface preparation and field application of elastomeric silicone roof coatings for use over new and existing granule surfaced modified bitumen, Single-ply, Metal roofing, flashings and metal fabrications as indicated on the drawings

- B. Related Sections:
 - 1. Section 03 01 00 – Concrete Restoration
 - 2. Section 09 01 70 – Pressure Washing and Cleaning
 - 3. Section 09 91 05 – Paint Metal Doors, Windows, Frames Openings & Handrails
 - 4. Section 09 91 13 – Painting Exterior Walls Ceiling & Soffits
 - 5. Section 09 96 53 - Elastomeric Wall Coating
 - 6. Section 09 96 56 – PPG-Acrylic Polyurethane

1.02 PERFORMANCE REQUIREMENTS

- A. Provide labor, materials, equipment and supervision necessary to install elastomeric silicone roof coating system as outlined in this specification to restore and extend the service life of the roof system. The manufacturer's application instructions and product data sheets for each product used are considered part of these specifications and should be followed at all times.

1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM C1549 Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer
 - 2. ASTM D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension
 - 3. ASTM D676 Method of Test for Indentation of Rubber by Means of a Durometer
 - 4. ASTM D1371 Recommended Practice for Cleaning Plastic Specimens for Industrial Resistance, Surface Resistance, and Volume Resistivity Testing
 - 5. ASTM D1624 Standard Specification for Acid Copper Chromate
 - 6. ASTM D1664 Test Method for Coating and Stripping of Bitumen-Aggregate Mixtures

7. ASTM D2240 Standard Test Method for Rubber Property—Durometer Hardness
8. ASTM D2370 Standard Test Method for Tensile Properties of Organic Coatings
9. ASTM D2697 Standard Test Method for Volume Nonvolatile Matter in Clear or Pigmented Coatings
10. ASTM D2939 Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coating
11. ASTM D3960 Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings
12. ASTM D6694 Standard Specification for Liquid-Applied Silicone Coating Used in Spray Polyurethane Foam Roofing Systems
13. ASTM E108 Standard Test Methods for Fire Tests of Roof Coverings
14. ASTM E903 Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres

1.04 SUBMITTALS

- B. Refer to DIVISION 1, Section 01 33 00 for submittal procedures and qualification requirements.
- C. Product Data: Submit manufacturer's most current technical product data indicating product testing results and compliance as indicated.
- C. Samples: Submit samples as required by the Project Manager.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Installer of sealants will be authorized by manufacturer with at least five years successful experience with the application of sealants on restoration projects of similar type and nature.
- B. There shall be no deviation made from the Project Specification or the approved shop drawings without prior written approval by the Owner
- C. The Applicator must check wet film thickness during the application of the coatings to ensure achievement of specified coverage rates.
- D. Source Limitations: Obtain sealants through one source from a single manufacturer.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, handle and protect all products in accordance with DIVISION 1, Section 01 60 00, Product Requirements.
- B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- C. Deliver sealants in manufacturer's original, unopened, undamaged containers with identification labels clearly shown.
- D. Store and protect material containers from harmful weather conditions as recommended by the manufacturer. Protect from damage during construction and while stored onsite.

1.07 PROJECT CONDITIONS

- A. The Owner's Representative and Applicator shall determine the condition of the roof system. Deteriorated decking, deteriorated materials, or wet decking/materials are to be removed and replaced.
- B. Spring scale peel adhesion tests are required when the substrate is unknown and recommended on previously coated roofs. The Applicator must conduct the spring scale peel adhesion test prior to bid to verify the adhesion of the roof coating to the substrate. Submit peel adhesion test findings to Owner, Architect and manufacturer.
- C. The Applicator shall:
 - 1. Survey the roof to determine areas where water ponds for 72 hours or more and employ methods to eliminate such ponded water conditions.
 - 2. Verify that all drain lines are connected and in good working order before starting work. Drains that are not connected or are not functioning properly shall be reported in writing to the Owner's Representative and/or design professional.
 - 3. Take necessary measures to protect unrelated work and other adjacent surfaces from overspray and spillage.
 - 4. Take necessary precautions when using roof coatings and accessories around air in-takes. The smell of the roof coatings and accessories may be a disturbance to the building owner and occupants. It is the Applicator's responsibility to notify the Owner and take the proper precautions.
 - 5. Follow all safety regulations as required by OSHA and any other applicable authority having jurisdiction.
 - 6. Take precautions to avoid overloading the roof or building structure.
 - 7. Protect the installed roof coating system and coordinate with other trades and building occupants to avoid construction traffic or equipment storage on newly installed roof coating system. The Applicator must provide all necessary temporary protection and barriers to segregate the work area and to prevent damage. Any damage that occurs to the roof coating system is to be brought to the attention of the Owner's Representative and/or design

professional and manufacturer. All damage is to be repaired according to manufacturer's recommendations. The party responsible for damage shall bear the cost of repairs.

- D. The minimum recommendations for roof coating usage are for ideal conditions. The number of gallons per square may need to increase due to uneven application, rough surface texture, wind conditions while spraying and/or other variables.
- E. Proceed with the roof coating system application only after substrate preparation is complete. Substrate must be clean, dry, structurally sound and properly prepared, the ambient temperature must be 50°F (10°C) and rising, and do not apply the roof coating system if weather conditions will not permit proper drying of the roof coating system prior to exposure to precipitation or freezing temperatures.
- F. The roof coating system shall be fully bonded to the substrate on which it is applied. Voids left under the system are not acceptable and must be repaired.
- G. If any unusual or concealed condition is discovered, stop work and notify the Owner's Representative and/or design professional and manufacturer immediately, in writing.
- H. All waste material (e.g. empty containers of coating and other accessories) shall be removed from the site by the Applicator and properly transported to a legal dumping area authorized to receive such material.
- I. All new and temporary construction, including equipment, material and accessories, shall be secured in such a manner, at all times, as to preclude wind blow-off or damage.
- J. Site cleanup, including both interior and exterior building areas in any way affected by the construction, shall be complete and to the Owner's satisfaction.
- K. Environmental Requirements: Verify surfaces, substrates and ambient air temperature at project site before, during and after application to assure compliance with manufacturer's recommendations. Surfaces shall be dry at time of installation.
 - 1. Weather Conditions: In accordance with manufacturer's instructions, do not apply sealants when weather conditions are not within the manufacturer's prescribed limits or when such conditions are expected. Allow surfaces to attain dry conditions as recommended by the manufacturer before application.
 - 2. Compliance: Follow manufacturer's specific safety, health and environmental recommendations per most recent Material Safety Data Sheets, technical bulletins and instructions. Handle all solvents in compliance with EPA, OSHA and VOC requirements regarding health and safety standards.

1.08 WARRANTY

- A. Provide a five year warranty on all workmanship.
- B. Provide a five year manufacturer's labor and material warranty.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Product Options and Substitutions: Since the extent of repair varies according to the type of repair and the location of the area to be repaired, the manufacturer must be consulted prior to the selection and application of the material to ensure that it is particularly suitable for the purpose intended.
 - 1. Meets or exceeds ASTM D6083 standard including test method D522 requirements.
 - 2. Per owner's option, reflective coatings to be used to meet energy efficiency requirements.
- B. Acceptable manufacturers: For silicone elastomeric roof coating used as a finished coat over bituminous roof systems:
 - 1. Polyglass
 - 2. GAF Quest
 - 3. WDG
 - 4. Gaco
 - 5. Owner or Architect approved equal
- C. Acceptable manufacturers: For silicone elastomeric roof coating used as a finished coat over single-ply roof systems:
 - 1. Polyglass
 - 2. GAF Quest
 - 3. WDG
 - 4. Gaco
 - 5. Owner or Architect approved equal
- D. Acceptable manufacturers: For silicone elastomeric roof coating used as a finished coat over metal roof systems:
 - 1. Polyglass
 - 2. GAF Quest
 - 3. WDG
 - 4. Gaco
 - 5. Owner or Architect approved equal

2.02 RELATED MATERIALS

- A. The Contractor will ensure that all sealants are compatible with existing and new material abutting the area of repair including other sealants and caulking compounds, deck coatings and other waterproofing materials.
 - 1. Polyester reinforcing fabric

2. Primers
3. Flashings for penetrations
4. Pourable sealer pockets
5. Cleaning agents

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Comply with manufacturer's most recently published product data, including installation instructions, substrate testing and surface preparation and cleaning and post installation testing.

3.02 EXAMINATION

- A. Verify area to be repaired and substrate conditions are acceptable for sealant applications in accordance with the manufacturer's instructions.
 1. General: Determine acceptable removal techniques for contaminants harmful to sealants, such as dust, dirt, grease, oils, curing compounds, form release agents, laitance, and previous films or water repellent materials. Prepare all surfaces in accordance with manufacturer's instructions. All surfaces must be clean, dry, frost free, and dust free.
- B. Examine all surfaces to receive roof coating system to ensure they are clean, smooth, sound, properly prepared, and free of moisture, frost, ice, snow, dirt, debris, contaminants, or other conditions that may impair the application and performance of the roof coating system. Notify the Owner and copy manufacturer in writing of any such conditions. Do not commence work until all conditions are remedied.
- C. Applicator shall be responsible for acceptance or provision of proper substrate to receive roof coating system.
- D. Applicator shall verify that the work done under related sections meets the following conditions:
 1. Roof drains and/or scuppers are clean and in working order.
 2. Roof curbs, cants, edge metal, equipment supports, vents and other roof penetrations are properly secured and prepared to receive roof coating system.
 3. All air conditioning and air intake vents are adequately protected or closed.
 4. All building areas and property around the vicinity of the roof coating application and equipment are adequately protected from overspray and spillage.

3.03 PREPARATION

- A. Rout out all static cracks to a minimum depth of 1/4" x 1/4" (one quarter inch by one quarter inch) and all dynamic cracks to a minimum of 3/8" x 3/8" (three eighths inch

by three eighths inch). Thoroughly clean all routed cracks and joints and remove all grease, dirt and dust prior to application. Blow out all dust, loose particles and other debris using oil-free and moisture-free compressed air. Protect adjacent areas that are not to receive sealant.

- B. Cut out and remove all existing joint material including sealant, backer rod, bond breaker tape, spalled concrete, etc. until sound concrete is exposed. Do not remove sound concrete. Pay particular attention to weld plate connections where applicable. Repair shoulder spalls using polymer modified concrete repair mortar to re-create previously existing joint width.
- C. Clean substrates of substances that could impair the bond of sealant adhesive. Non-porous surfaces should be cleaned with degreasing solvents such as toluene or xylene using the two-cloth, solvent wipe cleaning method as outlined by the sealant manufacturer.
- D. Efflorescence, mold, mildew and algae shall be neutralized and removed prior to sealant installation. Prepare previously coated surfaces according to sealant manufacturer's specific recommendations.
- E. Wash out joints using high-pressure water to remove debris, and allow joints to dry thoroughly. Blow out all dust, loose particles and other debris using oil-free and moisture-free compressed air. Protect adjacent areas that are not being repaired and/or resealed.

3.04 APPLICATION

- A. If required by the manufacturer, prime both sides of joint prior to the installation of sealant.
- B. If required by the nature of the repair, install backer rod using a blunt tool or roller to assure uniform depth without puncturing or twisting the backer rod. Closed cell backer rod shall be a minimum of 20% (twenty percent) oversized. Polyolefin backer rod shall be a minimum of 50% (fifty percent) oversized.
- C. Install bond breaker tape over weld plates where joint depth is too shallow to permit the use of backer rod.
- D. Apply a bead of sealant along the crack or joint to be sealed. Install the sealant at the manufacturer's recommended depth-to-width ratio and apply in full accordance with the manufacturer's specification. Refer to attached detail.

3.05 FIELD QUALITY CONTROL

- A. Where required by the Project Manager, provide manufacturer's field service consisting of periodic site visits by manufacturer or their distributor representative for observation of sealant application.

- B. The Owner reserves the right to complete recommended testing required by the manufacturer at the completion of the work to assure warranty requirements and contract compliance are met.

3.06 SPECIAL REQUIREMENTS

- A. Silicone sealants, as manufactured by Dow Corning and others, are not compatible with urethane deck coating systems. Accordingly, the Contractor will exercise caution to confirm that silicone sealants are not used on concrete decks that will receive a urethane coating, and will, instead, use a urethane sealant as specified herein.
- B. Where required by the Owner, provide manufacturer's field service consisting of site visit(s) by the manufacturer or their distributor representative for the observation of preparation and application of sealant.
- C. The Owner reserves the right to complete recommended testing at the completion of the work to assure warranty requirements are met.
- D. Prior to beginning any work on the replacement of sealant between precast concrete tees, the Contractor is required to install a mock-up of no less than 20 LF (twenty linear feet) including a minimum of 2 (two) weld plates to demonstrate appearance and workmanship for approval by the Owner.

END OF SECTION

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes: Repair and seal cracks in concrete and replace sealant in control joints in level and sloped concrete decks, at the intersection of horizontal and vertical precast concrete panels and between precast concrete tees.
- B. Related Sections:
 - 1. Section 03 01 00: Concrete Restoration.
 - 2. Section 09 01 70: Pressure Washing and Cleaning.

1.02 PERFORMANCE REQUIREMENTS

- A. Provide and install sealant in cracks and in control joints in horizontal concrete decks and sloped (“washes”) concrete decks, at the intersection of horizontal and vertical precast concrete panels and between precast concrete tees. Materials shall be consistent with other materials abutting the affected areas and with deck coatings as specified herein.

1.03 SUBMITTALS

- A. Refer to DIVISION 1, Section 01 33 00 for submittal procedures and qualification requirements.
- B. Product Data: Submit manufacturer’s most current technical product data indicating product testing results and compliance as indicated.
- C. Samples: Submit samples as required by the Project Manager.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Installer of sealants will be authorized by manufacturer with at least five years successful experience with the application of sealants on restoration projects of similar type and nature.
- B. Source Limitations: Obtain sealants through one source from a single manufacturer.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, handle and protect all products in accordance with DIVISION 1, Section 01 60 00, Product Requirements.

- B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- C. Deliver sealants in manufacturer's original, unopened, undamaged containers with identification labels clearly shown.
- D. Store and protect material containers from harmful weather conditions as recommended by the manufacturer. Protect from damage during construction and while stored onsite.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements: Verify surfaces, substrates and ambient air temperature at project site before, during and after application to assure compliance with manufacturer's recommendations. Surfaces shall be dry at time of installation.
 - 1. Weather Conditions: In accordance with manufacturer's instructions, do not apply sealants when weather conditions are not within the manufacturer's prescribed limits or when such conditions are expected. Allow surfaces to attain dry conditions as recommended by the manufacturer before application.
 - 2. Compliance: Follow manufacturer's specific safety, health and environmental recommendations per most recent Material Safety Data Sheets, technical bulletins and instructions. Handle all solvents in compliance with EPA, OSHA and VOC requirements regarding health and safety standards.

1.07 WARRANTY

- A. Provide a five year warranty on all workmanship.
- B. Provide a five year manufacturer's labor and material warranty.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Product Options and Substitutions: Since the extent of repair varies according to the type of repair and the location of the area to be repaired, the manufacturer must be consulted prior to the selection and application of the material to ensure that it is particularly suitable for the purpose intended.
- B. Acceptable manufacturers: For Decks not receiving a urethane deck coating:
 - 1. Level, horizontal decks:
 - a. Dow Corning SL Parking Structure Sealant
 - b. Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.

2. Sloped Decks ("Washes")
 - a. Dow Corning NS Parking Structure Sealant
 - b. Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.
 - c. Acceptable manufacturers: For Decks receiving a urethane deck coating:
 1. Vulkem 240
 2. Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.

2.02 RELATED MATERIALS

- A. The Contractor will ensure that all sealants are compatible with existing and new material abutting the area of repair including other sealants and caulking compounds, deck coatings and other waterproofing materials.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Comply with manufacturer's most recently published product data, including installation instructions, substrate testing and surface preparation and cleaning and post installation testing.

3.02 EXAMINATION

- A. Verify area to be repaired and substrate conditions are acceptable for sealant applications in accordance with the manufacturer's instructions.
 1. General: Determine acceptable removal techniques for contaminants harmful to sealants, such as dust, dirt, grease, oils, curing compounds, form release agents, laitance, and previous films or water repellent materials. Prepare all surfaces in accordance with manufacturer's instructions. All surfaces must be clean, dry, frost free, and dust free.

3.03 PREPARATION

- A. Rout out all static cracks to a minimum depth of 1/4" x 1/4" (one quarter inch by one quarter inch) and all dynamic cracks to a minimum of 3/8" x 3/8" (three eighths inch by three eighths inch). Thoroughly clean all routed cracks and joints and remove all grease, dirt and dust prior to application. Blow out all dust, loose particles and other debris using oil-free and moisture-free compressed air. Protect adjacent areas that are not to receive sealant.
- B. Cut out and remove all existing joint material including sealant, backer rod, bond breaker tape, spalled concrete, etc. until sound concrete is exposed. Do not remove sound concrete. Pay particular attention to weld plate connections where applicable.

Repair shoulder spalls using polymer modified concrete repair mortar to re-create previously existing joint width.

- C. Clean substrates of substances that could impair the bond of sealant adhesive. Non-porous surfaces should be cleaned with degreasing solvents such as toluene or xylene using the two-cloth, solvent wipe cleaning method as outlined by the sealant manufacturer.
- D. Efflorescence, mold, mildew and algae shall be neutralized and removed prior to sealant installation. Prepare previously coated surfaces according to sealant manufacturer's specific recommendations.
- E. Wash out joints using high-pressure water to remove debris, and allow joints to dry thoroughly. Blow out all dust, loose particles and other debris using oil-free and moisture-free compressed air. Protect adjacent areas that are not being repaired and/or resealed.

3.04 APPLICATION

- A. If required by the manufacturer, prime both sides of joint prior to the installation of sealant.
- B. If required by the nature of the repair, install backer rod using a blunt tool or roller to assure uniform depth without puncturing or twisting the backer rod. Closed cell backer rod shall be a minimum of 20% (twenty percent) oversized. Polyolefin backer rod shall be a minimum of 50% (fifty percent) oversized.
- C. Install bond breaker tape over weld plates where joint depth is too shallow to permit the use of backer rod.
- D. Apply a bead of sealant along the crack or joint to be sealed. Install the sealant at the manufacturer's recommended depth-to-width ratio and apply in full accordance with the manufacturer's specification. Refer to attached detail.

