
Rochester Housing Authority
675 West Main Street
Rochester, New York 14611

March 2021

Facade Repairs

at

Danforth Towers East & West

140 / 160 West Avenue
Rochester, New York 14611

Project Manual

Single Prime Contract



Konopka Architecture, PC

1115 Rush West Rush Road
Rush, New York 14543

585.230.0842 mobile
www.konopkaarchitecture.com

TABLE OF CONTENTS

DIVISION 00	PROCUREMENT AND CONTRACTING REQUIREMENTS
00 0000	by RHA
DIVISION 01	GENERAL REQUIREMENTS
01 1100	Summary of Work
01 2200	Unit Prices
01 2500	Substitution Procedures
01 2519	Substitution Request Form
01 2600	Contract Modification Procedures
01 3100	Project Management and Coordination
01 3216	Construction Progress Schedules
01 3300	Submittal Procedures
01 3516	Alteration Project Procedures
01 4000	Quality Requirements
01 5000	Temporary Facilities and Controls
01 6000	Product Requirements
01 7329	Cutting and Patching
01 7700	Closeout Procedures (Includes 2-Year Contractor Warranty Requirement)
DIVISION 02	EXISTING CONDITIONS
--- -----	Limited Pre-Renovation Regulated Building Materials Inspection by LaBella dated March 2020 (21 Pages)
02 4120	Selective Building Demolition
02 8400	Non-Liquid PCB Material Removal
DIVISION 03	CONCRETE
03 0100	Maintenance of Concrete
03 0130	Maintenance of Cast-In-Place Concrete and Details
03 7300	Concrete Rehabilitation and Details
DIVISION 04	MASONRY
04 0100	Maintenance of Masonry
DIVISION 07	THERMAL AND MOISTURE PROTECTION
07 1900	Water Repellents
07 9000	Joint Sealers, Elastomeric and Non-Elastomeric Sealant (1a)
07 9200	Joint Sealers, Elastomeric and Non-Elastomeric Sealant (15LM)
DIVISION 09	FINISHES
09 8300	Elastomeric Coatings
09 9000	Paints and Coatings

END OF TABLE OF CONTENTS

SECTION 01 1100 - SUMMARY OF WORK**PART 1 GENERAL****1.1 SUMMARY****A. Section Includes:**

1. Project description.
2. Work by Others.
3. Work sequence.
4. Owner occupancy.
5. Future work.
6. Contractor's use of site and premises.
7. Owner furnished Products.
8. Conflicting requirements.

1.2 PROJECT DESCRIPTION

- A. Work of this Project "generally" includes Facade Repairs at Danforth Towers East and West. Repairs include selective demolition, pcb caulk removal, masonry restoration, concrete patch, sealants, water repellents and elastomeric coatings.

1. Location: **Danforth Towers East and West**
140 / 160 West Avenue
Rochester, New York 14611
2. Owner: **Rochester Housing Authority**
675 West Main Street
Rochester, New York 14611

- B. Contract Documents, dated March 2021 were prepared for the Project by Konopka Architecture, PC.

- C. The Project will be constructed under a single prime contract.

1.3 WORK BY OTHERS

- A. Separate Contracts: Not applicable.
- B. Work by the RHA: Not applicable.
- C. RHA's Products: Not applicable.

1.4 WORK SEQUENCE

- A. Construct Work to accommodate RHA's use of premises during construction period:
1. The work shall be done in one continuous phase. Refer to RHA requirements for completion date.
 2. No work shall be started without submittal and approval of all shop drawings and submittals.
 3. **Work hours shall be 8:30am to 4:30pm daily.** Holiday and weekend work is not allowed unless submitted to, and approved by the RHA.
- B. **Schedule;**
1. Contract work shall be completed as follows:

a. Shop drawings and material	1 month
b. Exterior repairs	14 months
Total time	<u>15 months</u>
 2. See RHA contract requirements for total contract time.
 3. **THE EAST TOWER SHALL BE DONE FIRST.**
- C. Coordinate construction schedule, operations and site access with the RHA Property Rehab Specialist.
- D. Schedule the Work to accommodate these requirements.

1.5 RHA OCCUPANCY

- A. The RHA will occupy the apartments and site during the entire period of construction for conduct of normal operations.
- B. Cooperate with the RHA to minimize conflict, and to facilitate RHA's operations.
- C. Schedule the Work to accommodate this requirement.

1.6 FUTURE WORK

- A. Not applicable.

1.7 CONTRACTOR'S USE OF SITE AND PREMISES

- A. Limit use of site and premises to allow for:
 1. Work by separate contractors.
 2. Work by RHA.
 3. RHA occupancy.
 4. Use of site and adjacent premises by the public.

- B. Move any stored products under Contractor's control that interfere with the operations of the RHA or separate contractors.
- C. Assume full responsibility for protection and safekeeping of products under this Contract stored on site.
- D. Obtain and pay for use of any additional storage or work areas needed for operations.
- E. Coordinate use of site and premises with the RHA:
 - 1. Access to site and premises: Coordinate with RHA Property Rehab Specialist.
 - 2. Access to the building: Coordinate with RHA Property Rehab Specialist.
 - 3. **Staging, storage and parking areas will be designated by the RHA Property Rehab Specialist.**
- F. Conform to Building Rules and Regulations.
- G. The Contractor shall be responsible for obtaining and paying for all necessary permits.
- H. Confine operations to construction area unless otherwise approved by the RHA.
- I. If access to adjacent common or occupied spaces is required:
 - 1. Schedule operations with RHA in advance.
- J. Do not interrupt building fire or life safety systems.
- K. Do not close or obstruct exits.
- L. Do not use or store hazardous or flammable materials on premises without Owner's approval; follow requirements of governing authorities having jurisdiction over the work.
- M. Smoking is not allowed on RHA property.

1.8 OWNER FURNISHED PRODUCTS

- A. Products that will be furnished and paid for by the RHA are as follows:
 - 1. Not applicable.
- B. RHA's Responsibilities:
 - 1. Not applicable.

C. Contractor's Responsibilities:

1. Not applicable.

1.9 CONFLICTING REQUIREMENTS

- A. Conflicting Requirements:** Where compliance with two (2) or more drawn or specified requirements is found, which establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. This applies to DRAWING and SPECIFICATION information. Refer to the Architect before proceeding for a decision on requirements that are different but apparently equal, and where it is uncertain which requirement is the most stringent.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01 2200 - UNIT PRICES**PART 1 GENERAL**

1.1 SUMMARY

- A. Section Includes:
 - 1. Measurement and Payment.
- B. Related Sections:
 - 1. Division 3 and 7 Sections.

1.2 UNIT PRICES

- A. Provide unit prices for items listed, for inclusion in Contract, guaranteed to apply for duration of Project.
- B. Take measurements and compute quantities.
- C. Payment includes full compensation for all required labor, Products, tools, equipment, plant, transportation, services, and incidentals, and for erection, application, or installation of an item of the Work.
- D. Adjustments to Contract Sum will be made by Change Order based on net cumulative change for each item of the Work.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.1 UNIT PRICE SCHEDULE

- A. The Contractor shall provide the UNIT PRICES for items below with the bid submission. Include in the amount of the UNIT PRICES, all labor, material, products, tools, equipment, plant and facilities, transportation, services and incidentals, erection, application or installation of the item of work, overhead and profit. The Base Bid of the contract shall include all work associated with the assumed quantities indicated below. **If it is determined that quantities are less than the totals required at the end of the contract, then the contract amount shall be reduced in accordance with the associated unit prices by change order.** The unit

prices will be used to determine the actual value of the work that may or may not be necessary to complete the project and not for awarding the contract.

B. Unit Price No.1 - Concrete Patch:

1. Base Bid: Provide 200 square feet in the Base Bid. This is in addition to specific amounts shown in the contact documents.
2. Description: Provide concrete preparation and patch per Specification Section 03 0100 - Maintenance of Concrete and drawings / details for spalled and deteriorated areas.
3. Unit of Measurement: One (1) square foot.

C. Unit Price No.2 - Concrete Patch with No Exposed Rebars:

1. Base Bid: Provide 100 square feet in the Base Bid. This is in addition to specific amounts shown in the contact documents.
2. Description: Provide concrete preparation and patch per Specification Section 03 7300 - Concrete Rehabilitation and drawings / details for deteriorated areas with No Exposed Rebars.
3. Unit of Measurement: One (1) square foot.

D. Unit Price No.3 - Concrete Patch With Exposed Rebars:

1. Base Bid: Provide 100 square feet in the Base Bid. This is in addition to specific amounts shown in the contact documents.
2. Description: Provide concrete preparation and patch per Specification Section 03 7300 - Concrete Rehabilitation and drawings / details for deteriorated areas With Exposed Rebars.
3. Unit of Measurement: One (1) square foot.

E. Unit Price No.4 - Remove and Replace Brick Masonry:

1. Base Bid: Provide 200 square feet in the Base Bid. This is in addition to specific amounts shown in the contact documents.
2. Description: Provide for removal and replacement of brick masonry per Specification Section 04 0100 - Maintenance of Masonry and drawings / details.
3. Unit of Measurement: One (1) square foot.

F. Unit Price No.5 - Weep Holes in Brick Masonry:

1. Base Bid: Provide 50 total in the Base Bid. This is in addition to specific amounts shown in the contact documents.
2. Description: Provide "Retro" weep hole covers in existing brick masonry per Specification Section 04 0100 - Maintenance of Masonry and drawings / details.
3. Unit of Measurement: One (1) each.

G. Unit Price No.6 - Joint Sealers (Concrete Cracks):

1. Base Bid: Provide 100 lineal feet in the Base Bid. This is in addition to specific amounts shown in the contact documents.
2. Description: Provide preparation and joint sealer per Specification Section 07 9000 - Joint Sealers and drawings / details.
3. Unit of Measurement: One (1) lineal foot.

H. Unit Price No.7 - Joint Sealers (General):

1. Base Bid: Provide 200 lineal feet in the Base Bid. This is in addition to specific amounts shown in the contact documents.
2. Description: Remove existing PCB containing caulk and provide preparation, backer rod and joint sealer per Specification Section 07 9200 - Joint Sealers and drawings / details.
3. Unit of Measurement: One (1) lineal foot.

I. Unit Price No.8 - Metal Panel Coating:

1. Base Bid: Provide 100 square feet in the Base Bid. This is in addition to specific amounts shown in the contact documents.
2. Description: Prepare surface and provide coating per Specification Section 09 9000 - Paints and Coatings and drawings / details.
3. Unit of Measurement: One (1) square foot.

END OF SECTION

SECTION 01 2500 - SUBSTITUTION PROCEDURES**PART 1 GENERAL****1.1 SUMMARY**

- A. Section Includes:
 - 1. Product Substitution Procedures.

1.2 GENERAL

- A. Definition: Proposal by Contractor to use manufacturer, product, material, or system different from one required in Contract Documents.
- B. Do not substitute Products unless a substitution request has been approved by Architect.
- C. Substitutions during Bidding: **Not allowed.**
- D. Architect will consider substitution requests **within 5 days after award of Contract.** After the initial 5 day period, substitutions requests will not be considered.
- E. In case of non-availability of a specified Product notify Architect in writing as soon as non-availability becomes apparent.

1.3 SUBSTITUTION REQUESTS

- A. Submit substitution requests on copy of form bound into Project Manual.
- B. Document specified product and proposed substitution with complete data, including:
 - 1. Product identification, including name and address of manufacturer.
 - 2. Product description, performance and test data, and reference standards.
 - 3. Sample, if requested.
 - 4. Description of any anticipated effect that acceptance of proposed substitution will have on Progress Schedule, construction methods, or other items of Work.
 - 5. Description of any differences between specified product and proposed substitution.
 - 6. Difference in cost between specified product and proposed substitution.
- C. Burden of proof for substantiating compliance of proposed substitution with Contract Document requirements remains with Contractor.
- D. A request constitutes a representation that the Contractor:

1. Has investigated the 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 that may be required for the Work to be complete with no additional cost to RHA.
 4. Waives claims for additional costs or time extension that may subsequently become apparent.
- E. Substitutions will not be considered if:
1. They are indicated or implied on Shop Drawings or other submittals without submittal of a substitution request.
 2. Approval will require substantial revision of Contract Documents without additional compensation to Architect.
- F. Submit one paper bound copy and one electronic in Adobe PDF format.
- G. Architect will notify Contractor of approval or rejection of each Substitution Request. Approved Substitutions will be incorporated into Contract by Change Order or Construction Change Directive.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01 2519 - SUBSTITUTION REQUEST FORM

DATE: _____

TO: _____

ATTENTION: _____

PROJECT: _____

We submit for your consideration the following product as a substitution for the specified product:

Section No.	Paragraph	Specified Product
_____	_____	_____

Proposed Substitution: _____

Reason for Substitution: _____

Product Data:

Attach complete technical data for both the specified product and the proposed substitution. Include information on changes to Contract Documents that the proposed substitution will require for its proper installation.

Samples:

Attached Will be furnished upon request

Does the substitution affect dimensions shown on Drawings?

No Yes (explain) _____

Effects of proposed substitution on other Work:

Differences between proposed substitution and specified Product:

Manufacturer's warranties of the proposed substitution are:

___ Same ___ Different (explain) _____

Maintenance service and spare parts are available for proposed substitution from:

Previous installations where proposed substitution may be seen:

Project: _____ Project: _____

Owner: _____ Owner: _____

Architect: _____ Architect: _____

Date Installed: _____ Date Installed: _____

Cost savings to be realized by RHA, if proposed substitution is approved:

Change to Contract Time, if proposed substitution is approved:

___ No Change ___ Add _____ days ___ Deduct _____ days

Submittal constitutes a representation that Contractor has read and agrees to the provisions of Section 01 2500.

Submitted by Contractor:

Signature

Firm

For Use by Architect:

Based on the information supplied by the Contractor, the Architect has reviewed the proposed substitution on the basis of design concept of the Work and conformance with information given in Contract Documents.

Approved Approved as Noted Rejected

Submit Additional Information: _____

By: _____ Date: _____

SECTION 01 2600 - CONTRACT MODIFICATION PROCEDURES**PART 1 GENERAL****1.1 SUMMARY**

- A. Section Includes:
1. Contract Modification Procedures.
 2. Payment Procedures.

