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PROJECT MANUAL

Montclair State University

Kasser Theater- Façade Repair

Montclair, NJ

DATE: October 18, 2019

PROJECT NO. 19092.00

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SECTION 01 5000

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Temporary utilities.
2. Field offices and sheds.
3. Temporary controls.
4. Protection of installed Work.
5. Security.
6. Progress cleaning.
7. Removal.

PART 2 PRODUCTS

Not used

2.1 MATERIALS

A. Cleaning Materials: Use only materials that:
1. Are not potentially hazardous to health or property.
2. Do not contain hazardous ingredients.
3. Are non-carcinogenic.
4. Are non or mildly irritating to skin, eyes, and mucous membranes.
5. Have an LD50 rating above 5 grams per kilogram.
6. Are non-reactive.
7. Contain minimum fragrance and dye.
8. Do not require respiratory protection.

PART 3 EXECUTION

3.1 TEMPORARY ELECTRICITY

A. Provide temporary electrical service of capacity and characteristics required for construction.

B. Existing electrical system may not be used during construction unless authorized by the owner. Provide separate temporary electric service.

3.2 TEMPORARY WATER

A. Provide temporary water required for construction.

B. Existing water may not be used during construction. Unless authorized by client.

C. If connecting to existing water source is permitted.
1. Regulate system to prevent interference with Owner's usage.
2. Exercise measures to conserve water.

D. Extend branch piping and provide temporary hoses so that water is available at locations needed for work.

E. Protect from freezing.

F. Maintain distribution system and provide routine repairs.

3.3 FIELD OFFICES AND SHEDS

A. Provide temporary field offices and storage sheds required for construction.

B. Existing building may be not used for field office and storage of materials.

3.4 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas, to allow Owner's use of site and premises, and to protect existing facilities and adjacent properties from construction operations.

B. Provide barricades and covered walkways required by governing authorities for public walkways and for public access to existing facilities. The covered walkways shall provide protection from falling debris and water from cleaning operations. No building egress points shall be obstructed.

C. Fencing:
1. Provide temporary fencing for construction operations.
2. Construction: Commercial grade chain link.
3. Height: 6 feet.
4. Locate to protect construction operations, materials, equipment and pedestrians.
5. Provide pedestrian gates.

3.5 PROTECTION OF INSTALLED WORK

A. Protect installed work from construction operations; provide special protection when required.

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.

3.6 SECURITY

A. Provide a project security program, to:
1. Protect the Work, stored products, and construction equipment from theft and vandalism.

3.7 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.

3.8 TEMPORARY CONTROLS

A. Water Control:
   1. Prevent puddling water.
   2. Maintain the walkways and entrances free of ponding water during cleaning.

B. Dust Control:
   1. Provide dust control materials and methods to minimize dust from construction operations.
   2. Prevent dust from dispersing into atmosphere.

3.9 REMOVAL

A. Clean and repair damage caused by installation or use of temporary work.

B. Restore existing and permanent facilities used during construction to original or to specified condition.

END OF SECTION

SECTION 017800 - CLOSEOUT SUBMITTALS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Project Record Documents.

B. Operation and Maintenance Data.

C. Warranties and bonds.

1.2 RELATED SECTIONS

A. Section 007200 – General Conditions: Performance bond and labor and material payment bonds, warranty, and correction work.

B. Section 013000 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.

C. Section 017000 - Execution Requirements: Contract closeout procedures.

D. Individual Product Sections: Specific requirements for operation and maintenance data.

E. Individual Product Sections: Warranties required for specific products or Work.

1.3 SUBMITTALS

A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.

B. Operation and Maintenance Data:
   1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
   2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
   3. Provide one set of equipment manuals on site, no later than 30 days after equipment approval, to insure manuals are available during owner training.
   4. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
   5. Submit two sets of revised final documents in final form within 10 days after final inspection.

C. Warranties and Bonds:
   1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
   2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
   3. Date of Substantial Completion for Warranty Start Date shall be Date of Turnover, or Date of Certificate of Occupancy, whichever is later.
   4. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.1 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; 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. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. Specifications: Legibly mark and record at 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.

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
   1. Measured depths of foundations in relation to finish first 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 Contract drawings.

G. Project Record Documents (as-built drawings) – To Owner / Architect
   1. Contractor to submit within 30 days of project Substantial Completion and prior to Final Completion.
   2. The Contractor’s original and complete set of Redlined Drawings including all as-built information shall be copied into 3 complete printed and one scanned on disk sets. The original As-Built Drawing, with Contractor’s mark-ups, shall be sent to the Architect.
   3. Contractor shall submit one (1) full set of the As-Built Drawings scanned on disk to the Owner’s Designated Representative (Project Manager) with a copy of the transmittal letter sent to the Architect containing date, Project title, Contractor’s name and address, list of documents, and signature of Contractor.
   4. All copied drawings, specifications, and O&M manuals to be presented to the Facility Manager (FM) and to be left in the Data Room as specified. For FM contact for specific region, contact Chase Project Manager.

3.2 OPERATION AND MAINTENANCE DATA (Submit within 30 days of Substantial Completion)

A. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

E. The Contractor's Original O&M Manual(s) shall be copied into electronic portable document format (.pdf) and placed on a flash drive. The original O&M Manual(s) shall be delivered to the site and placed in the Data Room.

F. Contractor shall submit two (2) copies of the flash drive containing the O&M Manual in electronic (.pdf) format to the Architect with a copy of the transmittal letter to Owner's Designated Representative (Project Manager) containing date, Project title, Contractor's name and address, list of documents, and signature of Contractor.

G. The electronic O&M Manual files shall be indexed or bookmarked in the same manor as the binder delivered to the site.

H. Clearlylabel flash drive with Project name, location, completion date, and financial center number.

3.3 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. For Each Product, Applied Material, and Finish:

B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

3.4 WARRANTIES AND BONDS

A. Special Warranty: Non-prorated, non-transferable, 20 year limited warranty against defective raw materials and defects in manufacturing
   1. Include warranty against color change due to normal atmospheric conditions that exceed the limits established by ASTM D 4726

B. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.

C. Verify that documents are in proper form, contain full information, and are notarized.

D. Co-execute submittals when required.

E. Retain warranties and bonds until time specified for submittal.

F. Manual: Bind in commercial quality 8-1/2 by 11 inch three D side ring binders with durable plastic covers.

G. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.

H. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.

I. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

J. Include warrantees for the following items and in addition any other major items specified on the project and follow the format and order as it is given here:

.

1. JOINT SEALANTS
   a. Correct defective work within a five year period after Date of Substantial Completion.
   b. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal, exhibit loss of adhesion or cohesion, or do not cure. Provide written warranty, signed by manufacturer, Warranty Period for Silicone Sealants: 20 years from date of Substantial Completion
2. Acrylic coating
   A. Provide written warranty, signed by manufacturer, agreeing to replace or repair, within warranty period, Warranty shall be 10 year material warranty.*)*. The warranty is available only when the Acrymax system is installed by an Acrymax Approved Applicator and minimum coating thickness is achieved.
   B. Furnish minimum 2 year contractor warranty covering defects in workmanship.

END OF SECTION

SECTION 02 4120
SELECTIVE BUILDING DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Removal of designated building construction, equipment, and fixtures.

B. Related Sections:
   1. Division 01 - Administrative, procedural, and temporary work requirements.

1.2 SUBMITTALS

A. Submittals for Review:
   1. Shop Drawings: Indicate areas for demolition, removal sequence and location of salvageable items, and location and construction of temporary work.

1.3 REGULATORY REQUIREMENTS

A. Conform to applicable code for demolition work, safety of structure, and dust control.

B. Obtain required permits from authorities.

C. Notify affected utility companies before starting work and comply with their requirements.

D. Conform to applicable codes when hazardous or contaminated materials are discovered.

E. Do not close or obstruct exits.

F. Electrical disconnects shall be performed by a licensed NJ Electrician.

G. Do not disable or disrupt building fire or life safety systems without [3] days prior written notice to Owner or as directed by MSU.

1.4 PROJECT CONDITIONS

A. Minimize interference with streets, walks, public right-of-ways, and adjacent facilities.

B. If hazardous materials are discovered, notify owner and await instructions.

C. All temporary removals shall be reinstalled once work is complete.

D. If any of the following conditions are encountered, cease work immediately, notify Architect, and await instructions:
   1. Structure is in danger of movement or collapse.
   2. Materials or conditions encountered differ from those designated in the Contract Documents.

Where repairs are indicated as typical it shall apply to the entire project for a full and complete project and does not exclude an area not shown on the drawings. For example, all sealant joints are to be replaced and all EIFS will be repaired and recoated.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.1 PREPARATION

A. Erect temporary partitions, barricades, warning devices, and controls where required.

B. All main entrances shall have sidewalk bridges installed and remain until work is complete in that area.

C. Provide protective coverings for construction designated to remain. All existing construction damaged due to not being protected shall be replaced at the contractors cost.

D. Remove or protect surface mounted devices or equipment that will interfere with new coatings and reinstall when work is complete. This includes electrical disconnects for surface mounted lights, cameras, sensors, etc. Any wiring damaged during removals shall be replaced. Electric reinstallation shall abide by the NEC.

E. Temporarily or permanently disconnect utilities as required.

F. Protect all existing construction from overspray of the coating.

G. Temporarily remove existing rain leaders and straps attached to façade to complete recoating of façade.

H.

I.

3.2 DEMOLITION

A. Remove existing construction to extent indicated on contract drawings and as necessary to join new work to existing. Do not remove more than is necessary to allow for new construction.

B. Do not damage work designated to remain.

C. Minimize noise and spread of dirt and dust.

D. Assign work to trades skilled in procedures involved.

E. Plug ends of disconnected utilities with threaded or welded caps.

F. Protect and support active utilities designated to remain. Post warning signs showing location and type of utility and type of hazard.

G. Store items designated to remain property of Owner where directed by MSU.

H. Remove and dispose of waste materials off site.

END OF SECTION

SECTION 061000- REMOVING BIOLOGICAL GROWTH FROM EXTERIOR MASONRY AND EIFS

PART 1---GENERAL

1.01 SUMMARY

A. This procedure includes guidance on removing biological growth such as lichens, algae, mold and mildew from masonry and EIFS.

B. Biological growths such as lichens, algae, moss and fungi growing on walls is usually an indication that there is excess moisture in or around the masonry. These growths should be removed, as they attract moisture to the masonry surface and hold it there.

C. These guidelines cover the following sections:

1. Safety Precautions

3. Submittals

4. Quality Assurance

5. Delivery, Storage and Handling

6. Project/Site Conditions

7. Sequencing and Scheduling

8. General Protection (Surface and Surrounding)

PART 2---PRODUCTS

2.01 MANUFACTURERS

A. ProSoCo, Inc.
http://www.prosoco.com/

2.02 MATERIALS

A. For Removing Mold and Mildew:

2.03 EQUIPMENT

A. Garden hose and nozzle

B. Rubber or polyethylene bucket (DO NOT USE A METAL BUCKET AS IT MAY REACT WITH THE CHEMICAL CLEANER AND PRODUCE TOXIC FUMES)

C. Glass or ceramic mixing bowl

D. Knife blade

E. Stiff, natural bristle brushes (non-metallic)

F. Tampico brush, roller or low pressure (50 psi maximum) spray such as pneumatic garden sprayer

G. Rubber gloves

H. Safety glasses

PART 3---EXECUTION

3.01 EXAMINATION

B. Determine the type of stain, i.e. algae and lichens, or mold and mildew.

3.02 PREPARATION

A. Protection:

1. Provide adequate wash solutions (i.e. water, soap and towels) before starting the job.

2. Do not spray in the immediate vicinity of unprotected people and animals.

3. Consult manufactures instructions and protect existing construction that may adversely affected by any cleaning solution.