3.05 FIELD QUALITY CONTROL

- A. Where required by the Project Manager, provide manufacturer's field service consisting of periodic site visits by manufacturer or their distributor representative for observation of sealant application.
- B. The Owner reserves the right to complete recommended testing required by the manufacturer at the completion of the work to assure warranty requirements and contract compliance are met.

3.06 SPECIAL REQUIREMENTS

- A. Silicone sealants, as manufactured by Dow Corning and others, are not compatible with urethane deck coating systems. Accordingly, the Contractor will exercise caution to confirm that silicone sealants are not used on concrete decks

that will receive a urethane coating, and will, instead, use a urethane sealant as specified herein.

- B. Where required by the Owner, provide manufacturer's field service consisting of site visit(s) by the manufacturer or their distributor representative for the observation of preparation and application of sealant.
- C. The Owner reserves the right to complete recommended testing at the completion of the work to assure warranty requirements are met.
- D. Prior to beginning any work on the replacement of sealant between precast concrete tees, the Contractor is required to install a mock-up of no less than 20 LF (twenty linear feet) including a minimum of 2 (two) weld plates to demonstrate appearance and workmanship for approval by the Owner.

END OF SECTION

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes: Stripping of existing coating, preparation of concrete deck surface and application of a urethane waterproof elastomeric traffic coating system with non-skid aggregate for either vehicular or pedestrian traffic.
- B. Crack detailing to include crack face surface preparation and installation of a flexible waterproof system.
- C. Work to include preparation, patching and membrane upturn at all vertical surfaces including columns, walls, cast-in-place curbs, islands and pipe penetrations.
- D. Material thickness as per manufacturer's recommendation.

1.02 RELATED SECTIONS

- A. Section 03 01 00: Concrete Restoration
- B. Section 07 01 90: Joint Sealant
- C. Section 07 90 03: Expansion Joint Repair
- D. Section 09 01 70: Pressure Washing and Cleaning

1.03 PERFORMANCE REQUIREMENTS

- A. Provide only urethane waterproof elastomeric traffic coating materials that are compatible with the joint sealants in the areas requiring resurfacing.

1.04 SUBMITTALS

- A. Refer to DIVISION 1, Section 01 33 00 for submittal procedures and qualification requirements.
- B. Product Data: Submit manufacturer's most current technical product data indicating product testing results and compliance as indicated.
- C. Samples: Submit samples as required by the Project Manager.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Installer of urethane waterproof elastomeric traffic coating system will be authorized by manufacturer with at least five years successful experience with the application of similar systems on restoration projects of similar type and nature.
- B. Source Limitations: Obtain urethane waterproof elastomeric traffic coating materials through one source from a single manufacturer.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, handle and protect all products in accordance with DIVISION 1, Section 01 60 00, Product Requirements.
- B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- C. Deliver urethane waterproof elastomeric traffic coating materials in manufacturer's original, unopened, undamaged containers with identification labels clearly shown.
- D. Store and protect material containers from harmful weather conditions as recommended by the manufacturer. Protect from damage during construction and while stored onsite.

1.07 PROJECT CONDITIONS

- A. Environmental Requirements: Verify surfaces and ambient air temperature at project site before, during and after application to assure compliance with manufacturer's recommendations. Surfaces shall be dry at time of installation.
 - 1. Weather Conditions: In accordance with manufacturer's instructions, do not apply urethane waterproof elastomeric traffic coating materials in rain, fog or mist or when such conditions are expected. Allow surfaces to attain dry conditions as recommended by the manufacturer before application.
 - 2. Compliance: Follow manufacturer's specific safety, health and environmental recommendations per most recent Material Safety Data Sheets, technical bulletins and instructions. Handle all solvents in compliance with EPA, OSHA and VOC requirements regarding health and safety standards.

1.08 WARRANTY

- A. Provide a five-year warranty on all workmanship.
- B. Provide a five-year manufacturer's labor and material warranty from the manufacturer of the selected product.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Product Options and Substitutions: The Contractor is required to submit technical literature from the selected product manufacturer.
- B. Acceptable manufacturers:
 - 1. Mameko Vulkem 350/351 Clear Waterproofing System

2. Carlyle (Quaker), with Decorative Colorquartz Aggregate.
3. Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.

2.02 RELATED MATERIALS

- A. The Contractor will ensure that all urethane waterproof elastomeric traffic coating materials are compatible with existing and new materials abutting the area of repair including sealants and caulking compounds and other waterproofing materials.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Comply with manufacturer's most recently published product data, including installation instructions, surface preparation and cleaning and post installation testing.

3.02 EXAMINATION

- A. Verify area to be repaired and substrate conditions are acceptable for application of urethane waterproof elastomeric traffic coating system in accordance with the manufacturer's instructions.
 1. General: Determine acceptable removal techniques for contaminants harmful to urethane waterproof elastomeric traffic coating performance, such as dust, dirt, grease, oils, curing compounds, form release agents, laitance, and previous films or water repellent materials. Prepare all surfaces in accordance with manufacturer's instructions. All surfaces must be clean, free of standing water, frost free, and dust free.

3.03 PREPARATION

- A. Protect adjacent work areas and finished surfaces from damage during installation of urethane waterproof elastomeric traffic coating materials.
- B. Remove all spalled or loose concrete by mechanical means. Do not remove sound concrete. Repair failed areas in accordance with Section 03900 – Concrete Restoration.
- C. Strip existing membrane to establish bare concrete by using mechanical scarifiers or other equally effective methods. Strip/acid etch residual material that cannot be removed by pressure washing and which may affect the adhesion of the waterproof base coating. Grind out/rout out all static and dynamic cracks as required by the manufacturer and fill or treat with the recommended compound.
- D. Pressure wash exposed concrete. Remove splatters, grind off high spots and

remove all loose material and surface contaminants such as oil, rust, grease, form release agents, etc. Float all voids with suitable compound so that no defects will “telegraph” through the finished coating.

3.04 APPLICATION

- A. Prior to the application of the base coat, install a cove bead of urethane sealant at the wall to floor intersection. Unless the manufacturer recommends otherwise, apply a primer to exposed concrete surfaces. A 40 mil base coat 3 “ (three inches) wide on each side of all cracks and construction joints including cracks filled with sealant. Apply traffic bearing waterproof urethane deck coating system to achieve a DFT (dry film thickness) of 60 (sixty) to 80 (eighty) mils. Apply entire system in full accordance with the manufacturer’s recommendations.

3.05 FIELD QUALITY CONTROL

- A. Where required by the Project Manager, provide manufacturer’s field service consisting of periodic site visits by manufacturer or their distributor representative for observation of application of urethane waterproof elastomeric traffic coating system.
- B. The Owner reserves the right to complete recommended testing required by the manufacturer at the completion of the work to assure warranty requirements and contract compliance are met.

3.06 SPECIAL REQUIREMENTS

- A. The manufacturer’s representative, or appointed supplier acting on his behalf, is required to approve the deck surface prior to the application of the system and to conduct a final inspection to ensure correct millage and application.
- B. The Contractor is required to conduct a 5 lb. (five pound) “pull test” prior to application of the base coat to establish usage of primer and extent of potential adhesion.

END OF SECTION

CLEAR PENETRATING SEALER ON CONCRETE
SECTION 07 19 00

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes: application of a water-based, clear penetrating sealer on concrete surfaces as specified herein
- B. Related Sections:
 - 1. Section 03 01 00: Concrete Restoration and Cleaning.
 - 2. Section 03 30 00: Epoxy Injection in Concrete.
 - 3. Section 07 90 03: Expansion Joint Repair.
 - 4. Section 07 90 02: Perimeter Sealant

1.02 PERFORMANCE REQUIREMENTS

- A. Provide only water-based, clear penetrating sealer that is compatible with the joint sealants in the areas receiving application.

1.03 SUBMITTALS

- A. Refer to DIVISION 1, Section 01 33 00 for submittal procedures and qualification requirements.
- B. Product Data: Submit manufacturer's most current technical product data indicating product testing results and compliance as indicated.
- C. Samples: Submit samples as required by the Project Manager.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Installer of clear penetrating sealer will be authorized by manufacturer with at least five years successful experience with the application of similar systems on restoration projects of similar type and nature.
- B. Source Limitations: Obtain clear penetrating sealer through one source from a single manufacturer.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, handle and protect all products in accordance with DIVISION 1, Section 01 60 00, Product Requirements.
- B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- C. Deliver clear penetrating sealer in manufacturer's original, unopened, undamaged containers with identification labels clearly shown.

CLEAR PENETRATING SEALER ON CONCRETE
SECTION 07 19 00

- D. Store and protect material containers from harmful weather conditions as recommended by the manufacturer. Protect from damage during construction and while stored onsite.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements: Verify surfaces and ambient air temperature at project site before, during and after application to assure compliance with manufacturer's recommendations. Surfaces shall be dry at time of installation.
 - 1. Weather Conditions: In accordance with manufacturer's instructions, do not apply clear penetrating sealer in rain, fog or mist or when such conditions are expected. Allow surfaces to attain dry conditions as recommended by the manufacturer before application.
 - 2. Compliance: Follow manufacturer's specific safety, health and environmental recommendations per most recent Material Safety Data Sheets, technical bulletins and instructions.

1.07 WARRANTY

- A. Provide a five-year warranty on all workmanship.
- B. Provide a five-year manufacturer's labor and material warranty from the manufacturer of the selected product.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Product Options and Substitutions: The Contractor is required to submit technical literature from the selected product manufacturer.
- B. Acceptable manufacturers:
 - 1. Hydrozo Enviroseal 40 (for horizontal surfaces).
 - 2. Hydrozo Enviroseal 20 (for vertical surfaces).
 - 3. Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.

2.02 RELATED MATERIALS

- A. The Contractor will ensure that the selected clear penetrating sealer is compatible with existing and new materials abutting the area of repair including sealants and caulking compounds and other waterproofing materials.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

CLEAR PENETRATING SEALER ON CONCRETE
SECTION 07 19 00

- A. Comply with manufacturer's most recently published product data, including installation instructions, surface preparation and cleaning.

3.02 EXAMINATION

- A. Verify area to be repaired and substrate conditions are acceptable for application of clear penetrating sealer in accordance with the manufacturer's instructions.
 - 1. General: Determine acceptable removal techniques for contaminants harmful to clear penetrating sealer performance, such as dust, dirt, grease, oils, curing compounds, form release agents, laitance, and previous films or water repellent materials. Prepare all surfaces in accordance with manufacturer's instructions. All surfaces must be clean, free of standing water, frost free, and dust free.

3.03 PREPARATION

- A. Protect adjacent work areas and finished surfaces from damage during installation of clear penetrating sealer.
- B. Remove all spalled or loose concrete by mechanical means. Do not remove sound concrete. Repair failed areas in accordance with Sections cited in PART 1, 1.01 SUMMARY, Paragraph B, above.
- C. Pressure wash all exposed concrete to receive clear penetrating sealer and allow to dry thoroughly. Remove all loose material and surface contaminants such as oil, rust, grease, form release agents, etc.

3.04 APPLICATION

- A. Apply a clear, penetrating, water-based silane sealer specifically designed to protect concrete surfaces and having an active alkylalkoxysilane content of 40% (forty percent) by weight for horizontal surfaces and 20% (twenty percent) by weight for vertical surfaces. Stir the material thoroughly prior to, and during, application. Apply to saturation level using a low pressure sprayer, or pour onto the surface (for horizontal applications) followed by brooming for uniform distribution and coverage.
- B. Apply at a suitable coverage rate for the density of the concrete to be sealed, which is estimated to be between 125 and 200 square feet per gallon of sealer. The Contractor shall consult with the manufacturer, or his designated representative, for advice on the coverage rate and shall apply the sealer in full accordance with the manufacturer's recommendation to achieve the desired warranty.

3.05 FIELD QUALITY CONTROL

- A. Where required by the Project Manager, provide manufacturer's field service consisting of periodic site visits by manufacturer or their distributor representative for observation of application of clear penetrating sealer.

CLEAR PENETRATING SEALER ON CONCRETE
SECTION 07 19 00

- B. The Owner reserves the right to complete recommended testing required by the manufacturer at the completion of the work to assure warranty requirements and contract compliance are met.

3.06 SPECIAL REQUIREMENTS

- A. Care must be taken during application to ensure that vehicles and pedestrians in the vicinity of the areas to be treated are protected from over-spray.

END OF SECTION

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes: Repair of E.I.F.S. (External Insulated Finish System) to include: (1) repair of surface cracks, (2) repair of deep cracks, (3) repair of cracks at aesthetic joints using bond breaker tape, (4) removal and replacement of sealant at joints, (5) repair of cracks at sealant joints using sealant tape, and (6) repair of puncture damage.
- B. Related Sections:
 - 1. Section 07 01 90: Joint Sealant
 - 2. Section 07 90 02: Perimeter Sealant for Openings

1.02 PERFORMANCE REQUIREMENTS

- A. Provide and install E.I.F.S. repair compound, repair mesh, bond breaker tape, backer rod, sealant, sealant primer (if required), sealant, base coat and finish coat to repair surface cracks, cracks at joints and punctures in E.I.F.S. systems.

1.03 SUBMITTALS

- A. Refer to DIVISION 1, Section 01 33 00 for submittal procedures and qualification requirements.
- B. Product Data: Submit manufacturer's most current technical product data indicating product testing results and compliance as indicated.
- C. Samples: Submit samples as required by the Project Manager.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: E.I.F.S. repair Contractor will be authorized by manufacturer with at least five years successful experience with the installation of similar repairs on restoration projects of similar type and nature.
- B. Source Limitations: Obtain E.I.F.S. repair materials through one source from a single manufacturer.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, handle and protect all products in accordance with DIVISION 1, Section 01 60 00, Product Requirements.
- B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.

- C. Deliver E.I.F.S. repair materials in manufacturer's original, unopened, undamaged containers with identification labels clearly shown.
- D. Store and protect material containers from harmful weather conditions as recommended by the manufacturer. Protect from damage during construction and while stored onsite.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements: Verify surfaces and ambient air temperature at project site before, during and after application to assure compliance with manufacturer's recommendations. Surfaces shall be dry at time of installation.
 - 1. Weather Conditions: In accordance with manufacturer's instructions, do not apply repair materials in rain, fog or mist or when such conditions are expected. Allow surfaces to attain dry conditions as recommended by the manufacturer before application.
 - 2. Compliance: Follow manufacturer's specific safety, health and environmental recommendations per most recent Material Safety Data Sheets, technical bulletins and instructions. Handle all solvents in compliance with EPA, OSHA and VOC requirements regarding health and safety standards.

1.07 WARRANTY

- A. Provide a five-year warranty on all workmanship.
- B. Provide a five-year manufacturer's labor and material warranty from the manufacturer of the selected product.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Product Options and Substitutions: The Contractor is required to submit technical literature from the selected product manufacturer.
- B. Acceptable manufacturers:
 - 1. Sto Corp
 - a. Sto RFP
 - b. Sto Mesh
 - c. Sto Insulation Board
 - d. Sto Finish Coat

- e. Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.

2.02 RELATED MATERIALS

- A. The Contractor will ensure that all E.F.I.S repair materials are compatible with existing and new materials abutting the area of repair including sealants, caulking compounds and other waterproofing materials.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Comply with manufacturer's most recently published product data, including installation instructions, surface preparation and cleaning and post installation testing.

3.02 EXAMINATION

- A. Verify area to be repaired and substrate conditions are acceptable for application of E.I.F.S. repair materials in accordance with the manufacturer's instructions.
 - 1. General: Determine acceptable removal techniques for contaminants harmful to E.F.I. S. repair materials such as dust, dirt, grease, oils, laitance, and previous films or water repellant materials. Prepare all surfaces in accordance with manufacturer's instructions. All surfaces must be clean and free of moisture and frost.

3.03 PREPARATION

- A. Protect adjacent work areas and finished surfaces from damage during application of repair materials.

3.04 APPLICATION

- A. Repair of Surface Cracks in E.I.F.S. (shallow cracks where reinforcing mesh is not severed):
 - 1. Scrape away any loose finish or base coat material. Clean if necessary to remove surface dirt. Use a small, stiff brush to apply repair compound into the crack and use a wet brush to remove excess material that gets onto the face of the finish. Allow to dry.
 - 2. Fill the crack with color-matched and texture-matched finish coat compound and allow to dry.

- B. Repair of Deeper Cracks in E.I.F.S. (where underlying mesh and membranes have been damaged):
1. Apply a water-based type gel paint remover in the affected area of the crack to soften the finish, exercising care not to get paint remover on unaffected areas. Use a scrapper to remove the finish after it has softened.
 2. Use sand paper or a lightly applied grinder to remove the top layer of base coat down to the surface of the mesh.
 3. If the cause of the crack is a gap between EPS boards, remove the base coat from within the gap and fill the gap with EPS slivers or a low expanding urethane spray foam. Allow the spray foam to cure. Shave or rasp the surface flush then embed reinforcing mesh in base coat compound with the mesh centered over the crack.
 4. If the cause of the crack is mesh that is abutted or has insufficient overlap, embed reinforcing mesh in base coat with the mesh centered over the crack and a minimum 2 ½ inch overlap on each side of the crack. Feather the edges of the base coat.
 5. Apply masking tape around the area under repair to be refinished. Then apply a finish coat. Scrape aggregate from the masking tape with a margin trowel, then scrape the finish coat tight against the wall surface. Float with a plastic float to match the adjacent texture. Remove the masking tape and use a brush to “stipple” the wet edge of the finish into the adjacent finish. Alternate between a brush and a float to blend the texture.
- C. Repair of Cracks at Aesthetic Joints in E.I.F.S. using Bond Breaker Tape: (Aesthetic joints are defined as those joints scored or routed into the EIFS board.)
1. Clean the joint surface removing any dirt, algae or other surface contaminants, using a trisodium phosphate or similar solution, including bleach if algae or mildew is present.
 2. Center bond breaker tape over the crack to prevent three-sided adhesion of the sealant.
 3. Install sealant material over the bond breaker tape and tool the sealant in two Directions. Protect from rain and freezing until dry.
- D. Removal and Replacement of Sealant at Joints in E.I.F.S: (Joints between dissimilar materials and other joints in wall assemblies.)
1. Slice along the terminating edges of the deteriorated sealant with a sharp knife to separate it from the EIFS finish or base coat material, exercising care not to slice into the EIFS material.