1.2 CONTRACT MODIFICATION PROCEDURES

- A. Contractor shall complete RHA cost analysis worksheet and submit to RHA, RHA will complete change order request. RHA will review/approve change order and verify additional funding is available. RHA will forward forms to the Architect for approval.
- B. Upon RHA approval of the proposal from the Contractor, RHA will issue a Change Order on RHA's Change Order Form, for all changes to Contract Sum or Contract Time.
- C. Section 28:
1. Only the Contracting Officer has the authority to modify any term or condition of this contract. Any contract modification shall be authorized in writing.
 2. The Contracting Officer may modify the contract unilaterally (1) pursuant to a specific authorization stated in a contract clause (e.g., Changes); or (2) for administrative manners which do not change the rights or responsibilities of the parties (e.g., change in the PHA address). All other contract modifications shall be in the form of supplemental agreements signed by the Contractor and the Contracting Officer.
 3. When a proposed modification requires the approval of HUD prior to its issuance (e.g., a change order that exceeds the PHA's approved threshold), such modification shall not be effective until the required approval is received by the PHA.
- D. Section 29:
1. The Contracting Officer may, at any time, without notice to the sureties, by written order designated or indicated to be a change order, make changes to the work within the general scope of the contract including changes.
 2. Additional Sections are included in HUD Form 5370.

1.3 PAYMENT PROCEDURES

- A. Submit RHA partial payment request.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01 3100 - PROJECT MANAGEMENT AND COORDINATION**PART 1 GENERAL****1.1 SUMMARY****A. Section Includes:**

1. Project coordination.
2. Administrative and Supervisory Personnel.
3. Coordination drawings.
4. Preconstruction conference.
5. Project meetings.

B. Related Sections:

1. Section 01 7700 - Closeout Procedures.

1.2 PROJECT COORDINATION**A. All submittals shall be made upon contract award. No work shall start without shop drawings and submittals made and approved.**

- B. Coordinate scheduling, submittals, and work of various Sections of specifications to assure efficient and orderly sequence of installation of interdependent construction elements.
- C. Verify that utility requirement 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 such equipment.
- D. Coordinate space requirements and installation of mechanical and electrical items that are indicated diagrammatically on Drawings.
 1. Follow routing shown as closely as practical; place runs parallel with building lines.
 2. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- E. In finished areas, conceal pipes, ducts, and wiring within construction. Coordinate locations of fixtures and outlets with finish elements.
- F. Coordinate completion and clean up of work of separate Sections in preparation for Substantial Completion.

- G. After Owner occupancy, 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 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

- A. The contractor shall provide a full time project superintendent for the duration of the project. No work by a subcontractor shall be performed without the prime contractor's superintendent on site.**

1.4 COORDINATION DRAWINGS

- A. MEP Coordination Drawings: Not applicable.

1.5 PROJECT MEETINGS

- A. RHA will schedule and administer the preconstruction conference. Pre-installation conferences are the responsibility of the contractor.
- B. All meetings will be held at the project site, with the exception of the pre-construction meeting, which will be held at 495 Upper Falls Boulevard.
- C. The Architect will record significant proceedings and decisions at each meeting; reproduce and distribute copies to parties in attendance and others affected by proceedings and decisions made.

1.6 PRECONSTRUCTION CONFERENCE

- A. The preconstruction conference will be scheduled by the RHA, at which time, the notice to proceed will be issued. It will be held at RHA, 495 Upper Falls Boulevard.
- B. Attendance:
 - 1. Prime contractor.
 - 2. RHA Procurement Department.
 - 3. RHA Construction Manager.
- C. Review and Discuss:
 - 1. Relation and coordination of various parties, and responsible personnel for each party.
 - 2. Use of premises, including office and storage areas, temporary controls, and security procedures.
 - 3. Construction schedule and critical work sequencing.
 - 4. Processing of:
 - a. Contract modifications.
 - b. Shop Drawings, Product Data, and Samples.
 - c. Applications for Payment.

- d. Substitutions.
- e. Other required submittals.
5. Adequacy of distribution of Contract Documents.
6. Procedures for maintaining contract closeout submittals.
7. Installation and removal of temporary facilities.
8. Notification procedures and extent of testing and inspection services.

1.7 PROGRESS MEETINGS

- A. Schedule for progress meetings will be every other week.
- B. Location: At the project site.
- C. Attendance:
 1. Contractor.
 2. Owner.
 3. Architect and consultants as appropriate to agenda.
 4. Subcontractors and suppliers as appropriate to agenda.
 5. Others as appropriate to agenda.
- D. Review and Discuss:
 1. Work progress since previous meeting, including:
 - a. Field observations, deficiencies, conflicts, and problems.
 - b. Schedule, progress and completion date.
 - c. Corrective measures needed to maintain quality standards, progress, and completion date.
 2. Status of:
 - a. Requests for information.
 - b. Submittals.
 - c. Contract modifications.
 3. Coordination between various elements of Work.
 4. Maintenance of Project Record Documents.

1.8 PRE-INSTALLATION CONFERENCES

- A. Where required in individual specification Section, convene a pre-installation conference at project site or other designated location.
- B. Require attendance of parties directly affecting or affected by work of the specific Section.

- C. Review conditions of installation, preparation and installation procedures, and coordination with related work.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01 3216 - CONSTRUCTION PROGRESS SCHEDULES**PART 1 GENERAL****1.1 SUMMARY****A. Section Includes:**

1. Construction progress schedule.

B. Related Sections:

1. Section 01 1100 - Summary of Work: Work sequence.
2. Rochester Housing Authority Payment Procedures.

1.2 FORMAT

- A. Prepare Progress Schedule as a horizontal bar chart with separate bar for each major portion of Work or operation, identifying first work day of each week. Maintain established staging and overall contract milestones.
- B. Sequence of Listings: The chronological order of the start of each item of Work.
- C. Scale and Spacing: To provide space for notations and revisions.
- D. Sheet Size: Multiples of 8-1/2 x 11 inches.

1.3 CONTENT

- A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.**
- B. Identify each item by specification Section number.**
- C. Provide subschedules to define critical portions of the entire Progress Schedule.
- D. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
- E. Provide separate schedule of submittal dates for Shop Drawings, Product Data, and Samples, including:
 1. Dates reviewed submittals will be required from Architect.
 2. Decision dates for selection of finishes.
 3. Delivery dates for Owner furnished products (if applicable).
- F. Coordinate content with Schedule of Values.

G. Revisions:

1. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
2. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.

H. Provide narrative report to define problem areas, anticipated delays, and impact on Progress Schedule. Report corrective action taken, or proposed, and its effect.

1.4 SUBMITTAL

A. Submit 3 copies of the Progress Schedule at the Pre-construction Meeting. After review, resubmit required revised data within 10 days.

B. Submit revised Progress Schedule with each Application for Payment (if different than previous).

C. Submit electronically in Adobe PDF format.

1.5 DISTRIBUTION

A. Distribute copies of approved Progress Schedule to project site file, Subcontractors, suppliers, and other concerned parties.

B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in Progress Schedule.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01 3300 - SUBMITTAL PROCEDURES**PART 1 GENERAL****1.1 SUMMARY****A. Section Includes:**

1. Submittal procedures, **Procore management software**.
2. Proposed Products list.
3. Submittal schedule.
4. Shop Drawings.
5. Product Data.
6. Samples.
7. Quality control submittals.

B. Related Sections:

1. Section 01 4000 - Quality Requirements.

1.2 SUBMITTAL PROCEDURES

- A. Number each submittal with Project Manual section number and a sequential number within each section. Number resubmittals with original number and an alphabetic suffix.
- B. Identify Project, Contractor, Subcontractor or supplier, pertinent Drawing sheet and detail numbers, and specification Section number, as appropriate.
- C. Submit all submittals in Adobe PDF format using **Procore management software**.
- D. Architect will not review incomplete submittals.
- E. Apply Contractor's stamp, signed or initialed certifying that:
 1. Submittal was reviewed.
 2. Products, field dimensions, and adjacent construction have been verified.
 3. Information has been coordinated with requirements of Work and Contract Documents.
- F. Schedule submittals to expedite the Project, and deliver to Architect. Coordinate submittal of related items.
- G. For each submittal, **allow 5 days for Architect's review**, excluding delivery time to and from Contractor.

- H. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of completed Work.
- I. Revise and resubmit submittals when required; identify all changes made since previous submittal.
- J. Distribute copies of reviewed submittals to concerned parties and to Project Record Documents file. Instruct parties to promptly report any inability to comply with provisions.

1.3 PROPOSED PRODUCTS LIST

- A. Within 7 days after date of Notice to Proceed, submit a complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.
- C. Submit electronically in Adobe PDF format.

1.4 SUBMITTAL SCHEDULE

- A. Within 7 days after date of Notice to Proceed, submit all shop drawings and submittals, including submittals listed as:
 - 1. Submittals for Review.
 - 2. Quality Control Submittals.
 - 3. Closeout Submittals.
- B. Include for each submittal:
 - 1. Specification section number.
 - 2. Description of submittal.
 - 3. Type of submittal.
 - 4. Anticipated submittal date.
 - 5. For submittals requiring Architect's review, date reviewed submittal will be required from Architect.
- C. Submit electronically in Adobe PDF format.

1.5 SHOP DRAWINGS

- A. Present information in clear and thorough manner.
- B. Identify details by reference to sheet and detail numbers or room number shown on Drawings.

- C. Submit required project submittals electronically in Adobe PDF format using **Procore management software**.

1.6 PRODUCT DATA

- A. Mark to identify applicable products, models, options, and other data.
- B. Supplement manufacturers' standard data to provide information unique to this Project.
- C. Submit electronically in Adobe PDF format using **Procore management software**. Architect will reply in kind.

1.7 SAMPLES

- A. Submit samples to illustrate functional and aesthetic characteristics of Products, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- B. Where so indicated, submit samples of finishes from the full range of manufacturers' standard colors, textures, and patterns for Architect's selection.
- C. Include identification on each sample, with full Project information. Unless otherwise specified in individual specifications, submit two (2) of each sample.
- D. Architect will notify Contractor of approval or rejection of samples, or of selection of color, texture, or pattern if full range is submitted.

1.8 QUALITY CONTROL SUBMITTALS

- A. Quality control submittals specified in Section 01 4000 are for information and do not require Architect's responsive action except to require re-submission of incomplete or incorrect information.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01 3516 - ALTERATION PROJECT PROCEDURES**PART 1 GENERAL**

1.1 SUMMARY

A. Section Includes:

1. Patching and extending existing work.
2. Transitions and adjustments.
3. Repair of damaged surfaces.

1.2 PROJECT CONDITIONS

A. Hazardous Materials:

1. **Comply with EPA's Lead Renovators Certification Rules and Regulations and HUD Lead Safe Housing Rule.**

B. If suspected hazardous materials are encountered during work of this Contract:

1. Cease work in affected area immediately.
2. Notify Architect and await instructions.
3. Protect affected areas from damage and contact by persons.

PART 2 PRODUCTS

2.1 MATERIALS

A. New Materials:

1. Provide new materials to match existing adjacent materials for closing of openings, repairs, and reconstructions where suitable salvaged materials do not exist, are insufficient in quantity, or where reuse is not permitted.
2. Match existing materials in material, type, size, quality, color, finish, and other attributes.

B. Reused Materials:

1. Clean and prepare salvaged materials for reuse.
2. Do not use materials with objectionable chips, cracks, splits, dents, scratches, or other defects.
3. Repair operable items to function properly.

PART 3 EXECUTION

3.1 PREPARATION

- A. Test materials to be used in repairs for compatibility with existing materials; do not use incompatible materials.
- B. Cut, move, or remove items as necessary for access to alterations, renovation work and as required for contract work. Replace and restore upon completion.
- C. Remove, cut, and patch work in manner to minimize damage and to provide means for restoring products and finishes to their original or specified new condition.
- D. Remove unsuitable materials not marked for salvage.
- E. Remove debris and abandoned items from areas of work and from concealed spaces.

3.2 ALTERATIONS

- A. Coordinate alterations and renovations to expedite completion.
- B. Install products and finish surfaces as specified in individual sections, or where no specification section exists to match existing.
- C. Refinish visible surfaces to specified condition, with neat transition to adjacent surfaces.
- D. Finish patches to provide uniform color and texture over entire surface, with repairs not discernible from normal viewing distance. If finish cannot be matched, refinish entire surface to nearest intersections.
- E. Where new work abuts or aligns with existing, provide smooth and even transition. Where a change in plane of 1/4 inch or more occurs, submit recommendation to Architect for transition.
- F. Where alterations expose mechanical and electrical components that were previously concealed, renovate to be concealed in completed work.
- G. In addition to specified replacement of equipment and fixtures, restore mechanical and electrical systems to full operational condition.
- H. Patch holes in exposed surfaces left by removal of mechanical and electrical components.

END OF SECTION

SECTION 01 4000 - QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
1. References.
 2. Quality assurance and control of installation.
 3. Conflicting requirements.
 4. Mockups.
 5. Manufacturer's field services and reports.
 6. Design data and calculations.
 7. Test reports and certifications.
 8. Manufacturer's installation instructions.

1.2 REFERENCES

- A. For products or workmanship specified by reference to association, trade, or industry standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Should specified reference standards conflict with Contract Documents, comply with the most stringent requirement. Request clarification from Architect before proceeding. See paragraph 1.4.**
- C. Conform to edition of reference standard in effect as of date of Owner/Contractor Agreement.
- D. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.3 QUALITY ASSURANCE 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 fully with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

- E. Perform work by persons qualified to produce workmanship of specified quality.
- F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.4 CONFLICTING REQUIREMENTS

- A. **Conflicting Requirements:** Where compliance with two (2) or more drawn or specified requirements is found, which establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. This applies to DRAWING and SPECIFICATION information. Refer to the Architect before proceeding for a decision on requirements that are different but apparently equal, and where it is uncertain which requirement is the most stringent.

1.5 MOCKUPS

- A. Definition:
 - 1. Mockups are field samples constructed, applied, or assembled at the project site for review by the Owner and Architect that illustrate materials, equipment, or workmanship.
 - 2. Approved mockups establish the standard of quality by which the Work will be judged.
- B. Construct, apply, or assemble specified items, with related attachment and anchorage devices, flashings, seals, and finishes.
- C. Perform work in accordance with applicable specifications sections.
- D. Erect at project site at location acceptable to Architect. Protect from damage.
- E. Removal:
 - 1. Mockups may remain as part of the Work only when so designated in individual specification sections.

1.6 MANUFACTURERS' FIELD SERVICES AND REPORTS

- 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, or startup of equipment, as applicable, and to initiate instructions when necessary.
- B. Individuals to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

- C. Submit electronically in Adobe PDF format within seven (7) days after each observation.

1.7 DESIGN DATA AND CALCULATIONS

- A. When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide design data and calculations.
- B. Accuracy of design data and calculations is the responsibility of the Contractor.
- C. When so specified, prepare design data and calculations under the direction of a professional engineer licensed in the state in which the Project is located. Affix engineer's seal to submittals.
- D. Submit 3 paper copies and electronic file in Adobe PDF format.

1.8 TEST REPORTS AND CERTIFICATIONS

- A. When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide test reports and manufacturers' certifications.
- B. Indicate that material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Submittals may be recent or previous test results on material or Product, but must be acceptable to Architect.
- D. Submit 3 paper copies and electronic file in Adobe PDF format.