3.03 ERECTION, INSTALLATION, APPLICATION

NOTE: DO NOT TRY MORE THAN ONE TREATMENT ON A GIVEN AREA UNLESS THE CHEMICALS USED FROM PRIOR TREATMENT HAVE BEEN WASHED AWAY.

A. Removing Lichens and Algae (ONLY):

1. Remove as much plant growth as possible using a knife blade and stiff bristle brush.

2. Water rinse the surface to remove most of the plant material.

   a. If the substrate is sound and dense, use low to medium water pressure (100-400 psi).

   b. If the masonry is softer, use standard water pressure from the spigot.

3. Allow water to soak plant growth for approximately 30 minutes.

4. Gently scrub the surface with a stiff, natural bristle brush.

5. Thoroughly rinse the surface again with clean, clear water at low pressure from a garden hose.

B. Removing Mold and Mildew (ONLY):

C. For treating any of the above (lichens, algae, mold or mildew), use a proprietary cleaner such as Enviro Klean® 2010 All Surface Cleaner or Enviro Klean® EIFS Clean 'N Prep Cleaning (ProSoCo, Inc.), or approved equal. Mocks of each cleaner shall be performed to determine best product for cleaning stone and stucco. Mockups shall be performed on each different building material.

1. Follow manuf. instruction for proper dilution and test on small areas to determine proper ratio.

2. Apply a flood coat of this mixture to the masonry using a low pressure spray (approximately 50 psi).

   CAUTION: DO NOT USE A HIGH PRESSURE SPRAY WHEN APPLYING THIS SOLUTION AS THIS MAY CAUSE THE SOLUTION TO BE DRIVEN DEEPER INTO THE PORES OF THE MASONRY, MAKING REMOVAL OF THE SOLUTION DIFFICULT.

   a. Begin spraying at the top of the vertical surface and move across horizontally. Allow 100mm rundown.

   b. Continue the next horizontal pass across the previous run down.

   c. Allow the solution to remain on the surface

approximately 5-30 minutes depending upon the thickness of the growth and manuf. instructions.

d. Gently scrub the surface with a stiff, natural bristle brush.

e. Thoroughly rinse the treated area using pressure-applied water (approximately 400 to 1500 psi) with a 40-60 degree fan spray or garden hose with nozzle adjusted to a tight stream. Rinse from the bottom of the treated area to the top.

f. Allow the surface to dry a minimum of 24 hours.

END OF SECTION

All SURFACE CLEANER
SECTION 061510

Masonry and Stucco Cleaner
Enviro Klean® 2010 All Surface Cleaner Cleaning Specification

Test Area
Test a minimum 4 ft. by 4 ft. area on each type of masonry. Use manufacturer's application instructions. Let the test panel dry 3 to 7 days before inspection. Keep test panels available for comparison throughout the cleaning project.

Manufacturer: PROSOCO, Inc., 3741 Greenway Circle, Lawrence, KS 66046. Phone: (800) 255-4255; Fax: (785) 830-9797. E-mail: CustomerCare@prosoco.com

Product Description
Enviro Klean® 2010 All Surface Cleaner is a mildly alkaline product for cleaning and degreasing light-to-heavily soiled stone, tile, and masonry. It contains no harsh acids, caustics or solvents. It's concentrated for the toughest industrial cleaning jobs on concrete, metal and many other plant and warehouse surfaces but dilutable for home-use on windows, bathroom tub and tile, countertops and more.

Technical Data
FORM: Clear Green liquid
TOTAL SOLIDS: N/A
SPECIFIC GRAVITY: 1.070
pH: 10.5 Typical Rinse water 7.8 - 8.2
WT./GAL.: 8.90 lbs.
FLASH POINT: > 200 degrees F (> 93 degrees C) ASTM D 3278
FREEZE POINT: 32 degrees F (0 degrees C)

Limitation
- Repeated use may dull polished carbonate surfaces, including but not limited to limestone, marble and travertine.

Application
Before applying, read "Preparation" and "Safety Information" sections in the Manufacturer's Product Data Sheet for 2010 All Surface Cleaner. Use in concentrate or dilute 2010 All Surface Cleaner concentrate with 1-10 parts water. Refer to Product Data Sheet for recommended dilution for intended use.

1. Working from bottom to top, prewet the surface with clean water.
2. Apply the diluted cleaning solution to the masonry surface using a brush or low-pressure spray.
3. Let the cleaner stay on the surface 1-10 minutes, based on testing. Gently scrub heavily soiled areas.
4. Working from bottom to top, rinse the surface thoroughly with clean water. The best combination of rinsing pressure and water volume is provided by masonry washing equipment generating 400-1000 psi with a water flow rate of 6-8 gallons per minute delivered through a 15-45 degree fan spray tip. Equipment should be adjustable to reduce water flow rate and rinsing pressure as required for controlled cleaning of more sensitive surfaces. See also "Equipment" section of the Product Data Sheet.
5. Repeat steps 1 through 4 if necessary.

Note: Do not let cleaning solution dry on the surface. If drying occurs, lightly wet surfaces with fresh water and reapply the cleaner in a gentle scrubbing manner.

SECTION 060513

Masonry and Stucco Cleaner
Enviro Klean® EIFS Clean 'N Prep Cleaning Specification

Test Area
Test a minimum 4 ft. by 4 ft. area on each type of masonry. Use manufacturer's application instructions. Let the test panel dry 3 to 7 days before inspection. Keep test panels available for comparison throughout the cleaning project.

Manufacturer: PROSOCO, Inc., 3741 Greenway Circle, Lawrence, KS 66046. Phone: (800) 255-4255; Fax: (785) 830-9797. E-mail: CustomerCare@prosoco.com

Product Description
Enviro Klean® EIFS Clean 'N Prep is a nonacidic, phosphate- and solvent-free cleaner for general maintenance and recoat-prep cleaning of exterior insulated finish systems. It removes residues of mud, algae, grease, oil and food staining from exterior insulated finish systems, but can also be used on concrete, brick, natural stone, ceramic tile, most metal, wood, plastic and most painted surfaces. Used properly, EIFS Clean 'N Prep will clean and help restore the original appearance of EIFS structures.

Technical Data
FORM: Clear light blue liquid
SPECIFIC GRAVITY: 1.01
pH: 12.0 - 12.4 (concentrate)
WEIGHT/GALLON: 8.34 pounds
ACTIVE CONTENT: not applicable
TOTAL SOLIDS: not applicable
VOC CONTENT: not applicable
FLASH POINT: not applicable
FREEZE POINT: 32 degrees F (0 degrees C)
SHELF LIFE: 3 years in tightly sealed, unopened container
BULK DENSITY: 8.4 pounds

Application
Before applying, read "Preparation" and "Safety Information" sections in the Manufacturer's Product Data Sheet for EIFS Clean 'N Prep. Refer to Product Data Sheet for recommended dilution for intended use.

1. Pre-wet surface with clean water. Keep lower areas wet to avoid streaks.
2. Brush or spray (low pressure only) EIFS Clean 'N Prep directly on the surface.
3. Let cleaner dwell for 5 to 10 minutes. Keep people away from the surface being cleaned.
4. Thoroughly rinse surface with fresh water.
5. Reapply if necessary, depending on severity and type of stain.

NOTE: The best combination of rinsing pressure and water volume is provided by masonry washing equipment generating 400 to 1000 psi with a water flow rate of 6 to 8 gallons per minute delivered through a 15 to 45 degree fan spray tip. Equipment should be adjustable to reduce water flow rate and rinsing pressure as required for controlled cleaning of more sensitive surfaces. See also "Equipment" section of the Product Data Sheet. If pressure rinsing isn't practical, rinse and brush surface.
NOTE: Excessive pressure may damage construction materials. Refer to test area results for appropriate rinsing pressure.

Cleanup: clean tools and equipment using fresh water.

07 25 00 EIFS Repair Procedures

Index of Documents

DC001 Cleaning of Dryvit Finishes and Coatings

DC002 EIFS Repair - Small Holes, Impact or Hail Damage Repair Using RapidPatch™

DC003 EIFS Repair – Impact Damage

DC004 EIFS Repair – Corner Damage

DC005 EIFS Repair – Cracks in Aesthetic Reveals

DC006 EIFS Repair – Cracks

DC007 EIFS Repair – Cracks at Corners of Doors, Windows, Etc.

DC009 EIFS Repair – Terminations at Sealant Joints

DC009A EIFS Repair – Overlay Sealant Joints using Sealant

DC012 EIFS Repair – Reattachment of EIFS

DC013 EIFS Repair – Correcting Finish Texture Irregularities

DC014 EIFS Repair – Frozen and Delaminating Finish

DC015 EIFS Repair – Hot Knife Procedure

Recommendations for Cleaning of Dryvit Finishes and Coatings DC001

EIFS finishes are most effectively and safely cleaned with the use of general cleaning compounds, followed by a mildly pressurized water rinse.
Acidic cleaners are not recommended for routine cleaning of EIFS finishes. The only condition that MAY warrant use of acidic cleaners is efflorescence, which is discussed later.
The following products are general-purpose cleaners the manufacturers of which indicate are suitable for cleaning of EIFS finishes:

Company	General Purpose Cleaner
Prosoco 3741 Greenway Circle Lawrence, KS 66046 (800) 255-4255	Enviro Klean® EIFS Clean 'N Prep
Shore Corporation 2917 Spruce Way Pittsburgh, PA 15210 (800) 860-4978	2600 EIFScrub
ABR Products, Inc. 9720 S. 60th Street Franklin, WI 53132 (414) 421-4125	Building Wash 3
The Clean-Up Group 3000 Gulf Shore Blvd. N. Naples, FL (239) 455-2225	CitraShield BioCide

Choice of Cleaning Compounds

The above list should be considered a starting point in selection of the appropriate cleaning compound. Testing of cleaning compounds on a small and isolated area of the actual finish surface is advised prior to commencing on a large scale.

Usage instructions from manufacturers of cleaning solutions for general cleaning of EIFS finishes include the following information:

Preparation

Protect people, vehicles, property and all surfaces not intended for cleaning from splash, residue, fumes, rinse and wind drift. Read the cleaning solution manufacturer's instructions for the proper dilution appropriate for the surface cleanliness/condition of the textured finish. Mix cleaning solution in accordance with those manufacturer's instructions. Test the prepared mixture on all surfaces that may come into contact with it during application and rinsing. Contact the manufacturer of the cleaning solution for more information and cautions for use. Check all equipment for compatibility with the type of cleanser used.

Surface and Air Temperatures

Cleaning effectiveness is diminished when surface and air temperature falls below 50 °F (10 °C). For best results, allow wall surface to warm to a temperature above 50 °F
(10 °C), prior to initiating cleaning.

