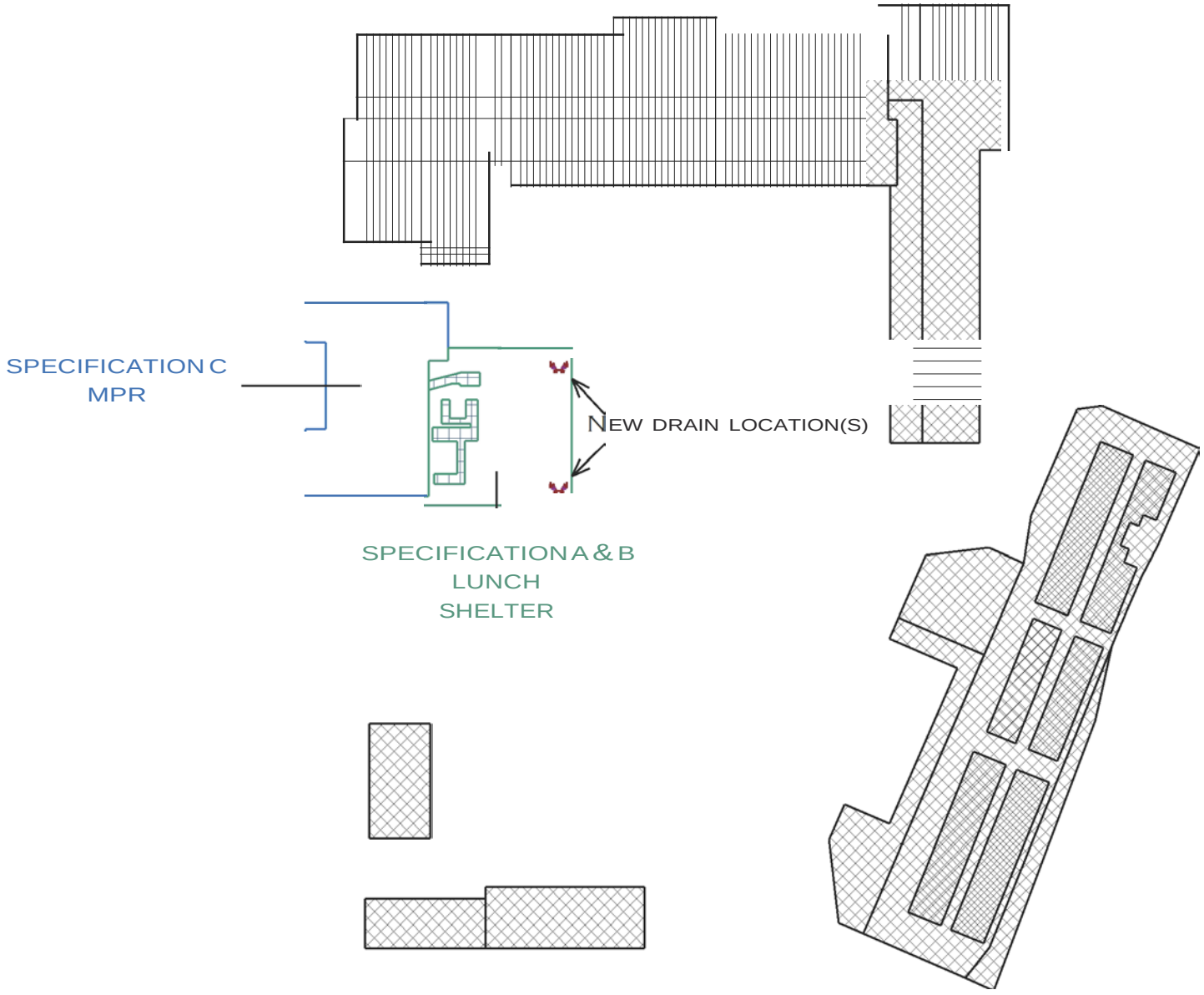
GLENDALE UNIFIED SCHOOL DISCTRICT

223 NORTH JACKSON STREET.GLENDALE.CA,91206

BENJAMIN FRANKLIN ELEMENTARY SCHOOL

1610 LAKE STREET, GLENDALE, CA 91201



SPECIFICATION KEY

(A) - 070150.19 PREPERATION FOR RE-ROOFING

(8) - 075216.13 SBS MODIFIED BITUMINOUS MEMBRANE ROOFING, COLD-APPLEID

(C) - 070150.73 - REHABILITATION OF MODIFIED BITUMINMOUS ROOFING

Scope and specification

Specification C - Benjamin Franklin Elementary School - Multi-Purpose Room

1. Roof system is left in place.
2. Install 5 gallons per square of TremLastic S.
3. Immediately embed Rapid Set Reinforcing Fabric. Roll or broom the fabric until it is free of wrinkles, voids, air pockets, etc.
4. Install 2 gallons per square of ICE Coating First Coat
5. Install 2 gallons per square of ICE Coating Second Coat
6. Reinforce gutter seams with a three-course application of Solargard Seam Sealer and Permafab. Allow to cure completely before proceeding. Install AlphaGuard BIO Top Coat to entire gutter system at 3 gallons per square.