2. Pull the sealant and backer rod from the joint. Remove the EIFS finish (if present in the joint) by grinding with a hand-held grinder or by softening the finish with a water-based gel type paint remover. Do not grind through layer of base coat in the joint or damage the EIFS reinforcing mesh. Blow away dust and dirt in the joint with oil-free compressed air.
 3. Apply a thin (1/32") skim coat of base coat to the prepared joint surfaces to create a smooth surface free of ridges so that it completely hides the reinforcing mesh. Protect from rain and freezing until dry.
 4. Mask the adjacent EIFS finish on the face of the wall and prime with the sealant manufacturer's primer (if required) and allow to dry.
 5. Install closed cell backer rod to the proper depth in the joint. Apply sealant in the proper depth-to-width ratio and tool to ensure complete contact with the joint surfaces. Protect from rain and freezing until dry.
- E. Repair of Sealant Joints in E.I.F.S. Using Sealant Tape:
1. Clean the EIFS surfaces adjacent to the deteriorated joint with a trisodium phosphate detergent solution and warm water (and bleach if algae and mildew are present) to remove dirt, mold and any other surface contamination. Rinse and allow to dry thoroughly.
 2. Hold a small piece of sealant tape, centered over the joint, and mark the finish at the edges of the sealant tape. Mask the areas immediately adjacent to the marks along the length of the joint.
 3. Prime the surfaces immediately adjacent to the joint with the sealant manufacturer's primer, using care not to prime surfaces that will not be covered by sealant tape.
 4. Apply two parallel beads of the sealant manufacturer's adhesive slightly to the inside (joint side) of the masking tape along each side of the joint.
 5. Immediately unroll and lay the sealant tape into the wet adhesive and press into place with a vinyl roller. Remove any excess adhesive that squeezes past the edges of the sealant tape and tool the adhesive along the edges of the tape. Protect from rain and freezing until dry.
- F. Repair of Puncture Damage in E.I.F.S
1. Clean the area around the puncture damage and apply a water-based gel type paint remover with a stiff brush to the finish in the immediate area surrounding the damage. Use a hand held grinder or sand paper to remove the finish at least five inches around the damage. Remove the top layer of base coat down to the surface of the mesh.

2. Cut the mesh at the damaged area so that at least 2 ½ inches of intact base coat and reinforcing mesh exist between the puncture damage and the finished edge. Cut a piece of insulation board slightly larger than the damaged area and temporarily pin it in place with a nail. Use a sharp knife to cut through the insulation board cutting at least one inch away from the mesh cut. Cut the board on an angle so that the new board will be slightly larger than the hole to be filled with it.
3. Make a clean cut to the substrate and remove the old board. Dry fit the new board and check for fit. "Butter" the new board along its perimeter and center and press into place. Allow the adhesive to dry then rasp or sand flush with the adjacent surface.
4. Cut mesh to overlap the existing mesh at least one inch, apply base coat and embed the mesh. Level the base coat to match the adjacent surfaces. Allow to dry.
5. If primer was used in the original installation, apply primer and allow to dry.
6. Apply finish coat and trowel and stipple to match existing level and finish texture.

3.05 FIELD QUALITY CONTROL

- A. Where required by the Project Manager, provide manufacturer's field service consisting of periodic site visits by manufacturer or their distributor representative for observation of application of E.I.F.S. repair materials.
- B. The Owner reserves the right to complete recommended testing required by the manufacturer at the completion of the work to assure warranty requirements and contract compliance are met.

3.06 SPECIAL REQUIREMENTS

- A. In situations involving large areas of damage to E.I.F.S systems, the Contractor may be required to repair a test area to demonstrate workmanship quality and proper matching of color and texture, for approval by the Owner.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes:
- B. Drip metal, gutters, downspouts, expansion joint and parapet coping caps.
- C. Counterflashing over roof system base flashing.
- D. Counterflashing and extension curbs at roof mounted equipment.
- E. Weatherheads, goosenecks and other metal fabrications at various roof membrane penetrations for mechanical, plumbing and electrical devices and services.
- F. Materials specified in this section are for use in conjunction with roof repairs, and may be an extension of an existing detail. The intent of these specifications is to match the existing materials, configurations and finish being used. This section is intended to define the quality of materials and workmanship provided.

1.2 RELATED SECTIONS:

- A. Section 06 10 54 – Wood and Timber Repair.
- B. Section 07 90 03 – Perimeter Sealant for Openings.
- C. Section 09 91 13 - paintings and coatings exterior walls, ceilings and soffits.

1.3 REFERENCES:

- 1. ASTM International:
 - a. ASTM A 167 – Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip
 - b. ASTM A 480/A480M – Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet and Strip
 - c. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - d. ASTM A 755/A 755M - Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products
 - e. ASTM A 792/A 792M – Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
 - f. ASTM A 924/A 924M – Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
 - g. ASTM B 29 – Standard Specification for Refined Lead.
 - h. ASTM B 32 - Standard Specification for Solder Metal.
 - i. ASTM B 209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

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- j. ASTM B 306 – Standard Specification for Copper Drainage Tube (DWV).
- k. ASTM B 370 – Standard Specification for Copper Sheet and Strip for Building Construction.
- l. ASTM B 749 - Standard Specification for Lead and Lead Alloy Strip, Sheet, and Plate Products.
- m. ASTM D 226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
- n. ASTM D 1187 – Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal.
- o. ASTM D 4397 - Standard Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications
- p. ASTM D4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
- 2. National Roofing Contractors' Association:
 - a. NRCA – National Roofing Contractors' Association Manual.
- 3. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
 - a. SMACNA - Architectural Sheet Metal Manual.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Shop Drawings: Submit shop drawings for any condition not shown on plans and details.
- C. Product Data: Submit data on manufactured components metal types, finishes, and characteristics.
- D. Samples:
 - 1. Submit two samples 12 x 12 inch in size illustrating a typical external corner, internal corner, material and finish.
 - 2. Submit two samples 12 x 12 inch in size illustrating metal finish color.

1.5 QUALITY ASSURANCE

- A. Perform work in accordance with SMACNA and standard details and requirements.
- B. Failure to install work in strict accordance with provisions of this Section is subject to total rejection of the work specified herein.
- C. Maintain copy of documents on site.

1.6 MOCK-UPS

- A. Construct "in-place" sheet metal mock-ups demonstrating the following conditions as applicable and detailed in the project documents:
 - 1. Perimeter edge metal, splice and termination conditions.
 - 2. Edge metal exterior and interior corner conditions

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- 3. Gutter conditions: Attachment; expansion joint; splice; termination; downspout connections, etc.
 - 4. Typical interior wall counterflashing conditions.
 - 5. Parapet coping conditions and splice, etc.
 - 6. Roof expansion joint coping conditions:
 - 7. Additional conditions as may be determined by the Architect or Owner.
- B. Mock-ups are to be constructed and located where designated. Upon approval mock-ups may remain as part of the work.
- 1.7 QUALIFICATIONS
- A. Fabricator and Installer: Company specializing in sheet metal work with minimum three years documented experience.
- 1.8 PRE-INSTALLATION MEETINGS
- A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
 - B. Convene minimum one week prior to commencing work of this section.
- 1.9 DELIVERY, STORAGE, AND HANDLING
- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
 - B. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
 - C. Prevent contact with materials causing discoloration or staining.
- 1.10 COORDINATION
- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
 - B. Coordinate application of flashings with application of roofing, protruding material, and roof accessories to provide a complete weathertight installation according to the specified warranty requirements.

PART 2 PRODUCTS

2.1 SHEET MATERIALS

- A. Stainless Steel: ASTM A 240, ASTM A 480 and ASTM A 666; Type 304, soft temper (annealed), 22 ga. or 24 ga. thickness unless otherwise specified; smooth 2B finish.
- B. Copper: ASTM B 370-88, cold-rolled, 16 oz/sq.ft. (.0216"), natural finish, unless otherwise shown. Vinyl protective coating shall be on copper sheet to protect metal from premature staining from handling. The vinyl protective coating shall remain on the

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metal until the entire job is finished and all of the vinyl removed on the same day if possible.

- C. Coated Galvanized Sheet Metal for Thermoplastic Roofs: Twenty (20) mil UV resistant PVC (polyvinyl chloride with Elvaloy®* KEE (ketone ethylene ester) membrane laminated to 24 gauge, G90 hot-dip galvanized steel (ASTM A 525). Approved for use by membrane manufacturer.
- D. Coated Aluminum Sheet Metal for Thermoplastic Roofs: Twenty (20) mil UV resistant PVC (polyvinyl chloride with Elvaloy®* KEE (ketone ethylene ester) membrane laminated 0.040 thick 3003-H14 aluminum,
- E. Coated Stainless Steel for Thermoplastic Roofs: Membrane manufacturer=s approved coating laminated to 24 gage stainless steel, AISI Type 304, ASTM A 167-, 2B annealed finish, soft except where harder, temper required for forming or performance.
- F. Aluminum-Zinc Alloy Coated Steel: (Galvalume) Coated on both sides with a layer of aluminum-zinc alloy by continuous hot-dip method (approximately 55% aluminum, 45% zinc). Triple spot minimum 0.55 oz. Per square foot as determined by ASTM A 792, 24 gage except as otherwise indicated.
- G. Zinc-Coated Steel: (Galvanized) Commercial quality with 0.20% copper, ASTM A 525 except ASTM A 527 for lock-forming, G90 hot-dip galvanized, 24 gage except as otherwise indicated.
- H. Aluminum: ASTM B 209, alloy 3003, temper H14, AA-C22A41 mill finish; 0.040" thick; Coping 0.050" thick.
- I. Sheet Lead: Standard 0.063 inch thick lead sheet weighing 4 pounds per square foot, arsenical-antimonial and pig lead alloy meeting the requirements of ASTM B29. Use sheet lead or tubing for flashing of vent pipes, roof drain sumps and other roof penetrations noted.

2.2 ACCESSORIES

- A. Termination Bar: Aluminum ASTM B-209, Alloy 6061, Temper T-6, mill finish; sizes 1/8" thick by 1-1/2" with rounded edges.
- B. Sheet Metal Fasteners:
 - 1. Fasteners: Stainless steel
 - 2. Exposed fasteners are prohibited, and may only be used where specifically permitted by the project details, Owner, or the Architect.
 - 3. Fasteners being on weather side of metal are to be a minimum #10 size "Scots" type screw with metal-backed neoprene washer integral with the head of the screw, or 3/16" diameter minimum steel rivet.
 - a. Locate and space fastenings for true vertical and horizontal alignment. Use proper type fastening tools to obtain controlled uniform compression for positive seal without rupture of neoprene washer.

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4. Use stainless steel fasteners for exterior application and cadmium plated fasteners for interior applications. Use painted fasteners where fastening into painted panel or trim.
- C. Fasteners: Stainless steel: Fastener size and penetrations into various substrates should be as follows:
1. Wood: ¼ inch screw x 2 inch penetration or 1 ½ inch annular ring stainless steel roofing nail.
 2. Concrete: ¼ inch “zamac” nail-in x 1 ½ inch penetration.
 3. Concrete Block: ¼ inch “zamac” nail-in x 1 ½ inch penetration.
- D. Fastener Schedule: Anchorage for below assumed to be into wood blocking, See details for other specifics.
1. Continuous Cleats: 1 ½ inch annular ring stainless steel roofing nails at 6 inches on center maximum.
 2. See Fastener Schedule sheets included as part of the project documents.
 3. For all conditions not covered, refer to fastener specifications above or consult with Owner, Manufacture, and Architect.
- E. Dry-in Membrane: Forty (40) mils thick, polyester reinforced, SBS modified asphalt waterproofing and underlayment membrane sheet.
1. Protecto-Wrap “Rainproof 40”
 2. Soprema “Sopralene Stick”
 3. Tamko “TW Metal and Tile” underlayment
 4. Architect approved (prior to bidding) equivalent product.
- F. Primer: Asphaltic based primer for flanges set in adhesive.
- G. Protective Backing Paint (bituminous coating): ASTM D1187, 'Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal.'; SSPC-Paint 12, Cold-Applied Asphalt Mastic (Extra Thick Film – 15 mil dft) [Society for Protective Coatings].
- H. Sealant: Sealant specified in Section 07 01 90.
- I. Plastic Cement: ASTM D 4586, Type I.
- J. Flashing Tape (concealed application): Double sided, gray extruded or preformed, 99% solids, cross linked polyisobutylene compound, non-sag, non-toxic, non-staining, permanently elastic self adhesive tape. One eighth (1/8) inch minimum thickness, 3/4” minimum width unless otherwise noted on the drawings.
1. Pecora Corporation Extru-Seal Glazing Tape
 2. Tremco Construction Products 440 II Tape
 3. Equivalent products as approved by the Owner or Architect.
- K. Splash Pads: Precast concrete type, of size and profiles indicated; minimum 3000 psi at 28 days, with minimum 5 percent air entrainment.
- L. Downspout Boots: Stainless Steel, or

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- M. Downspout Boots: Extruded aluminum tubing; 0.050", mill finish.
- N. Solder/Flux/Cleaner: ASTM B 32;
 - 1. Solder: type suitable for application and material being soldered. ASTM B-32; 50/50 lead/tin type or ASTM B-32: 90/10 tin/silver type
 - 2. Flux: Acid - Chloride type
 - 3. Flux Cleaner: Washing Soda Solution - 5% to 10%
- O. Sheet Metal Adhesive: Aluminum adhesive: SciGrip SG5000 Series adhesive, 2 component system as manufactured by SCIGRIP Americas, 600 Ellis Road, Durham, NC 27703. Contact: (887) 477-4583, (www.scigrip.com) or Owner/Architect approved equal.

2.3 FABRICATION

- A. Form sections shape indicated on Drawings, accurate in size, square, and free from distortion or defects.
- B. Fabricate cleats of same material as sheet metal, interlocking with sheet.
- C. Form pieces in longest possible lengths.
- D. Hem exposed edges on underside 1/2 inch; miter and seam corners.
- E. Form material with flat lock seams, except where otherwise indicated. At moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
- F. Fabricate corners from one piece with minimum 18 inch long legs; solder for rigidity, seal with sealant.
- G. Pre-tin edges of stainless steel sheet. Solder shop formed metal joints. After soldering, remove flux. Wipe and wash solder joints clean. Weather seal joints. (Heliarc shop formed aluminum joints).
- H. Perform soldering work slowly, with properly heated irons to thoroughly heat seam material and sweat solder through full width of seam that shall show not less than 1 inch of evenly flowed solder.
 - 1. Start soldering immediately after application of flux.
 - 2. Solder flat locked seams.
- I. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.
- J. Fabricate flashings to allow toe to extend 1 1/2" over wood nailers. Return and brake edges.
- K. Fabricate accessories in profile and size to suit gutters and downspouts.
 - 1. Anchorage Devices: In accordance with SMACNA requirements.
 - 2. Gutter Supports: Brackets. Straps.
 - 3. Downspout Supports: Brackets.

- L. Seal metal joints.

2.4 FINISH (when painting is required)

- A. Dissimilar Metal Isolation: Where applicable, back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mils when dissimilar metals are in contact.
- B. Prepare stainless steel surfaces in accordance with Section 09 90 00 – Painting and Coating.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
- C. Verify roofing termination and base flashings are in place, sealed, and secure.
- D. Do not proceed with work of this section until conditions detrimental to the proper and timely completion of the work have been corrected in an acceptable manner.

3.2 PREPARATION

- A. Install starter and edge strips, and cleats before starting installation.
- B. Install surface mounted counterflashing (reglets) to lines and levels indicated on Drawings. Seal top of counterflashing (reglets) with sealant.
- C. Paint concealed metal surfaces with protective backing paint to minimum dry film thickness of 15 mils where applicable.

3.3 INSTALLATION

- A. Where applicable, insert flashings into reglets to form tight fit. Secure in place with lead wedges. Seal flashings into reglets with sealant.
- B. Secure flashing in place using concealed fasteners. Use exposed fasteners only where permitted.
- C. Apply plastic cement compound between metal flashings and felt flashings.
- D. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

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- E. Solder / weld per metal type metal joints for full metal surface contact. After soldering, wash metal clean with neutralizing solution and rinse with water.
- F. Apply modified bitumen cement compound between metal flashing and bituminous underlayment and/or flashing membrane. At other locations utilize self-adhesive butyl flashing tape as specified above.
- G. Secure gutters and downspouts in place using specified fasteners.
- H. Connect downspouts to downspout boot system. Seal connection watertight.
- I. Set splash blocks under downspouts.
- J. Seal metal joints watertight.

3.4 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspection will involve surveillance of Work during installation to ascertain compliance with specified requirements.

3.5 SCHEDULE

1.1 SCHEDULE

1.	Edge Metal - aluminum	Aluminum	0.040"	match existing
2.	Edge Metal - stainless steel	Stainless Steel	24 gage	Mill
3.	Edge Metal - copper	Copper Sheet	16 oz.	Natural
4.	Edge Metal - Cont Cleats	stainless steel	22 gage	Mill
5.	Coping Metal - aluminum	Aluminum	0.040"	match existing
6.	Coping Metal - stainless steel	Stainless Steel	24 gage	Mill
7.	Coping Metal - copper	Copper Sheet	16 oz.	Natural
8.	Coping Joint Covers	Matching material, one gage thinner if hemmed		
9.	Cleat/Blocking and Cants	Galvanized Steel	16 gage	Mill
10.	Scuppers - aluminum	Aluminum	0.040"	match existing
11.	Scuppers - stainless steel	Stainless Steel	24 gage	Mill

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12.	Scuppers - copper	Copper Sheet	16 oz.	Natural
13.	Counterflashing - aluminum	Aluminum	0.040"	match existing
14.	Counterflashing - stainless steel	Stainless Steel	24 gage	Mill
15.	Counterflashing - copper	Copper Sheet	16 oz.	Natural
16.	Expansion Joint Covers	Stainless Steel	24 gage	Mill
17.	Abandoned Curb Covers	Stainless Steel	24 gage	Mill
18.	Gutters - aluminum	Aluminum	0.050"	match existing
19.	Gutters - stainless steel	Stainless Steel	22 gage	Mill
20.	Gutters - copper	Copper Sheet	20 oz.	Natural
21.	Downspouts - aluminum	Aluminum	0.040"	match existing
22.	Downspouts - stainless steel	Stainless Steel	24 gage	Mill
23.	Downspouts - copper	Copper Sheet	16 oz.	Natural
24.	Downspouts - vandal resistant	Extruded Aluminum	0.125"	Mill

Miscellaneous metal flashing and transitions: Stainless steel, mill finish, 24 gage; or 0.040 Aluminum (mill finish or prefinished); or 16 ounce copper as required by Architect.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes:
- B. Drip metal, gutters, downspouts, expansion joint and parapet coping caps.
- C. Counterflashing over roof system base flashing.
- D. Counterflashing and extension curbs at roof mounted equipment.
- E. Weatherheads, goosenecks and other metal fabrications at various roof membrane penetrations for mechanical, plumbing and electrical devices and services.
- F. Materials specified in this section are for use in conjunction with roof repairs, and may be an extension of an existing detail. The intent of these specifications is to match the existing materials, configurations and finish being used. This section is intended to define the quality of materials and workmanship provided.