Protection

Protect grass and plantings by covering or with spray from sprinklers. Adjacent surfaces may need additional protection as well. Always contact the cleaning product manufacturer for more information about protection precautions they recommend.

Pressure washing: The tip angle of the nozzle should be appropriate for the distance between the area being cleaned and the nozzle tip. A 10° angle tip may be appropriate when the surface being cleaned is 100 ft (30.5 m) above the nozzle, but not when the surface being cleaned is 2 - 5 ft (.61 – 1.5 m) away from the tip of the nozzle. For close proximity cleaning, tip angles of 45° or greater must be used to prevent damage to the finish.
Water used for rinsing must be cold. Hot or even warm water will cause softening of the finish, and may result in damage to or removal of finish. The pressurized water rinse must not be harsh enough to erode the finish. Such degradation will reduce the long- term performance of the finish. Seek the equipment manufacturer's advice and use care when using this type of pressure near sealant joints and wood trim as well. Misdirected, high-pressure spray can damage most materials and surfaces!

Cleaning solutions used with this method should be compatible with the equipment. Some equipment manufacturers are careful to recommend that only specific cleaning compounds be pumped through their equipment. Many proprietary cleaning solutions may be subject to periodic change in formulation. It is suggested, therefore, that each product being considered be **sample tested** on a panel or inconspicuous wall area and judged on a trial basis before being used more extensively.

Water Presoak

It is necessary to thoroughly wet the area to be cleaned prior to the application of the cleaning solution itself. The wall surface to be cleaned must be wet when the cleaning solution is applied. Lower elevations should also be saturated with water in order to prevent absorption of run-off from above, which can cause "clean streaking"Cleaning Solution Application

Application of cleaning solutions can be accomplished using a low-pressure sprayer, 200 to 350 kPa (30 to 50 psi), or through a pressurized water cleaning unit. The pressure used must be adequate to coat the finish surface with the cleaning solution and not more. **Chemicals in the cleaner provide the cleaning action, not the force of the water spray used to apply the cleaner.** Light scrubbing with a soft bristle brush may be necessary. Follow the cleaning solution manufacturer's instructions for application and scrubbing. Some solution manufacturers recommend application from the bottom, upward, to avoid "clean streaking". Application in vertical sections is also typically recommended, because this allows re-rinsing clean sections below the vertical section being cleaned. Follow the solution manufacturer's recommendations for dwell time on the wall surface prior to rinsing. (Dwell time is the period of time the cleaning solution is left on the wall prior to rinsing off.) Heat, direct sunlight and wind will affect the drying time and reaction rate of cleaning solutions. Ideally, the cleaning crew should be working on shaded areas to avoid rapid evaporation. **Caution: Never use high pressure to apply cleaning solutions, as the solution may be driven through the finish and into the base coat, and become the source of future staining.** Wear protective goggles, rubber gloves, and NIOSH-approved dust-mist respirator as needed to avoid breathing mists. Read SDS on all cleaning products for specific protection information.

Pressurized Water Rinsing

Rinse the wall with large amounts of clean, pressurized water from top to bottom before the cleaning solution can dry. All wall areas below the cleaned area must also be rinsed down thoroughly in a vertical section. Failure to completely flush the cleaned area and all wall areas below of the cleaning solution may leave residues that may emerge upon exposure to precipitation. Rinse all equipment

thoroughly after each use. Higher pressures should be used for this pressurized water rinse, as long as it does not damage the finish. Pressure should normally be kept below 600 psi. The higher pressure is needed to remove surface contaminants that have been lifted by the chemical action of the cleaning solution, and also to remove any residue of the cleaning solution itself. This is why it is important not to use high pressure unit the cleaning solution has been applied (by low pressure or mild scrubbing) and allowed to act for the appropriate dwell time. Use of pressurized clean water alone to clean a finish will require higher water pressures to remove the surface contaminants, which increases the likelihood of damaging the finish. Without application of a cleaning solution, the pressure required to clean the finish will usually require such force that the surface of
the finish is abraded or removed. This must be avoided. Finish damaged by such "power washing" techniques alone can void product performance warranties.

Cleaning of Mildew and Algae Growth

Mildew and algae are commonly found on dirty, exterior wall surfaces that receive little sunlight. These organisms can grow wherever food (dirt) and favorable temperatures and humidity are found. Some cleaners work on mildew only. Others can also be effective on algae. Still others can effectively clean both organisms, while also being effective for general purpose cleaning. It is safe to assume that if there is mildew and algae, there is also dirt. In such cases, the more comprehensive cleaner is necessary to effectively clean the wall surface. **If recoating is planned, such cleaning MUST be performed. Caution: Never add ammonia to a bleach solution.** Read manufacturer's SDS prior to use.

Company	**Mildew & Algae Cleaner**
Prosoco, Inc. (800) 255-4255	Contact Prosoco for best choice; several products available
The Clean-Up Group (239) 455-2225	CitraShield BioCide

Other Common Stains

Many manufacturers of cleaning products offer compounds that are specifically formulated for removal of other common sources of staining. This includes mud, various metals, egg, efflorescence, oil, grease, and smoke/soot. EIFS recommends contacting a manufacturer of cleaning products for their suggestions on cleaners appropriate for EIFS finishes with these less common stains.

Unknown Stains

Unknown stains present unique challenges. As discussed, effective cleaning products and techniques are specific to the type of stain being cleaned. Laboratory tests of unknown stains may be necessary to determine their composition. Experimental cleaning without laboratory analysis in such cases may aggravate the initial stain, or result in other stains that are also difficult to remove. Bottom line is that if you do not know the nature of a stain, it is best to consult a qualified expert who can determine what it is, prior to proceeding further.

Removal of Efflorescence

Efflorescence can occur whenever the substrate beneath the EIFS finish contains cement. It is caused by the migration of water through the cementitious material and interaction with salts present in it. The water containing the salts works its way to the surface of the finish where the water evaporates and leaves the salts – efflorescence - behind. It is more easily noticed on darker surfaces. Efflorescence on the finish surface is more an aesthetic than a performance issue for the finish. However, the source of the water migration should be determined since it can mean a more serious problem exists elsewhere. It can be unsightly. It is preferable to use general cleaning compounds and pressurized water to remove light efflorescence deposits. In rare instances, an **extremely** dilute (1 part in 20) acidic cleaning solution may be required to remove heavy efflorescence. Consult a manufacturer for their recommendations under such circumstances. As with all cleaning solutions, prewet the finish with water prior to application of the diluted acid cleaner. Light scrubbing with a soft bristle brush may be necessary as well, to remove heaviest accumulation.

NEVER APPLY ACID SOLUTIONS BY HIGH PRESSURE SPRAY APPLICATION.

Rinse cleaned areas as quickly as possible with pressurized clean water, as described previously under Pressurized Water Rinsing. All acid residue must be completely rinsed away to avoid the possibility of adhesion problems of primers, paints/finishes, or sealants. Read cleaning solution manufacturer's SDS prior to use.

DC002
EIFS Repair – Small Holes or Impact/Hail Damage Repair Using RapidPatch™

General:

Holes or other damage less than 3 in x 3 in (76 mm x 76 mm) in size can be easily repaired using Dryvit RapidPatch product. The product needs to be applied at a thickness of 3/4 in – 1 in (19 mm – 25 mm) to allow proper heat generation for rapid cure. Under normal conditions, finish can be applied the same day.

Procedure:

1. With a sharp utility knife, cut through and remove the lamina, exposing a neat uniform- sized area of insulation slightly larger than the damaged area. Using a disk grinder or belt sander with a 20 grit aluminum oxide disk or belt, remove the finish around the cut, exposing the reinforced base coat approximately 3 in (76 mm) around the damage area.

2. Cut out the loose, damaged foam to reveal fresh foam. **Cutting off the foam all the way to substrate is not recommended**. When foam in the damaged area is well bonded to the substrate, care must be taken to expose as little of the substrate as possible and prevent rupturing the surface of the substrate. The area to be patched should be round or rectangular in shape and between 3/4 in – 1 in (19 mm – 25 mm) in depth. Deeper patches should be filled with a piece of EPS so the patch thickness is within this range. RapidPatch material may be used to adhere the EPS filler to the substrate.

3. Precisely mask the surrounding finish with masking tape.

4. Mix the RapidPatch and apply the mixture to the damaged area with a margin trowel to a depth of approximately 1/8 in (3.2 mm) below the existing base coat surface. Also add a thin layer of material on the exposed base coat surrounding the patch. Cut a piece of Detail Mesh® to the proper size and place over the wet RapidPatch overlapping the existing base coat a minimum of 1 in (25 mm). Add additional RapidPatch material to completely fill the damaged area, cover the mesh and feather onto the surrounding base coat. If the material appears initially loose, wait a short time until it stiffens up and level off any imperfections with additional RapidPatch mixture as needed.

5. When the patching material in the damaged area is stiff enough, use a clean, damp margin trowel to smooth out the surface. This may be repeated until a satisfactory surface is achieved. The trowel must be clean and damp prior to each smoothing.

6. Let RapidPatch set for at least 60 minutes, depending on ambient conditions.

7. If necessary, again, precisely mask the surrounding existing finish with masking tape.

8. Apply the new finish over the patched area and texture to match the surrounding finish.
   NOTE: Do not sand the patched area prior to finish application.

9. If the entire wall is to be refinished, it is not necessary to mask off and apply finish at this stage. Refer to the procedure for repairing texture variations for complete details. **NOTE: Because RapidPatch is specifically designed to compensate for drying shrinkage, it may be used to repair damaged areas up to 3 in x 3 in x 1 in (76 mm x 76 mm x 25 mm).**

EIFS Repair –Impact Damage DC003

General:

This procedure describes the method to repair impact damage. Impact damage can result from landscaping activities, vandalism, severe hail, etc.

Procedures:

1. Mask off an area slightly larger than the damaged area. Using a sharp utility knife, hand or circular saw with a carborundum blade, cut into the EIFS down to the substrate, outside of damaged area. Remove the damaged EIFS exposing a neat uniform size area slightly larger than the damage area.

2. Grind off finish a minimum 3 in (76 mm) to expose the existing base coat layer. **CAUTION: Care should be taken not to damage the reinforcing mesh with the grinder.** The edges of the finish should be sharp, clean and non-tapered beyond the cut out area.

3. Using the appropriate fasteners and/or adhesive install EPS. Ensure overall tightness at the cut line and sliver if necessary.

4. Apply new base coat (cementious/noncementious) and mesh overlapping onto existing exposed base coat layer approximately 2 1/2 in (64 mm). Ensure that the newly applied base coat is flat and is seated approximately 1/16 in (1.6 mm) below the surface of the existing finish. Allow to fully dry (minimum. 24 hours).

5. If necessary again precisely mask off the existing finish. Apply new finish and blend new finish into existing finish. While the finish is still wet, remove the masking tape and feather the edges of the patch so they will blend with the surrounding area. Use a brush, nail, toothpick or similar tool to blend the edges of the patch and to precisely match the texture of the patch with the surrounding area. Proper execution of this step is critical to the success of the patch.