SECTION 070150.73 - REHABILITATION OF MODIFIED BITUMINOUS ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Roof rehabilitation and coating preparation.

2. Application of coating on modified bituminous membrane roofing.

B. Related Information:

1. Division 00 Document "Existing Condition Information" for related Project information not part of the Contract Documents.

1.2 MATERIALS OWNERSHIP

A. Demolished materials shall become Contractor's property and shall be removed from Project site.

1.3 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D 1079 "Standard Terminology Relating to Roofing and Waterproofing" and glossary in NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" for definition of terms related to roofing work in this Section.

B. Existing Roofing System: Modified bituminous roofing, and components and accessories between deck and roofing membrane.

C. Roofing Coating Preparation: Existing roofing that is to remain and be prepared to accept restorative coating application.

D. Patching: Removal of a portion of existing membrane roofing system from deck or removal of selected components and accessories from existing membrane roofing system and replacement with similar materials.

E. Manufacturer: Manufacturer of roofing rehabilitation products, unless otherwise indicated.

F. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

G. Demolition Waste: Building and site improvement materials resulting from re-roofing preparation, demolition or selective demolition operations.

H. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

1.4 ROOFING CONFERENCES

A. Roofing Rehabilitation Preinstallation Conference: Conduct conference at Project site to review methods and procedures related to roofing system.

1. Meet with Owner; roofing re-coating materials manufacturer's representative; roofing re-coating Installer including project manager and foreman; and installers whose work interfaces with or affects re-coating including installers of roof accessories and roof-mounted equipment requiring removal and replacement as part of the Work.

2. Review methods and procedures related to coating preparation, including membrane roofing system manufacturer's written instructions.

3. Review temporary protection requirements for existing roofing system that is to remain, during and after installation.

4. Review temporary protection requirements for existing roofing system that is to remain, during and after installation.

5. Review roof drainage during each stage of coating and review roof drain plugging and plug removal procedures.

6. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

7. Review base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that will affect re-coating.

8. Review procedures for asbestos removal or unexpected discovery of asbestos-containing materials.

9. Review governing regulations and requirements for insurance and certificates if applicable.

10. Review existing conditions that may require notification of Owner before proceeding.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product specified.

B. Sustainable Design Submittals:

1. Product Test Reports: For roof coating, indicating that coated roof will comply with solar reflectance index requirement.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer, Manufacturer, and Roofing Inspector.

1. Letter written for this Project indicating manufacturer approval of Installer to apply specified products and provide specified warranty.

B. Contractor's Product Certificate: Submit original signed letter on Contractor's letterhead, indicating products intended for Work of this Section, including product names and numbers and manufacturers' names, with statement indicating that products to be provided meet the requirements of the Contract Documents.

C. Warranties: Unexecuted sample copies of special warranties.

D. Existing Conditions Photographs: Show existing conditions of adjoining construction and site improvements, including exterior finish surfaces adjacent to the Work, which might be misconstrued as having been damaged by re-coating operations. Submit before Work begins.

E. Inspection Reports: Reports of Roofing Inspector. Include weather conditions, description of work performed, tests performed, defective work observed, and corrective actions required and carried out.

1. Submit report within 24 hours after inspection.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: To include in maintenance manuals.

B. Warranties: Executed copies of approved warranty forms.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and certified by manufacturer, including a full-time on-site supervisor with a minimum of five years' experience installing products comparable to those specified, able to communicate verbally with Contractor, Architect, and employees, and the following:

1. Installer qualified by the manufacturer to install manufacturer's products and furnish warranty of type specified.

B. Manufacturer Qualifications: Primary product manufacturer that is UL-listed for roofing system identical to that specified for this Project with minimum five years' experience in manufacture of comparable products in successful use in similar applications, and able to furnish warranty with provisions matching specified requirements.

1. Approval of Other Manufacturers and Comparable Products: Submit the following in accordance with project substitution requirements, within time allowed for substitution review:

a. Product data, including certified independent test data indicating compliance with requirements.

b. Samples of each component.

c. Sample submittal from similar project.

d. Project references: Minimum of five installations of specified products not less than five years old, with Owner and Architect contact information.

e. Sample warranty.