1.9 MANUFACTURER'S INSTALLATION INSTRUCTIONS

- A. When Contract Documents require that Products be installed in accordance with manufacturer's instructions:
 - 1. Submit manufacturer's most recent printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, as applicable.
 - a. Submit in quantities specified for Product Data.
 - b. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
 - c. Identify conflicts between manufacturers' instructions and requirements of Contract Documents.
 - 2. Perform installation of Products to comply with requirements of manufacturer's instructions.
 - 3. If installation cannot be performed in accordance with manufacturer's instructions, notify Architect and await instructions.
 - 4. Submit 3 paper copies and electronic file in Adobe PDF format.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01 5000 - TEMPORARY FACILITIES AND CONTROLS**PART 1 GENERAL****1.1 SUMMARY****A. Section Includes:**

1. Temporary utilities.
2. Use of existing elevators.
3. Field offices and sheds.
4. Temporary controls.
5. Protection of installed Work.
6. Security.
7. Progress cleaning.
8. Water, erosion, sediment, dust, and mold and mildew control.
9. Access roads and parking areas.
10. Removal.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION**3.1 TEMPORARY ELECTRICITY**

- A. The existing electrical system may be used during construction. Take care to prevent excess use. Excess use or waste will be billed back to the contractor. The RHA will provide access to a panel in the penthouse on each roof. The contractor shall provide and have connections coordinated and approved by the RHA. Electrical work shall be performed by a licensed electrician.
- B. Provide temporary power outlets for construction operations, with branch wiring and distribution boxes located as required. Provide flexible power cords as required.
- C. Maintain distribution system and provide routine repairs.

3.2 TEMPORARY LIGHTING

- A. Provide temporary lighting for construction and security purposes.
- B. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.

- C. Maintain lamps and provide routine repairs.
- D. Provide portable lights when required to provide minimum lighting levels necessary for specific work.

3.3 TEMPORARY HEAT

- A. N/A.

3.4 TEMPORARY VENTILATION

- A. Ventilate enclosed areas to facilitate curing of materials, disperse humidity, and prevent accumulations of dust, fumes, vapors, or gases.
- B. Provide temporary fan units as required to maintain clean air for construction.
- C. Existing ventilation equipment may not be used during construction.

3.5 TEMPORARY TELEPHONE, FACSIMILE, AND COMPUTER SERVICES

- A. Contractor shall be accessible during normal business hours via mobile telephone with voice mail or an answering service.
- B. Provide plain paper facsimile machine in Contractor's field office [on separate telephone line from Contractor's field telephone.

3.6 TEMPORARY WATER

- A. Use of existing water will be allowed during construction. Excess use or waste will be billed back to the contractor.
- B. Protect from freezing.

3.7 TEMPORARY SANITARY FACILITIES

- A. Provide chemical toilets for use during construction.
- B. Existing toilets may not be used during construction.
- C. Permanent toilets may not be used during construction.

3.8 USE OF EXISTING ELEVATORS

- A. The RHA will allow the contractor to use building elevators for workers only. Construction materials and equipment will not be allowed in elevators. Elevator use will be restricted and only allowed with permission from RHA Project Manager and scheduled in advance, if necessary. All work and access to the building and roof to

be done from the exterior of the building. Any access into the building will require proper PPE as per CDC COVID-19 Safety Guidelines.

3.9 FIELD OFFICES AND SHEDS

- A. Field offices are not required.
- B. Do not unreasonably encumber site or premises with excess materials or equipment.
- C. Temporary Structures:
 - 1. Portable or mobile buildings, structurally sound, weathertight, with floors raised above ground.
 - 2. Thermal transmission resistance: Compatible with occupancy and storage requirements.
 - 3. Provide connections for utility services when required.
 - 4. Provide steps and landings at entrances.

3.10 BARRIERS

- A. **Provide overhead barriers to prevent unauthorized entry to protect construction operations. This includes protection of ALL ENTRIES AT BOTH TOWERS.**
- B. Provide barricades required by governing authorities for public right-of-ways and for public access to existing facilities.
- C. Fencing (as/if required):
 - 1. Provide temporary fencing for construction operations.
 - 2. Construction: Commercial grade chain link.
 - 3. Height: 6 feet.
 - 4. Locate to protect construction operations, materials, and equipment.
 - 5. Provide vehicular and pedestrian gates.
- D. Tree and Plant Protection:
 - 1. Provide as required for existing trees and plantings.

3.11 EXTERIOR CLOSURES

- A. Provide temporary weathertight closures for exterior openings to provide acceptable interior working conditions, to allow for temporary heating and maintenance of ambient temperatures required in individual specification sections, to protect the Work, and to prevent entry of unauthorized persons.
- B. Provide access doors with locking hardware.

3.12 PROTECTION OF INSTALLED WORK

- A. Protect installed work from construction operations; provide special protection when required in individual specification sections.
- B. Minimize traffic, storage, and construction activities on roof surfaces. If traffic, storage, or activity is necessary, obtain recommendations for protection from roofing manufacturer.
- C. Prohibit traffic from landscaped areas.

3.13 SECURITY

- A. Provide a project security program, to:
 - 1. Protect the Work, stored products, and construction equipment from theft and vandalism.
 - 2. Prevent entry by unauthorized persons.

3.14 PROGRESS CLEANING

- A. Maintain areas free from waste materials, debris, and rubbish. Maintain site in clean and orderly condition.
- B. Provide containers for collection of waste materials, debris, and rubbish; remove and dispose of off site as required by construction activities.
- C. Periodically clean interior areas to provide suitable conditions for finish work.

3.15 TEMPORARY CONTROLS

- A. Water Control: N/A
- B. Erosion and Sediment Control: N/A
- C. Dust Control:
 - 1. Provide dust control materials and methods to minimize dust from construction operations. Prevent dust from dispersing into atmosphere.

3.16 ACCESS ROADS AND PARKING AREAS

- A. Existing roads designated by Owner may be used for construction purposes. Do not allow heavy vehicles or construction equipment in parking areas.
- B. Provide for access by emergency vehicles.

- C. Keep fire hydrants and water control valves free from obstruction and accessible for use.
- D. Provide parking facilities for construction personnel. When parking needs exceed on site capacity, provide additional off site facilities.
- E. Maintain existing construction, and restore to original or specified condition at completion of Work.

3.17 REMOVAL

- A. Remove temporary utilities, equipment, facilities, and services when construction needs can be met by use of permanent construction or upon completion of Project.
- B. Remove foundations and underground installations; grade site as indicated.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing and permanent facilities used during construction to original or to specified condition.

END OF SECTION

SECTION 01 6000 - PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Products.
 - 2. Transportation and handling.
 - 3. Storage and protection.
 - 4. Reuse of existing materials.
 - 5. Product options.

1.2 PRODUCTS

- A. Provide interchangeable components by the same manufacturer for identical items.
- B. Do not use products containing asbestos or other known hazardous materials.
- C. Do not reuse materials and equipment removed from existing construction in completed Work, except as specifically permitted by the Contract Documents.

1.3 TRANSPORTATION AND HANDLING

- A. Coordinate delivery of Products to prevent conflict with Work and adverse conditions at site.
- B. Transport and handle Products in accordance with manufacturer's instructions.
- C. Promptly inspect shipments to ensure that Products comply with requirements of Contract Documents, are undamaged, and quantities are correct.
- D. Provide equipment and personnel to handle products by methods to prevent damage.
- E. **The contractor shall receive products and equipment at the project site. The RHA will not receive products and equipment for the contractor. Materials which arrive at the site without the contractor present will be turned away.**

1.4 STORAGE AND PROTECTION

- A. Store and protect Products in accordance with manufacturer's instructions with manufacturer's seals and labels intact and legible.
- B. All on-site storage needs to be approved by the RHA construction manager.

- C. Store Products subject to damage by elements in weathertight enclosures. Maintain temperature and humidity within ranges required by manufacturer's instructions.
- D. Exterior Storage:
 - 1. Store fabricated Products above ground; prevent soiling and staining.
 - 2. Cover products subject to deterioration with impervious sheet coverings; provide ventilation to prevent condensation.
 - 3. Store loose granular materials in well drained area on solid surfaces; prevent mixing with foreign matter.
- E. Arrange storage areas to permit access for inspection. Periodically inspect stored products to verify that products are undamaged and in acceptable condition.

1.5 REUSE OF EXISTING MATERIALS

- A. Carefully remove, handle, protect, and store Products.
- B. Clean and refinish Products to original or specified condition.
- C. Restore operable components to working condition.
- D. Arrange and pay for transportation, storage, and handling of Products requiring off site storage, restoration, or renovation.

1.6 PRODUCT OPTIONS

- A. Products specified by reference standard only:
 - 1. Select any Product meeting the specified standard.
 - 2. Submit Product Data to substantiate compliance of proposed Product with specified requirements.
- B. Products specified by naming two or more acceptable Products: Select any named Product.
- C. Products specified by stating that the Contract Documents are based on a Product by a single manufacturer followed by the statement "Equivalent products by the following manufacturers are acceptable":
 - 1. Select the specified Product or a Product by a named manufacturer having equivalent or superior characteristics to the specified Product and meeting the requirements of the Contract Documents.
 - 2. If the specified Product is not selected, submit Product Data to substantiate compliance of proposed Product with specified requirements.
 - 3. The specified Product establishes the required standard of quality.

- D. Products specified by required performance or attributes, without naming a manufacturer or Product:
 - 1. Select any Product meeting specified requirements.
 - 2. Submit Product Data to substantiate compliance of proposed Product with specified requirements.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01 7329 - CUTTING AND PATCHING**PART 1 GENERAL****1.1 SUMMARY****A. Section Includes:**

1. Requirements and limitations for cutting and patching of work.

1.2 SUBMITTALS**A. Submit written request in advance of executing cutting or alteration that affects:**

1. Work of Owner or separate contractor.
2. Structural integrity of project.
3. Integrity or effectiveness of weather exposed or moisture resistant elements or systems.
4. Efficiency, operational life, maintenance, or safety of operational elements.
5. Visual qualities of sight exposed elements.

B. Include in Request:

1. Identification of project.
2. Description of work affected.
3. Necessity for cutting or patching.
4. Effect of cutting or patching on work of Owner or separate contractor, or on structural, weatherproof, or visual integrity of project.
5. Description of proposed work:
 - a. Scope of cutting and patching.
 - b. Subcontractor and trades to execute work.
 - c. Products proposed to be used.
 - d. Extent of refinishing.
6. Alternate to cutting and patching.
7. Written permission of any separate contractor whose work will be affected.

C. Maintain existing warranties for materials and systems replaced, patched and repaired in the process of contract work.**PART 2 PRODUCTS****2.1 MATERIALS, GENERAL**

- A. Use materials identical to existing materials.** For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible if

identical materials are unavailable or cannot be used. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 EXECUTION

3.1 PREPARATION

- A. Examine existing conditions of work, including elements subject to movement or damage during cutting and patching.
- B. After uncovering work, examine conditions affecting installation of new products or performance of work.
- C. Provide protection for other portions of project.
- D. Provide protection from elements.

3.2 CUTTING AND PATCHING

- A. Execute cutting to include excavating, fitting, and patching of Work required to:
 - 1. Make several parts fit properly.
 - 2. Uncover work to provide for installation of ill timed work.
 - 3. Remove and replace defective work.
 - 4. Remove and replace work not conforming to requirements of Contract Documents.
 - 5. Provide routine penetrations of nonstructural surfaces for installation of piping and electrical conduit.
- B. Execute fitting and adjustment of products to provide finished installation to comply with specified tolerances, and finishes.
- C. Execute cutting and demolition by methods that will prevent damage to other work, and will provide proper surfaces to receive installation of repairs and new work.
- D. Execute excavating and backfilling by methods that will prevent damage to other Work, and will prevent settlement.
- E. Employ original installer or fabricator to perform cutting and patching for:
 - 1. Weather exposed or moisture resistant elements.
 - 2. Sight exposed finished surfaces.
- F. Restore work that has been cut or removed; install new products to provide completed Work in accordance with requirements of Contract Documents.
- G. Refinish and paint entire surface(s) as necessary to provide an even finish:

1. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken surface (CORNER TO CORNER) containing the patch after the area has received primer and second coat.
2. Assembly: Refinish entirely.

3.3 CLEANING

- A. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar items. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

END OF SECTION

SECTION 01 7700 - CLOSEOUT PROCEDURES**PART 1 GENERAL****1.1 SUMMARY****A. Section Includes:**

1. Closeout procedures.
2. Final cleaning.
3. Adjusting.
4. Project record documents.
5. Operation and maintenance data.
6. Warranties.
7. Spare parts and maintenance materials.
8. Starting of systems.
9. Demonstration and instructions.
10. Closeout documents.

B. Related Sections:

1. Section 01 1100 - Summary of Work.

1.2 CLOSEOUT PROCEDURES**A. Punch List and Final Inspection:**

1. **Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with the Contract Documents and ready for Architect's inspection.**
2. If Architect performs reinspection due to failure of Work to comply with claims of status of completion made by Contractor, **Owner will compensate Architect for such additional services and will deduct the amount of such compensation from final payment to Contractor.**

B. Submit RHA Partial Payment Request and Form of Contractor's Certificate and Release.**C. Closeout Submittals:**

1. Evidence of compliance with requirements of governing authorities.
2. Certificate of Occupancy (N/A).
3. Project Record Documents.
4. Operation and Maintenance Data.
5. Warranties.
6. Keys and keying schedule.

7. Spare parts and maintenance materials.
8. Evidence of payment of Subcontractors and suppliers.
9. Final lien waiver.
10. Certificate of insurance for products and completed operations.
11. Consent of Surety to final payment (N/A).

D. Owner will occupy all of the building as specified in Section 01 1100.

1.3 FINAL CLEANING

- A. Execute final cleaning prior to final inspection.
- B. Clean surfaces exposed to view:
 1. Clean glass.
 2. Remove temporary labels, stains and foreign substances.
 3. Polish transparent and glossy surfaces.
 4. Vacuum carpeted surfaces; damp mop hard surface flooring.
- C. Clean equipment and fixtures to a sanitary condition.
- D. Clean or replace filters of operating equipment.
- E. Clean debris from roofs and drainage systems.
- F. Clean site; sweep paved areas, rake clean landscaped surfaces.
- G. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.4 ADJUSTING

- A. Adjust operating Products and equipment to ensure smooth and unhindered operation.

1.5 PROJECT RECORD DOCUMENTS

- A. **Maintain following record documents on site; record actual revisions to the Work:**
 1. Drawings.
 2. Specifications.
 3. Addenda.
 4. Change Orders and other Modifications to the Contract.
 5. Reviewed Shop Drawings, Product Data, and Samples.
 6. Material Safety Data Sheets.
- B. Store Record Documents separate from documents used for construction.