ALTERNATIVE REPAIR METHOD (Using Noncementitious Base Coat)

To avoid the grinding procedure outlined in #2 and avoid a visible patch, complete #3 and:

1. Ensure that the existing finish coat is clean, dry and firmly bonded to the base coat.

2. Apply NCB; in conjunction with reinforcing mesh, onto newly installed insulation board and overlap onto existing finish coat a minimum of 2 1/2 in (64 mm). **Only a noncementitious base coat can be used with this procedure.** Allow patch locations to completely dry.

3. NCB is not recommended for applications on surfaces that will receive sealant. Any of Dryvit's cementitious base coats may be used in those locations.

4. Apply a tight coat of Freestyle finish or NCB over existing texture and blend in patch locations with skim coat. The wall will need to be skimmed and refinished to a natural break. Allow to fully dry.

5. Apply new finish coat and texture to match existing.

EIFS Repair –Corner Damage DC004

General:

Corner damage may be caused by impact from objects such as carts, cars or vandalism. Repair involves removing and replacement of materials in the affected area.

Procedure:

1. Using a sharp utility knife, hand or circular saw with a carborundum blade, cut approximately 3 in (76 mm) along each side of the corner down to the substrate. With a margin trowel or similar tool, carefully remove the sections.

2. Examine the piece removed to determine if there is any damaged to the sheathing.

3. If any damage to the substrate is present, repair prior to EIFS application.

4. Grind off excessive finish coat minimum 3 in (76 mm) on each side of the cut out section to expose the existing base coat layer. **Do not cut into reinforcing mesh with grinder**. The edges of the finish should be sharp, clean and non-tapered from the finish down to the base coat layer.

5. Install new insulation board to the substrate tight against EPS with the appropriate adhesive or fasteners. Sliver all gaps to ensure there is no space between EPS boards. **Do not use base coat to fill gaps between EPS board joints.**

6. Mask off the existing finish coat. Apply a layer of Dryvit Corner Mesh™ embedded in base coat over newly installed EPS section overlapping minimum 2 1/2 in (64 mm) onto existing base coat.

7. Install a continuous piece of reinforcing mesh (Standard or Standard Plus™) wrapping around the corner and extended past opposite side exposed EPS and lap onto existing base coat and mesh minimum 2 1/2 in (64 mm). Ensure that the base coat between the old and the new is flat and seated approximately 1/16 in (1.6 mm) below the surface of the existing finish coat. Allowing a 1/16 in (1.6 mm) recess is necessary so the finish coat, when applied, will become overall flush with the existing finish coat. Allow to fully dry.

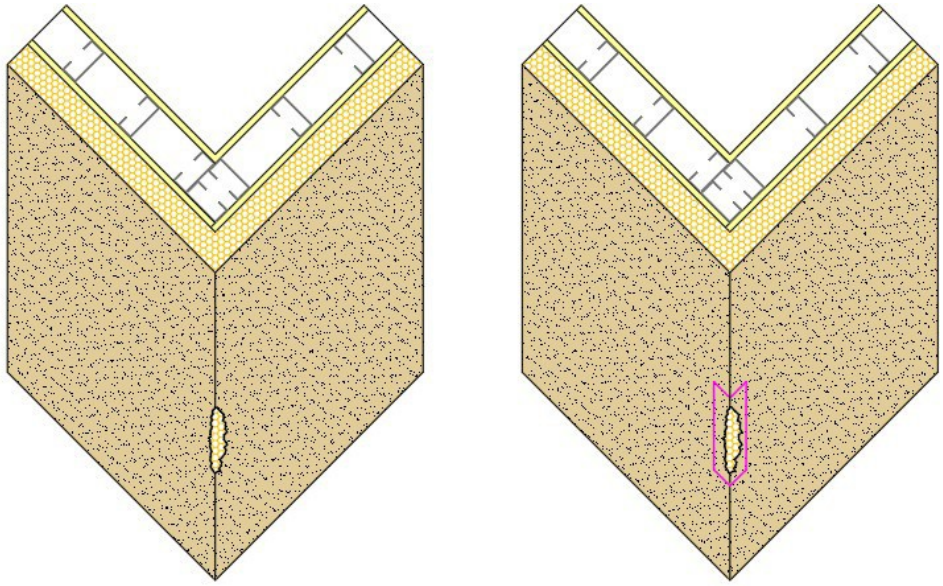
8. Precisely mask off the existing finish. Apply new finish and blend new texture into existing texture.

EIFS Repair –Corner Damage DC004

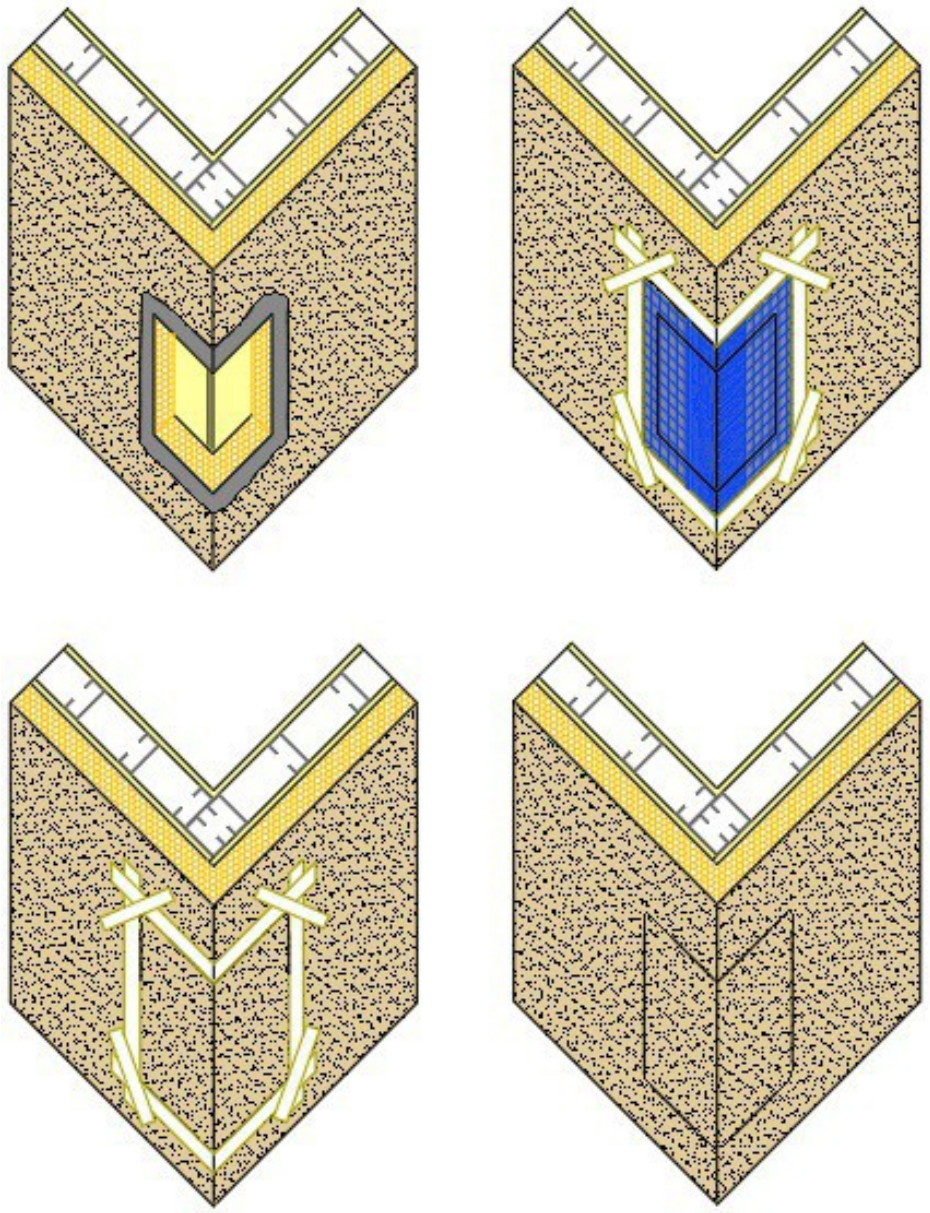
ALTERNATIVE REPAIR METHOD (Using Noncementitious Base Coat)

To avoid the grinding procedure outlined in #4 and avoid a visible patch, complete #5 and:

1. Ensure that the existing finish coat is clean, dry and firmly bonded to the basecoat.
2. Apply NCB™; in conjunction with reinforcing mesh, onto newly installed insulation board and overlap onto existing finish coat a minimum of 2 1/2 in (64 mm). **Only a noncementitious base coat can be used with this procedure**. Allow patch locations to completely dry.
3. NCB is not recommended for applications on surfaces that will receive sealant. Any of Dryvit's cementitious base coats may be used in those locations.
4. Apply a tight coat of Freestyle® finish or NCB over existing texture and blend in patch locations with skim coat. The wall will need to be skimmed and refinished to a natural break. Allow to fully dry.
5. Apply new finish coat and texture to match existing.



EIFS Repair –Corner Damage DC004



EIFS Repair –Cracks in Aesthetic Reveals DC005

General:

Cracks at the base of aesthetic reveals can sometimes occur. Some of the possible reasons may include substrate movement, excessive build up of base coat or accidental cutting of the mesh during installation. Generally, these cracks can be repaired easily by adding sealant along the base of the groove. This provides a weather seal as well as stress relief at those locations.

Procedure:

1. Clean the area to remove all dust, dirt, algae or other surface contamination as well as any loose material. A general all-purpose cleaner is usually adequate. For specific recommendations refer to DryvitCARE published cleaning procedures (DC#001) for EIFS surfaces.

2. Install a small closed cell backer rod or bond breaker tape along the base of the groove, to provide the proper sealant joint geometry and to avoid 3-sided adhesion. Small intermittent dabs of sealant may be used to maintain position until the sealant is applied.

3. Apply the specified sealant primer to each surface and allow it to dry.

4. Install and properly tool the sealant in accordance with the sealant manufacturer's instructions. A minimum 1/4 in (6.4 mm) contact area to the EIFS surface along each side of the groove is recommended.

5. Protect the joint from weather until sealant has achieved adequate cure.

EIFS Repair –Cracks DC006

General:

Cracks can sometimes occur as a result of structural movement, water penetration or improper application. Repair involves removal and replacement of materials in the affected area. Before proceeding, the exact cause of cracks should be determined.

Procedure:

1. Using a sharp utility knife, hand or circular skill saw with a carborundum blade, cut an approximate 3 in x 3 in (76 mm x 76 mm) square into EIFS at crack location, down to the substrate. With a margin trowel or similar tool, carefully remove the section in one piece.

2. Verify that the substrate is undamaged and structurally sound.

3. Cut out minimum 3 in (76 mm) on each side of crack down to substrate.

4. Grind off finish minimum 3 in (76 mm) on each side of the cut out section to expose the existing base coat layer. **Do not cut into reinforcing mesh with grinder**. The edges of the finish should be sharp, clean and non-tapered from the finish down to the base coat layer.

5. Install new insulation board to the substrate tight against EPS with the appropriate adhesive or fasteners. Sliver all gaps to ensure there is no space between EPS boards**. Do not use base coat to fill gaps between EPS board joints.**

6. Mask off the existing finish, apply base coat and mesh on new insulation board and overlap onto existing exposed base coat layer approximately 2 1/2 in (64 mm). Ensure that the base coat between the old and the new is flat and seated approximately 1/16 in (1.6 mm) below the surface of the existing finish coat. Allowing a 1/16 in (1.6 mm) recess is necessary so the finish coat, when applied, will become overall flush with the existing finish coat. Allow to fully dry.