1.2 RELATED SECTIONS:

- A. Section 06 10 54 – Wood and Timber Repair.
- B. Section 07 90 03 – Perimeter Sealant for Openings.
- C. Section 09 91 13 - paintings and coatings exterior walls, ceilings and soffits.

1.3 REFERENCES:

- 1. ASTM International:
 - a. ASTM A 167 – Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip
 - b. ASTM A 480/A480M – Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet and Strip
 - c. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - d. ASTM A 755/A 755M - Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products
 - e. ASTM A 792/A 792M – Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
 - f. ASTM A 924/A 924M – Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
 - g. ASTM B 29 – Standard Specification for Refined Lead.
 - h. ASTM B 32 - Standard Specification for Solder Metal.
 - i. ASTM B 209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

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- j. ASTM B 306 – Standard Specification for Copper Drainage Tube (DWV).
- k. ASTM B 370 – Standard Specification for Copper Sheet and Strip for Building Construction.
- l. ASTM B 749 - Standard Specification for Lead and Lead Alloy Strip, Sheet, and Plate Products.
- m. ASTM D 226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
- n. ASTM D 1187 – Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal.
- o. ASTM D 4397 - Standard Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications
- p. ASTM D4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
- 2. National Roofing Contractors' Association:
 - a. NRCA – National Roofing Contractors' Association Manual.
- 3. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
 - a. SMACNA - Architectural Sheet Metal Manual.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Shop Drawings: Submit shop drawings for any condition not shown on plans and details.
- C. Product Data: Submit data on manufactured components metal types, finishes, and characteristics.
- D. Samples:
 - 1. Submit two samples 12 x 12 inch in size illustrating a typical external corner, internal corner, material and finish.
 - 2. Submit two samples 12 x 12 inch in size illustrating metal finish color.

1.5 QUALITY ASSURANCE

- A. Perform work in accordance with SMACNA and standard details and requirements.
- B. Failure to install work in strict accordance with provisions of this Section is subject to total rejection of the work specified herein.
- C. Maintain copy of documents on site.

1.6 MOCK-UPS

- A. Construct "in-place" sheet metal mock-ups demonstrating the following conditions as applicable and detailed in the project documents:
 - 1. Perimeter edge metal, splice and termination conditions.
 - 2. Edge metal exterior and interior corner conditions

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- 3. Gutter conditions: Attachment; expansion joint; splice; termination; downspout connections, etc.
 - 4. Typical interior wall counterflashing conditions.
 - 5. Parapet coping conditions and splice, etc.
 - 6. Roof expansion joint coping conditions:
 - 7. Additional conditions as may be determined by the Architect.
- B. Mock-ups are to be constructed and located where designated. Upon approval mock-ups may remain as part of the work.
- 1.7 QUALIFICATIONS
- A. Fabricator and Installer: Company specializing in sheet metal work with minimum three years documented experience.
- 1.8 PRE-INSTALLATION MEETINGS
- A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
 - B. Convene minimum one week prior to commencing work of this section.
- 1.9 DELIVERY, STORAGE, AND HANDLING
- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
 - B. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
 - C. Prevent contact with materials causing discoloration or staining.
- 1.10 COORDINATION
- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
 - B. Coordinate application of flashings with application of roofing, protruding material, and roof accessories to provide a complete weathertight installation according to the specified warranty requirements.

PART 2 PRODUCTS

2.1 SHEET MATERIALS

- A. Stainless Steel: ASTM A 240, ASTM A 480 and ASTM A 666; Type 304, soft temper (annealed), 22 ga. or 24 ga. thickness unless otherwise specified; smooth 2B finish.
- B. Copper: ASTM B 370-88, cold-rolled, 16 oz/sq.ft. (.0216"), natural finish, unless otherwise shown. Vinyl protective coating shall be on copper sheet to protect metal from premature staining from handling. The vinyl protective coating shall remain on the

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metal until the entire job is finished and all of the vinyl removed on the same day if possible.

- C. Coated Galvanized Sheet Metal for Thermoplastic Roofs: Twenty (20) mil UV resistant PVC (polyvinyl chloride with Elvaloy®* KEE (ketone ethylene ester) membrane laminated to 24 gauge, G90 hot-dip galvanized steel (ASTM A 525). Approved for use by membrane manufacturer.
- D. Coated Aluminum Sheet Metal for Thermoplastic Roofs: Twenty (20) mil UV resistant PVC (polyvinyl chloride with Elvaloy®* KEE (ketone ethylene ester) membrane laminated 0.040 thick 3003-H14 aluminum,
- E. Coated Stainless Steel for Thermoplastic Roofs: Membrane manufacturer=s approved coating laminated to 24 gage stainless steel, AISI Type 304, ASTM A 167-, 2B annealed finish, soft except where harder, temper required for forming or performance.
- F. Aluminum-Zinc Alloy Coated Steel: (Galvalume) Coated on both sides with a layer of aluminum-zinc alloy by continuous hot-dip method (approximately 55% aluminum, 45% zinc). Triple spot minimum 0.55 oz. Per square foot as determined by ASTM A 792, 24 gage except as otherwise indicated.
- G. Zinc-Coated Steel: (Galvanized) Commercial quality with 0.20% copper, ASTM A 525 except ASTM A 527 for lock-forming, G90 hot-dip galvanized, 24 gage except as otherwise indicated.
- H. Aluminum: ASTM B 209, alloy 3003, temper H14, AA-C22A41 mill finish; 0.040" thick; Coping 0.050" thick.
- I. Sheet Lead: Standard 0.063 inch thick lead sheet weighing 4 pounds per square foot, arsenical-antimonial and pig lead alloy meeting the requirements of ASTM B29. Use sheet lead or tubing for flashing of vent pipes, roof drain sumps and other roof penetrations noted.

2.2 ACCESSORIES

- A. Termination Bar: Aluminum ASTM B-209, Alloy 6061, Temper T-6, mill finish; sizes 1/8" thick by 1-1/2" with rounded edges.
- B. Sheet Metal Fasteners:
 - 1. Fasteners: Stainless steel
 - 2. Exposed fasteners are prohibited, and may only be used where specifically permitted by the project details or the Architect.
 - 3. Fasteners being on weather side of metal are to be a minimum #10 size "Scots" type screw with metal-backed neoprene washer integral with the head of the screw, or 3/16" diameter minimum steel rivet.
 - a. Locate and space fastenings for true vertical and horizontal alignment. Use proper type fastening tools to obtain controlled uniform compression for positive seal without rupture of neoprene washer.

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4. Use stainless steel fasteners for exterior application and cadmium plated fasteners for interior applications. Use painted fasteners where fastening into painted panel or trim.
- C. Fasteners: Stainless steel: Fastener size and penetrations into various substrates should be as follows:
1. Wood: ¼ inch screw x 2 inch penetration or 1 ½ inch annular ring stainless steel roofing nail.
 2. Concrete: ¼ inch “zamac” nail-in x 1 ½ inch penetration.
 3. Concrete Block: ¼ inch “zamac” nail-in x 1 ½ inch penetration.
- D. Fastener Schedule: Anchorage for below assumed to be into wood blocking, See details for other specifics.
1. Continuous Cleats: 1 ½ inch annular ring stainless steel roofing nails at 6 inches on center maximum.
 2. See Fastener Schedule sheets included as part of the project documents.
 3. For all conditions not covered, refer to fastener specifications above or consult with Architect.
- E. Dry-in Membrane: Forty (40) mils thick, polyester reinforced, SBS modified asphalt waterproofing and underlayment membrane sheet.
1. Protecto-Wrap “Rainproof 40”
 2. Soprema “Sopralene Stick”
 3. Tamko “TW Metal and Tile” underlayment
 4. Architect approved (prior to bidding) equivalent product.
- F. Primer: Asphaltic based primer for flanges set in adhesive.
- G. Protective Backing Paint (bituminous coating): ASTM D1187, 'Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal.'; SSPC-Paint 12, Cold-Applied Asphalt Mastic (Extra Thick Film – 15 mil dft) [Society for Protective Coatings].
- H. Sealant: Sealant specified in Section 07 90 00.
- I. Plastic Cement: ASTM D 4586, Type I.
- J. Flashing Tape (concealed application): Double sided, gray extruded or preformed, 99% solids, cross linked polyisobutylene compound, non-sag, non-toxic, non-staining, permanently elastic self adhesive tape. One eighth (1/8) inch minimum thickness, 3/4” minimum width unless otherwise noted on the drawings.
1. Pecora Corporation Extru-Seal Glazing Tape
 2. Tremco Construction Products 440 II Tape
 3. Equivalent products as approved by the Owner or Architect.
- K. Splash Pads: Precast concrete type, of size and profiles indicated; minimum 3000 psi at 28 days, with minimum 5 percent air entrainment.
- L. Downspout Boots: Stainless Steel, or

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- M. Downspout Boots: Extruded aluminum tubing; 0.050", mill finish.
- N. Solder/Flux/Cleaner: ASTM B 32;
 - 1. Solder: type suitable for application and material being soldered. ASTM B-32; 50/50 lead/tin type or ASTM B-32: 90/10 tin/silver type
 - 2. Flux: Acid - Chloride type
 - 3. Flux Cleaner: Washing Soda Solution - 5% to 10%
- O. Sheet Metal Adhesive: Aluminum adhesive: SciGrip SG5000 Series adhesive, 2 component system as manufactured by SCIGRIP Americas, 600 Ellis Road, Durham, NC 27703. Contact: (887) 477-4583, (www.scigrip.com) or Architect approved equal.

2.3 FABRICATION

- A. Form sections shape indicated on Drawings, accurate in size, square, and free from distortion or defects.
- B. Fabricate cleats of same material as sheet metal, interlocking with sheet.
- C. Form pieces in longest possible lengths.
- D. Hem exposed edges on underside 1/2 inch; miter and seam corners.
- E. Form material with flat lock seams, except where otherwise indicated. At moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
- F. Fabricate corners from one piece with minimum 18 inch long legs; solder for rigidity, seal with sealant.
- G. Pre-tin edges of stainless steel sheet. Solder shop formed metal joints. After soldering, remove flux. Wipe and wash solder joints clean. Weather seal joints. (Heliarc shop formed aluminum joints).
- H. Perform soldering work slowly, with properly heated irons to thoroughly heat seam material and sweat solder through full width of seam that shall show not less than 1 inch of evenly flowed solder.
 - 1. Start soldering immediately after application of flux.
 - 2. Solder flat locked seams.
- I. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.
- J. Fabricate flashings to allow toe to extend 1 1/2" over wood nailers. Return and brake edges.
- K. Fabricate accessories in profile and size to suit gutters and downspouts.
 - 1. Anchorage Devices: In accordance with SMACNA requirements.
 - 2. Gutter Supports: Brackets. Straps.
 - 3. Downspout Supports: Brackets.

- L. Seal metal joints.

2.4 FINISH (when painting is required)

- A. Dissimilar Metal Isolation: Where applicable, back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mils when dissimilar metals are in contact.
- B. Prepare stainless steel surfaces in accordance with Section 09 90 00 – Painting and Coating.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
- C. Verify roofing termination and base flashings are in place, sealed, and secure.
- D. Do not proceed with work of this section until conditions detrimental to the proper and timely completion of the work have been corrected in an acceptable manner.

3.2 PREPARATION

- A. Install starter and edge strips, and cleats before starting installation.
- B. Install surface mounted counterflashing (reglets) to lines and levels indicated on Drawings. Seal top of counterflashing (reglets) with sealant.
- C. Paint concealed metal surfaces with protective backing paint to minimum dry film thickness of 15 mils where applicable.

3.3 INSTALLATION

- A. Where applicable, insert flashings into reglets to form tight fit. Secure in place with lead wedges. Seal flashings into reglets with sealant.
- B. Secure flashing in place using concealed fasteners. Use exposed fasteners only where permitted.
- C. Apply plastic cement compound between metal flashings and felt flashings.
- D. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

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- E. Solder / weld per metal type metal joints for full metal surface contact. After soldering, wash metal clean with neutralizing solution and rinse with water.
- F. Apply modified bitumen cement compound between metal flashing and bituminous underlayment and/or flashing membrane. At other locations utilize self-adhesive butyl flashing tape as specified above.
- G. Secure gutters and downspouts in place using specified fasteners.
- H. Connect downspouts to downspout boot system. Seal connection watertight.
- I. Set splash blocks under downspouts.
- J. Seal metal joints watertight.

3.4 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspection will involve surveillance of Work during installation to ascertain compliance with specified requirements.

3.5 SCHEDULE

1.1 SCHEDULE

1.	Edge Metal - aluminum	Aluminum	0.040"	match existing
2.	Edge Metal - stainless steel	Stainless Steel	24 gage	Mill
3.	Edge Metal - copper	Copper Sheet	16 oz.	Natural
4.	Edge Metal - Cont Cleats	stainless steel	22 gage	Mill
5.	Coping Metal - aluminum	Aluminum	0.040"	match existing
6.	Coping Metal - stainless steel	Stainless Steel	24 gage	Mill
7.	Coping Metal - copper	Copper Sheet	16 oz.	Natural
8.	Coping Joint Covers	Matching material, one gage thinner if hemmed		
9.	Cleat/Blocking and Cants	Galvanized Steel	16 gage	Mill
10.	Scuppers - aluminum	Aluminum	0.040"	match existing
11.	Scuppers - stainless steel	Stainless Steel	24 gage	Mill

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12.	Scuppers - copper	Copper Sheet	16 oz.	Natural
13.	Counterflashing - aluminum	Aluminum	0.040"	match existing
14.	Counterflashing - stainless steel	Stainless Steel	24 gage	Mill
15.	Counterflashing - copper	Copper Sheet	16 oz.	Natural
16.	Expansion Joint Covers	Stainless Steel	24 gage	Mill
17.	Abandoned Curb Covers	Stainless Steel	24 gage	Mill
18.	Gutters - aluminum	Aluminum	0.050"	match existing
19.	Gutters - stainless steel	Stainless Steel	22 gage	Mill
20.	Gutters - copper	Copper Sheet	20 oz.	Natural
21.	Downspouts - aluminum	Aluminum	0.040"	match existing
22.	Downspouts - stainless steel	Stainless Steel	24 gage	Mill
23.	Downspouts - copper	Copper Sheet	16 oz.	Natural
24.	Downspouts - vandal resistant	Extruded Aluminum	0.125"	Mill

Miscellaneous metal flashing and transitions: Stainless steel, mill finish, 24 gage; or 0.040 Aluminum (mill finish or prefinished); or 16 ounce copper as required by Architect.

END OF SECTION

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes: Cut out and replace perimeter sealant at metal-to-metal, metal-to-glass and masonry-to-metal interfaces including all heads and jambs at doors, windows and sliding glass doors, and around louvers and other framed openings.
- B. Related Sections: None

1.02 PERFORMANCE REQUIREMENTS

- A. Provide and install urethane or silicone sealant, as specified herein, around the perimeter of doors, windows, sliding glass doors, louvers and other framed openings. Materials shall be compatible with all materials abutting the affected areas of repair with particular attention paid to exposed insulation and interior and exterior surface finishes.

1.03 SUBMITTALS

- A. Refer to DIVISION 1, Section 01 33 00 for submittal procedures and qualification requirements.
- B. Product Data: Submit manufacturer's most current technical product data indicating product testing results and compliance as indicated.
- C. Samples: Submit samples as required by the Project Manager.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Installer of perimeter sealant will be authorized by manufacturer with at least five years successful experience with the application of perimeter sealant on restoration projects of similar type and nature.
- B. Source Limitations: Obtain perimeter sealant through one source from a single manufacturer.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, handle and protect all products in accordance with DIVISION 1, Section 01 60 00, Product Requirements.
- B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- C. Deliver perimeter sealant in manufacturer's original, unopened, undamaged containers with identification labels clearly shown.

- D. Store and protect material containers from harmful weather conditions as recommended by the manufacturer. Protect from damage during construction and while stored onsite.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements: Verify surfaces, substrates and ambient air temperature at project site before, during and after application to assure compliance with manufacturer's recommendations. Surfaces shall be dry at time of installation.
 - 1. Weather Conditions: In accordance with manufacturer's instructions, do not apply perimeter sealant when weather conditions are not within the manufacturer's prescribed limits or when such conditions are expected. Allow surfaces to attain dry conditions as recommended by the manufacturer before application.
 - 2. Compliance: Follow manufacturer's specific safety, health and environmental recommendations per most recent Material Safety Data Sheets, technical bulletins and instructions. Handle all solvents in compliance with EPA, OSHA and VOC requirements regarding health and safety standards.

1.07 WARRANTY

- A. Provide a one year warranty on all workmanship.
- B. Provide a five year manufacturer's labor and material warranty.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Product Options and Substitutions: Since the extent of repair varies according to the location of the area to be repaired, the manufacturer must be consulted prior to the selection and application of the material to ensure that it is particularly suitable for the purpose intended.
- B. Sealant Schedule:
 - 1. Masonry to metal: One-part urethane, non-sag.
 - 2. Metal-to-metal: Silicone, non-sag.
 - 3. Metal-to-glass: Silicone, non-sag.
- C. Acceptable manufacturers:
 - 1. One-part urethane, non-sag sealant:
 - a. Sika Sikaflex 1-a
 - b. Sonneborn NP-1

- c. Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.
- 2. Silicone, non-sag sealant:
 - a. Dow 791
 - b. Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.