- C. Record information concurrent with construction progress.
- D. Make entries neatly and accurately.
- E. Label each set or volume with "**PROJECT RECORD DOCUMENTS**", project title, and description of contents.
 - 1. Organize contents according to Project Manual table of Contents.
 - 2. Provide table of contents for each volume.
- F. Drawings: Mark each item to record actual construction including:
 - 1. Measured depths of foundations in relation to finish floor datum.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - 4. Field changes of dimension and detail.
 - 5. Details not on original Drawings.
- G. Specifications: Mark each Product section description of actual Products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by Addenda and Modifications.
- H. Shop Drawings: Mark each item to record actual construction including:
 - 1. Field changes of dimension and detail.
 - 2. Details not on original Shop Drawings.
- I. Material Safety Data Sheets:
 - 1. Maintain copies of manufacturer's Material Safety Data Sheets for each Product incorporated into the Work.
 - 2. Indicate manufacturer name, product name, chemical composition, hazards, and safety and health procedures.
- J. **Submit 3 paper bound copy and one electronic in Adobe PDF format along with final Application for Payment.**

1.6 OPERATION AND MAINTENANCE DATA

- A. Identify as "OPERATION AND MAINTENANCE INSTRUCTIONS" and title of project.
- B. Contents:

1. Directory: List names, addresses, and telephone numbers of Architect, Contractor, Subcontractors, and major equipment suppliers.
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:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.
 - d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - f. Maintenance instructions for special finishes, including recommended cleaning methods and materials and special precautions identifying detrimental agents.
3. Project documents and certificates including:
 - a. Shop drawings and product data.
 - b. Air and water balance reports.
 - c. Certificates.
 - d. Copies of warranties and bonds.

C. Submittal:

1. Submit 3 paper bound copy and one electronic in Adobe PDF format at least 15 days prior to final inspection.
2. Architect will notify Contractor of any required revisions after final inspection.
3. Revise content of documents as required prior to final submittal.
4. Submit one paper bound copy and one electronic in Adobe PDF format at least 10 days prior to final inspection.

1.7 WARRANTIES

- A. Warranty: The contractor shall submit a written warranty for materials and workmanship for contract work for a **period of two (2) years** from the date of Substantial Completion. This is in addition to special warranties required by the Contract Documents, either to extend time limits, or to provide greater rights to the RHA. Refer to individual Specification Sections.
- B. Include Table of Contents.
- C. Submit 3 paper bound copy and one electronic in Adobe PDF format along with final Application for Payment.
- D. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of warranty period.

1.8 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification Sections.
- B. Deliver to Project site in location as directed; obtain receipt prior to final payment.

1.9 STARTING OF SYSTEMS

- A. Notify Owner and Architect at least seven days prior to startup of each system or piece of equipment.
- B. Prior to beginning startup verify that:
 - 1. Lubrication has been performed.
 - 2. Drive rotation, belt tension, control sequences, tests, meter readings, and electrical characteristics are within manufacturer's requirements.
 - 3. Utility connections and support components are complete and tested.
- C. Execute start-up under supervision of applicable manufacturer's representative or Contractor's personnel in accordance with manufacturers' instructions.
- D. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to startup, and to supervise placing equipment or system in operation.
- E. Submit written report that equipment or system has been properly installed and is functioning correctly.

1.10 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of Products to Owner's personnel two weeks prior to date of Substantial Completion.
- B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- C. Utilize Operation and Maintenance Manuals as basis for instruction. Review contents of manual with Owners' personnel in detail to explain all aspects of operation and maintenance.
- D. Demonstrate startup, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown of each item of equipment at agreed upon times, at equipment location.
- E. Prepare and insert additional data in Operation and Maintenance Manuals when need for additional data becomes apparent during instruction.

1.11 CLOSEOUT DOCUMENTS

- A. Submit closeout documents as required by RHA.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 03 0100 - MAINTENANCE OF CONCRETE**PART 1 GENERAL**

1.1 General requirements

- A. This Specification shall be read as a whole by all parties concerned. Each Section may contain more or less the complete Work of any trade. The Contractor is solely responsible to make clear to the Subcontractors the extent of their Work and coordinate overlapping Work.

1.2 System description

- A. The Work of this section shall include furnishing all labor, materials, equipment, and supervision to prepare the surface of the structural concrete members and to install the material as indicated.

1.3 Related Sections

- A. Section 01 2200 - Unit Prices.
- B. Section 03 0100 - Maintenance of Concrete.
- C. Section 03 0130 - Maintenance of Cast-In-Place Concrete.
- D. Section 03 7300 - Concrete Rehabilitation.
- E. Section 07 9000 - Joint Sealers, Elastomeric and Non-Elastomeric Sealant (1a).
- F. Section 07 9200 - Joint Sealers, Elastomeric and Non-Elastomeric Sealant (15LM).
- G. Section 09 8300 - Elastomeric Coatings.

1.4 Submittals

- A. Substitutions: Requests for substitution must be received by Architect at least 14 days prior to bid opening and shall be accepted only from prime bidders. Request shall include:
 - 1. Documentation from an approved independent testing laboratory showing compliance with this specification.
 - 2. Record of past performance, list of similar installations.
 - 3. Detailed comparison of the qualities of the proposed substitute with the specified product, statement of product costs showing all savings passed to owner if approved.

4. Certification by the contractor that the proposed substitute is in every significant way equal to or better than the specified product.
- B. Submit two copies of manufacturer's actual literature including: Product Data Sheets and appropriate Safety Data Sheets (SDS).
- 1.5 Quality assurance
- A. Comply with the following unless modified by this specification.
 1. ASTM C109/C109M-02 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-inch. Cube Specimens)
 2. ASTM C191-04 Standard Test Method for Time of Setting of Hydraulic Cement by Vicat Needle
- 1.6 Delivery, Storage And Handling
- A. All materials must be delivered in original, unopened containers with the manufacturer's name, labels, product identification, and batch numbers. Damaged material or unsealed pails must be removed from the site immediately.
 - B. Store all materials off the ground and protect from rain, freezing or excessive heat until ready for use.
 - C. Store and handle the specified product as recommended by the manufacturer.
- 1.7 Job Conditions
- A. Environmental Conditions: Do not apply material if it is raining or snowing or if such conditions appear to be imminent. Minimum application temperature 45°F (7°C) and rising.
 - B. Protection: Precautions should be taken to avoid damage to packaging
- 1.8 Warranty
- A. Provide a written warranty from the manufacturer against defects of materials for a period of one (1) year, beginning with date of substantial completion of the project.

PART 2 PRODUCTS

2.1 Manufacturer

- A. SikaQuick Smooth Finish, as proposed by Sika Corporation, is considered to conform to the requirements of this specification.

- B. Or approved equal (**system and all related products**).

2.2 Materials

- A. SikaQuick Smooth Finish is a fast setting, one component, durable mortar for repairing and re-profiling vertical and overhead concrete surfaces to achieve a smooth finish.

2.3 Performance Criteria

- A Typical Properties of SikaQuick Smooth Finish:

1. Aspect; Light weight mortar.
2. Color; Concrete gray
3. Mixing Ratio; 8 - 9 quarts of water per 50 lb. bag.
4. Application Thickness; Min: Feather Edge / Max: 1/2".
5. Finishing Time; 1 hour
6. Compressive Strength (ASTM C-109)
 - a. 1 day @ 73°F (23°C)
 - b. 28 days @ 73°F (23°C) > 2,000 psi
7. Shall not re-emulsify when wet.
8. Shall be non-metallic with no added chlorides and shall be pre-blended

Note: Tests above were performed with the material and curing conditions @ 71oF – 75oF and 45-55%relative humidity.

PART 3 EXECUTION

3.1 Surface Preparation

- A. Concrete - Concrete/Mortar: Remove all deteriorated concrete, dirt, oil, grease, and all bond-inhibiting materials from surface. After preparation, substrate strength should be verified prior to patch placement. Substrate should be dry or saturated surface dry (SSD) with no standing water during application.

3.2 Mixing and Application

- A. Wet down all tools and mixer to be used. Mix mechanically with a low-speed drill (400 - 600 rpm) and mixing paddle or by hand.

- B. Mix to a uniform consistency, maximum 3 minutes. Manual mixing can be tolerated only for less than a full unit. Thorough mixing and proper proportioning of the powder and liquid is necessary. Inaccurate proportioning of the powder to liquid will result in a finished product that may not conform with stated properties.
- C. Start mixing with 8 - 9 quarts of water per 50 lb. bag. DO NOT EXCEED 9 qts. Adjust the water dosage, if necessary, to achieve the desired consistency. DO NOT OVER WATER. Over-watering may result in difficulty handling and/or not meeting stated property values. Do not retemper. Clean bucket and mixing equipment in between batches.

3.2 Application

- A. SikaQuick Smooth Finish should be applied in one pass in thicknesses ranging from a true feather edge to 1/2" in depth. Typical working time of the product is 30 minutes at 73°F. Working time will vary depending on application temperature. In high temperature work environments, cold water should be used to increase working time.
- B. Painting: Can be overcoated same day.
- C. Once material is in place, as the material hardens, use a trowel to shave or cut the excess material to the desired shape. Material can be sanded and painted the same day.

3.3 Cleaning

- A. Clean all tools immediately after use.
- B. Clean excess material from surrounding areas immediately.

END OF SECTION 03 0100

SECTION 03 0130 - MAINTENANCE OF CAST-IN-PLACE CONCRETE**PART 1 GENERAL****1.1 SUMMARY**

- A. This Specification shall be read as a whole by all parties concerned. Each Section may contain more or less the complete Work of any trade. The Contractor is solely responsible to make clear to the Subcontractors the extent of their Work and coordinate overlapping Work.
- B. Related Sections:
 - 1. Division 01 - Unit Prices.

1.2 SYSTEM DESCRIPTION

- A. This specification describes the patching of interior and exterior horizontal surfaces with Portland Cement Mortar/Concrete.

1.3 RELATED SECTIONS

- A. Maintenance of Cast-in-Place Concrete: Section 03 01 00

1.4 REFERENCES

- A. The following standards are applicable to this section:
 - 1. ASTM C-109 - Compressive Strength ASTM
 - 2. C-1583 – Direct Pull-Off Bond Strength
 - 3. ASTM C-293 - Flexural Strength
 - 4. ASTM C 33/C 33M - Standard Specification for Concrete Aggregates.

1.5 QUALITY ASSURANCE

- A. Manufacturing qualifications: The manufacturer of the specified product shall be ISO 9001 certified and have in existence a recognized ongoing quality assurance program independently audited on a regular basis.
- B. Contractor qualifications: Contractor shall be qualified in the field of concrete repair and protection with a successful track record of 5 years or more. Contractor shall maintain qualified personnel who have received product training by a manufacturer's representative.
- C. Store and apply materials in accordance with all safety and weather conditions

required by manufacturer or as modified by applicable rules and regulations of local, state and federal authorities having jurisdiction. Consult Safety Data Sheets (SDS) for complete handling recommendations.

D. The contractor shall be trained in the product and system by the manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. All materials must be delivered in original, unopened containers with the manufacturer's name, labels, product identification, and batch numbers. Damaged material must be removed from the site immediately.
- B. Store all materials off the ground and protect from rain, freezing or excessive heat until ready for use.
- C. Condition the specified product as recommended by the manufacturer.

1.7 JOB CONDITIONS

- A. Environmental Conditions: Do not apply material if it is raining or snowing or if such conditions appear to be imminent. Minimum application temperature 45°F (7°C) and rising.
- B. Protection: Precautions should be taken to avoid damage to any surface near the work zone due to mixing and handling of the specified material.

1.8 SUBMITTALS

- A. Submit two copies of manufacturer's literature, to include: Product Data Sheets (PDS), and appropriate Safety Data Sheets (SDS).
- B. Submit copy of Certificate of Approved Contractor status by manufacturer.

1.9 WARRANTY

- A. Provide a written warranty from the manufacturer against defects of materials for a period of one (1) year, beginning with date of substantial completion of the project.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. SikaQuick® EZ Patch, as manufactured by Sika® Corporation, is considered to conform to the requirements of this specification.
- B. Or approved equal (**system and all related products**).

2.2 MATERIALS

A. General

1. The patching material shall be a blend of selected Portland cements, specially graded aggregates, admixtures for controlling setting time, and water reducers for workability and an organic accelerator.
2. The materials shall be non-combustible, both before and after cure.
3. The material shall be supplied as a factory-blended unit.
4. The Portland cement mortar must be placeable from feather edge to 1-1/2" (38.1 mm) in depth per lift for horizontal applications.

- B. To prepare a rapid-setting portland cement concrete : aggregate shall conform to ASTM C -33. The material shall be extended with 30 -lb. of a 3/8" (No.8 distribution per ASTM C -33, Table II) clean, well -graded, saturated surface dry aggregate, having low absorption, high density and non-reactive (reference ASTM C -1260, C-227, C289). Aggregate must be approved for use by the Engineer.

2.3 PERFORMANCE CRITERIA

A. Typical Properties of the mixed polymer-modified, portland cement mortar:

Yield	12-15 ft ² at 1/4" per bag
Color	Concrete gray
Mixing Ratio	4.5-5.5 pts (2.1-2.6 L) per bag
Application Thickness	Neat: Min Feather edge; Max 1 -1/2" (38.1 mm) Extended: Min 1-1/2" (38.1 mm); Max 3 " (76.2 mm)
Application Temp	Min 50 oF (10oC) ; Max 86 o F (30o
Working Time	20 min.
Compressive Strength (ASTM C -109)	4 hours – 1,650 psi (11.4 MPa) 1 day – 2,700 psi (18.6 MPa) 7 days - 3,700 psi (25.5 MPa) 28 days - 4,000 psi (27.6 MPa)
Flexural Strength (ASTM C -293)	28 days – 1,200 psi (8.3 MPa)
Pull-out strength (ASTM C -1583)	28 days - 450 psi (3.1 MPa)
Freeze-Thaw Resistance (ASTM C -666)	On going testing

Note: Tests above were performed with the material and cured in g conditions @ 71°F – 75°F and 45 - 55% relative humidity.

PART 3 EXECUTION

3.1 SURFACE PREPARATION

- A. Areas to be repaired must be clean, sound, and free of contaminants. All loose and deteriorated concrete shall be removed by mechanical means. Mechanically prepare concrete substrate to obtain a surface profile of $\pm 1/16"$ (CSP 3 or greater as per ICRI Guidelines) with a new exposed aggregate surface.
- B. Where reinforcing steel with active corrosion is encountered, sandblast the steel to a white metal finish to remove all contaminants and rust. Where corrosion has occurred due to the presence of chlorides, the steel shall be high pressure washed after mechanical cleaning. Prime steel with 2 coats of Sika[®] Armatec[®] 110 EpoCem as per the Product Data Sheet (PDS).