7. Precisely mask off the existing finish. Apply new finish and blend new texture into existing texture.

EIFS Repair –Cracks

ALTERNATIVE REPAIR METHOD (Using Noncementitious Base Coat)

To avoid the grinding procedure outlined in #4 and avoid a visible patch, complete #5 and:

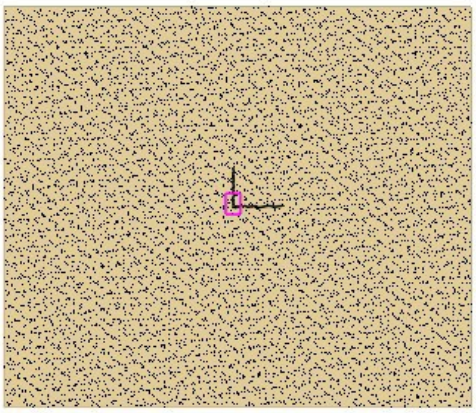
1. Ensure that the existing finish coat is clean, dry and firmly bonded to the base coat.

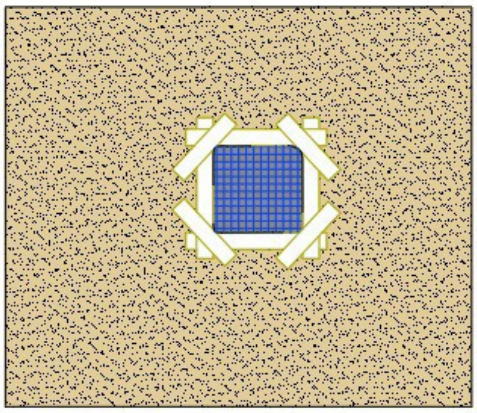
2. Apply NCB™ in conjunction with reinforcing mesh, onto newly installed insulation board and overlap onto existing finish coat a minimum of 2 1/2 in (64 mm). **Only a noncementitious base coat can be used with this procedure**. Allow patch locations to completely dry.

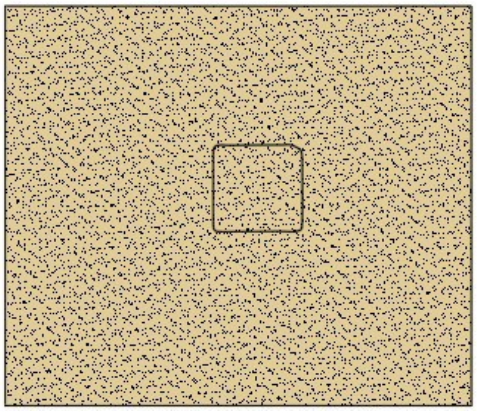
3. NCB is not recommended for applications on surfaces that will receive sealant. Any of Dryvit's cementitious base coats may be used in thoselocations.

4. Apply a tight coat of Freestyle® finish or NCB over existing texture and blend in patch locations with skim coat. The wall will need to be skimmed and refinished to a natural break. Allow to fully dry.

5. Apply new finish coat and texture to match existing.







EIFS Repair –Cracks at Corners of Doors, Windows, Etc. DC007

General:

Cracks can sometimes occur as a result of structural movement, water penetration or improper application. Repair involves removal and replacement of materials in the affected area.

Procedure:

1. Using a sharp utility knife, hand or circular saw with a carborundum blade, cut into EIFS down to substrate approximately 6 in (152 mm) along jamb and sill or jamb and head depending on crack location. These cuts should be long enough to totally remove the cracked area. Make vertical and horizontal cuts so that a square piece of EPS is removed.

2. With a margin trowel or similar tool, carefully remove the section in one piece.

3. Verify that the substrate is undamaged and structurally sound.

4. Grind off finish minimum 3 in (76 mm) on each side of the cut out section to expose the existing base coat layer. **Do not cut into reinforcing mesh with grinder**. The edges of the finish should be sharp, clean and non-tapered from the finish down to the base coat layer.

5. Attach pieces of Detail Mesh® to the substrate for EPS edge wrap.

6. Install a new continuous “L” shaped piece of insulation board tight against the existing EIFS. Attach the new EPS to the substrate using the appropriate adhesive or fasteners. Sliver all gaps to ensure overall tightness and hold EPS back minimum 3/4 in (19 mm) from frame to allow for proper sealant joint application.

7. Mask off the existing finish coat. Install a 9 in x 12 in (229 mm x 300 mm) piece of Detail Mesh embedded in base coat at a 45-degree angle. Apply base coat and Standard mesh overlapping onto existing exposed base coat layer approximately 2 1/2 in (64 mm). Ensure that the base coat between the old and the new is flat and seated approximately 1/16 in (1.6 mm) below the surface of the existing finish coat. Allowing a 1/16 in (1.6 mm) recess is necessary so the finish coat, when applied, will become overall flush with the existing finish coat. Allow to fully dry.

8. Precisely mask off the existing finish. Apply new finish and blend new texture into existing texture.

EIFS Repair –Cracks at Corners of Doors, Windows, Etc. DC007

ALTERNATIVE REPAIR METHOD (Using Non-Cementitious Base Coat) NOTE: This procedure does not apply when sealant joint repair is involved.

To avoid the grinding procedure outlined in #4 and avoid a visible patch, complete #5 and #6 and:

1. Ensure that the existing finish coat is clean, dry and firmly bonded to the base coat.
2. Apply NCB™; in conjunction with reinforcing mesh, onto newly installed insulation board and overlap onto existing finish coat a minimum of 2 1/2 in (64 mm). **Only a non-cementitious base coat can be used with this procedure**. Allow patch locations to completely dry.
3. NCB is not recommended for applications on surfaces that will receive sealant. Any of Dryvit's cementitious base coats may be used in those locations.
4. Apply a tight coat of Freestyle finish or NCB over existing finish texture and blend in patch locations with skim coat. The wall will need to be skimmed and refinished to a natural break. Allow to fully dry.
5. Apply new finish coat and texture to match existing.

EIFS Repair – Terminations at Sealants Joints DC009

General:

This procedure involves correcting and preparing the EIFS surface for installation of new sealant.

Procedure:

1. Using an appropriate tool, cut the sealant as close as possible to the EIFS surface without damaging it.
2. You should be able to grasp the sealant and backer rod in one hand and with constant tension, slice the sealant away from the EIFS.
3. Remove any remaining sealant (wire brushing or grinding may be necessary) and inspect EIFS surface.
4. Surfaces should be clean and sound with reinforcing mesh embedded in the base coat. It is recommended that any existing textured finish be removed from areas to receive sealant.
5. Improperly embedded reinforcing mesh should be skimmed with the base coat, to achieve proper coverage. Broken or damaged mesh can be repaired by addition of new mesh, properly embedded in base coat and lapped a minimum 2 1/2 in (64 mm) over the existing adjacent base coat.
6. Apply Weatherprime® or Weathercoat® along EIFS edge to receive sealant and allow to dry for a minimum of 72 hours.
7. Install closed cell backer rod, EIFS compatible primer, and sealant following manufacturer's specifications.

EIFS Repair – Reattachment of EIFS DC012

General:

This procedure describes a method to reattach an EIFS cladding that may have become separated from the underlying substrate. This can occur when substrates are not properly prepared or have otherwise become compromised during the service life of the building.

Repair involves adding mechanical fasteners to anchor the EIFS back to the substrate and refinishing the affected areas. The fastening schedule will need to resist structural loads (i.e. wind) and has to be properly evaluated for the specific building. The contractor should verify that the proposed fastening method and schedule meets specific building and local code requirements. It may be necessary to engage an engineer familiar with local requirements.

Procedure:

1. Thoroughly evaluate existing conditions to ensure the complete extent of the problem is known and causes determined and properly addressed prior to proceeding with reattachment. This procedure should only be used when it is determined that the EIFS and underlying materials are sound and inserviceable condition. Extensive cracking, delamination or other severe condition may indicate a different solution.

2. The fasteners must be installed into a structural substrate. When the sheathing is gypsum, cement board or other non nail-base material, the fasteners must be installed into the underlying framing. In this case the first step is to locate and mark the location of the framing members.

3. Using Wind Devil plates (Wind-lock Corp.) with a fastener of appropriate length and type for the substrate, reattach the existing EIF system at a minimum pattern of 16 in x 16 in (406 mm x 406 mm). This may need to be adjusted depending on design wind loads as well as whether the wall surface lays flat. If fasteners are spaced too far apart, some “pillowing” may be visible between attachment points. Power driven fasteners are also available.

4. Install the fasteners so that the washer surface is slightly below the plane of the finish surface but not more than 1/16 (1.6 mm).

5. Over each fastener, embed a piece of Detail Mesh® minimum 9 in x 9 in (229 mm x 229 mm) in NCB™ base coat material and feather out edges onto surrounding surface. Allow the material to fully dry (minimum 24 hours).

EIFS Repair – Frozen and Delaminating Finish DC014

General:

Localized spalling, blistering or delamination of finish can occur for a number of reasons including application outside recommended procedures, improper curing or inadequate substrate preparation. Repair involves removal of damaged materials and application of new finish.

Procedure:

1. Using a power washer, remove the existing finish to expose the base coat layer. You may encounter areas of finish that may be difficult to remove. These areas should be thoroughly saturated with hot water until soft and then scrape away finish with margin trowel or similar tool.

2. Examine the exposed areas of base coat for damage such as holes, breaks, excessive mesh pattern, etc. and repair per Dryvit's recommended repair procedure for penetration-type damage.

3. If efflorescence is present on the base coat it must be removed. To remove efflorescence, use an appropriate cleaner in accordance with DryvitCARE published cleaning procedures (DC#001) for EIFS surfaces.

4. If the repair extends onto existing finish the wall may need to be skimmed with NCB™ or Freestyle® to a natural break. This provides a smooth level surface for the application of finish.

5. Apply new finish and texture to match existing finish.

EIFS Repair – Hot Knife Procedure DC015

General:

This procedure describes a method to provide the required edge wrap for the EPS when repairing a system termination in an existing EIFS wall. By not disturbing the surrounding base coat and finish, a visible patch is avoided. This simplifies patching/repairs by eliminating the task of removing the original finish from the area surrounding the patch and thus avoiding texture variations on the face of the wall that may be objectionable. This procedure may also be used for repairing holes or installing/repairing expansion joints in EIFS.

A certain amount of care and judgment is necessary with this method and may not be appropriate for all situations and personnel. **Caution: Minor cracking may occur at corners when the hot knife procedure is used at penetrations.**

Procedure:

1. Precisely mark the area to be removed. All lines should be straight and true.
2. Using a circular saw with a carborundum blade precisely cut along the marked lines through the lamina and EPS. Use a straightedge as a guide to maintain neat, straight and true cuts.
3. Remove the lamina and insulation board taking care not to damage the substrate.
4. Insert the hot knife blade just behind the lamina and carefully melt out a cavityin the insulation board approximately 3 in (76 mm) deep by 1/8 in - 3/16 in (3.2 mm - 4.8 mm) wide for placing the base coat and reinforcing mesh behind the original lamina. (See Figure 1)

NOTE: Take care not to disturb the flat plane of the existing lamina, as this may result in a bulge in the final repair.