C. Roofing Inspector Qualifications: A technical representative of manufacturer not engaged in the sale of products and experienced in the installation and maintenance of the specified roofing system, qualified to perform roofing observation and inspection specified in Field Quality Control Article, to determine Installer's compliance with the requirements of this Project, and approved by the manufacturer to issue warranty certification. The Roofing Inspector shall be one of the following:

1. An authorized full-time technical employee of the manufacturer.

1.9 FIELD CONDITIONS

A. Weather Limitations: Proceed with rehabilitation work only when existing and forecasted weather conditions permit Work to proceed without water entering into existing roofing system or building.

1. Store all materials prior to application at temperatures recommended by manufacturer.

2. Apply coatings within range of ambient and substrate temperatures recommended by manufacturer.

3. Do not apply roofing in snow, rain, fog, or mist.

B. Protect building to be rehabilitated, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from rehabilitation operations.

C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.

D. Owner will occupy portions of building immediately below re-coating area. Conduct re-coating so Owner's operations will not be disrupted. Provide Owner with not less than 72 hours' notice of activities that may affect Owner's operations.

1.10 WARRANTY

A. Manufacturer's Warranty: Roof System Manufacturer's standard form in which Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within warranty period, as follows.

1. Form of Warranty: Manufacturer's standard warranty form.

2. Scope of Warranty: Work of this Section and including sheet metal details and termination details installed by the roof system Installer and approved by the Roof System Manufacturer.

3. Warranty Period: 12 years from date of completion.

B. Manufacturer Inspection Services: By manufacturer's technical representative, to report maintenance responsibilities to Owner necessary for preservation of Owner's warranty rights. The cost of manufacturer's inspections is included in the Contract Sum.

1. Inspections to occur in following years: 2, 5, 10, 15 following completion.

C. Installer Warranty: Installer's warranty signed by Installer, as follows.

1. Form of Warranty: Form included in Project Manual.

2. Scope of Warranty: Work of this Section.

3. Warranty Period: 2 years from date of completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: The roof system specified in this Section is based upon products of Tremco, Inc., Beachwood, OH, (800) 562-2728, www.tremcoroofing.com that are named in other Part 2 articles. Provide specified products.

1. *Specifier: You may include the following in addition to or in lieu of listing other approved manufacturers or as a stand-alone "approved equal" provision.

2. Manufacturers of comparable products: Approved by Architect prior to bid.

2.2 PERFORMANCE REQUIREMENTS

A. General Performance: Rehabilitated roofing shall withstand exposure to weather without failure or leaks due to defective manufacture or installation.

1. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.

B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.

C. Exterior Fire-Test Exposure: Roofing system exterior fire-test exposure performance following application of rehabilitation coating shall be not be less than that of the pre-rehabilitated roof

performance when tested in accordance with ASTM E 108, based upon manufacturer's tests of identical applications.

D. Energy Performance: Provide rehabilitated roofing according to the following when tested according to CRRC-1:

1. Three-year, aged solar reflectance of not less than 0.55 and emissivity of not less than 0.75.

2.3 MATERIALS, GENERAL

A. General: Roof rehabilitation coating materials recommended by roofing system manufacturer for intended use and compatible with components of existing membrane roofing system.

B. Temporary Roofing Materials: Selection of materials and design of temporary roofing is responsibility of Contractor.

C. Temporary Roof Drainage: Design and selection of materials for temporary roof drainage are responsibilities of the Contractor.

D. Infill Materials: Where required to replace test cores and to patch existing roofing, use infill materials matching existing membrane roofing system materials, unless otherwise indicated.

2.4 ACRYLIC TOP COATINGS

A. Acrylic Roof Coating, Highly-Reflective Elastomeric: high-solids acrylic latex elastomeric roof coating formulated for use on bituminous roof surfaces; water-based, Energy Star qualified, CRRC listed and California Title 24 Energy Code compliant.

1. Basis of design product: ICE Coating.

2. Volatile Organic Compounds (VOC), ASTM D3960: 39 g/L.

3. Emissivity, minimum, ASTM C1370: 0.83.

4. Solar Reflectance Index (SRI), ASTM E1980: 103 (initial) 75 (3 year aged).

5. Reflectance, minimum, ASTM C1549: 84 percent.

6. Solids, by volume, ASTM D5201: 65 percent.

7. Minimum Thickness: 45 mils (1.1 mm) dry film thickness .

B. Cold-Applied Rubberized Surfacer for Bituminous Roofing: Neoprene-modified water-based low VOC low odor asphalt emulsion surfacer formulated for use over new smooth surfaced bituminous roofing.