3.2 MIXING AND APPLICATION

- A. Neat: Mechanically mix in appropriate sized mortar mixer or with a Sika jiffy paddle and low speed (400 -600 rpm) drill. Pour approximately 4-1/2 pints of water into the mixing container. Add the powder while continuing to mix. Mix to a uniform consistency for a maximum of three minutes. Add up to another 1 pint of water to mix if a greater flow is desired. Should smaller quantities be needed, be sure the proper water/powder ratio is maintained and that the dry material is uniformly blended before mixing the components together. Mix only that amount of material that can be placed in 30 minutes. Do not retemper material.
- B. Extended: Pour 4-1/2 to 5-1/2 pints of water into the mixing container. Add the powder while continuing to mix. Add correct amount of the pre-approved coarse aggregate, and continue mixing to a uniform consistency. Mixing time should be 3 minutes maximum.
- C. Placement Procedure: Mortar and/or concrete must be scrubbed into substrate filling all pores and voids. While the scrub coat is still plastic, force material against edge of repair, working toward center. After filling, consolidate, then screed. Allow mortar or concrete to set to desired stiffness, then finish with a trowel for a smooth surface. Broom or burlap drag for rough surface. Areas where the depth of the repair is less than 1 -1/2" shall be repaired with the neat rapid setting Portland cement mortar. In areas where the depth of the repair is greater than 1-1/2", the repair shall be made with the extended rapid-setting Portland cement concrete.
- D. As per ACI recommendations for portland cement concrete, curing is required. Moist cure with wet burlap and polyethylene, a fine mist of water or a water-based* compatible curing compound. Moist curing should commence immediately after finishing and continue for 48 hours. Protect newly applied material from rain, sun, and wind until compressive strength is 70% of the 28 day compressive strength. To prevent from freezing cover with insulating material. Setting time is dependent on temperature and humidity.
*Pretesting of curing compound is recommended.

- E. Adhere to all procedures, limitations and cautions for the polymer-modified portland cement mortar in the manufacturers current printed Product Data Sheet (PDS) and literature.

3.3 CLEANING

- A. The uncured portland cement mortar can be cleaned from tool s with water. The cured polymer modified portland cement mortar can only be removed mechanically.
- B. Leave finished work and work area in a neat, clean condition without evidence of spillovers onto adjacent areas.

END OF SECTION 03 0130

SECTION 03 7300 - CONCRETE REHABILITATION**PART 1 GENERAL****1.1 SUMMARY**

- A. This specification describes the patching of interior and/or exterior vertical or overhead surfaces with a polymer-modified, portland cement mortar.
- B. Related Sections:
 - 1. Division 01 - Unit Prices.

1.2 QUALITY ASSURANCE

- A. Manufacturing qualifications: The manufacturer of the specified product shall be ISO 9001 certified and have in existence a recognized ongoing quality assurance program independently audited on a regular basis.
- B. Contractor qualifications: Contractor shall be qualified in the field of concrete repair and protection with a successful track record of 5 years or more. Contractor shall maintain qualified personnel who have received product training by a manufacturer's representative.
- C. Install materials in accordance with all safety and weather conditions required by manufacturer or as modified by applicable rules and regulations of local, state and federal authorities having jurisdiction. Consult Material Safety Data Sheets for complete handling recommendations.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. All materials must be delivered in original, unopened containers with the manufacturer's name, labels, product identification, and batch numbers. Damaged material must be removed from the site immediately.
- B. Store all materials off the ground and protect from rain, freezing or excessive heat until ready for use.
- C. Condition the specified product as recommended by the manufacturer.

1.4 JOB CONDITIONS

- A. Environmental Conditions: Do not apply material if it is raining or snowing or if such conditions appear to be imminent. Minimum application temperature 45°F (5°C) and rising.
- B. Protection: Precautions should be taken to avoid damage to any surface near the

work zone due to mixing and handling of the specified material.

1.5 SUBMITTALS

- A. Submit two copies of manufacturer's literature, to include: Product Data Sheets, and appropriate Material Safety Data Sheets (MSDS).

1.6 QUALITY ASSURANCE

- A. The contractor shall be trained in the product and system by the manufacturer.**

1.7 WARRANTY

- A. Provide a written warranty from the manufacturer against defects of materials for a period of one (1) year, beginning with date of substantial completion of the project.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. SikaTop 123 Plus, as manufactured by Sika Corporation, is considered to conform to the requirements of this specification.
- B. Or approved equal (**system and all related products**).

2.2 MATERIALS

- A. Polymer-modified Portland cement mortar:
 - 1. Component A shall be a liquid polymer emulsion of an acrylic copolymer base and additives.
 - a. pH: 4.5-6.5
 - b. Film Forming Temperature: 73° F max.
 - c. Tear Strength: 950-psi min.
 - d. Elongation at Break: 500% min.
 - e. Particle Size: less than 0.1 micron
 - 2. Component A shall contain an organic, penetrating corrosion inhibitor which has been independently proven to reduce corrosion in concrete via ASTM G3 (half-cell potential tests). The corrosion inhibitor shall not be calcium nitrite, and shall have a minimum of 5 years of independent field testing to document performance on actual construction projects.
 - 3. Component B shall be a blend of selected portland cements, specially graded aggregates, admixtures for controlling setting time, water reducers for workability, and an organic accelerator.

4. The materials shall be non-combustible, both before and after cure.
5. The materials shall be supplied in a factory-proportioned unit.
6. The polymer-modified, portland cement mortar must be placeable from 1/8" to 1-1/2" in depth per lift for vertical applications and 1/8" to 1" in depth for overhead applications.

2.3 PERFORMANCE CRITERIA

- A. Typical Properties of the mixed polymer-modified, portland cement mortar:
 1. Working Time: Approximately 15 minutes
 2. Finishing Time: 20 - 60 minutes
 3. Color: concrete gray
- B. Typical Properties of the cured polymer-modified, portland cement mortar:
 1. Compressive Strength (ASTM C-109 Modified)
 - a. 1 day: 3500 psi min. (24.1 MPa)
 - b. 7 day: 6000 psi min. (44.8 MPa)
 - c. 28 day: 7000 psi min. (48.3 MPa)
 2. Flexural Strength (ASTM C-293) @ 28 days: 2000 psi (13.8 MPa)
 3. Splitting Tensile Strength (ASTM C-496) @ 28 days: 900 psi (6.2 MPa)
 4. Bond Strength (ASTM C-882 Modified) @ 28 days: 2200 psi (15.2 MPa)
 5. The portland cement mortar shall not produce a vapor barrier.
 6. Density (wet mix): 132 lbs. / cu. ft. (2.2 kg/l)
 7. Permeability - AASHTO T-277 @ 28 days Approximately 500 Coulombs

Note: Tests above were performed with the material and curing conditions @ 71°F – 75°F and 45-55% relative humidity.

PART 3 EXECUTION

3.1 SURFACE PREPARATION

- A. Areas to be repaired must be clean, sound, and free of contaminants. All loose and deteriorated concrete shall be removed by mechanical means. Mechanically prepare concrete substrate to obtain a surface profile of +/- 1/16" (CSP 5 or greater as per ICRI Guidelines) with a new exposed aggregate surface. Area to be patched shall not be less than 1/8" in depth.
- B. Where reinforcing steel with active corrosion is encountered, sandblast the steel to a white metal finish to remove all contaminants and rust. Where corrosion has occurred due to the presence of chlorides, the steel shall be high pressure washed after mechanical cleaning. Prime steel with 2 coats of Sika Armatec 110 EpoCem as per the technical data sheet. (See Spec Component SC-201-0699)

3.2 MIXING AND APPLICATION

- A. Mechanically mix in an appropriate sized mortar mixer or with a Sika mud paddle and low speed (400-600 rpm) drill. Pour approximately 4/5 gal Component A into the mixing container. Add Component B while continuing to mix. Mix to a uniform consistency for a maximum of three minutes. Add remaining Component A to mix for desired consistency. Should smaller quantities be needed, be sure the components are measured in the correct ratio and that the Component B is uniformly blended before mixing the components together. Mix only that amount of material that can be placed in 10 - 15 minutes. Do not retemper material.
- B. Placement Procedure: At the time of application, the substrate shall be saturated surface dry with no standing water. Mortar must be scrubbed into substrate filling all pores and voids. While the scrub coat is still plastic, force material against edge of repair, working toward center. If repair area is too large to fill while scrub coat is still wet use Sika Armatec 110 EpoCem in lieu of scrub coat. (See spec component SC-200-0699) After filling, consolidate then screed. Allow mortar to set to desired stiffness then finish with trowel for smooth surface. Wood float or sponge float for a rough surface. Areas where the depth of the repair area to sound concrete is greater than 1-1/2", the repair shall be made in lifts of 1-1/2" maximum thickness. The top surface of each lift shall be scored to produce a rough surface for the next lift. The preceding lift shall be allowed to reach final set before applying fresh material. The fresh mortar must be scrubbed into the preceding lift.
- C. As per ACI recommendations for portland cement concrete, curing is required. Moist cure with wet burlap and polyethylene, a fine mist of water or a water-based* compatible curing compound. Moist curing should commence immediately after finishing and continue for 48 hours. Protect newly applied material from rain, sun, and wind until compressive strength is 70% of the 28-day compressive strength. To prevent from freezing cover with insulating material. Setting time is dependent on temperature and humidity.
*Pretesting of curing compound is recommended.
- D. Adhere to all procedures, limitations and cautions for the polymer-modified portland cement mortar in the manufacturers current printed technical data sheet and literature.

3.3 CLEANING

- A. The uncured polymer-modified portland cement mortar can be cleaned from tools with water. The cured polymer modified portland cement mortar can only be removed mechanically.
- B. Leave finished work and work area in a neat, clean condition without evidence of spillovers onto adjacent areas.

END OF SECTION 03 7300

SECTION 04 0100 - MAINTENANCE OF MASONRY**PART 1 GENERAL****1.1 SECTION INCLUDES**

- A. Repointing mortar joints.
- B. Repair of damaged masonry.
- C. Removal and Replacement of all cracked, spalled, and salt eroded masonry with new masonry.
- D. Crack filling of individual bricks.
- E. Installation of "retro" weep covers.
- F. Chemical Cleaning of masonry surfaces.

1.2 RELATED REQUIREMENTS

- A. Division 7 Section for Joint Sealers.
- B. Division 7 Section for Water Repellent.

1.3 REFERENCE STANDARDS

- A. ACI 530/530.1/ERTA -Building Code Requirements and Specification for Masonry Structures and Related Commentaries; American Concrete Institute International; 2011.
- B. ACI 530.1/ASCE 6/TMS 602 -Specification for Masonry Structures; American Concrete Institute International; 2008.
- C. IMIAWC (HW) -Recommended Practices & Guide Specifications for Hot Weather Masonry Construction; International Masonry Industry All-Weather Council; current edition.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week prior to commencing work of this section.
 - 1. Require attendance of parties directly affecting work of this section.
 - 2. Review conditions of installation, installation procedures, and coordination with related work.

- B. Illinois Historic Preservation Series: No. 10 -Masonry Repointing of Twentieth Century Buildings.
 - 1. IRCI -Technical Guidelines, Guideline No. 0373; International Concrete Repair Institute.

1.5 SUBMITTALS

- A. Shop Drawings: Indicate setting details of stone and details of special masonry shapes. Detail shoring.
- B. Product Data: Provide data on cleaning compounds, masonry sealer and mortar.
- C. Samples: Submit four samples of face brick units to illustrate matching color, texture and extremes of color range.
- D. Manufacturer's Instructions: For cleaning materials, indicate special procedures and conditions requiring special attention.

1.6 QUALITY ASSURANCE

- A. Comply with provisions of ACI 530/530.1/ERTA, except where exceeded by requirements of the contract documents.
- B. Cleaners and restorer: Company specializing in masonry restoration with minimum five years of documented experience.

1.7 MOCK-UP

- A. Masonry Restoration:
 - 1. Restore and repoint a section of existing masonry wall sized 2 feet (1.22 m) long by 2 feet (1.22 m) high, which includes mortar, accessories, and wall openings.
 - 2. Work includes masonry cleaning, grinding mortar joints, pointing mortar joints, and sealing
 - 3. Clean a 10 ft (3.0 m) by 10 ft (3.0 m) panel of wall to determine extent of cleaning on brick. Coordinate with architect to locate the worst and most stubborn areas to clean.
 - 4. Repeat, as instructed by Architect using different cleaning methods for up to three different panels.
- D. Locate where directed / shown on the drawings by the Architect..
- E. Approved mock-up(s) will remain as part of the Work.

1.8 PRE-INSTALLATION MEETING

- A. Convene one week prior to commencing work of this section.
- B. Require attendance of parties directly affecting work of this section.
 - 1. Restorer's Superintendent and/ or Foreman must be in attendance.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver masonry neatly stacked and tied on pallets. Store clear of ground with adequate waterproof covering.

1.10 DELIVER, HANDLE AND STORE UNITS BY MEANS THAT WILL PREVENT MECHANICAL DAMAGE AND CONTAMINATION BY OTHER MATERIALS.

- A. Store flashing materials, related accessories, and restoration cleaner materials in manufacturer's packaging. Store chemicals at 40 to 80 degrees F, or as required by the manufacturer.
- B. Store sand on waterproof tarp; cover when not in use with waterproof covering.
- C. Clean all materials of all foreign substances prior to using.
- D. Any materials not protected at all times shall be marked rejected and shall be removed from the site by the contractor within 24 hours. All transportation, replacement costs, and delays in the schedule will be the sole responsibility of the contractor and at no additional cost to the owner.

1.11 PROTECTION

- A. Protect elements surrounding the work of this section from damage or disfiguration.
- B. Protect existing roof systems and flashings from damage. Lay 1/2 plywood over 1" rigid insulation over full extent of roof area and traffic routes on membrane roofing systems. Weight down accordingly to prevent blow off.
- C. Immediately remove stains, efflorescence, or other excess materials resulting from the work of this section.
- D. Provide sand or waterproof dams to divert flowing water to exterior site drains.
- E. All windows, doors, louvers and other masonry wall penetrations to be sealed off with 10 mil polyethylene and tape. All tape adhesive must be removed and window frames cleaned upon completion of the work.

- F. All adjacent buildings, amenities, vehicles, etc. to be sealed off from work areas with 10 mil polyethylene and tape.

1.12 FIELD CONDITIONS

- A. Maintain materials and surrounding air temperature to minimum 40 degrees F (5 degrees C) prior to, during, and 48 hours after completion of masonry work.
- B. Hot Weather Requirements: Comply with IMIAWC Recommended Practices and Guide Specifications for Hot Weather Masonry Construction.
- C. Do not blast clean or use process creating dust, dirt, when wind is over 10 mph (16 kph).
- D. Saw and grinder shall be fitted with dust extraction system to prevent dust from being released in accordance with EPA (Environmental Protection Agency). local code jurisdictions, and other regulatory agencies.
 - 1. Dust extraction system is only required where maintenance of masonry work is being performed indoors.
- E. Observe local ordinances related to hours of work and noise generating activities.