Figure 1

EIFS Repair – Hot Knife Procedure DC015

5. When repairing an opening in an existing wall or repairing an expansion joint, cut a piece of reinforcing mesh of sufficient size to ensure a 2 1/2 in (64 mm) minimum lap behind the original lamina and returning onto the edge of the insulation board and substrate. When repairing holes, cut a piece of reinforcing mesh of sufficient size to ensure a 2 1/2 in (64 mm) minimum lap behind the original lamina and onto the face of the insulation board in the patch surface.

6. For patches, cut a piece of insulation board and sand to fit as tight as possible into the opening. Apply adhesive to the back of the insulation board. Place it into the opening so that the surface is flush and level with the surface of the surrounding insulation board. Install EPS slivers as required to fill any gaps.

   NOTE: Do not apply adhesive on the edges of the insulation board.

   Procedure:

7. Precisely mask the surrounding finish to protect it from damage. For best results, ensure that the masking tape precisely follows the cut edge of the remaining lamina.

8. Use a margin trowel or similar tool to work a sufficient amount of base coat into the void created by the hot knife to allow full reinforcing mesh embedment.

9. NCB is not recommended for applications on surfaces that will receive sealant. Any of Dryvit's cementitious base coats may be used in those locations.

10. Carefully insert one edge of reinforcing mesh into the void and embed into the base coat.

11. Repeat the above steps for the remaining sides of the patch, opening or expansion joint. Ensure that the existing basecoat is pressed flat around the perimeter of the patch so that it is flat and level with the surrounding surface.

12. Fully embed the reinforcing mesh into the base coat on the remainder of the patch, leaving the surface smooth and free of trowel marks or rough areas.

13. Allow the base coat to completely cure, usually a minimum of 24 hours.

14. Check to ensure masking is in place and that it will protect the surrounding finish coat.

    NOTE: Base coat surfaces that will receive sealant should be coated with either Weatherprime® or Weathercoat™ prior to sealant application. For patches in visible areas, the final finish should be color matched to the surrounding finish.

EIFS Repair – Hot Knife Procedure DC015

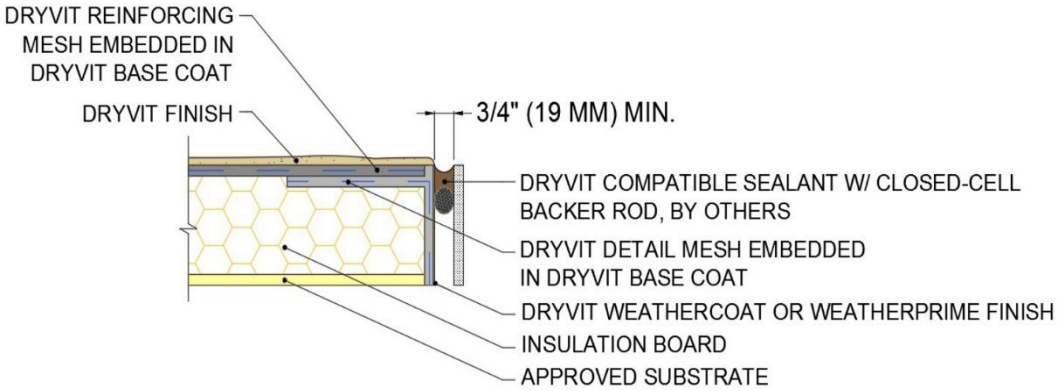


Figure 2

15. Apply the finish coat to the face of the patch. Do not apply textured finish over the base coat in areas where sealant/caulking will be installed; refer to DS153.
16. While the finish is still wet, remove the masking tape and feather the edges of the patch so they will blend with the surrounding area. Use a brush, nail, toothpick or similar tool to blend in the edges of the patch, and match the texture with the surrounding area. Proper execution of this step is critical to the success of the patch.

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SECTION 07 92 00 – JOINT SEALANTS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior silicone sealants.

B. Related Sections:

2. Section 09 96 53 "Silicone Elastomeric Coatings" for water-repelling liquid silicone elastomeric coatings for exterior surfaces.

1.2 REFERENCE STANDARDS

A. ASTM International (ASTM): www.astm.org :

1. ASTM C 661 - Standard Test Method for Indentation Hardness of Elastomeric Type Sealants by Means of a Durometer
2. ASTM C 794 - Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants
3. ASTM C834 - Specification for Latex Sealants.
4. ASTM C 920 - Specification for Elastomeric Joint Sealants.
5. ASTM C 1087 - Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems
6. ASTM C 1193 - Guide for Use of Joint Sealants.
7. ASTM C 1248 - Test Method for Staining of Porous Substrate by Joint Sealants.
8. ASTM C 1311 - Specification for Solvent Release Sealants.
9. ASTM C 1330 - Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.
10. ASTM D 412 - Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension.
11. ASTM D 624 - Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
12. ASTM D 2240 - Test Method for Rubber Property - Durometer Hardness.
13. ASTM E 283 - Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
14. ASTM E 331 - Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.

B. NSF International (NSF): www.nsf.org :

1. Standard 51: Food Equipment Materials.

C. Sealant, Waterproofing, and Restoration Institute (SWRI): www.swrionline.org :

1. SWRI Validation Program.

D. *U. S. Environmental Protection Agency (EPA): www.epa.gov :*

1. 40 CFR 59, Subpart D: National Volatile Organic Compound Emission Standards for Architectural Coatings.

E. U.S. Food and Drug Administration (FDA): www.fda.gov :

1. 21 CFR 177.2600: Title 21 Part 177 Indirect Food Additives: Polymers.

F. *US Green Building Council (USGBC): www.usgbc.org*

1. *Leadership in Energy and Environmental Design (LEED) Green Building Rating System*

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate installation of joint sealants with cleaning of joint sealant substrates and other operations that may impact installation or finished joint sealant work.

B. Preinstallation Conference: Conduct conference at Project Site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of joint sealant product specified, including:

1. Preparation instructions and recommendations.
2. Standard drawings illustrating manufacturer's recommended sealant joint profiles and dimensions applicable to Project.

B. Joint Sealant Schedule: Indicate joint sealant location, joint sealant type, manufacturer and product name, and color, for each application. Utilize joint sealant designations included in this Section.

D. Samples for Color Selection: For each joint sealant type. Colors shall be colored match to the finishes they are being applied to. Custom color matching shall be provided when required.

E. Samples for Verification: For each exterior joint sealant product, for each color selected.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified applicator.

B. Sealant, Waterproofing, and Restoration Institute (SWRI) Validation Certificate: For each sealant specified to be validated by SWRI's Sealant Validation Program.

C. Preconstruction compatibility and adhesion test reports.

D. Preconstruction field-adhesion test reports.

E. Field quality control adhesion test reports.

F. Warranty: Sample of unexecuted manufacturer and installer special warranties.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Experienced Installer equipped and trained for application of joint sealants required for this Project with record of successful completion of projects of similar scope.

B. Preconstruction Manufacturer Laboratory Compatibility, Staining, and Adhesion Testing: Submit [four] samples of each material that will be in contact with or affect joint sealants. Test sealants with substrate materials using ASTM C794 or manufacturer's standard test methods to determine requirements for joint preparation, including cleaning and priming. Test sealants with related materials to verify compatibility.

C. Preconstruction Field-Adhesion Testing: Prior to installing joint sealants, field test adhesion to joint substrates using ASTM C1193 Method A or method recommended by manufacturer. Verify adhesion is adequate. Modify joint preparation recommendations for failed joints and re-test. Submit written report to Architect.

D. Mockups: Provide joint sealant application within mockups required in other sections identical to specified joint sealants and installation methods.

1.7 WARRANTY

A. Special Installer's Warranty: Original statement on Installer's letterhead in which Installer agrees to repair or replace joint sealants that demonstrate deterioration or failure within warranty period specified.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint sealant manufacturer agrees to furnish joint sealants to repair or replace those that demonstrate deterioration or failure under normal use within warranty period specified.

1. Warranty Period for Silicone Sealants: [20] years date of Substantial Completion.

C. Warranty Conditions: Special warranties exclude deterioration or failure of joint sealants in normal use due to structural movement resulting in stresses on joint sealants exceeding sealant manufacturer's written specifications, joint substrate deterioration, mechanical damage, or normal accumulation of dirt or other contaminants.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Provide joint sealant products manufactured by The Dow Chemical Company, Midland MI; (877) SEALANT ((877) 732-5268); email: construction@dowcorning.com; consumer.dow.com/construction.
[or comparable products of other manufacturer approved by Architect in accordance with Instructions to Bidders and Division 01 General Requirements].

2.2 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants and accessory materials that are compatible with one another, with joint substrates, and with materials in close proximity under use conditions, as demonstrated by sealant manufacturer by testing and related experience.

B. Joint Sealant Standard: Comply with ASTM C 920 and other specified requirements for each liquid-applied joint sealant.

C. Stain Test Characteristics: Where sealants are required to be nonstaining, provide sealants tested per ASTM C 1248 as non-staining on porous joint substrates indicated for Project.

D. Food Contact Suitability: Where sealants are required to be suitable for contact with food provide sealants complying with 21 CFR 177.2600.

2.3 LIQUID JOINT SEALANTS

A. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant : ASTM C 920, Type S, Grade NS, Class 100/50, for Use T, NT; SWRI validation.

1. Basis of Design Product: **DOWSIL™ 790 Silicone Building Sealant.**
2. Hardness, ASTM C 661: 15 durometer Shore A.
3. Volatile Organic Compound (VOC) Content: 26 g/L maximum.
4. Staining, ASTM C 1248: None on concrete, granite, limestone, and brick.
5. Color: [Match finish color, provide custom match when standard does not match].

2.6 ACCESSORIES

A. Joint Substrate Primers: Substrate primer recommended by sealant manufacturer for application. Test substrate for bonding. Prime metal with DOW SIL 1200 primer.

B. Cylindrical Sealant Backing: ASTM C 1330, Type B non-absorbent, bi-cellular material with surface skin, or Type O open-cell polyurethane, as recommended by sealant manufacturer for application.

C. Bond Breaker Tape: Polymer tape compatible with joint sealant materials and recommended by sealant manufacturer.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine joint profiles and surfaces to determine if work is ready to receive joint sealants. Verify joint dimensions are adequate for development of sealant movement capability. Proceed with joint sealant work once conditions meet sealant manufacturer's recommendations.

3.2 PREPARATION

A. Joint Surface Cleaning: Clean joints prior to installing joint sealants using materials and methods recommended by sealant manufacturer.

1. Remove laitance, form-release agents, dust, and other contaminants.
2. Clean nonporous and porous surfaces utilizing chemical cleaners acceptable to sealant manufacturer.

3.3 SEALANT APPLICATION

A. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

B. Masking: Mask adjacent surfaces to prevent staining or damage by contact with sealant or primer.

C. Joint Priming: Prime joint substrates when recommended by sealant manufacturer or when indicated by preconstruction testing or experience. Apply recommended primer using sealant manufacturer's recommended application techniques.