2.02 RELATED MATERIALS

- A. The Contractor will ensure that all perimeter sealant is compatible with existing and new material abutting the area of repair including sealants and caulking compounds and other waterproofing materials.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Comply with manufacturer's most recently published product data, including installation instructions, substrate testing and surface preparation and cleaning and post installation testing.

3.02 EXAMINATION

- A. Verify area to be repaired and substrate conditions are acceptable for application of perimeter sealant in accordance with the manufacturer's instructions.
 - 1. General: Determine acceptable removal techniques for contaminants harmful to perimeter sealant, such as dust, dirt, grease, oils, curing compounds, form release agents, laitance, and previous films or water repellent materials. Prepare all surfaces in accordance with manufacturer's instructions. All surfaces must be clean, dry, frost free, and dust free.

3.03 PREPARATION

- A. At masonry-to-metal and metal-to-metal interfaces, cut out and remove all deteriorated sealant at the perimeter of all framed openings. Where window frames are flush with a stucco wall, rout a 3/8" (three eighths inch) joint at 45 degrees to the frame for application of urethane sealant.
- B. Thoroughly clean out all joints (solvent wipe) and ensure sides are free from grease, dirt and dust and other surface contaminants prior to application. Clean and inspect all metal-to-metal and metal-to-glass joints that are open and likely to permit water intrusion. Report defective areas and potential problem areas to the Owner and/or his designated representatives.

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- C. Efflorescence, mold, mildew and algae shall be neutralized and removed prior to sealant installation. Prepare previously coated surfaces according to sealant manufacturer's specific recommendations.
- D. Clean and inspect metal-to-metal joints at the 90 degree intersection with the jambs/frames which are open and likely to permit water intrusion and report defective areas to the Owner. On sliding glass door tracks and around perimeters, remove rusted or corroded screws and replace with stainless steel screws imbedded in sealant.

3.04 APPLICATION

- A. If required by the approved sealant manufacturer, prime both sides of the joint prior to the installation of flexible joint filler. Where deemed necessary, and at the Contractor's discretion, install backer rod or bond breaker tape of suitable type and size to prevent three-sided adhesion. Install sealant at recommended depth-to-width ratio and apply in full accordance with manufacturer's specifications.
- B. Allow sealant to cure for 10 to 14 days before performing adhesion testing as required by the manufacturer for an extended warranty.
- C. For replacement of sealant in E.I.F.S. (Exterior Insulated Finish Systems), clean the E.I.F.S. surface and abutting framed openings with a trisodium phosphate detergent to remove dirt, algae, mold and other surface contamination. Rinse thoroughly and allow to dry. Place bond breaker tape or triangular backer rod at the joint cove. Mask the E.I.F.S. finish surface to the point where the sealant will terminate (at least 1/4" of bearing surface is required for proper sealant adhesion). Prime the joint surfaces and apply and tool the sealant. Protect from rain and freezing until dry.

3.05 FIELD QUALITY CONTROL

- A. Where required by the Project Manager, provide manufacturer's field service consisting of periodic site visits by manufacturer or their distributor representative for observation of application of perimeter sealant.
- B. The Owner reserves the right to complete recommended testing required by the manufacturer at the completion of the work to assure warranty requirements and contract compliance are met.
- C. The Owner may designate certain areas as presenting persistent water intrusion problems. In those areas the Contractor shall conduct water tests around sealed and unsealed openings, as directed by the Owner, to determine the cause of the problems. The agreed upon solution, if accepted by the Owner, will be conducted under a change order.

END OF SECTION

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes: Cut out and remove existing urethane expansion joints and install new joints using polymer mortar and silicone sealant.
- B. Related Sections:
 - 1. Section 03 01 00: Concrete Restoration and Cleaning.
 - 2. Section 03 30 00: Epoxy Injection in Concrete

1.02 PERFORMANCE REQUIREMENTS

- A. Provide and install polymer mortar and silicone sealant to provide waterproof joints. Materials shall be compatible with other materials abutting the affected areas of repair.

1.03 SUBMITTALS

- A. Refer to DIVISION 1, Section 01 30 00 for submittal procedures and qualification requirements.
- B. Product Data: Submit manufacturer's most current technical product data indicating product testing results and compliance as indicated.
- C. Samples: Submit samples as required by the Project Manager.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Installer of polymer mortar and silicone sealant will be authorized by manufacturer with at least five years successful experience with the application of polymer mortar and silicone sealant on restoration projects of similar type and nature.
- B. Source Limitations: Obtain polymer mortar and silicone sealant through one source from a single manufacturer.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, handle and protect all products in accordance with DIVISION 1, Section 01 60 00, Product Requirements.
- B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.

- C. Deliver polymer mortar and silicone sealant in manufacturer's original, unopened, undamaged containers with identification labels clearly shown.
- D. Store and protect material containers from harmful weather conditions as recommended by the manufacturer. Protect from damage during construction and while stored onsite.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements: Verify surfaces, substrates and ambient air temperature at project site before, during and after application to assure compliance with manufacturer's recommendations. Surfaces shall be dry at time of installation.
 - 1. Weather Conditions: In accordance with manufacturer's instructions, do not apply polymer mortar and silicone sealant when weather conditions are not within the manufacturer's prescribed limits or when such conditions are expected. Allow surfaces to attain dry conditions as recommended by the manufacturer before application.
 - 2. Compliance: Follow manufacturer's specific safety, health and environmental recommendations per most recent Material Safety Data Sheets, technical bulletins and instructions. Handle all solvents in compliance with EPA, OSHA and VOC requirements regarding health and safety standards.

1.07 WARRANTY

- A. Provide a five year warranty on all workmanship.
- B. Provide a five year manufacturer's labor and material warranty.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Product Options and Substitutions: Since the extent of repair varies according to the location of the area to be repaired, the manufacturer must be consulted prior to the selection and application of the material to ensure that each material is particularly suitable for the purpose intended. The Contractor is required to submit technical literature from the selected manufacturer that specifies the preferred repair material for each different type and size of repair (e.g, vertical, horizontal, minor damage, moderate damage, severe damage, etc.).
- B. Acceptable manufacturers:
 - 1. Silicone Sealant:
 - a. Dow Corning FC Parking Structure Sealant.

- b. Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.
- 2. Polymer Mortar Nosing:
 - a. SSI Silspec 950 PDX
 - b. Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.

2.02 RELATED MATERIALS

- A. The Contractor will ensure that all polymer mortar and silicone sealant is compatible with existing and new material abutting the area of repair including sealants and caulking compounds and other waterproofing materials.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Comply with manufacturer's most recently published product data, including installation instructions, substrate testing and surface preparation and cleaning and post installation testing.

3.02 EXAMINATION

- A. Verify area to be repaired and substrate conditions are acceptable for application of polymer mortar and silicone sealant in accordance with the manufacturer's instructions.
 - 1. General: Determine acceptable removal techniques for contaminants harmful to polymer mortar performance, such as dust, dirt, grease, oils, curing compounds, form release agents, laitance, and previous films or water repellent materials. Prepare all surfaces in accordance with manufacturer's instructions. All surfaces must be clean, dry, frost free, and dust free.

3.03 PREPARATION

- A. Protect adjacent work areas and finished surfaces from damage during installation of flexible joint sealer.
- B. Cut out and remove all existing joint material including sealant, backer rod, bond breaker tape, spalled concrete, etc., until sound concrete is exposed at shoulder locations. Do not remove sound concrete. Square off shoulders where necessary to ensure proper installation of new shoulder material. Use abrading or cutting tools as required. Repair shoulder spalls using polymer modified concrete repair mortar to recreate the existing joint width.

- C. Wash out joints using high-pressure water to remove debris and most of the slurry from the joint faces. Allow joints to dry thoroughly. Sandblast both sides of the joint surfaces to remove any residual contaminants. Blow out all dust, loose particles and other debris using oil-free and moisture-free compressed air. Protect adjacent areas that are not to receive sealant.

3.04 APPLICATION

- A. Install polymer nosing in shoulder sections as indicated on attached details. If required by the approved manufacturer, prime both sides of joint prior to installation of flexible joint filler. Install backer rod using a blunt tool or roller to assure a uniform depth without puncturing or twisting the backer rod.
- B. Closed cell backer rod shall be a minimum of 20% (twenty percent) oversized. Polyolefin backer rod shall be a minimum of 50% (fifty percent) oversized.
- C. Apply sealant in joints using a pressure gun with the nozzle cut to an appropriate size. Deposit sealant in a uniform and continuous operation. Allow 1/4" (one quarter inch) to 1/2" (one half inch) recess per manufacturer's installation instructions. Tool joint with a blunt instrument immediately after installation and before "skin-over" begins to occur.
- D. Sealant color will be selected by the Owner and shall match adjacent areas.

3.05 FIELD QUALITY CONTROL

- A. Where required by the Project Manager, provide manufacturer's field service consisting of periodic site visits by manufacturer or their distributor representative for observation of application of flexible joint filler.
- B. The Owner reserves the right to complete recommended testing required by the manufacturer at the completion of the work to assure warranty requirements and contract compliance are met.

3.06 SPECIAL REQUIREMENTS

- A. During the course of the work, should the Contractor uncover or encounter any unusual conditions that are considered to be beyond the scope of the repair specified herein, it shall be brought to the attention of the Owner.
- B. Prior to starting any work, the Contractor is required to install a mock-up of no less than ten linear feet (10 LF) to demonstrate appearance and workmanship techniques for approval by the Owner and/or his representatives.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pre-cleaning of existing glass and framing prior to refurbishment activities.
2. Removal and disposal of existing sealant material
3. Replacement of any damaged or broken skylight glazing or aluminum framing sections.
4. Application of wet glazing to existing skylight system
5. Application of safety and security film to glazing

B. Areas of work:

1. Existing skylights

C. Related Sections:

1. Section 07 01 90 – Joint Sealant
2. Section 08 80 00 – (Metal Framed Skylight) Glazing

1.2 REFERENCES

A. American Architectural Manufacturers Association (AAMA)

1. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.
2. AAMA 800 - Voluntary Specifications and Test Methods for Sealants
3. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.
4. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Architectural Extrusions and Panels.
5. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Architectural Extrusions and Panels.

B. American National Standards Institute (ANSI)

1. ANSI Z 97.1 - Safety Performance Specifications and Methods of Test for Safety Glazing Material Used in Buildings.

C. American Society of Civil Engineers (ASCE)

1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures

D. American Society for Testing and Materials (ASTM).

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1. ASTM A 36/A 36/M - Standard Specification for Carbon Structural Steel.
 2. ASTM B 85 - Standard Specification for Aluminum-Alloy Die Casting.
 3. ASTM B 209 - Standard Specification for Aluminum-Alloy Sheet and Plate.
 4. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 5. ASTM E 283 - Standard Test Method for Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors.
 6. ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
 7. ASTM E 331 - Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
 8. ASTM E 783 - Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors.
 9. ASTM E 1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform or Cyclic Static Air Pressure Difference
- E. Consumer Product Safety Commission (CPSC)
1. CPSC 16 CFR 1201 - Safety Standard for Architectural Glazing Materials.
- F. Glass Association of North America (GANA):
1. Engineering Standards Manual.
 2. Glazing Manual.
 3. Laminated Glass Design Guide.
- G. Flat Glass Manufacturers Association (FGMA).
- H. Insulating Glass Manufacturers Alliance (IGMA):
1. IGMA TB-3001 - Sloped Glazing Guidelines.
 2. SIGMA TM-3000 - Glazing Guidelines for Sealed Insulating Glass Units
- I. National Fenestration Rating Council (NFRC)
1. NFRC 100 - Procedure for Determining Fenestration Product Thermal Properties.
 2. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficients at Normal Incidence.
 3. NFRC 300 - Procedures for Determining Solar Optical Properties of Simple Fenestration Products.
- 1.3 SYSTEM DESCRIPTION
- A. Designated Skylight Areas:
1. Replace damaged glass and framing components as designated by owner.

METAL FRAMED SKYLIGHT REFURBISHMENT
SECTION 08 63 00

1.4 SUBMITTALS

- A. Shop drawings as required to identify location and type of glass to be replaced or film to be installed.
- B. Design Data: Submit structural calculations (where applicable) by a licensed structural engineer.
- C. Finished aluminum samples (color charts or range samples), and glazing samples (as required by Section 08 80 00 – Glazing) shall be submitted and approved by the Architect prior to starting any fabrication.
- D. Submit manufacturer's warranty form (where applicable) as outlined in paragraph 1.7 of this specification.

1.5 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Required.
- B. Manufacturer's written warranty
- C. Installer's written warranty.

1.6 MOCK-UP

- A. Before framing repair and glazing construct mockup at location designated by Architect and Owner. The mock-up shall be used to verify selections and to demonstrate aesthetic effects and qualities of material and installation.
 - 1. Construction: Build mock-ups with glass and glazing systems specified for the project, including framing systems and glazing methods.
 - 2. Scheduling: Notify architect and owner seven days in advance of dates and times when mockups will be available for viewing.
 - 3. Quality Assurance: Maintain mockups during construction in an undisturbed condition as a standard for judging the completed work.
- B. Accepted mock-ups may become part of the completed work if undisturbed at the time of substantial completion.

1.7 QUALITY ASSURANCE

- A. The skylight contractor shall be responsible for the design, procurement, fabrication, and installation of skylight refurbished components.
- B. New components shall comply with the most current building code.

1.8 WARRANTY

- A. The refurbished skylight system shall be warranted after substantial completion against defects in materials and workmanship as follows:

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1. Provide five (5) year manufacturers standard materials warranty on the all new replacement glass.
2. Provide two (2) year watertight warranty on all skylights.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Aluminum Framing Manufacturer:

1. LinEL Signature, 101 LinEL Drive, Mooresville, Indiana 46158, PH: (317) 831-5314, FAX: (317) 831-9260. www.linelsignature.com
2. Substitutions: Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.

B. Glass Manufacturers: (Refer to specific Glass requirements in Section 08 80 00 – Glazing)

1. Viracon: Architectural Glass, 800 Park Drive, Owatonna, Minnesota 55060, PH: (800) 533-2080. www.viracon.com
2. Dlubak Glass Corporation, 1600 Saxonburg Roads, Natrona Heights, Pennsylvania 15065, PH: (724) 224-6611 FAX: (724) 224-1099. www.dlubakglass.com (Bent or Curved Laminated Glass Products)
3. Substitutions: Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.

C. Safety Film Manufacturer:

1. Madico Window Films, 2630 Fairfield Avenue South, St. Petersburg, Florida 33712
2. Huper Optik USA, Cornerstone Energy Solutions, LLC, 957 Route 33, Suite 238, Hamilton Square, New Jersey 08690. Contact: Andrew Sabados, (609) 977-7180. www.huperoptikusa.com . Local Contact: Advanced Film Solutions, Inc., (813) 949-3456. www.advancedfilmfl.com/
3. Substitutions: Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.

2.2 COMPONENTS

A. Framing Members:

1. Skylight system replacement components to match existing manufacturer.

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- a. Extruded aluminum shall have minimum mechanical properties equal to or greater than existing member alloy and temper.
- b. Snap on covers and miscellaneous non-structural trim shall be the minimum thickness recommended by the manufacturer.

B. Glass:
No proprietary system listed.

2.3 ACCESSORIES

A. Flashing:

- 1. All formed aluminum sheet shall be the required alloy and temper to make compatible with the specified finish, with a minimum thickness of 0.040”.

B. Fasteners and Rivets:

- 1. All fasteners and rivets shall be stainless steel or aluminum, unless otherwise noted.

C. Glazing Gaskets:

- 1. Extruded black EPDM meeting or exceeding the following:
 - a. Hardness (Shore A) = 50± durometer
 - b. Tensile strength = 2000 psi
 - c. Elongation = 50%

D. Sealants:

- 1. Specified in Section 07 01 90 – Joint Sealant
- 2. Dow Corning 123 and 795 Silicone Building Sealant.
- 3. All surfaces shall be cleaned and primed within the sealant manufacturers guidelines.

E. Safety Film:

- 1. Eight (8) mil multi-ply laminate safety film by Madico or Huper Optik with matching performance characteristics. Refer to Section 08 80 00 – Glazing for product information and specifications.

F. Glass:

- 1. Refer to 2.2, B. above and Section 08 80 00 – Glazing for product specifications.

2.4 FABRICATION

A. Skylight components shall be shop fabricated to the greatest extent possible.

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- B. It is not the intent of this project to alter the engineering components or overall appearance of the skylight systems.

2.5 FINISH

- A. Finish for new framing materials shall be mill finish matching existing framing system.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Site Verification and Conditions:
 - 1. Verify that site conditions are acceptable for installation of the glass.
 - 2. Verify openings for glazing are correctly sized and within tolerance.
 - 3. Verify that a functioning weep system is present.
 - 4. Verify that the minimum required face and edge clearances are being followed.
 - 5. Do not proceed with glazing until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Protection:
 - 1. Handle and store glass and framing products according to manufacturer's recommendations.
 - 2. Surface Preparation:
 - a. Clean and prepare glazing channels and other framing members to receive glass.
 - b. Clean glass just prior to installation.

3.3 REPAIRS

- A. Skylight refurbishment shall be performed as follows:
 - 1. Skylights
 - a. Clean all glass and metal prior to commencing any other work.
 - b. Identify glass that is broken, damaged or delaminated and replace.
 - c. Remove all two sided silicone joints. Clean with isopropyl alcohol or other Dow approved solvent. Mask and re-install joint using open cell

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polyethylene backer rod and Dow 795 black silicone sealant following approved protocols.

- d. Remove old sealants, clean and apply 100% wet seal to all rafters and the top side of the horizontal sill purlin.
- e. Since the roofer cut off the entire skylight sill flashing, check to see that the termination bar installed is secure, continuous and water tight. Silicone any areas that appear to less than 100%. Check that all weep holes are open.
- f. Clear all weep holes at the head. Be sure that the pop rivets holding the flashing to the cover are sealed and are no more than 6" apart. Apply new aluminum rivets or SS screws as necessary and seal heads.
- g. Inspect, re-fasten and seal end wall flashings as required.