1.13 PROJECT CONDITIONS

- A. Perform repointing after cleaning masonry surfaces.
- B. Do not allow cleaning runoff to drain into sanitary or storm sewers.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Restoration and Cleaning Chemicals:
 - 1. Prosoco; Product Sure Klean Product Line: www.prosoco.com.
 - 2. Or approved equal.

2.2 PRODUCTS

- A. Restoration cleaners for masonry.
 - 1. Prosoco; Product Sure Klean Restoration Cleaner -Carbon & Pollution Remover: www.prosoco.com.
 - 2. Or approved equal.

B. Afterwash:

1. Prosoco: www.prosoco.com; Product Limestone & Masonry Afterwash.
2. Or approved equal.

2.3 MORTAR MATERIALS

A. Conform to requirements of Section 04 05 11.

B. Dry pre-blended mortar mix; conforming to ASTM C 270 and ASTM C 1714.

1. Spec-Mix.; Product Tuckpoint mortar: www.specmix.com.
2. Or approved equal.

C. Repointing Mortar Proportions by Volume: ASTM C-270 Proportion Specification. Use Portland Cement only.

1. Mix cementitious materials and aggregates in a mechanical batch mixer for at least 5 minutes with maximum consistency. All mortar shall be used within two hours after mixing.
2. Re-tempering of mortar shall not be permitted.

D. Mortar shall match color and texture of existing mortar.

E. Admixtures are not permitted.

2.4 MASONRY MATERIALS

A. Face brick shall match existing, Grade SW.

B. Dimensions: **Accurately match with existing adjacent bricks. Field verify size in submittals.**C. Manufacturer / Product: **Glen-Gery, 250-M, Modular.****2.5 FLASHINGS**

A. N/A.

2.6 CRACK INJECTION MORTAR

- A. Mineral mortar and natural synthetic pigment specially developed for filling cracks of between 3mm and 10mm in brick and stone. It is vapour permeable and contains no latex or acrylic bonding agents. It protects the substrate by allowing salts, water vapor, and liquid water to reach the surface, preventing failure due to

salt expansion or freeze/thaw cycles. It has been engineered to provide a permanent repair that is compatible with the original substrate.

1. Total Wall Care, Crack injection mortar, www.twistfix.co.uk.
2. Or approved equal.

2.7 RETRO WEEP COVERS

- A. Stainless steel or plastic weep hole covers.
 1. Rid-O-Mice, www.ridofmice.net.
 2. Retrofit Weep Drain Opening Screen, by Tamlyn Building Products, tamlynstore.com.
 3. Or approved equal.

2.8 WATER REPELLENT

- A. See Section 07 1900.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces to be cleaned are ready for work of this section.

3.2 PREPARATION

- A. Protect surrounding elements from damage due to restoration procedures.
- B. Carefully remove and store removable items located in areas to be restored, including fixtures, fittings, finish hardware, and accessories; reinstall upon completion.
- C. Separate areas to be protected from restoration areas using means adequate to prevent damage.
- D. Cover existing landscaping with tarpaulins or similar covers.
- E. **Mask immediately adjacent surfaces with material that will withstand cleaning and restoration procedures.**
- F. Close off adjacent occupied areas with dust proof and weatherproof partitions.
- G. Protect roof membrane and flashings from damage with 1/2 inch (13 mm) plywood laid over 1 inch insulation on roof surfaces over full extent of work area and traffic route.

- H. When using cleaning methods that involve water or other liquids, install drainage devices to prevent runoff over adjacent surfaces unless those surfaces are impervious to damage from runoff.

3.3 REBUILDING

- A. Cut out damaged and deteriorated masonry and stone joints with care in a manner to prevent damage to any adjacent remaining materials.
- B. Support structure as necessary in advance of cutting out units.
- C. Cut away loose or unsound adjoining masonry to provide firm and solid bearing for new work.
- D. Mortar Mix: Colored and proportioned to match existing work.
- E. Ensure that anchors are correctly located and built in.
- F. Install built in masonry and stone work to match and align with existing, with joints and coursing true and level, faces plumb and in line. Build in all openings, accessories and fittings.

3.4 CRACK FILLING OF INDIVIDUAL BRICKS

- A. Mortar Preparation:
 - 1. Remove all contents from tub
 - 2. Empty required amount of powdered crack injection mortar into tub.
 - 3. Using tub, thoroughly mix 2 to 2.5 parts dry mortar with 1 part water for a minimum of 3 minutes. Mix by hand or with a slow speed drill with a mixing paddle until smooth.
 - 4. Pour mixed mortar into syringe and replace lid on tub.
- B. Repair Method:
 - 1. Widen 1 - 2mm to 3mm using a bladed tool.
 - 2. Ensure surface to be repaired is free from dust, dirt and loose particles.
 - 3. Substrate should be pre-moistened and damp but not too wet. Weather factors such as direct sunlight should be taken into account.
 - 4. For deep cracks attach extension tube to syringe.
 - 5. Starting from the bottom of the crack inject the mortar leaving 3- 5mm proud of the surface.
 - 6. Deep repairs should be built up in layers no more than 20mm deep and allowed to cure.
 - 7. Final layer should be 3mm to 5mm proud of the surrounding surface and allowed to cure. 3mm is sufficient for flat brick.
 - 8. The repair can then be shaped and modelled with appropriate tools for up to two days after application.

9. Thoroughly clean tub and syringe for future use.

3.5 RETRO WEEPS

- A. Install weeps in cavity walls at 24 inches on center horizontally above existing through-wall flashings. **Take precaution to not tear, cut or damage existing through wall flashing.**
- B. Install as follows;
 1. Remove vertical mortar joint full depth of brick and to height required by weep cover. Leave weep tubes in place where existing.
 2. Remove existing weep tube.
 3. Install retro weep cover.
 4. Clean surrounding area.

3.6 TOLERANCES

- A. Construct unit masonry assemblies in strict accordance with ACI 530.1, but not less than the tolerances below:
 1. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.
 2. Maximum Variation from Plane of Wall: 1/4 inch in 10 feet and 1/2 inch in 20 feet or more.
 3. Variation from Plumb: 1/4 inch per story, non-cumulative; 1/2 inch in two stories or more.
 4. Maximum Variation from Level Coursing: 1/8 inch in 3 feet and 1/4 inch in 10 feet; 1/2 inch in 30 feet.
 5. Maximum Variation of Joint Thickness: 1/8 inch in 3 feet.
 6. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.
- B. CUTTING AND FITTING
 1. Cut and fit for application. Coordinate with existing materials to provide correct size, shape and location.
 2. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.7 REPOINTING

- A. Cut out loose or disintegrated mortar in joints to minimum 3/4 inch (-mm) depth; or 2-1/2 times the joint width or until sound mortar is reached.

- B. Use power tools only after test cuts determine no damage to masonry units will result. Use hand tools only near window frames or when it is expected that power tools will damage the adjacent areas.
- C. Do not damage masonry units.
- D. When cutting is complete, remove dust and loose material by brushing or with water jet.
- E. Premoisten joint and apply mortar. Pack tightly in maximum 1/4 inch (6 mm) layers. Form a smooth, compact concave joint to match existing.
- F. Moist cure for 72 hours.

3.8 CLEANING EXISTING MASONRY

- A. Verify mortar is fully set and cured.
- B. Dilute restoration cleaner in accordance with manufacturer's recommendations to achieve results identical to that required for sample area.
- C. Prewet surfaces from bottom to top.
- D. Clean surfaces and remove large particles with wood scrapers or non-ferrous wire brush.
- E. Spray or Roller apply surfaces with restoration cleaner mixed into solution identical to that required for sample area.
- F. Allow sufficient time for solution to remain on masonry and agitate with soft fiber brush or sponge. Do not allow cleaners to dry.
- G. Apply low pressure, flood rinse to treated surfaces with clean water to flush away loose mortar, dirt, and cleaner.
- H. Apply high pressure rinse to treated surfaces with a concentrated stream of clean water. Keep wall surfaces beneath area being cleaned running wet at free of afterwash solution and residues.

3.9 CLEANING NEW MASONRY

- A. Verify mortar is fully set and cured.
- B. Dilute restoration cleaner in accordance with manufacturer's recommendations to achieve results identical to that required for sample area.
- C. Clean surfaces and remove large particles with wood scrapers, brass or nylon wire brushes.

- D. Scrub walls with cleaning agent solution using stiff brush. Thoroughly rinse and wash off cleaning solution, dirt and mortar crumbs using clean, pressurized water.

3.10 AGING

- A. Rub in new masonry work to match, as close as possible, adjacent original work.
 - 1. Use carbon black in small amounts, rubbing in well with burlap rags.
- B. After each application, dust off surplus and wash down with low pressure hose. Allow surface to dry before proceeding with succeeding applications.
- C. Continue process until acceptance.

3.11 CLEANING

- A. Immediately remove stains, efflorescence, or other excess resulting from the work of this section.
- B. Remove excess mortar, smears, and droppings as work proceeds and upon completion.
- C. Clean surrounding surfaces.

END OF SECTION 04 0100

SECTION 07 1900 - WATER REPELLENTS**PART 1 GENERAL**

1.1 Summary

- A. This specification describes the sealing of absorptive substrates with a non-vapor-barrier penetrant to reduce water and chloride ion intrusion.

1.2 Quality Assurance

- A. Manufacturing qualifications: The manufacturer of the specified product shall be ISO 9001:2008 certified and have in existence a recognized ongoing quality assurance program independently audited on a regular basis.
- B. Contractor qualifications: Contractor shall be qualified in the field of concrete repair and protection with a successful track record of 5 years or more. Contractor shall maintain qualified personnel who have received product training by a manufacturer's representative.
- C. Install materials in accordance with all safety and weather conditions required by manufacturer or as modified by applicable rules and regulations of local, state and federal authorities having jurisdiction. Consult Material Safety Data Sheets for complete handling recommendations.

1.3 Delivery, Storage, and Handling

- A. All materials must be delivered in original, unopened containers with the manufacturer's name, labels, product identification, and batch numbers. Damaged material must be removed from the site immediately.
- B. Store all materials off the ground and protect from rain, freezing or excessive heat until ready for use.
- C. Condition the specified product as recommended by the manufacturer.

1.4 Job Conditions

- A. Environmental Conditions: Do not apply material if it is raining or snowing or if such conditions appear to be imminent. Minimum application temperature 45°F (7°C) and rising.
- B. Protection: Precautions should be taken to avoid damage to any surface near the work zone due to mixing and handling of the specified material.

1.5 Submittals

- A. Submit two copies of manufacturer's literature, to include: Product Data Sheets and appropriate Material Safety Data Sheets (MSDS).

1.6 Warranty

- A. Provide a written warranty from the manufacturer against defects of materials for a period of one (1) year, beginning with date of substantial completion of the project.

PART 2 PRODUCTS

2.1 Manufacturer

- A. Sikagard 701W, as sampled for Sika Corporation, 1682 Marion Williamsport Road, Marion, Ohio, 43302 is considered to conform to the requirements of this specification.
- B. Or approved equal (**system and all related products**).

2.2 Materials

- A. Modified siloxane penetrating sealer:
 - 1. A concentrated compound, mixed with water and forming a water-based siloxane penetrating sealer.
 - 2. The material shall not contain any solvents.
 - 3. The material shall not contain any silicates, fluosilicates, or stearates.

2.3 Performance Criteria

- A. Typical Properties of the modified siloxane penetrating sealer:
 - 1. Color: white/opaque liquid
 - 2. Solids: 50% concentrated (silane modified siloxane polymer)
 - 3. Viscosity: 5- 20 cps.
 - 4. VOC: 211g/l a. 46 g/l as diluted
 - 5. Flash point: 212 F
 - 6. NCHRP 244 REPORT SERIES 2 TEST
 - a. Reduction in Water Absorption: 91%
 - b. Water Vapor Transmission: 100%
 - c. Reduction in Cl ion intrusion: 90%
 - d. Federal Spec SSW-110C
 - e. Water Absorption: .97%

Note: Tests above were performed with the material and curing conditions @ 71oF – 75oF and 45-55% relative humidity.

PART 3 EXECUTION

3.1 Surface Preparation

- A. Substrate must be clean, sound, and free of surface contaminants. Remove dust, laitance, grease, oils, curing compounds, form release agents and all foreign particles by mechanical means. Substrate shall be in accordance with ICRI Guideline No. 03732 for sealers.

3.2 Mixing and Application

- A. Mixing: Dilute Sikagard 701W concentrated with up to 4(gal.) of tap water in a appropriate size container. Mix with a low speed (400-600 rpm) drill with a Sika paddle or comparable drum mixer until uniformly blended.
- B. Placement Procedure: The penetrating sealer should be applied liberally and allowed to soak into the substrate. This shall be accomplished by the use of brushes, rollers, or hand-pressure spray equipment. Depending on porosity of the substrate, coverage rates will range from 100-250 sq.ft./gal (diluted concentrate). On dense substrates, two coats of the diluted concentrate may be required to obtain the recommended application rate. They should be applied in a wet on wet fashion so as to completely saturate the surface. For proven results against chloride-ion intrusion, a 125 sq. ft./gal. coat is recommended.
- C. Adhere to all limitations and cautions for the solvent-free silxolane emulsion concentrate as stated in the manufacturers printed literature.

3.3 Field Testing

- A. The contractor shall have the manufacturer of the specified product perform RILEM tests at locations to be selected by the RHA. A minimum of two locations at each tower shall be required. The manufacturer shall provide written verification of acceptable results at all locations.

3.4 Cleaning

- A. The modified silxoane penetrating sealer can be cleaned from tools with water.
- B. Leave finished work and work area in a neat, clean condition without evidence of spillovers onto adjacent areas.

END OF SECTION 07 1900

SECTION 07 9000 - JOINT SEALERS, ELASTOMERIC AND NON-ELASTOMERIC SEALANT**PART 1 GENERAL**

1.1 Summary

- A. This specification describes the sealing of joints and cracks with a one-component, gun-grade, elastomeric polyurethane sealant.
- B. Related Sections:
 - 1. Division 01 - Unit Prices.

1.2 Quality Assurance

- A. Manufacturing qualifications: The manufacturer of the specified product shall be ISO 9001:2008 certified and have in existence a recognized ongoing quality assurance program independently audited on a regular basis.
- B. Contractor qualifications: Contractor shall be qualified in the field of concrete repair and protection with a successful track record of 5 years or more. Contractor shall maintain qualified personnel who have received product training by a manufacturer's representative.
- C. Install materials in accordance with all safety and weather conditions required by manufacturer or as modified by applicable rules and regulations of local, state and federal authorities having jurisdiction. Consult Material Safety Data Sheets for complete handling recommendations.

1.3 Delivery, Storage, and Handling

- A. All materials must be delivered in original, unopened containers with the manufacturer's name, labels, product identification, and batch numbers. Damaged material must be removed from the site immediately.
- B. Store all materials off the ground and protect from rain, freezing or excessive heat until ready for use.
- C. Condition the specified product as recommended by the manufacturer.