D. Joint Backing: Select joint backing materials recommended by sealant manufacturer to be compatible with sealant material. Install backing material at depth required to produce profile of joint sealant allowing optimal sealant movement.

1. Install bond breaker tape over substrates when sealant backings are not used.

E. Liquid Sealant Application: Install sealants using methods recommended by sealant manufacturer, in depths recommended for application. Apply in continuous operation from bottom to top of joint vertically and horizontally in a single direction. Apply using adequate pressure to fill and seal joint width.

1. Tool sealants immediately with appropriately shaped tool to force sealants against joint backing and joint substrates, eliminating voids and ensuring full contact.
2. Using tooling agents approved by sealant manufacturer for application.

F. Cleaning: Remove excess sealant using materials and methods approved by sealant manufacturer that will not damage joint substrate materials.

1. Remove masking tape immediately after tooling joint without disturbing seal.
2. Remove excess sealant from surfaces while still uncured.

3.4 PREFORMED JOINT SEALANT APPLICATION

A. Preparation: Prepare surfaces in accordance with sealant manufacturer's written instructions. Perform field adhesion testing to determine need for application of primer. Clean surfaces to dust free, and perform solvent wipe where recommended. Mask edges of surface to be treated.

B. Application: Apply bead of recommended liquid joint sealant to each side of joint in bead size recommended by manufacturer. Press extrusion into sealant using roller to ensure uniform and complete contact. Lap vertical and horizontal joints as indicated in manufacturer's instructions. Trim preformed joint sealant. Remove masking tape and excess sealant.

3.6 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Perform adhesion tests in accordance with manufacturer’s instructions and with ASTM C 1193, Method A.

1. Perform [5] tests for the first [1000 feet (300 m)] of joint length for each kind of sealant and joint substrate, and one test for each [1000 feet (300 m)] of joint length thereafter or 1 test per each floor per building elevation, minimum.
2. For sealant applied between dissimilar materials, test both sides of joint.

B. Remove sealants failing adhesion test, clean substrates, reapply sealants, and re-test. Test adjacent sealants to failed sealants.

C. Submit report of field adhesion testing to Architect indicating tests, locations, dates, results, and remedial actions taken.

3.7 EXTERIOR JOINT-SEALANT SCHEDULE

A. All exterior construction sealant joints as scheduled on the contract documents which include but not limited to, EIFS joints, Cast stone to EIFS joints, Window frames and sill perimeters, steel railings, Cast concrete, Horizontal joints in concrete.

1. Joint Sealant: Single-component neutral-curing non-staining silicone sealant DOWSIL™ 790 Silicone
2. Joint-Sealant Color: Matched to finish surface- custom match when required.

END OF SECTION

SECTION 099113 - EXTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes surface preparation and the application of paint systems on **exterior substrates.**
   1. Steel.
   2. Galvanized metal.
   3. Aluminum

B. Related Requirements:

   1. Section 051200 "Structural Steel Framing" for shop priming of metal substrates with primers specified in this section.
   2. Section 099123 "Interior Painting" for surface preparation and the application of paint systems on interior substrates.
   3. Section 099300 "Staining and Transparent Finishing" for surface preparation and the application of wood stains and transparent finishes on exterior wood substrates.
   4. Section 099600 "High-Performance Coatings" for tile-like coatings.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

   1. Indicate VOC content.

B. Samples for Initial Selection: For each type of topcoat product.

C. Samples for Verification: For each type of paint system and each color and gloss of topcoat.

   1. Submit Samples on rigid backing, 8 inches (200 mm) square.
   2. Label each coat of each Sample.
   3. Label each Sample for location and application area.

D. Product List: For each product indicated, include the following:

   1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
   2. Indicate VOC content.

1.4 CLOSEOUT SUBMITTALS

A. Coating Maintenance Manual: Provide coating maintenance manual including area summary with finish schedule, area detail designating location where each product/color/finish was used, product data pages, material safety data sheets, care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials[**, from the same product run,**] that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Paint: [**1 gal. (3.8 L)**] of each material and color applied.

1.6 QUALITY ASSURANCE

A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.

a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
b. Other Items: Architect will designate items or areas required.

2. Final approval of color selections will be based on mockups.

a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Handling: Deliver products to Project site in an undamaged condition in manufacturer's original sealed containers, complete with labels and instructions for handling, storing, unpacking, protecting, and installing. Packaging shall bear the manufacture’s label with the following information:

1. Product name and type (description).
2. Batch date.
3. Color number.
4. VOC content.
5. Environmental handling requirements.
6. Surface preparation requirements.
7. Application instructions.

B. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.8 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).

B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

C. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

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

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Sherwin-Williams Company ;

B. Comparable Products: Comparable products of approved manufacturers will be considered in accordance with Section 016000 "Product Requirements," and the following:

1. Products are approved by manufacturer in writing for application specified.
2. Products meet performance and physical characteristics of basis of design product including published ratio of solids by volume, plus or minus two percent.

C. Source Limitations: Obtain paint materials from single source from single listed manufacturer.

1. Manufacturer's designations listed on a separate color schedule are for color reference only and do not indicate prior approval.

2.2 PAINT, GENERAL

A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

B. VOC Content: For field applications, provide paints and coatings that complies with VOC content limits of authorities having jurisdiction.

C. Colors: Per University standards and to match existing building colors.

2.3 SOURCE QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:

1. Owner may engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
2. Testing agency will perform tests for compliance with product requirements.
3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers. Where acceptability of substrate conditions is in question, apply samples and perform in-situ testing to verify compatibility, adhesion, and film integrity of new paint application.

1. Report, in writing, conditions that may affect application, appearance, or performance of paint.

B. Substrate Conditions:

1. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

a. Concrete: 12 percent.
b. Fiber-Cement Board: 12 percent.
c. Masonry (Clay and CMU): 12 percent.
d. Wood: 15 percent.
e. Portland Cement Plaster: 12 percent.
f. Gypsum Board: 12 percent.

2. Portland Cement Plaster Substrates: Verify that plaster is fully cured.
3. Exterior Gypsum Board Substrates: Verify that finishing compound is sanded smooth.

C. Proceed with coating application only after unsatisfactory conditions have been corrected; application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

E. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.

F. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer, **but not less than the following:**

1. SSPC-SP 2, "Hand Tool Cleaning."
   Hand Tool Cleaning removes all loose mill scale, loose rust, and other detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Mil scale, rust, and paint are considered adherent if they cannot be removed by lifting with a dull putty knife. Before hand tool cleaning, remove visible oil, grease, soluble welding residues, and salts by the methods outlined in SSPC-SP1.
   For complete instructions, refer to Steel Structures Paint Council Surface Preparation Specification No.2
2. SSPC-SP 3, "Power Tool Cleaning."
   Power Tool Cleaning removes all loose mill scale, loose rust, and other detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Mil scale, rust, and paint are considered adherent if they cannot be removed by lifting with a dull putty knife. Before power tool cleaning, remove visible oil, grease, soluble welding residues, and salts by the methods outlined in SSPC-SP1. For complete instructions, refer to Steel Structures Paint Council Surface Preparation Specification No.3.
3. SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."
4. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."

G. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

H. Previously Coated Surfaces- S-W 12
Maintenance painting will frequently not permit or require complete removal of all old coatings prior to repainting. However, all surface contamination such as oil, grease, loose paint, mill scale dirt, foreign matter, rust, mold, mildew, mortar, efflorescence, and sealers must be removed to assure sound bonding to the tightly adhering old paint.
Glossy surfaces of old paint films must be clean and dull before repainting.
Thorough washing with an abrasive cleanser will clean and dull in one operation, or, wash thoroughly and dull by sanding. Spot prime any bare areas with an appropriate primer. Recognize that any surface preparation short of total removal of the old coating may compromise the service length of the system. Check for compatibility by applying a test patch of the recommended coating system, covering at least 2 to 3 square feet. Allow to dry one week before testing adhesion per ASTM D3359. If the coating system is incompatible, complete removal is required per ASTM D4259. SSPC-SP2 - Hand Tool Cleaning and SSPC-SP3 - Power Tool Cleaning

I. Prior to the adhesion test ASTM D3359 do a light sanding with 100 grit sand paper to create a profile. Then test the Extreme Bond primer according to the adhesion test. Comply with the Extreme bond data sheet for wet and dry mils during application.

J. All Metal that has been previously coated with a baked enamel finish , powder coating or kynar finish follow the instructions above.

K. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

L. Aluminum Substrates: Remove loose surface oxidation.

M. Wood Substrates:

1. Scrape and clean knots. Before applying primer, apply coat of knot sealer recommended in writing by topcoat manufacturer for exterior use in paint system indicated.
2. Sand surfaces that will be exposed to view, and dust off.
3. Prime edges, ends, faces, undersides, and backsides of wood.
4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

N. Plastic Trim Fabrication Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Manual."

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
4. Paint entire exposed surface of window frames and sashes.

5. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
6. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

B. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.

1. Contractor shall touch up and restore painted surfaces damaged by testing.
2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 EXTERIOR PAINTING SCHEDULE

1. Previously Painted Steel Rails:
Primer :1 Coat Pro Industrial ProCryl Universal Primer
Finish: 2 Coats Pro Industrial Waterbased Alkyd Urethane

B. Ferrous Metal, Galvanized-Metal, and Aluminum Substrates:

1. Water-Based Light Industrial Coating System:

a. Prime Coat: Primer, water based.

1) S-W Pro Industrial Pro-Cryl Universal Primer, B66-310 Series, 5.0 to 10.0 mils (0.127 to 0.254 mm) wet, 2.0 to 4.0 mils (0.051 to 0.102 mm) dry.

b. Intermediate Coat: industrial coating, exterior, water based, matching topcoat.

c. Topcoat: industrial coating, exterior, water based, semi-gloss.

1) S-W Pro Industrial Waterbased Alkyd Urethane Semi-Gloss Coating, B53-1151, at 2.5 to 4.0 mils (0.064 to 0.102 mm) dry, per coat.

2. **Previously Coated Steel Panels / Aluminum Frames** : (baked enamel finish , powder coating or kynar finish)
Primer :1 Coat Extreme Bond Primer
Finish: 2 Coats Pro Industrial Waterbased Alkyd Urethane

3. Water-Based Light Industrial Coating System:

a. Prime Coat: Primer, water based.

1) S-W Extreme Bond Primer, B51W00150, 3.1 mils wet, 0.9 mils dry.

b. Intermediate Coat: industrial coating, exterior, water based, matching topcoat.

c. Topcoat: industrial coating, exterior, water based, semi-gloss.

1) S-W Pro Industrial Waterbased Alkyd Urethane Semi-Gloss Coating, B53-1151, at 2.5 to 4.0 mils (0.064 to 0.102 mm) dry, per coat.

END OF SECTION 099113

Guideline Specification
ACRYMAX AWS-12
Elastomeric Coating System
Section 099653 Elastomeric Coatings

PART 1 - GENERAL

1.01 SUMMARY

A. Provide labor and materials necessary to install a high-build 100% acrylic elastomeric weatherproof coating system.

B. Related Sections:
1. Section 033000 Cast-In-Place Concrete
2. Section 034000 Precast Concrete
3. Section 042200 Concrete Unit Masonry
4. Section 092400 Portland Cement Plastering

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM) Standards
1. Volume 06.01 Paint- Tests for Chemical, Physical, and Optical Properties; Appearance
2. D5324-03 Standard Guide for Testing Water-Borne Architectural Coatings

B. Federal Specification TT-C-555-B

1.03 SYSTEM DESCRIPTION

A. The AWS-12 system is an elastomeric acrylic weatherproof coating system for Cast-in Place Concrete, Masonry, Brick, EIFS, Stucco and other manufacturer approved surfaces. The AWS-12 System is available in a full range of architectural colors.