3.4 SAFETY FILM

- A. Install 8 mil safety film to the interior skylight assemblies complying with manufacturers written instructions.
 - 1. Cut and install film to within 1/8" of the surrounding aluminum framing.
 - 2. After water is removed, install triangular bead of gray Dow 795 around the perimeter of the lite maintaining a 5/8" sealant bite as described by the film manufacturer.

3.5 FINAL CLEANING

- A. Upon completion of installation and after silicone is cured; the installer shall re-clean the exterior of all skylights.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Glass panel replacement requirements.
2. Transparent and translucent glass for general and special purpose applications including; coated, float, heat-strengthened, impact resistant, insulating, low emissivity, laminated, spandrel and tempered glass.
3. Work Results: Manufacture, handle, deliver and install glazing systems as shown on the architectural drawings or as otherwise specified and in accordance with the requirements of the contract documents

B. Related Sections:

1. Section 07 01 90 – Joint Sealant
2. Section 08 63 00 – Metal Framed Skylight Refurbishment

1.2 DEFINITIONS

- A. Deterioration of Coated Glass: Defects developing from normal use that are attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking and other indications of deterioration in metallic coating.
- B. Deterioration of Insulating Glass: Failure of the hermetic seal under normal use that is attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture or film on interior surfaces of glass.
- C. Deterioration of Laminated Glass: Defects developed from normal use that are attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delaminating material obstructing vision through glass and blemishes exceeding those allowed by referenced laminated glass standards.
- D. Interspace or Airspace: The space between lites of any insulating glass unit that contains dehydrated air or a specified gas.
- E. Manufacturer: A firm that produces primary glass or fabricated glass products as defined in referenced glazing publications.

1.3 REFERENCE STANDARDS

- A. ASTM - American Society for Testing and Materials
 - 1. ASTM C 1036 Standard Specification for Flat Glass
 - 2. ASTM C 1048 Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass
 - 3. ASTM C 1172 Standard Specification for Laminated Architectural Flat Glass
 - 4. ASTM C 1376 Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass
 - 5. ASTM E 2190 Standard Specification for Insulating Glass Unit Performance and Evaluation (*replaces ASTM E773, E774 CBA, CAN / CGSB 12.8*)
 - 6. ASTM E 546 Standard Test Method for Frost/Dew Point of Sealed Insulating Glass Units
 - 7. ASTM E 576 Standard Test Method for Frost/Dew Point of Sealed Insulating Glass Units in the Vertical Position
 - 8. ASTM E 1300 Standard Practice for Determining Load Resistance of Glass in Buildings
 - 9. ASTM C 1349 Standard Specification for Architectural Flat Glass Clad Polycarbonate

- B. ANSI – American National Standards Institute
 - 1. ANSI Z 97.1 Performance Specifications and Methods of Test for Safety Glazing Materials Used in Buildings

- C. CPSC - Consumer Products Safety Commission
 - 1. CPSC 16 CFR 1201 Safety Standard for Architectural Glazing Materials

1.4 SUBMITTALS

- A. Shop Drawings: Show details of each type of glazing system in conjunction with the framing system indicating type of glass, sizes, shapes, glazing material and quantity. Show details indicating glazing material, glazing thickness, bite on the glass and glass edge clearance. Submit only additional details which are not specifically indicated in contract drawings.

- B. Samples: Submit 12-inch (305 mm) long samples of each type of glass indicated except for clear monolithic glass products, and 12-inch (305 mm) long samples of each color required, except black, for each type of sealant or gasket exposed to view.

- C. Test and Evaluation Reports: Glazing contractor shall obtain compatibility and adhesion test reports from sealant manufacturer indicating that glazing materials were tested for compatibility and adhesion with glazing sealant as well as other glazing materials including insulating units.

- D. Manufacturer Reports: Submit Glass Fabricator's Shop Drawing Review indicating compliance with glazing standards established by the Glass Association of North America (GANA). Submittal to include thermal stress and structural load analysis of the proposed glass types, configuration and sizes.

- E. Warranties:
1. Coated Glass: Provide a written **ten (10) year warranty** from date of manufacture for sputter coated glass. Warranty covers deterioration due to normal conditions of use and not to handling, installing, and cleaning practices contrary to the glass manufacturer's published instructions.
 2. Laminated Glass: Provide a written **ten (10) year warranty** from date of manufacture for laminated glass. Warranty covers deterioration due to normal conditions of use and not to handling, installing, and cleaning practices contrary to the glass manufacturer's published instructions.
 3. Insulating Glass: Provide a written **ten (10) year warranty** from date of manufacture for insulating glass. Warranty covers deterioration due to normal conditions of use and not to handling, installing, protecting and maintaining practices contrary to the glass manufacturer's published instructions.
 4. Fully Tempered Glass: Provide a written **five (5) year warranty** from date of manufacture for fully tempered glass that has been Heat Soaked. Warrants that heat soaked tempered glass will not break spontaneously as a result of Nickel Sulfide (NiS) inclusions at a rate exceeding 0.5% (5/1000) for a period of five (5) years from the date of manufacture.

1.5 QUALITY ASSURANCE

- A. Qualifications:
1. Manufacturers: Fabrication processes, including low emissivity and reflective coatings, insulating, laminated, silk-screening and tempering shall be manufactured by a single manufacturer with a minimum of ten (10) years of fabrication experience and meet ANSI / ASQC 9002 1994.
 2. Installers: Installers of specified glass products must be certified and approved by the manufacturer for installation. The installer must have a minimum of ten (10) years of installation experience.
- B. Mock-ups: Before glazing, build mockups for each glass product indicated in article 2.5 Product Schedule of this section, to verify selections and to demonstrate aesthetic effects and qualities of materials and execution.
1. Construction: Build mockups with glass and glazing systems specified for the project, including typical lite size, framing systems and glazing methods. Mock-up shall be constructed within existing framing system.
 2. Scheduling: Notify Architect and Owner seven days in advance of dates and times when mockups will be available for viewing.
 3. Quality Assurance: Maintain mockups during construction in an undisturbed condition as a standard for judging the completed work.
 4. Accepted mockups may become part of the completed work if undisturbed at the time of substantial completion.
- C. Reference Publications: Comply with recommendations in the publications below, except where more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this section or in Article 1.2 References.
1. GANA Glazing Manual
 2. GANA Engineering Standards Manual

3. GANA Laminated Glazing Reference Manual

1.6 DELIVERY STORAGE AND HANDLING

A. Storage and Handling Requirements:

1. Protection: Protect glass from edge damage during handling. For insulating units exposed to substantial altitude changes, comply with insulating glass manufacturers written recommendations for venting and sealing to avoid hermetic seal ruptures.
2. Storage: Store glazing materials according to manufacturer's written instructions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun or other causes.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers:

1. Viracon Incorporated, 800 Park Drive, Owatonna, Minnesota 55060, PH: (800) 533-2080. www.viracon.com (insulating glass products)
2. Dlubak Glass Corporation, 1600 Saxonburg Roads, Natrona Heights, Pennsylvania 15065, PH: (724) 224-6611 FAX: (724) 224-1099. www.dlubakglass.com (Bent or Curved Laminated Glass Products)
3. Glass safety film
 - a. Madico Window Films, 2630 Fairfield Avenue South, St. Petersburg, Florida 33712; (corporate) 64 Industrial Parkway, Woborn, MA 01801 PH: (800) 225-1926, (781) 935-7850 www.madico.com
 - b. Huper Optik USA, Cornerstone Energy Solutions, LLC, 957 Route 33, Suite 238, Hamilton Square, New Jersey 08690. Contact: Andrew Sabados, (609) 977-7180. www.huperoptikusa.com . Local Contact: Advanced Film Solutions, Inc., (813) 949-3456. www.advancedfilmfl.com/
4. Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.

- B. Product Options: Obtain glass and glazing materials only from the above sources for each product indicated. Coatings and finished assemblies, such as insulating units and laminated units, to be manufactured by the same fabricator.

2.2 DESCRIPTION

- A. Provide glazing systems capable of withstanding normal thermal movements, wind loads and impact loads, without failure, including loss due to defective manufacture, fabrication and installation; deterioration of glazing materials; and other defects in construction.

2.3 PERFORMANCE / DESIGN CRITERIA

- A. Glass Strength: Analysis shall comply with ASTM E 1300 Determining Load Resistance of Glass in Buildings. Provide glass products in the thickness and strengths (annealed or heat-treated) required to meet or exceed the following criteria based on project loads and in-service conditions.
1. Minimum thickness of annealed or heat-treated glass products to be selected so the worst case probability of failure does not exceed the following:
 - a. 8 breaks per 1000 for glass installed vertically or not 15 degrees or more from the vertical plane and under wind action.
 - b. 1 break per 1000 for glass installed 15 degrees or more from the vertical plane and under action of wind and/or snow.
 2. Deflection must be limited to prevent disengagement from the frame and be less than or equal to 1".
- B. Thermal and Optical Performance: Provide glass products with performance properties specified in 2.5 Product Schedule. Performance properties to be manufacturer's published data as determined according to the following procedures:
1. Center of glass U-Value: NFRC 100 methodology using LBNL WINDOW 5.2 computer program.
 2. Center of glass solar heat gain coefficient: NFRC 200 methodology using LBNL-35298 WINDOW 5.2 computer program.
 3. Solar optical properties: NFRC 300.

2.4 FABRICATION

- A. Insulating Glass:
1. Shall comply with ASTM E 2190 Standard Specification for Insulating Glass Unit Performance and Evaluation.
 - a. Units shall be certified for compliance by the IGCC in accordance with the above ASTM test method.
 2. The unit overall thickness tolerance shall be $-1/16'' / +1/32''$ (0.79 mm) for a 1" two ply insulating unit. Unit constructed with patterned or laminated glass shall be $\pm 1/16''$.
 3. Shall comply with ASTM E 546 Standard Test Method for Frost Point of Sealed Insulating Glass Units.
 4. Shall comply with ASTM E 576 Standard Test Method for Frost Point of Sealed Insulating Glass Units in the Vertical Position.
 5. Sealed Insulating Glass Units to be double sealed with a primary seal of polyisobutylene and a secondary seal of silicone.
 - a. The minimum thickness of the secondary seal shall be $1/16''$.
 - b. The target width of the primary seal shall be $5/32''$.
 - c. There shall be no voids or skips in the primary seal.
 - d. Up to a maximum of $3/32''$ of the air spacer may be visible above the primary polyisobutylene sealant.
 - e. Gaps or skips between primary and secondary sealant are permitted to a maximum width of $1/16''$ by maximum length of 2". Continuous contact between the primary seal and the secondary seal is desired.

**(METAL FRAMED SKYLIGHT) GLAZING
SECTION 08 80 00**

6. To provide a hermetically sealed and dehydrated space, lites shall be separated by a spacer with bent corners and straight butyl injected zinc plated steel straight key joints.

B. Laminated Glass:

1. Shall comply with ASTM C 1172 Standard Specification for Laminated Architectural Flat Glass.
2. All laminated architectural safety glass shall conform with ANSI Z 97.1 and CPSC 16 CFR 1201
3. Laminated Glass products to be fabricated free of foreign substances and air or glass pockets in autoclave with heat plus pressure.

C. Coated Vision Glass:

1. Shall comply with ASTM C 1376 Standard for Pyrolytic and Vacuum Deposition Coatings on Glass.
2. Coated products to be magnetically sputtered vacuum deposition (MSVD).
3. Edge Deletion – When low-e coatings are used within an insulating unit, coating shall be edge deleted to completely seal the coating within the unit.
 - a. The edge deletion should be uniform in appearance (visually straight) and remove 95% of the coating.

2.5 ACCESSORIES

- A. Glazing Materials: Select glazing sealants, tapes, gaskets and additional glazing materials of proven compatibility with other materials they will contact, including glass products, seals of insulating glass units and glazing channel substrates, under conditions of installation and service, as demonstrated by testing and field experience. Glazing materials must be acceptable to glazing manufacturer.**

1. Setting blocks to be 100% silicone with a durometer hardness of 85±5.

2.6 PRODUCT SCHEDULE (All products shall comply with ASTM Standards and requirements in Article 2.3 Materials)

A. Insulating Coated Glass:

1. One (1) inch VT26-40 Insulating Coated Glass as manufactured by Viracon.
 - a. Exterior Glass Ply: 1/4 inch Solarblue Fully Tempered (FT)
 - b. Coating: VT-40 coating on #2 Surface
 - c. Space: 1/2" air filled
 - d. Silicone: {gray or black}
 - e. Interior Glass Ply: 1/4 inch Clear Fully Tempered

B. Curved Laminated Glass:

1. Curved Laminated Glass as manufactured by Dlubak Glass Corporation.
 - a. Exterior Glass Ply: 1/4" Solarblue Heat Strengthened (HS)
 - b. Interlayer: 0.060 inch pvb
 - c. Interior Glass Ply: 1/4 inch Solarblue Heat Strengthened (HS)

C. Sloped Insulating Laminated Coated Glass:

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1. One and 5/16 inch overall Insulating Laminated Coated Glass as manufactured by Viracon. (VT26-40)
 - a. Exterior Glass Ply: 1/4 inch Solarblue Fully Tempered (FT)
 - b. Coating: VT 26 on #2 Surface
 - c. Space: 1/2 inch air filled
 - d. Silicone: gray or black (use appropriate color where specified)
 - e. Interior Glass Ply 1: 1/4 inch Clear Heat Strengthened (HS)
 - f. Interlayer: .060 pvb
 - g. Interior Glass Ply 2: 1/4 inch Clear Heat Strengthened (HS)

- D. Safety Film: (Bid Alternate No. 1)
 1. Eight (8) mil multi-ply laminate safety film by Madico or Huper Optik with the following performance characteristics and physical properties:

a. Solar Heat Gain Coefficient:	0.83
b. Shading Coefficient	0.95
c. Luminous Efficacy	0.92
d. U-factor	1.07
e. Emissivity	0.90
f. Film Thickness	0.0095"
g. Structural Component	0.008"
h. Structure	Multi-Ply Laminate
i. Tensile Strength	25,000 psi Avg
j. Break Strength	240 psi (width)
k. Adhesive Type:	Acrylic Pressure Sensitive
l. Peel Strength	5 to 6 Pounds per inch

PART 3 EXECUTION

3.1 SITE CONDITIONS

- A. Ambient Conditions: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by the glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation or other causes.
 1. Do not install liquid glazing sealants when ambient and substrate temperature conditions are outside limits permitted by glazing sealant manufacturer or below 40° F.

3.2 EXAMINATION

- A. Verification of Conditions:
 1. Verify prepared openings for glazing are correctly sized and within tolerance. Verify that the minimum required face and edge clearances are being followed.
 2. Verify that a functioning weep system is present.
 3. Do not proceed with glazing until unsatisfactory conditions have been corrected.

(METAL FRAMED SKYLIGHT) GLAZING
SECTION 08 80 00

3.3 PREPARATION

- A. Surface Preparation: Immediately before glazing, clean glazing channels and other framing members receiving glass. Remove coatings not firmly bonded to substrates.
- B. Demolition / Removal: Remove and replace glass that is broken, chipped, cracked or damaged in any way. (Refer to project drawings for known panel replacement locations)
- C. Additional glass replacement shall be in accordance with unit pricing requirements.

3.4 INSTALLATION

- A. Install products using the recommendations of manufacturers of glass, sealants, gaskets and other glazing materials including those in the GANA Glazing Manual except where more stringent.
- B. Prevent glass from contact with contaminating substances that result from construction operations such as weld splatter, fire-safing or plastering.

3.5 CLEANING

- A. Clean excess sealant or compound from glass and framing members immediately after application using solvents or cleaners recommended by manufacturers.

END OF SECTION

**PRESSURE WASHING AND CLEANING
SECTION 09 01 70**

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes: Pressure washing horizontal, vertical and sloped surfaces in preparation for repair and/or application of painting, coating or other protective finishes.
- B. Related Sections:
 - 1. Section 03 01 00: Concrete Restoration.
 - 2. Section 03 30 00: Epoxy Injection in Concrete.

1.02 PERFORMANCE REQUIREMENTS

- A. Provide labor and equipment necessary to achieve completely bare concrete surfaces suitable to receive further treatment and applications.

1.03 SUBMITTALS

- A. Refer to DIVISION 1, Section 01 30 00 for submittal procedures and qualification requirements.

1.04 QUALITY ASSURANCE

- A. Qualifications: Contractor will provide equipment satisfactory to accomplish the assigned task and will provide workmen with experience in pressure washing surfaces on restoration projects of similar type and nature.

PART 2 – PRODUCTS - Not applicable.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify the areas to be pressure washed and determine acceptable techniques for surface conditions.

3.02 PREPARATION

- A. Use pressure-washing equipment with a maximum pressure of 3,500 PSI and a minimum pressure of 1200 PSI. Apply to designated areas using the maximum pressure necessary to clean the surface but without causing unnecessary damage to that particular element or to adjacent surfaces and materials. If necessary to protect adjacent surfaces and materials, erect temporary waterproof barriers.
- B. Diluted chemicals shall be used to remove fungus, mold, mildew, dirt and other existing deteriorated surface materials. In locations where pressure washing is unsuccessful in removing certain stains, special cleaners shall be used and worked into the surface with a scrubbing brush before rinsing off. All cleaning agents shall be environmentally safe or diluted to such an extent.

**PRESSURE WASHING AND CLEANING
SECTION 09 01 70**

3.03 FIELD QUALITY CONTROL

- A. The Owner reserves the right to visit and inspect the progress of the work and to ensure the adequate protection of occupied and unoccupied areas adjacent to the site of the work.

3.04 SPECIAL REQUIREMENTS

- A. Special care shall be taken at areas of the building with vulnerable joints which may allow water to penetrate the structure and/or enter occupied spaces. Care must also be taken to minimize over-spray, especially during windy conditions.
- B. The operation of noisy equipment may be restricted between certain hours of the day. A time frame will be established for the work to maximize production and minimize inconvenience for facility occupants.