1.4 Job Conditions

- A. Environmental Conditions: Do not apply material if it is raining or snowing or if such conditions appear to be imminent. Minimum application temperature 40°F (5°C) and rising.

- B. Protection: Precautions should be taken to avoid damage to any surface near the work zone due to mixing and handling of the specified coating.

1.5 Submittals

- A. Submit two copies of manufacturer's literature, to include: Product Data Sheets, and appropriate Material Safety Data Sheets (MSDS).

1.6 Warranty

- A. Provide a written warranty from the manufacturer against defects of materials for a period of one (1) year, beginning with date of substantial completion of the project.

PART 2 PRODUCTS

2.1 Manufacturers

- A. Sikaflex-1a, as manufactured by Sika Corporation, 201 Polito Avenue, Lyndhurst, NJ 07071 is considered to conform to the requirements of this specification.
- B. Or approved equal (**system and all related products**).

2.2 Materials

- A. Polyurethane sealant:
 - 1. The joint sealant shall be a one-component, gun grade, polyurethane-base material. It shall be applicable in horizontal, vertical, and overhead joints. The sealant shall cure under the influence of atmospheric moisture to form an elastomeric substance.
- B. Any primers, as required, recommended by the manufacturer of the specified product, approved by the engineer.
- C. Backer rod or bond breaker tape, as approved by the engineer.

2.3 Performance Criteria

- A. Properties of the uncured polyurethane sealant:
 - 1. Initial Cure (Tack-Free Time): TT-S-00230C - 4 hours
Final Cure 4 – 7 days
 - 2. Consistency: non-sag
 - 3. Color: 7 architectural standard colors

- B. Properties of the cured polyurethane sealant:
1. Tensile Properties (ASTM D-412) at 21 days
 - a. Tensile Stress: 175-psi min.(1.37 MPa)
 - b. Elongation at Break: 550%
 - c. Modulus of Elasticity:

25%	35 psi (0.24 MPa)
50%	60 psi (0.41 MPa)
100%	85 psi (0.59 MPa)
 2. Shore A Hardness (ASTM D-2240) at 21 days: 40 +/- 5
 3. Tear Strength (ASTM D-624) at 21 days: 55 lb./in.
 4. Adhesion in Peel (TT-S-00230C, ASTM C 794)
 - a. Concrete: 20-lb. min. -0% Adhesion Loss
 - b. Aluminum: 20-lb. min. - 0% Adhesion Loss
 - c. Glass: 20-lb. min. - 0% Adhesion Loss
 5. Service Range: -40o to 170oF (-400 to 77 0 C)
 6. The sealant shall conform to Federal Specification TT-S-00230C, Type II, Class A.
 7. The sealant shall conform to ASTM C-920, Type S, Grade NS, Class 35.
 8. The sealant must comply with ANSI Standard 61(NSF Approval) for use in contact with potable water.
 9. The sealant shall be non-staining.
 Note: Tests were performed with material and curing conditions at 71 degrees-75 degrees F and 45-55% relative humidity.

PART 3 EXECUTION

3.1 Surface Preparation

- A. The joint and adjacent substrate must be clean, dry, sound and free of surface contaminants. Remove all traces of the old sealant, dust, laitance, grease, oils, curing compounds, form release agents and foreign particles by mechanical means, i.e. – sandblasting, etc., as approved by the engineer. Blow joint free of dust using compressed air line equipped with an oil trap.

3.2 Mixing and Application

- A. Joints:

1. Placement Procedure: Prime substrate as required based upon the recommendations of the manufacturer of the specified product, when field testing indicates need, and when the joints will be subject to immersion after cure, as approved by the Engineer.
2. Install approved backer rod or bond breaker tape in all joints subject to thermal movement to prevent three-sided bonding and to set the depth of the sealant at a maximum of 1/2 in., measured at the center point of the joint width. Approval of the backer rod or bond breaker tape shall be made by the engineer.
3. Joints shall be masked to prevent discoloration or application on unwanted areas, as directed by the engineer. If masking tape is used, it shall not be removed before tooling, yet must be removed before the initial cure of the sealant. Do not apply the masking tape until just prior to the sealant application.
4. Install sealant into the prepared joints when the joint is at the mid-point of its expansion and contraction cycle. Place the nozzle of the gun, either hand, air, or electric powered, into the bottom of the joint and fill entire joint. Keep the tip of the nozzle in the sealant; continue with a steady flow of sealant preceding the nozzle to avoid air entrapment. Avoid overlapping the sealant to eliminate the entrapment of air. Tool as required to properly fill the joint.
5. Adhere to all limitations and cautions for the polyurethane sealant as stated in the manufacturer's printed literature.

B. Cracks:

1. For best performance sealant should be gunned into crack to a minimum of a 1/4" in depth. Place the nozzle of the gun, either hand, air or electric powered, into the bottom of the crack and fill entire crack. Keep the tip of the nozzle in the sealant. Continue with a steady flow of sealant preceding the nozzle to avoid air entrapment. Avoid overlapping the sealant to eliminate the entrapment of air. Tool as required to properly fill the crack.
2. Adhere to all limitations and cautions for the polyurethane sealant as stated in the manufacturer's printed literature.

3.3 Cleaning

- A. The uncured polyurethane sealant can be cleaned with an approved solvent. The cured polyurethane sealant can only be removed mechanically.
- B. Leave finished work and work area in a neat, clean condition without evidence of spillovers onto adjacent areas.

END OF SECTION 07 9000

SECTION 07 9200 - JOINT SEALERS, ELASTOMERIC AND NON-ELASTOMERIC**PART 1 GENERAL****1.1 SUMMARY**

- A. This specification describes the sealing of joints and cracks with a one-component, gun-grade, elastomeric polyurethane sealant.
- B. Related Sections
 - 1. Division 01 - Unit Prices.

1.2 QUALITY ASSURANCE

- A. Manufacturing qualifications: The manufacturer of the specified product shall be ISO 9001:2008 certified and have in existence a recognized ongoing quality assurance program independently audited on a regular basis.
- B. Contractor qualifications: Contractor shall be qualified in the field of concrete repair and protection with a successful track record of 5 years or more. Contractor shall maintain qualified personnel who have received product training by a manufacturer's representative.
- C. Install materials in accordance with all safety and weather conditions required by manufacturer or as modified by applicable rules and regulations of local, state and federal authorities having jurisdiction. Consult Material Safety Data Sheets for complete handling recommendations.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. All materials must be delivered in original, unopened containers with the manufacturer's name, labels, product identification, and batch numbers. Damaged material must be removed from the site immediately.
- B. Store all materials off the ground and protect from rain, freezing or excessive heat until ready for use.
- C. Condition the specified product as recommended by the manufacturer.

1.4 JOB CONDITIONS

- A. Environmental Conditions: Do not apply material if it is raining or snowing or if such conditions appear to be imminent. Minimum application temperature 40°F (5°C) and rising.

- B. Protection: Precautions should be taken to avoid damage to any surface near the work zone due to mixing and handling of the specified coating.

1.5 SUBMITTALS

- A. Submit two copies of manufacturer's literature, to include: Product Data Sheet, and appropriate Material Safety Data Sheets (MSDS).

1.6 WARRANTY

- A. Provide a written warranty from the manufacturer against defects of materials for a period of one (1) year, beginning with date of substantial completion of the project.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Sikaflex-15LM, as manufactured by Sika Corporation, 201 Polito Avenue, Lyndhurst, NJ 07071 is considered to conform to the requirements of this specification.
- B. Or approved equal (**system and all related products**).

2.2 MATERIALS

- A. Polyurethane sealant:
 - 1. The joint sealant shall be a one-component, gun grade, polyurethane-base material. It shall be applicable in vertical, overhead, and recess horizontal joints. The sealant shall cure under the influence of atmospheric moisture to form an elastomeric substance.
- B. Any primers, as required, recommended by the manufacturer of the specified product, approved by the Engineer.
- C. Backer rod or bond breaker tape, as approved by the Engineer.

2.3 PERFORMANCE CRITERIA

- A. Properties of the uncured polyurethane sealant:
 - 1. Initial Cure Tack-Free Time: (TT-S-00230C) 3 - 6 hours Final Cure 7 - 10 days
 - 2. Consistency: non-sag
 - 3. Color: 16 architectural standard colors
- B. Properties of the cured polyurethane sealant:

1. Tensile Properties (ASTM D-412) at 21 days
 - a. Tensile Stress: 125-psi min.(.86 MPa)
 - b. Elongation at Break: 700%
 - c. Modulus of Elasticity
 - 25% 20 psi (0.13 MPa)
 - 50% 35 psi (0.24 MPa)
 - 100% 50 psi (0.34 MPa)
2. Shore A Hardness (ASTM D-2240) at 21 days: 25 + /-5
3. Tear Strength (ASTM D-624) at 21 days:
4. Adhesion in Peel (TT-S-00230C, ASTM C 794)
 - a. Concrete: 30-lb. Min. – 0% Adhesion Loss
 - b. Aluminum: 25-lb. min. – 0% Adhesion Loss
 - c. Glass: 25-lb. min. – 0% Adhesion Loss
5. Service Range: -40o to 170oF (-400 to 770C)
6. The sealant shall conform to Federal Specification TT-S-00230C, Type II, Class A and Federal Specification for Silicones TT-S-001543A, Type non-sag.
7. The sealant shall conform to ASTM C-920, Type S, Grade NS, Class 100/50.
8. The sealant shall be non-staining.
9. The sealant shall be capable of + 100% / -50% joint movement

Note: Tests were performed with material and curing conditions at 71 °-75 °F and 45-55% relative humidity.

PART 3 EXECUTION

3.1 SURFACE PREPARATION

- A. The joint and adjacent substrate must be clean, dry, sound and free of surface contaminants. **Remove existing sealant and all traces of the old sealant**, dust, latence, grease, oils, curing compounds, form release agents and foreign particles by mechanical means, i.e. – sandblasting, etc., as approved by the engineer. Blow joint free of dust using compressed air line equipped with an oil trap.

3.2 MIXING AND APPLICATION

- A. Joints:
 1. Placement Procedure: Prime substrate as required based upon the recommendations of the manufacturer of the specified product, when field testing indicates need, and when the joints will be subject to immersion after cure, as approved by the Engineer.

2. Install approved backer rod or bond breaker tape in all joints subject to thermal movement to prevent three-sided bonding and to set the depth of the sealant at a maximum of 1/2 in., measured at the center point of the joint width. Approval of the backer rod or bond breaker tape shall be made by the Engineer.
 3. Joints shall be masked to prevent discoloration or application on unwanted areas, as directed by the Engineer. If masking tape is used, it shall not be removed before tooling, yet must be removed before the initial cure of the sealant. Do not apply the masking tape until just prior to the sealant application.
 4. Install sealant into the prepared joints when the joint is at the mid-point of its expansion and contraction cycle. Place the nozzle of the gun, either hand, air, or electric powered, into the bottom of the joint and fill entire joint. Keep the tip of the nozzle in the sealant; continue with a steady flow of sealant preceding the nozzle to avoid air entrapment. Avoid overlapping the sealant to eliminate the entrapment of air. Tool as required to properly fill the joint.
 5. Adhere to all limitations and cautions for the polyurethane sealant as stated in the manufacturer's printed literature.
- B. Cracks
1. For best performance sealant should be gunned into crack to a minimum of a 1/4" in depth. Place the nozzle of the gun, either hand, air or electric powered, into the bottom of the crack and fill entire crack. Keep the tip of the nozzle in the sealant. Continue with a steady flow of sealant preceding the nozzle to avoid air entrapment. Avoid overlapping the sealant to eliminate the entrapment of air. Tool as required to properly fill the crack.
 2. Adhere to all limitations and cautions for the polyurethane sealant as stated in the manufacturer's printed literature.

3.3 FIELD TESTING

- A. The contractor shall have the manufacturer of the specified product perform adhesion tests at locations to be selected by the RHA. A minimum of three locations at each tower shall be required. The manufacturer shall provide written verification of acceptable results at all locations.

3.3 CLEANING

- A. The uncured polyurethane sealant can be cleaned with an approved solvent. The cured polyurethane sealant can only be removed mechanically.

- B. Leave finished work and work area in a neat, clean condition without evidence of spillovers onto adjacent areas.

END OF SECTION 07 9200

SECTION 09 8300 - ELASTOMERIC COATINGS**PART 1 GENERAL****1.1 SUMMARY**

- A. This specification describes the coating of substrates with an elastomeric, crack bridging, anti-carbonation, protective coating.

1.2 QUALITY ASSURANCE

- A. Manufacturing qualifications: The manufacturer of the specified product shall be ISO 9001:2008 certified and have in existence a recognized ongoing quality assurance independently audited on a regular basis.
- B. Contractor qualifications: Contractor shall be qualified in the field of concrete repair and protection with a successful track record of 5 years or more. Contractor shall maintain qualified personnel who have received product training by a manufacturer's representative.
- C. Install materials in accordance with all safety and weather conditions required by manufacturer or as modified by applicable rules and regulations of local, state and federal authorities having jurisdiction. Consult Material Safety Data Sheets for complete handling recommendations.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. All materials must be delivered in original, unopened containers with the manufacturer's name, labels, product identification, and batch numbers. Damaged material must be removed from the site immediately.
- B. Store all materials off the ground and protect from rain, freezing or excessive heat until ready for use.
- C. Condition the specified product as recommended by the manufacturer.

1.4 JOB CONDITIONS

- A. Environmental Conditions: Do not apply material if it is raining or snowing or if such conditions appear to be imminent. Minimum application temperature 45° F (7° C) and rising.
- B. Protection: Precautions should be taken to avoid damage to any surface near the work zone due to mixing and handling of the specified material.

1.5 SUBMITTALS

- A. Submit two copies of manufacturer's literature, to include: Product Data Sheets, and appropriate Material Safety Data Sheets (MSDS).

1.6 QUALITY ASSURANCE

- A. The contractor shall be trained in the product and system by the manufacturer.**

1.7 WARRANTY

- A. Provide a written warranty from the manufacturer against defects of materials for a period of one (1) year, beginning with date of substantial completion of the project.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. Sikagard 550W Elastocolor, as manufactured by Sika Corporation, 1682 Marion Williamsport Road, Marion, Ohio, 43302 is considered to conform to the requirements of this specification.
- B. Sikagard Elastic Base Coat (Smooth & Textured), as manufactured by Sika Corporation, 1682 Marion Williamsport Road, Marion, Ohio, 43302 is considered to conform to the requirements of this specification.
- C. Sikagard 552W Primer or SikaLatex R, as manufactured by Sika Corporation, 1682 Marion Williamsport Road, Marion, Ohio, 43302 is considered to conform to the requirements of this specification.
- B. Or approved equal (**system and all related products**).