1.04 SUBMITTALS

A. Product Data: Provide written technical information and installation instructions from Acrymax which demonstrate that materials to be installed comply with contract documents.

B. Verify field measurements and submit materials list, including quantities, to be applied to achieve specified coating dry film thickness.

C. Submit contractor warranty against defects in workmanship.

D. Submit sample copy of Acrymax warranty.

E. Submit Acrymax Material Safety Data Sheets (MSDS).

F. Submit manufacturers custom color to match MSU china white, prepare and submit 6”x 8” samples of color in the product specified.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Not less than 20 years successful experience in manufacturing elastomeric coatings of the type specified herein.

B. Applicator Qualifications: Applicator must have at least 3 years experience in the installation of products similar to that required for this project.
1. Manufacturer’s certification of applicator approval is required.
2. Provide applicator’s completed project reference list.

C. All details must be installed in conformance with the current Acrymax Technologies specifications and detail drawings. Any deviations from these criteria must have prior written approval from Acrymax Technologies.

D. Inspections by an authorized representative of Acrymax may be required for warranty. Inspection shall not replace the normal responsibilities of the contracting parties. Request for inspections must be forwarded to Acrymax Technologies prior to start of the application.

E. Provide all primers, coatings, and accessories as manufactured and/or approved in writing by Acrymax Technologies.

F. *Acrymax Applicators Daily Log* providing project information and describing weather conditions at times of application of system must be kept by project foreman. This log shall be forwarded to Acrymax upon completion of application.

1.06 DELIVERY, STORAGE AND HANDLING

A. Furnish Acrymax Coating system materials and component accessories in manufacturer's original containers clearly indicating the Acrymax label and other identifying information.
B. Handle and store materials in accordance with Acrymax recommendations.
C. Protect materials against freezing. Protect from extreme heat. Store materials between 50ºF and 85ºF.

1.07 PROJECT CONDITIONS

A. Allow any installed sealant joints to cure according to sealant manufacturer's recommendations before application of coatings.
B. Coats: The number of coats specified is the minimum number that is acceptable. If specified dry film thickness is not achieved with the specified number of coats, apply additional coats as necessary to provide the required dry film thickness.

1.08 ENVIRONMENTAL CONDITIONS

A. It is the responsibility of the applicator to determine if present and forecast weather conditions are acceptable for application of Acrymax coatings. To qualify for warranty a log book of project weather conditions during application must be kept by project foreman.
B. Do not apply Acrymax coatings when snow, rain, fog or freezing temperatures are possible within 24 hours after application or before coating can dry.
C. Do not apply coatings when the temperature of surfaces to be coated and/or surrounding air temperatures are less than 50ºF.
D. Do not apply Acrymax coatings when the dew point can be reached before the coatings have sufficiently dried or cured. Special consideration must be given during spring and autumn applications for rapid temperature changes near sunset, shortened workdays may be required.
E. Allow wet surfaces to dry thoroughly and to attain temperature and conditions specified before proceeding with or continuing coating operation.
F. Wind conditions must be considered during application of products to avoid damage to adjacent surfaces or completed work. Provide for protection of other surfaces or do not spray apply coatings if overspray will be deposited on surfaces not intended to be coated.

1.09 SAFETY REQUIREMENTS

A. Users should familiarize themselves with appropriate Material Safety Data Sheets (MSDS). MSDS must be available at all worksites where materials are being used.
B. Materials shall be applied in accordance with all applicable local, state, and federal regulations.
C. A respirator should be used when spraying Acrymax coatings to protect applicators from overspray particles.
D. Handle on pails should only be used to hand carry pail and should not be used to hoist pail more than 2' from ground.
E. All work shall be performed in conformance with all OSHA requirements including the safety procedures outlined in the current Fall Protection Guide. OSHA Standards are available on the internet at www.osha.gov.
F. If hazardous materials such as lead paint or asbestos are encountered notify appropriate personnel and comply with all applicable local, state, and federal regulations.

1.10 WORK SEQUENCE

A. Sequence of operations is at the Applicator's discretion providing it does not disrupt operations or activities of the occupants of the building.

1.11 WARRANTY

A. Warranty shall be 10 year material warranty. (*Consult with Acrymax about specific Acrymax warranty requirements and conditions)*. The warranty is available only when the Acrymax system is installed by an Acrymax Approved Applicator and minimum coating thickness is achieved.

B. Furnish minimum 2 year contractor warranty covering defects in workmanship.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Manufacturer: Acrymax Technologies Inc. 221 Brooke Street

1. Contact: 221 Brooke Street; Media, PA 19063; Telephone (610) 566-7470; FAX (610) 891-0834; email info@acrymax.com website www.acrymax.com.

B. Substitutions: No substitutions permitted.

C. Primer: Concrete and other masonry surfaces may require primer. *Consult Acrymax*

D. Elastomeric Coatings – Elastomeric coatings shall be water-dispersed 100% acrylic elastomeric coatings designed for use on masonry surfaces. Materials shall meet the following minimum specifications:

1. Liquid Coating Property Requirements

	AF-135	**ASTM**
Weight Per Gallon	12.1 +/- .3 lbs	D1475
Solids by Weight	66.9 +/- 2.0	D1644
Solids by Volume	50.8 +/- .5	D2697
Viscosity	95 – 115 kU	D562

2. Cured Film Typical Physical Properties

	AF-135	**ASTM**
Low Temp. Flexibility	Pass @ -15° F	D522
Elongation at break	245% @ 74° F	D2370
	130% @ 0° F	D2370
Tensile strength at break	240 psi @ 74° F	D2370
	660 psi @ 0° F	D2370
Accelerated weathering	No effect	D4798
Fungi Resistance	Zero rating	G21
Wind Driven Rain	Pass	TT-C-555-B

2.02 APPLICATION EQUIPMENT

A. Acrymax coatings shall be applied by brush, roller, or spray. When applied by spray it is recommended that airless spray be used. Application by roller or brush may require additional coats, but material requirements will remain the same. In all cases, the specified minimum membrane thickness must be achieved.

2.03 RELATED MATERIALS

A. Related Products Supplied By Acrymax Technologies:

1. AF-315 Fibrated Acrylic
2. AF-110 Masonry Primer

B. Sealant - ***Silicone sealant unacceptable as substrate. Silicone sealants shall be installed***

after coating has cured.

C. Polyurethane Foam - Expanding polyurethane foam.

D. Polymer modified concrete patching material

PART 3 - EXECUTION

3.01 MANUFACTURERS INSTRUCTIONS

A. Compliance: Comply with Acrymax's product data, recommendations, and installation instructions for substrate verification, preparation requirements, and installation.

3.02 INSPECTION

A. Inspect the surfaces to be coated and the conditions under which the Work is to be installed. Do not proceed with the Work until unsatisfactory conditions have been corrected and substrate is acceptable. Notify the general contractor, building owner, or architect in writing of any unsatisfactory conditions. Applicator shall be responsible for providing a proper substrate to receive the Acrymax coating system.

B. Verify that the pH of all concrete surfaces to be coated is within manufacturer's acceptable level.

C. All bond breakers and curing compounds must be removed.

D. Verify that all sealants or caulks used are "paintable" and are fully cured in accordance with manufacturer's specifications and that the caulking system provides a clean and bondable surface.

3.03 PREPARATION

A. Surfaces must be sound, clean and dry prior to application of coating or primer.

B. Remove all dust dirt, mildew, loose substrate materials, or any other contaminants that can interfere with adhesion of coatings. Pressure wash, chemically clean, or mechanically prepare as necessary to provide a suitable surface for application of coatings or primer.

C. Damaged or spalled areas shall be repaired with non-shrinking polymer modified cementitious patching mortar and shall be allowed to cure for 7 days before applying coating system.

D. Cementious Repair

1. Damaged or spalled areas shall be repaired with non-shrinking polymer modified cementitious patching mortar and shall be allowed to cure for 7 days before applying coating system.

E. Crack repair – All caulking, patching, crack repair materials and joint sealants should be installed prior to application of the elastomeric coating. Poly-1 Reinforcement Fabric embedded into wet coat of AF-135 shall be used where necessary.

1. Static cracks up to 1/8 in
    a. Clean crack and remove all loose materials.
    b. Apply AF-315 directly over the crack and feather out a minimum of 3" on each side
2. Static cracks from 1/8 to 1/4 in
    a. Chip or grind out crack to 1/4 in wide by 1/4 in deep
    b. Clean and remove all loose materials
    c. Fill groove with AF-315
    d. Apply AF-315 directly over the crack and feather out a minimum of 3" on each side
3. Static cracks over 1/4 in.
    a. Clean crack and remove all loose materials.
    b. Repair crack with non-shrinking polymer modified cementitious patching mortar and allow to cure 7 days.
    c. Apply AF-315 directly over the repaired crack and feather out a minimum of 3" on each side
4. Dynamic cracks 1/16 to 1/2 in.

a. Chip or grind out crack so that width is equal to depth (Minimum 1/4 in.)
b. Clean crack and remove all loose materials.
c. Fill crack with high grade urethane sealant. Tool into joint and allow to cure for 24 hours.
d. Apply AF-315 directly over the repaired crack and feather out a minimum of 3” on each side

3.04 INSTALLATION

A. Following inspection and acceptance of cleaned substrate condition, install the Acrymax AWS-12 Coating System using minimum coverage indicated in the manufacturer's guidelines.
B. If necessary, prime masonry surfaces with AF-110 primer @ 1 gallon per 250 sq. ft. Use of primer is not a substitute for proper cleaning of surfaces to receive coatings.
C. If and where necessary, install Poly-1 Reinforcement Fabric by embedding into wet coat of AF-135.
D. Apply Elastomeric Coating System
   1. Apply minimum of 2 coats of AF-135 to achieve minimum 12 mils dry film thickness. Minimum application rate of 0.8 gallon per 100 sq. ft. per coat
   2. Contrasting colors recommended for each coat in the system.
   3. Allow to dry minimum of 4 hours between coats.
   4. Maintain a wet edge to prevent lap marks and continue work to a natural break point such as panel edge, corner, or seam.
   5. If necessary apply additional AF-135 where required, to insure that the minimum 12 mils total dry film thickness is achieved.

3.05 FIELD QUALITY REQUIREMENTS

A. Verify final film thickness as specified. If specified dry film thickness has not been achieved, application of additional coating will be required.
B. Architect, Manufacturer, and or Building Owner reserve the right to perform post installation testing for conformance to specification.

3.06 CLEANING AND PROTECTION

A. During the course of application, remove all discarded materials and debris from the site at the end of each workday.
B. Any surfaces splattered with coating material must be cleaned immediately.
C. Insure all areas that are not to be coated are clean and left in acceptable condition.
D. Protect completed areas from damage by work of other trades.

END OF SECTION