END OF SECTION

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes: Repair of failed stucco.
- B. Related Sections:
 - 1. Section 07 24 10: E.I.F.S Repair
 - 2. Section 09 01 70: Pressure Washing and Cleaning
 - 3. Section 09 91 13: Painting and Coating Exterior Walls, Ceilings and Soffits.
 - 4. Section 09 96 53: Elastomeric Wall Coating

1.02 PERFORMANCE REQUIREMENTS

- A. Provide and install stucco repair compound, repair mesh, and resurface to match existing finish color and texture.

1.03 SUBMITTALS

- A. Refer to DIVISION 1, Section 01 33 00 for submittal procedures and qualification requirements.
- B. Product Data: Submit manufacturer's most current technical product data indicating product testing results and compliance as indicated.
- C. Samples: Submit samples as required by the Project Manager.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Stucco repair Contractor will be authorized by manufacturer with at least five years successful experience with the installation of similar repairs on restoration projects of similar type and nature.
- B. Source Limitations: Obtain stucco repair materials through one source from a single manufacturer.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, handle and protect all products in accordance with DIVISION 1, Section 01 60 00, Product Requirements.
- B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.

- C. Deliver stucco repair materials in manufacturer's original, unopened, undamaged containers with identification labels clearly shown.
- D. Store and protect material containers from harmful weather conditions as recommended by the manufacturer. Protect from damage during construction and while stored onsite.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements: Verify surfaces and ambient air temperature at project site before, during and after application to assure compliance with manufacturer's recommendations. Surfaces shall be dry at time of installation.
 - 1. Weather Conditions: In accordance with manufacturer's instructions, do not apply repair materials in rain, fog or mist or when such conditions are expected. Allow surfaces to attain dry conditions as recommended by the manufacturer before application.
 - 2. Compliance: Follow manufacturer's specific safety, health and environmental recommendations per most recent Material Safety Data Sheets, technical bulletins and instructions. Handle all solvents in compliance with EPA, OSHA and VOC requirements regarding health and safety standards.

1.07 WARRANTY

- A. Provide a one-year warranty on all workmanship.
- B. Provide a five-year manufacturer's labor and material warranty from the manufacturer of the selected product.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Product Options and Substitutions: The Contractor is required to submit technical literature from the selected product manufacturer.
- B. Acceptable manufacturers – Cleaning and Re-coating:
 - 1. Sto Corp
 - a. Sto Renew-it
 - b. Stolastic
 - c. StoSilco Lastic
 - 2. Thoro – pre-mixed bag ready plaster mix.

3. Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.
- C. Acceptable Manufacturers – Cleaning, Repairing, Patching and Re-coating:
1. Sto Corp
 - a. Sto Leveler or Sto Skim Coat
 - b. Sto Flexible Crack Filler or Sto Flexible Skim Coat
 - c. Sto Flexyl or Sto Watertight Coat
 - d. Sto RFP
 - e. Sto Mesh
 2. Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.

2.02 RELATED MATERIALS

- A. The Contractor will ensure that all stucco repair materials are compatible with existing and new materials abutting the area of repair including sealants, caulking compounds and other waterproofing materials.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Comply with manufacturer's most recently published product data, including installation instructions, surface preparation and cleaning and post installation testing.

3.02 EXAMINATION

- A. Verify area to be repaired and substrate conditions are acceptable for application of stucco repair materials in accordance with the manufacturer's instructions.
1. General: Determine acceptable removal techniques for contaminants harmful to stucco repair materials such as dust, dirt, grease, oils, laitance, and previous films or water repellent materials. Prepare all surfaces in accordance with manufacturer's instructions. All surfaces must be clean and free of moisture and frost.

3.03 PREPARATION

- A. Protect adjacent work areas and finished surfaces from damage during application of repair materials.

- B. Deteriorated stucco shall be completely broken out down to sound material and substrate surfaces will be cleaned using high pressure water and prepared for the application of new stucco.

3.04 APPLICATION

- A. Light Repairs and Re-coating:
 - 1. This procedure is used when there is normal surface fading and deterioration with minimal efflorescence.
 - 2. Clean the surface with high pressure water to remove dirt, mold mildew and algae. Then recoat with the selected re-coating/re-finishing material to match the texture of adjacent surfaces.
- B. Repair of Deeper Cracks, Spalling and Peeling: (where underlying mesh, base coats and other membranes have been damaged):
 - 1. Clean out cracks and delaminations mechanically, completely removing all failed material down to sound substrate.
 - 2. Where underlying concrete or masonry is revealed, the area shall be primed and patched using a matching plaster or mortar compound that is completely compatible with the surrounding stucco veneer.
 - 3. Recoat the area of repair with the selected re-coating/re-finishing material to match the texture of adjacent surfaces.

3.05 FIELD QUALITY CONTROL

- A. Where required by the Owner, provide manufacturer's field service consisting of periodic site visits by manufacturer or their distributor representative for observation of application of stucco repair and refinishing materials.
- B. The Owner reserves the right to complete recommended testing required by the manufacturer at the completion of the work to assure warranty requirements and contract compliance are met.

3.06 SPECIAL REQUIREMENTS

- A. In situations involving large areas of damage to stucco, the Contractor may be required to repair a test area to demonstrate workmanship quality and proper matching of color and texture, for approval by the Owner.
- B. Since the type of repair method varies according to the size, type and location of the repair, the manufacturer must be consulted prior to the application of repair and refinishing materials to ensure that each material, compound or method is particularly suitable for the purpose intended. The Contractor is required to submit

technical literature from the selected manufacturer specifying the preferred approach for each different type and size of repair.

- C. If, in the process of repair, it is considered in the Contractor's opinion that the extent of repairs exceeds that as specified herein, the condition shall immediately be brought to the attention of the Owner.

END OF SECTION

**PAINTING METAL DOORS, WINDOWS,
FRAMED OPENINGS & HANDRAILS
SECTION 09 91 05**

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes: Surface preparation, cleaning, priming and finish painting of metal doors, windows, louvers and other aluminum framed openings and metal handrails. A base and an alternate high performance coating system are provided with this section.
- B. Related Sections: None

1.02 PERFORMANCE REQUIREMENTS

- A. Provide and apply standard or high performance paint to properly prepared, cleaned and prime-coated aluminum-framed doors, windows, louvers and other aluminum-framed openings and metal handrails.

1.03 SUBMITTALS

- A. Refer to DIVISION 1, Section 01 30 00 for submittal procedures and qualification requirements.
- B. Product Data: Submit manufacturer's most current technical product data indicating product testing results and compliance as indicated.
- C. Samples: Submit samples as required by the Project Manager.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Painting contractor will be authorized by manufacturer with at least five years successful experience with the application of similar paint on restoration projects of similar type and nature.
- B. Source Limitations: Obtain paints through one source from a single manufacturer.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, handle and protect all products in accordance with DIVISION 1, Section 01 60 00, Product Requirements.
- B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.

**PAINTING METAL DOORS, WINDOWS,
FRAMED OPENINGS & HANDRAILS
SECTION 09 91 05**

- C. Deliver paint in manufacturer's original, unopened, undamaged containers with identification labels clearly shown.
- D. Store and protect material containers from harmful weather conditions as recommended by the manufacturer. Protect from damage during construction and while stored onsite.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements: Verify surfaces, substrates and ambient air temperature at project site before, during and after painting to assure compliance with manufacturer's recommendations. Surfaces shall be dry at time of application.
 - 1. Weather Conditions: In accordance with manufacturer's instructions, do not apply paint when weather conditions are not within the manufacturer's prescribed limits or when such conditions are expected. Allow surfaces to attain dry conditions as recommended by the manufacturer before application.
 - 2. Compliance: Follow manufacturer's specific safety, health and environmental recommendations per most recent Material Safety Data Sheets, technical bulletins and instructions. Handle all solvents in compliance with EPA, OSHA and VOC requirements regarding health and safety standards.

1.07 WARRANTY

- A. Provide a one year warranty on all workmanship.
- B. Provide a five year or a ten year manufacturer's labor and material warranty. State warranty period on the bid form at the time of bid.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Product Options and Substitutions: Since the scope of work varies according to the location of the area to be painted, the manufacturer must be consulted prior to the selection and application of the material to ensure that it is particularly suitable for the purpose intended.
- B. Acceptable manufacturers:
Base System:
 - 1. Sherwin Williams
 - a. Spot Primer – DTM Acrylic Coating B66W200 Series.

**PAINTING METAL DOORS, WINDOWS,
FRAMED OPENINGS & HANDRAILS
SECTION 09 91 05**

- b. First Coat – DTM Acrylic Coating B66W200 Series.
 - c. Finish Coat – DTM Acrylic Coating B66W200 Series.
2. Dupont High Performance Coatings
 - a. Spot Primer – Tufcoate 72P DTM Acrylic.
 - b. First Coat - Tufcoate 72P DTM Acrylic.
 - c. Finish Coat - Tufcoate 72P DTM Acrylic.
3. Devoe Paint
 - a. Spot Primer – Mirrolac-WB DTM Flat #8502 Primer.
 - b. First Coat – Mirrolac-WB DTM Flat #8502 Primer.
 - c. Finish Coat – Mirrolac-WB DTM Semi-Gloss #83XX.
4. Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.
High Performance System:
 - Sherwin Williams
 - a. Spot Primer – Macropoxy 646.
 - b. First Coat – Macropoxy 646.
 - c. Finish Coat – Corothane II Aliphatic Acrylic Polyurethane.
 2. Dupont High Performance Coatings
 - a. Spot Primer – Dupont 25P High Solids Epoxy Mastic.
 - b. First Coat – Dupont 25P High Solids Epoxy Mastic.
 - c. Finish Coat – Dupont Imron 326 Aliphatic Acrylic Polyurethane.
 3. Devoe Paint
 - a. Spot Primer – Tru-Glaze Epoxy Primer #12735.
 - b. First Coat – Tru-Glaze Epoxy Primer #12735.
 - c. Finish Coat – Devthane 369 Aliphatic Acrylic Polyurethane.
 4. Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.

2.02 RELATED MATERIALS

- A. The Contractor will ensure that all spot primer, base coat and finish coat material is compatible with existing and new material abutting the area of painting including sealants and caulking compounds and other waterproofing materials.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

**PAINTING METAL DOORS, WINDOWS,
FRAMED OPENINGS & HANDRAILS
SECTION 09 91 05**

- A. Comply with manufacturer's most recently published product data, including surface preparation, cleaning, priming and application instructions.

3.02 EXAMINATION

- A. Verify area to be prepared, primed and painted are acceptable for application of materials in accordance with the manufacturer's instructions.
 - 1. General: Determine acceptable removal techniques for contaminants harmful to the successful application of paint, such as dust, dirt, grease, oils, curing compounds, form release agents, laitance, and previous films or water repellent materials. Prepare all surfaces in accordance with manufacturer's instructions. All surfaces must be clean, dry, frost free, and dust free.

3.03 PREPARATION

- A. Hand or power sand all pre-existing OEM coatings to remove any oxidized coating and provide a roughened surface. Hand or power sand any exposed metal provide a roughened surface free of oxidation.
- B. Thoroughly clean all previously prepared surfaces with a water / detergent solution followed by a clean water rinse immediately prior to painting. Pressure washing may be used.

3.04 APPLICATION

- A. All surfaces shall have been prepared, cleaned and dried prior to application of paint. Paint application should begin as soon as possible after cleaning to avoid recontamination through the air from organic material, industrial pollutants or coastal salt laden air.
- B. Spot prime all exposed metal surfaces first. This shall be followed by general priming and application of the finish coat material. The materials should be applied either by roller or by brush at the discretion of the applicator to ensure an even, uniform dried film free of defects with a finish quality consistent the Owner's approved test patch sample. All applications shall be performed in full accordance with the manufacturer's requirements as supplemented by this specification.

3.05 FIELD QUALITY CONTROL

- A. Where required by the Project Manager, provide manufacturer's field service consisting of periodic site visits by manufacturer or their distributor representative for observation of application of materials.
- B. The Owner reserves the right to complete recommended testing required by the manufacturer at the completion of the work to assure warranty requirements and contract compliance are met.

**PAINING METAL DOORS, WINDOWS,
FRAMED OPENINGS & HANDRAILS
SECTION 09 91 05**

END OF SECTION

**PAINTINGS AND COATINGS EXTERIOR
WALLS, CEILINGS AND SOFFITS
SECTION 09 91 13**

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes: Surface preparation, cleaning, priming and finish painting or coating of exterior walls, ceilings (e.g. underside of balconies, entrance canopies, roof overhangs) and soffits.
- B. Related Sections: Section 09 01 70: Pressure Washing.

1.02 PERFORMANCE REQUIREMENTS

- A. Provide and apply paint or elastomeric wall coating to properly prepared, cleaned and patched and prime-coated exterior walls, ceilings and soffits.

1.03 SUBMITTALS

- A. Refer to DIVISION 1, Section 01 33 00 for submittal procedures and qualification requirements.
- B. Product Data: Submit manufacturer's most current technical product data indicating product testing results and compliance as indicated.
- C. Samples: Submit samples as required by the Project Manager.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Painting/coating contractor will be authorized by manufacturer with at least five years successful experience with the application of similar paint and coatings on restoration projects of similar type and nature.
- B. Source Limitations: Obtain paints and coatings through one source from a single manufacturer.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, handle and protect all products in accordance with DIVISION 1, Section 01 60 00, Product Requirements.
- B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- C. Deliver paint and coatings in manufacturer's original, unopened, undamaged containers with identification labels clearly shown.

**PAINTINGS AND COATINGS EXTERIOR
WALLS, CEILINGS AND SOFFITS
SECTION 09 91 13**

- D. Store and protect material containers from harmful weather conditions as recommended by the manufacturer. Protect from damage during construction and while stored onsite.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements: Verify surfaces, substrates and ambient air temperature at project site before, during and after painting and coating to assure compliance with manufacturer's recommendations. Surfaces shall be dry at time of application.
 - 1. Weather Conditions: In accordance with manufacturer's instructions, do not apply paint or coatings when weather conditions are not within the manufacturer's prescribed limits or when such conditions are expected. Allow surfaces to attain dry conditions as recommended by the manufacturer before application.
 - 2. Compliance: Follow manufacturer's specific safety, health and environmental recommendations per most recent Material Safety Data Sheets, technical bulletins and instructions. Handle all solvents in compliance with EPA, OSHA and VOC requirements regarding health and safety standards.

1.07 WARRANTY

- A. Provide a one year warranty on all workmanship.
- B. Provide the maximum material warranty available from the selected manufacturer. State warranty period on the bid form at the time of bid.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Product Options and Substitutions: Since the scope of work varies according to the location of the area to be painted or coated, the manufacturer must be consulted prior to the selection and application of the material to ensure that it is particularly suitable for the purpose intended.
- B. Acceptable paint manufacturers:
 - 1. Devoe "Wondergard."
 - 2. Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.
- C. Acceptable elastomeric coating manufacturers:

**PAINTINGS AND COATINGS EXTERIOR
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1. Thoro Systems:
 - a. Primer – Thoro Primer 1000
 - b. Elastomeric Coating – Thorolastic A-Plus
 2. Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.
- D. Acceptable coating manufacturers for E.I.F.S. resurfacing and refinishing:
1. Sto Corp
 - a. For Resurfacing: Sto RFP and Sto Finish Coat
 - b. For Refinishing: Sto Coating (StoSilco and Sto Maxicryl are recommended).
 2. Approved equal based upon the Contractor's submission of sufficient technical data and product history to enable an assessment of the product.

NOTE: E.I.F.S. surfaces are refinished to refresh the look of the cladding and/or to change the color. Resurfacing is sometimes done for cosmetic reasons but usually to restore an original appearance or to change color or texture, thereby renewing the appearance. For repair of cracks, joints and punctures refer to a more complete specification on E.I.F.S. repair.

2.02 RELATED MATERIALS

- A. The Contractor will ensure that all spot primer and finish coat material is compatible with existing and new material abutting the area of painting and coating including sealants and caulking compounds and other waterproofing materials.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Comply with manufacturer's most recently published product data, including surface preparation, cleaning, priming and application instructions.

3.02 EXAMINATION

- A. Verify area to be prepared, primed and painted or coated are acceptable for application of materials in accordance with the manufacturer's instructions.
1. General: Determine acceptable removal techniques for contaminants harmful to the successful application of paint and coatings, such as dust, dirt, grease, oils, curing compounds, form release agents, laitance, and previous films or

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water repellent materials. Prepare all surfaces in accordance with manufacturer's instructions. All surfaces must be clean, dry, frost free, and dust free.

3.03 PREPARATION

- A. Pressure wash walls, ceilings/soffits as indicated in Section 09 01 70, Pressure Washing. Following pressure washing, preparatory work and required repairs and resurfacing, and prior to application, ensure that surfaces to be coated are free of chalk, oxidation, grease, dirt and any other extraneous material that would prevent proper bonding of the paint or coating material. Following preparatory work, patch exposed concrete areas with a suitable texture to match the surrounding area as closely as possible.

3.04 APPLICATION

- A. All surfaces shall have been prepared, cleaned and dried prior to application of paint or coating. Prime chalky surfaces where necessary or recommended by the manufacturer. Apply primer, paint and coatings at the following rates of coverage:
1. Primer on previously painted masonry surfaces - a minimum coverage rate of 200 square feet per gallon and a maximum of 400 square feet per gallon.
 2. Acrylic paint on concrete, stucco and C.M.U. surfaces – a minimum coverage rate of 150 square feet per gallon to achieve a dry film thickness (DFT) of 3 mils.
 3. Elastomeric coating – a minimum coverage rate of 50 square feet per gallon to achieve a dry film thickness (DFT) of 16 mils. The material shall be applied by roller, in two coats. Minimum elongation shall be 250% (two hundred fifty percent). Apply in strict accordance with the manufacturer's recommendations to achieve the desired warranty.
 4. E.I.F.S. Resurfacing – Apply resurfacing compound to a thickness of approximately 1/8" (3mm) working horizontally and vertically in strips of 40 inches. Embed mesh into the wet base coat by troweling from the center to the edge of the mesh. Overlap the mesh no less than 2 1/2" (64mm) at seams and feather seams and edges.
 5. E.I.F.S. Refinishing – Roll or brush refinishing material to achieve a dry film thickness (D.F.T.) of 10 to 17 mils.
- B. Primer, paint and coating application should begin as soon as possible after cleaning to avoid recontamination through the air from organic material, industrial pollutants or coastal salt laden air.