2.2 MATERIALS

- A. Elastomeric Acrylic Coating:
 - 1 Product shall be 100% Acrylic Emulsion with the following properties:
 - a. Water vapor permeable
 - b. Can bridge dynamically moving cracks
 - c. Crack bridging properties maintained at low temperatures
 - d. The material shall be resistant to dirt pick-up and mildew
- B. Elastomeric Acrylic Smooth & Textured Base Coating:
 - 1. Product shall be 100% Acrylic Emulsion with the following properties:
 - a. Water vapor permeable

- b. Can bridge dynamically moving cracks
 - c. Crack bridging properties maintained at low temperatures
- C. Adhesion Promoter / Surface Conditioner
- 1. Product shall be a water-based, acrylic primer with the following properties:
 - a. Solids content 12.5% -20% by volume
 - b. Recoat time 4 – 24 hours
- D. Colors: To be selected by the RHA from manufacturer's standards.

2.3 PERFORMANCE CRITERIA

- A. Properties of the elastomeric Sikagard 550W Elastocolor acrylic coating:
- 1. Pot Life: indefinite
 - 2. Tack Free Time 6 Hours @ 73°F, 50% Relative Humidity. Final Cure < 24 Hours
 - 3. Carbon Dioxide Diffusion: μCO_2 214,000 Carbon Dioxide Diffusion Resistance at 16 mils (400 microns) $\text{SdCO}_2 = 299$ ft. (equivalent air thickness) i.e. Approx. 9-in. of standard concrete cover.
 - 4. Water Vapor Diffusion: $\mu\text{H}_2\text{O}$ 2,146 Water Vapor Diffusion Resistance at 16 mils $\text{SdH}_2\text{O} = 2.6$ ft. (0.8m) (equivalent air thickness)
 - 5. Moisture Vapor permeability (ASTM E96) 14.5 perms
 - 6. Tensile Properties (ASTM D-412 Modified)
7 day-Tensile strength 190 psi (1.3 MPa) - Elongation at break 820% - 340% @ 0oF (-18o
 - 7. Crack Bridging(at 16 mils = 400 microns DFT
 - a. Static (at -4°F/-20oC) 30 mils (0.75mm)
 - b. Dynamic > 1000 cycles(at -4oF/-20°C) 12 mils (0.30mm)
 - 8. Resistance to wind driven rain (TT-C-555B): No passage of water through coating
 - 9. Weathering (ASTM G-23) 10,000 hours excellent, no chalking or cracking.
 - 10. Solids Content: by weight – 62% by volume – 55%
 - 11. Flame Spread and Smoke Development (ASTM E-84-94)
Flame Spread 5 Smoke Development 5 Class Rating A

Note: Tests above were performed with the material and curing conditions @ 71°F – 75°F and 45-55% relative humidity.

PART 3 EXECUTION

3.1 SURFACE PREPARATION

- A. Substrate must be clean, sound, and free of surface contaminants. Remove dust, laitance, grease, oils, curing compounds, form release agents and all foreign particles by mechanical means. Substrate shall be in accordance with ICRI Guideline No. 03732 for coatings and fall within CSP1 to CSP3.

3.2 MIXING AND APPLICATION

- A. Mixing: Stir materials to ensure uniformity using a low speed (400-600 rpm) drill and paddle. To minimize color variation, blend two batches of material.(boxing)
- B. Crack detail: Recommended application temperatures 40° - 100°F (40-380)
Small defects and cracks (non-structural): Cracks 10 – 20 mils. Apply Surface Filler ^aBrush Grade^o generously over the center of the cracks. Feather material to zero over a two-inch wide area. Allow a minimum 24 hours to cure before overcoating. Large defects and cracks (non-structural): Cracks >20mils. Rout to 1/4-in wide by 1/4-in. deep. Blow out cut with oil-free compressed air. Fill slot with Surface Filler ^aKnife Grade^o allowing for a small crest to remain. This will compensate for any shrinkage that might occur. NOTE: Sikaflex-1a,-2c, or -15LM, polyurethane sealant may be used in place of Knife Grade Surface Filler. Allow 24 hours-minimum cure before over coating.
- C. Coating Application: Apply by brush, roller, or spray over entire area moving in one direction. A minimum of two coats are required. Each coat should be applied at a rate not to exceed 100 sq. ft. per gallon. Total dry film thickness shall be a minimum 8 - 10 dry mils per coat. Allow a minimum of 2 hours prior to re-coating.
- D. When applying the coating, never stop the application until the entire surface has been coated. Always stop application at an edge, corner, or joint. Never let a previously coated film dry; always coat into a wet film. Always apply the coating at a 45° angle to an edge, corner, or joint.
- E. If substrate has been previously coated and presents a ^achalky^o condition, apply 1 coat of Sikagard 552W or SikaLatex R, primer/surface conditioner by brush, roller, or spray at a rate not to exceed 300 sq. ft. per gallon.
- F. Adhere to all limitations and cautions for the elastomeric acrylic coating in the manufacturers printed literature.

3.3 CLEANING

- A. The uncured elastomeric acrylic coating can be cleaned from tools with water. The cured elastomeric acrylic coating can only be removed mechanically.
- B. Leave finished work and work area in a neat, clean condition without evidence of spillovers onto adjacent areas.

END OF SECTION 09 8300

SECTION 09 9000 - PAINTS AND COATINGS**PART 1 GENERAL****1.1 SECTION INCLUDES**

- A. Exterior Coating Systems: Surface preparation and field application of exterior high-performance coating systems to items and surfaces scheduled.

1.2 RELATED SECTIONS

- A. Division 7 Sections for Joint Sealers.

1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM) D 16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications.

1.4 DEFINITIONS

- A. General: Standard coating terms defined in ASTM D 16.
 - 1. Flat: lusterless or matte. Gloss Range: Max 15 measured at 85 degree meter.
 - 2. Eggshell: Low-sheen. Gloss Range: 20 to 35 measured at 60 degree meter.
 - 3. Semi-Gloss: Medium-sheen. Gloss Range: 35 to 70 measured at 60 degree meter.
 - 4. Full Gloss: High-sheen. Gloss Range: Above 70 measured at a 60 degree meter.
- B. Environments: The following terms distinguish between different corrosive exposures:
 - 1. Severe Environments: Highly corrosive industrial atmospheres. Sustained exposure to high humidity and condensation and with frequent cleaning using strong chemicals. Environments with heavy concentrations of strong chemical fumes and frequent splashing and spilling of harsh chemical products are severe environments.
 - 2. Moderate Environments: Corrosive industrial atmospheres with intermittent exposure to high humidity and condensation, occasional mold and mildew development, and regular cleaning with strong chemicals. Environments with exposure to heavy concentrations of chemical fumes and occasional splashing and spilling of chemical products are moderate environments.
 - 3. Mild Environment: industrial atmospheres with normal exposure to moderate humidity and condensation, occasional mold and mildew development, and infrequent cleaning with strong chemicals. Environments with low levels of

mild chemical fumes and occasional splashing and spilling of chemical products are mild environments. Normal outdoor weathering is also considered a mild environment.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01 3300 - Submittal Procedures.
- B. Product Data: For each paint system indicated, including:
 - 1. Material List: An inclusive list of required coating materials. Indicate each material and cross reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
 - 2. Preparation instructions and recommendations.
 - 3. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material.
- C. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors.
- D. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product and color.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.
- B. Paint exposed surfaces. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, Architect will select from standard colors and finishes available.
- C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.
- D. **Mock-Up:** Provide a mock-up for evaluation of surface preparation techniques and application workmanship. **Provide under the supervision of the manufacturer's representative.**
 - 1. Finish areas designated by Architect.
 - 2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
 - 3. Refinish mock-up area as required to produce acceptable work.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label:
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain storage containers in a clean condition, free of foreign materials and residue.

1.8 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. Apply waterborne paints only when temperatures of surfaces to be painted and surrounding air are between 50 and 90 deg F (10 and 32 deg C).
- C. Apply solvent-thinned paints only when temperatures of surfaces to be painted and surrounding air are between 45 and 95 deg F (7 and 35 deg C).
- D. Do not apply paint in snow, rain, fog, or mist: or when relative humidity exceeds 85 percent: or at temperatures less than 5 deg F (3 deg C) above the dew point: or to damp or wet surfaces.
 - 1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

1.9 EXTRA MATERIALS

- A. Furnish extra paint materials from the same production run as the materials applied and in the quantities described below. Package with protective covering for storage and identify with labels describing contents. Deliver extra materials to Owner.
- B. Quantity: Furnish Owner with an additional three percent, but not less than 1 gal of each material.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: PPG Paints: 400 Bertha Lamme Drive, Cranberry Township, PA 16066. ASD Toll Free Tel: 888-PPG-IDEA. Email: brian.joyce@ppg.com; Web: www.ppgpaints.com

1. **Basis of Design: PPG Paints** as manufactured and supplied by PPG Architectural Finishes, Incorporated.

- a. **PSX ONE (Topcoat)**
- b. **AMERICOAT 370 (Primer)**
- c. **DURAPREP | PREP 88 (Prep)**

B. Or approved equal system.

2.2 PAINT MATERIALS - GENERAL

- A. **Material Compatibility:** Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
- B. **VOC Classification:** Provide high-performance coating materials, including primers, undercoats, and finish-coat materials, that meet the applicable local, state or federal VOC requirements.
- C. **Color: As selected by the RHA to match existing metal panels.**

2.3 EXTERIOR HIGH PERFORMANCE COATING SYSTEMS

- A. **Existing Metal Panels:** Provide the following finish systems over existing metal panel surfaces:
 1. Preparation: DURAPREP | PREP 88 by PPG Paints.
 2. Primer: AMERICOAT 370 by PPG Paints.
 3. Topcoat: PSX ONE by PPG Paints.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. **Coordination of Work:** Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
 1. Notify Architect about anticipated problems when using the materials specified over substrates primed by others.

2. If a potential incompatibility of primers applied by others exists, obtain the following from the primer Applicator before proceeding:
 - a. Confirmation of primer's suitability for expected service conditions.
 - b. Confirmation of primer's ability to be top coated with materials specified.

3.2 PREPARATION

- A. General: Remove adjacent joint sealers, provide surface-applied protection before surface preparation and painting. **Mask panel and adjacent surface prior to application of coatings.**
 1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
- B. **Cleaning and Surface Preparation: Clean affected areas with DURAPREP | Prep 88.** Scuff sand to remove stain and rust.
 1. Apply Prep 88 generously using spray, brush, roller or mop on the surface to be cleaned. For most applications, Amercoat 88 can be reduced 2 to 3 times with fresh clean water. Use concentrated Prep 88 Cleaner for heavy oil residues.
 2. Allow Prep 88 to remain on the surface for 5 to 10 minutes, then scrub off with a broom or high pressure water wash. The longer the Amercoat 88 can be allowed to work before scrubbing, the more effective it is in loosening deposits.
IMPORTANT: do not allow Prep 88 to dry on the surface.
 3. Hose with water under high pressure. On rough or pitted surfaces, it may be necessary to scrub with a stiff brush while washing. Hot water or low pressure steam greatly facilitates removal.
 4. If any deposits of grease or oil remain, repeat the application of Prep 88 and scrub with a cloth or scrape deposit away.
 5. Wash again with water as described before. Allow to dry before application of protective coatings.
 6. If surfaces are hot, pre-wet before application of Prep 88
 7. Do not apply under freezing conditions.

3.3 APPLICATION

- A. General: Apply coatings according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
- B. Application Procedures: Apply coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
- C. **Primer: Prime with Amercoat 370.**
 1. Flush equipment with recommended cleaner before use.

2. Stir each of the components prior to mixing to an even consistency with a power mixer.
3. Add cure to resin, and continue stirring for 5 minutes.

NOTE: Since the pot life is limited and shortened by high temperatures, do not mix more material than will be used within the potlife period.

4. For conventional spray, thin only as needed for workability with no more than 10% of recommended thinner. Thinning is normally not needed for airless spray.
5. Stir during application to maintain uniformity of material. Apply a wet coat by even, parallel passes. Overlap each pass 50% to avoid bare areas, pinholes or holidays.
6. Double coat all welds, rough spots, sharp edges and corners, rivets, bolts, etc.
7. Application at 190 μm (7.6 mils) wet film thickness will normally provide 125 μm (5 mils) dry film. Normal recommended dry film thickness is 125 μm (5 mils). Total dry film thickness must not exceed 375 μm (15 mils).
8. Check thickness of dry coating with a non destructive dry film thickness gauge, such as Mikrotest or Elcometer. If less than specified thickness, apply additional material as needed.
9. Small damaged or bare areas and random pinholes or holidays can be touched up by brush. Repair larger areas by spray.
10. When applying by conventional spray, use adequate air pressure and volume to ensure proper atomization.
11. When applying over inorganic zinc or zinc rich primers, a "mist coat" (25-35 μm (1 - 1.4 mils) wet) full coat technique may be required to minimise bubbling. This will depend on the age of the primer, surface roughness and conditions during curing. When applying Amercoat 370 over Dimetcote at 15°C/59F and above, use Amercoat 65 thinner up to 10% per litre.
12. In confined areas ventilate with clean air during application and drying until all solvents are removed. Temperature and humidity of ventilating air must be such that moisture condensation will not form on surface.
13. Clean all equipment with recommended cleaner immediately after use or at least at the end of each working day or shift. When left in spray equipment, Amercoat 370 will cure and cause clogging.

D Topcoat: Topcoat with PSX ONE.

1. Mixing; Agitate with a power mixer for 1-2 minutes until completely dispersed.
2. Airless spray; 30:1 pump or larger, 0.013 – 0.017 fluid tip
3. Air spray; Thin up to 20%, standard conventional equipment, 0.070" fluid orifice. A moisture and oil trap in the main line is essential.

4. Brush & roll; Use a high quality natural bristle brush and / or solvent resistant, 1/4-inch or 3/8-inch nap roller. Ensure brush / roller is well loaded to avoid air entrainment. Multiple coats may be necessary to achieve adequate film build. Amercoat 851 flow control additive can be used to for enhanced flow and leveling with brush and roll application.

3.4 FIELD QUALITY CONTROL

- A. Owner reserves the right to invoke the following test procedure at any time and as often as Owner deems necessary during the period when paint is being applied:
 1. Owner will engage a qualified independent testing agency to sample paint material being used. Samples of material delivered to Project will be taken, identified, sealed, and certified in the presence of Contractor.
 2. Owner may direct Contractor to stop painting if test results show material being used does not comply with specified requirements. Contractor shall remove noncomplying paint from Project site, pay for testing, and repaint surfaces previously coated with the noncomplying paint. If necessary, Contractor may be required to remove noncomplying paint from previously painted surfaces if, on repainting with specified paint, the two coatings are incompatible.

3.5 CLEANING

- A. After completing painting, clean glass and paint spattered surfaces. Remove spattered paint by washing and scraping without scratching or damaging adjacent finished surfaces.

3.6 PROTECTION

- A. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.
- B. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.
- C. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces.

END OF SECTION 09 9000