3.05 FIELD QUALITY CONTROL

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- A. Where required by the Project Manager, provide manufacturer's field service consisting of periodic site visits by manufacturer or their distributor representative for observation of application of materials.
- B. The Owner reserves the right to complete recommended testing required by the manufacturer at the completion of the work to assure warranty requirements and contract compliance are met.

3.06 SPECIAL REQUIREMENTS

- A. Areas of excessive flaking of previously applied coatings or areas of potential delamination shall be completely stripped, then prime coated with the manufacturer's recommended primer or bonding agent to prevent re-occurrence of the problem. Areas of damage encountered, requiring repair beyond the capability of the painting or coating contractor, shall immediately be brought to the attention of the Owner.
- B. The Contractor shall submit color samples for approval by the Owner. The Contractor shall prepare and paint or coat a sample panel of no less than 100 (one hundred square feet for approval by the Owner prior to commencing the work. Random mil tests of elastomeric coatings will be taken to ensure correct mil thickness at different surface locations.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Work to be accomplished consists of coating existing concrete, masonry, stucco and exterior insulation finish system (EIFS) surfaces of the entire exterior building elevation.
- B. Related Sections
 - 1. Section 07 01 90 – Joint Sealant
 - 2. Section 09 91 05 – Painting Exterior Walls Ceilings & Soffits

1.2 REFERENCES

1.3 QUALITY ASSURANCE

- A. Installer:
 - 1. Obtain written certification from manufacturer of the proposed coating certifying that the coating products are approved for the use intended in these specifications and Installer is approved by manufacturer for installation of specified system.
 - 2. Installer must maintain full-time supervisor (not a working foreman), on job site during times that work is in progress.
 - a. Supervisor must have a minimum of three years experience in coating work similar to nature and scope of specified work
- B. Manufacturer's Field Inspection Service:
 - 1. Manufacturer of the coating materials shall provide qualified personnel to observe field conditions of surfaces and installation, quality of workmanship as applicable, and to make appropriate recommendations.
 - 2. Representative shall submit written reports to Owner and Architect listing observations and recommendations.

1.4 SUBMITTALS

- A. Product Data: Submit product specifications, installation instructions and general recommendations from coating manufacturer, including data that materials comply with the requirements herein.
- B. Installer's Certifications: Provide two (2) copies of certification to Owner and Architect prior to beginning coating work
- C. Material Certification: For each material specified with a standard or reference material designation, certification label shall appear on each package of bulk shipped to project with certification of compliance.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Delivery
 - 1. Deliver material in manufacturer's original, unopened containers with manufacturer's labels intact and legible:
 - 2. Deliver enough material to allow continuous work.
- B. Storage:
 - 1. Store materials on clean, raised platforms in an interior location.
 - 2. Store and handle materials to protect them from.
 - a. Moisture, whether due to precipitation or condensation
 - b. Damage by construction traffic.
 - c. Temperatures over 110 degrees F
 - d. Temperatures below 50 degrees F.

1.6 PROJECT SITE CONDITIONS

- A. Existing Conditions:
 - 1. This project involves coating of existing masonry parapet wall surfaces. Verify existing conditions.
 - 2. Report conflicts or problems to the Owner and Architect prior to bidding for resolution. Failure to report these conflicts or problems places the responsibility on the Contractor to complete the work in accordance with the Documents at no additional cost to the Owner.
 - 3. Failure to install the work in strict accordance with provisions of this Section, is subject to total rejection of work specified herein.
- B. Weather Conditions:
 - 1. Do not apply materials when the temperature of surfaces to be coated and the surrounding air temperatures are below 45 degrees F (7 degrees C) unless otherwise permitted by coating manufacturer's printed instructions.
 - 2. Do not apply coating material in rain, fog, or mist; or when relative humidity exceeds 85%; or to damp or wet surfaces.

PART 2 PRODUCTS

2.1 ELASTOMERIC COATINGS

- A. Manufacturers:
 - 1. Duron Paints and Wall Covering – “Maxflex Performance “100% Acrylic Elastomeric Coating.
 - 2. Neogard (Division of Jones-Blair) – “Neoflex” Elastomeric Acrylic Anti-Carbonation Wall Coating

3. PPG / Porter Paints – “Perma-Crete Pitt-Flex” Elastomeric Coating
4. Sherwin Williams – “SherLastic” Elastomeric Coating, A5-100 Series
5. Sto Corporation – “Stolastic Smooth”, Elastomeric Acrylic Based Coating
6. Substitutions are permitted upon approval.

B. Manufacturers: Primers:

1. Manufacturer’s specified primer for use with metals, stucco, wood and other building materials.

2.2 CLEANING AGENT

- A. Cleaning agent and cleaning procedures selected by the applicator to meet the requirements for cleaning the existing masonry/stucco/concrete surfaces shall be as recommended by the coating manufacturer.

PART 3 EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS

A. Manufacturer's Installation Requirements:

1. In addition to the specified procedures, the installer shall be responsible for the installation of the elastomeric coating materials in accordance with the procedures required by the coating material manufacturer for the proper execution of the work.
2. The coating installer shall review the specified procedures for possible conflicts, for resolution, prior to bidding.

3.2 PREPARING SURFACES

- A. Prepare building surfaces to receive coating in accordance with manufacturer’s instructions.
- B. Remove all surface contamination by washing with appropriate cleaner, rinse thoroughly and allow surfaces to dry.
- C. Existing peeled or checked paint should be scraped and sanded to a sound surface.
- D. Glossy surfaces should be sanded dull.
- E. Stains from water, smoke, ink, pencil, grease, etc. should be sealed with the appropriate primer/sealer as recommended by the coating manufacturer.
- F. Pressure clean concrete and stucco surfaces to remove all dirt, dust, grease, oil, loose particles, laitance, foreign material, peeling and defective coatings, chalk, form release

agents, moisture curing membranes, etc. Remove all mildew. Allow surface to dry thoroughly.

- G. Patch, repair, level or fill surfaces as needed with appropriate materials as recommended by the coating manufacturer to obtain the desired finish appearance.

3.3 APPLICATION

- A. Material shall be applied using as a minimum one (1) primer coat and two (2) finish coats. Follow manufacturer's recommendation for mil thickness, time between coats and additional coats, if required.
- B. When applying to new concrete, mortar or stucco surfaces allow seven (7) days for proper curing at 75 degrees and have a pH of 12 or less.
- C. Application may be accomplished by airless sprayer, roller or brush (small areas only).

3.4 ADJUST AND CLEAN

- A. Clean-up:
 - 1. During progress of work remove from project site discarded materials, rubbish, cans and rags resulting from work.
 - 2. Upon completion of work, clean all spattered surfaces. Remove spattered materials by proper methods of washing and scraping, using care not to damage finished surfaces.

3.5 PROTECTION

- A. Protect adjacent surfaces not receiving coating and protect work of other trades. Correct damage by cleaning, repairing or replacing, as directed by Owner and Architect. Leave work in undamaged condition.

END OF SECTION

ACRYLIC POLYURETHANE INDUSTRIAL ENAMEL
SECTION 09 96 56

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes surface preparation and field application of a one part acrylic polyurethane high performance enamel coating system for use over existing factory finished exterior metal entrance or overhang panels (Both sides) and trim.

1.2 RELATED SECTIONS

- A. Section 07 62 00 - Sheet Metal Flashing and Trim.

1.3 REFERENCES

- A. ASTM D 16 - Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products.
- B. PDCA (Painting and Decorating Contractors of America) - Painting - Architectural Specifications Manual.
- C. SSPC (Steel Structures Painting Council) - Steel Structures Painting Manual.

1.4 DEFINITIONS

- A. Conform to ASTM D 16 for interpretation of terms used in this Section.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Product Data: Provide data on all finishing products, including Material Safety Data Sheets. Inform Owner of any safety or odor concerns associated with these products which may effect travelers and/or activities.
- C. Samples: Submit three samples, 6x18 inch in size illustrating selected colors for each color selected.
- D. Manufacturer's Instructions: Indicate special surface preparation procedures and substrate conditions requiring special attention.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum five years experience.
- B. Applicator: Company specializing in performing the work of this section with minimum 3 years documented experience.

**ACRYLIC POLYURETHANE INDUSTRIAL ENAMEL
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1. Submit a list of roof refurbishment projects, (with project name, location, date, size, coating system, cost and references (contact/phone numbers)), with the bid within the last three (3) years and a minimum aggregate total metal roof refurbishment of 50,000 square feet, (either a single or multiple projects).
 2. Non-compliance with this requirement in the opinion of the Owner, will be considered adequate justification to disqualify a bid from further consideration.
- C. The metal overhang coating application work shall be performed by an applicator who has been trained by the manufacturer and then certified in writing as an applicator approved by the manufacturer of the metal roof refurbishment coating. Certificate holder must be employed by coating contractor and be present at the jobsite for the duration of the project.
- D. Maintain full-time supervisor/foreman, not a working foreman, on the job site during times that coating application work is in progress. Supervisor must have minimum of three (3) years experience in roof refurbishment work using the same or very similar products as specified. Submit a copy of their resume with project experience upon request by the Owner or Architect

1.7 FIELD SAMPLES

- A. Provide field sample of coating under provisions of Section 01 33 00.
- B. Provide field sample panel, fascia edge metal, illustrating special coating color, texture, and finish.
- C. Locate where directed.
- D. Accepted sample may remain as part of the Work.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver to site, store, protect and handle products under provisions of Division 1.
- B. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- C. Container label to include manufacturer's name, type of coating, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- D. Store coating materials at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

1.9 PROJECT CONDITIONS

**ACRYLIC POLYURETHANE INDUSTRIAL ENAMEL
SECTION 09 96 56**

A. Existing Conditions

1. The Bidder shall verify existing conditions prior to Bidding.
2. Conflicts and problems shall be reported to the Architect for resolution prior to Bidding. Failure to report these conflicts and problems places the responsibility on the Prime Contractor to complete the work in accordance with the Documents at no additional cost to the Owner.
3. Replace or restore to original condition any materials or work damaged during construction.
4. Surfaces not designated to receive the system shall be properly masked or otherwise protected against accidental spillage or application of the material to those areas.
5. Failure to install the work in strict accordance with provisions of this Section, is subject to total rejection of work specified herein.

1.10 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the coating product manufacturer.
- B. Do not apply exterior coatings during rain or when relative humidity is outside the humidity ranges required by the coating product manufacturer.
- C. Minimum Application Temperatures for Coatings: 45 degrees F (7 degrees C) for interiors; 50 degrees F (10 degrees C) for exterior; unless required otherwise by manufacturer's instructions.

1.11 EXTRA MATERIALS

- A. Provide 1 gallon of each color and type to Owner. Label each container with color, type, texture, locations, in addition to the manufacturer's label.

1.12 WARRANTY

- A. Provide manufacturer=s 7 year product warranty against product failure, including both material and labor.
 1. The Warranty terms and conditions are to comply with the "Manufacturer's Notice of Intent to Issue Coating Warranty" form included at the end of this section. This form is also to be used to certify the bidder as an approved applicator.
 2. The warranty shall be governed by the laws of the State of Florida. The sole and exclusive venue for any litigation arising from or related to this Warranty or any work performed under the terms of this Warranty, shall be in Orange, Florida.

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- B. Applicator to provide a 2 year warranty to the Owner against problems due to preparation and/or application methods.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers – Coating

- 1. PPG Industries, Inc., Architectural Coatings, One PPG Place, Pittsburgh, PA 15272.
- 2. Owner or Architect approved (prior to bidding) equivalent product.

2.2 MATERIALS

A. First Coat Primer: PPG Pitt-Tech Plus 90-912, (or BRP 4912) Series.

- 1. Utilize specialty primers for specific conditions as directed by the manufacturer=s technical representative - some field testing may be necessary for product selection.

B. Finish Top Coat: PPG Pitt-Tech Plus 90-1310, (or BRP 4910) Series, (gloss finish).

C. Accessory Materials:

- 1. PPG Amercoat Prep 88, solvent wipes, PPG Rapid Coat Epoxy Mastic Coating # 95-245.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify site conditions under provisions of Division 1.
- B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- D. Test shop applied primer for compatibility with subsequent cover materials.

3.2 PREPARATION

ACRYLIC POLYURETHANE INDUSTRIAL ENAMEL SECTION 09 96 56

- A. Clean and Pressure wash the surfaces to be coated using PPG Amercoat Prep 88 to meet the SSPC-SP-1 Cleanliness Standard; remove any contamination that may be present.
- B. Cleaning Overhang Panels:
 - 1. Spot prepare all loose or flaking coatings and thoroughly remove any existing corrosion from the surfaces to be coated. Abrade the spot areas using 80 to 100-grit sandpaper to obtain a minimum surface profile of 1.0-mil to produce a mechanical profile for adhesion of coating system. Make certain to feather all edges of the chipped and/or peeled coatings.
 - 2. Pre-wet the roof's substrate to be recoated to reduce the temperature. Next, on a damp roof, apply one coat of a cleaning solution made from 1-part Prep 88 to 4-parts fresh clean water and scrub over the surfaces to be coated and remove prior to the solution drying. Remove this solution with the use of a high pressure-wash with a minimum 3,000 PSI pressure at the tip to thoroughly remove all of the cleaning solution along with all visible contaminants. After washing, if a visible contaminant is still present, *Solvent Wipe* those spot areas only in an attempt to remove with the use of xylene.
 - 3. Allow drying of the roof prior to the application of coatings.

3.3 APPLICATION

- A. Corroded Fasteners and/or other Corroded Areas of Roof Panels:
 - 1. Spot apply one coat of PPG DTR Rapid Coat Epoxy Mastic Coating #95-245 over all fasteners and any other areas of spot corrosion on the roof panels via brush or spray application. Brush application would be preferred, particularly to insure complete dobbing of the sealer around the fastener. If you decide to spray, have someone brush spray around the fastener to force the product into all areas of the fastener. Do not apply finishes to surfaces that are not dry.
 - 2. Apply each coat to uniform finish.
 - 3. Vacuum clean surfaces free of loose particles. Use tack cloth just prior to applying next coat.
 - 4. Allow applied coat to dry before next coat is applied.
- B. All Areas of Overhang Panels:
 - 1. After the appropriate recoat time and within the recoat window, apply one full coat of PPG BRP 49 Series Primer / PPG PMC 90-912 Pitt-Tech Plus DTM Int/Ext Industrial Primer (High Solids Acrylic) to achieve a minimum of 6.4 to 10.2-mils wet film thickness; achieve an absolute minimum of 2.5-mils dry film thickness for optimum performance of this coating.

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2. After the appropriate recoat time and within the recoat window, apply one full coat of PPG BRP 4910 Series Gloss / PPG PMC 90-1310 Pitt-Tech Plus DTM Int/Ext High Gloss Industrial Enamel (High Solids Acrylic) to achieve a minimum of 6.2 to 9.0-mils wet film thickness; achieve an absolute minimum of 2.5-mils dry film thickness for optimum performance of this coating.

C. Total System minimum DFT: 5.0 mils.

D. Application can be made via brush, roller or airless spray application; spray application is preferred when feasible. If roller application is chosen as the method of application, use shed-resistant rollers, such as the Porter pro Supreme roller covers. If airless spray application is used as the method of application, extreme care should be used to protect all surfaces from overspray.

3.4 FIELD QUALITY CONTROL

A. Field inspection will be performed under provisions of Section 01 40 00.

3.5 CLEANING

A. Clean work under provisions of Section 01 50 00.

B. Collect waste material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

END OF SECTION

MANUFACTURER'S NOTICE OF INTENT TO ISSUE COATING WARRANTY

Whereas _____ herein called the "Roof Refurbishment Coating System Manufacturer" hereby gives notice to:

Owner: _____

Address: _____
of its Notice of Intent to issue its Coating Warranty, to the Owner for this Project,

Project: _____

Address: _____

incorporating the Manufacturer's _____

_____ coating system or product when installed in accordance with the Contract Documents.

- I. Manufacturers' Notice of Intent to Issue Coating Warranty in conformance with the Contract Documents shall be executed by the manufacturer and submitted to the Owner with the bid documents:
 1. A detailed description of the components of the manufacturer's system proposed and a list of any other component, proposed for use in the system that is manufactured by other roofing manufacturers.
 2. A statement that the Manufacturer's Representative has reviewed the documents prior to the bid date, including the job conditions, proposed details, and application requirements. Having reviewed the above items in detail, the Representative will provide written notification to Orange County Procurement Division prior to bidding if any conflicts between the project documents and the Manufacturer's requirements exist which would prevent the issuance of the required warranty.
 3. A sample of the Manufacturer's Coating Warranty shall be part of the submittal process. The manufacturer shall also submit to the Orange County Procurement Division a clarification letter defining their definitions of "Fade" or "Color Change" as referenced in their warranty.
 4. 7 year total coating system warranty inclusive of coating materials and labor, for all included products, accessories, and all specialty products, from substrate to finish, whether supplied by the coating manufacturer or by others. Provide a "No Dollar Limit", single source responsibility, non-deductible coating warranty inclusive of all material and labor.
 - a) If the manufacturer fails and/or refuses to issue the required coating warranty, the Contractor with Surety shall warrant to make repairs, replacement or take corrective action on the same terms as required of the manufacturer, (had the warranty been issued by the manufacturer), so that the intended warranty is delivered to the Owner.
 - b) The warranty shall be governed by the laws of the State of Florida.

5. The manufacturer's Representative shall conduct a Post-Construction field inspection no earlier than eleven (11) months, and no later than twelve (12) months after the Date of Substantial Completion. Submit a written report within seven (7) days of this visit to the Owner's Maintenance Dept. listing observations, conditions and any recommended repairs or remedial action.

Further, the manufacturer acknowledges that the applicator:

Coating Applicator's Name: _____

Address: _____

has been approved to install this roof system since _____, _____ and meets the criteria for an approved applicator listed in the Project Manual.

By signing the above, the Authorized Representative of said Manufacturer certifies and represents the Coating System Manufacturer with the authority to contract and make the above representations to the Owner.

By: _____
Signature of Authorized Representative

Date: _____

(SEAL)

Witness: _____

Date: _____