1. Basis of design product: TremLastic S.

2. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 25 g/L.

3. Elongation, ASTM D412: 100 percent.

2.5 AUXILIARY MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with existing roofing system.

B. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required by roofing system manufacturer for application.

C. Seam Sealer: Waterproof seam and patching material compatible with applied coating.

1. Roofing Mastic, Solvent-Free: Modified asphalt elastomeric roof mastic, one-part, low-odor, specially formulated for compatibility and use with specified roofing membranes and flashings.

a. Basis of design product: POLYroof SF.

b. Tensile strength at 77b deg F (25 deg C), ASTM D412: 30 psi (207 kPa) @ 100 percent elongation.

c. Elongation at 77 deg. F (25 deg. C), minimum, ASTM D412: 300 percent.

d. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 20 g/L.

2. Roof Cement, Asphalt-Based: ASTM D4586, Type II, Class I, fibrated roof cement formulated for use in installation and repair of asphalt ply and modified bitumen roofing plies and flashings; UL-classified for fire resistance.

a. Basis of design product: ELS.

b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 190 g/L.

c. Non-Volatile Matter, ASTM D4586: 85 percent.

d. Resistance to sag ASTM D4586: 1/8 in. (3 mm).

D. Reinforcing Fabric:

1. Polyester fabric reinforcing mat, 80 percent recycled content, infused with curing accelerant activated when installed in conjunction with specially formulated adhesive.

a. Basis of design product: Rapid Set Reinforcing Fabric.

b. Breaking Strength, minimum, ASTM D5034: Machine direction, 65 lbf/in (11 kN/m); Cross machine direction, 85 lbf/in (14 kN/m).

c. Elongation, ASTM D5034: Machine direction, 24 percent; Cross machine direction, 95 percent.

d. Weight, ASTM D3776: 2.5 lb./100 sq. ft. (120 g/m2).

e. Thickness, minimum, ASTM D1777: 0.025 inch (0.63 mm).

f. Recycled Content, post-consumer: 83 percent.

2. Woven Glass Fiber Mesh, Vinyl-Coated: Non-shrinking, non-rotting, vinyl-coated woven glass mesh for reinforcing flashing seams, membrane laps, and other roof system detailing.

a. Basis of design product: BURmesh.

b. Tensile strength, 70 deg. F, min ASTM D146: Warp, 65 lbf/in (285 N); fill, 75 lbf/in (310 N).

c. Color: Aqua green.

E. Joint Sealant: Elastomeric joint sealant compatible with applied coating, with movement capability appropriate for application.

1. Joint Sealant, Polyurethane: ASTM C920, Type S, Grade NS, Class 50 single-component moisture curing sealant, formulated for compatibility and use in dynamic and static joints; paintable.

a. Basis of design product: TremSEAL Pro.

b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 40 g/L.

c. Hardness, Shore A, ASTM C661: 40.

d. Adhesion to Concrete, ASTM C794: 35 pli.

e. Tensile Strength, ASTM D412: 350 psi (2410 kPa).

f. Color: Closest match to substrate.

A. Single-Ply Gutter Restoration:

1. Seam Sealer: Aliphatic polyurethane sealer, single-component, moisture curing, high solids, low-VOC, formulated for compatibility and use with specified roofing substrates.

a. Basis of design product: SOLARGARD Seam Sealer.

b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 75 g/L.

c. Tensile Strength, ASTM D412: 270 psi (1860 kPa).

d. Tear Strength, ASTM D412: 35 pli (6 kN/m).

e. Elongation, ASTM D412: 700 percent.

f. Color: White.

2. Polyurethane roof coating system top coat, bio-based low-odor low-VOC two-part, for application over compatible base coat.

a. Basis of design product: AlphaGuard BIO Top Coat.

b. Combustion Characteristics, UL790: Maintains combustion characteristics of existing roof system.

c. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 6 g/L.

d. Solar Reflectance Index (SRI), ASTM E1980: For white, not less than 103.

e. Accelerated Weathering, 5000 hours, ASTM G 154: Pass.

f. Hardness, Shore A, minimum, ASTM D2240: 81.

g. Solids, by volume, ASTM D2697: 100 percent.

h. Bio-Based Content, Minimum: 60 percent.

i. Minimum Thickness, reinforced system: 48 mils (1.22 mm)] wet.

3. Polyester Reinforcing and Protection Fabric: 100 percent stitch-bonded mildew-resistant polyester fabric intended for reinforcement of compatible fluid-applied membranes and flashings and as a protection layer under pavers or stone aggregates.

a. Basis of design product: Permafab.

b. Tensile Strength, Minimum, ASTM D1682: 50 lbf (23 kg) avg..

c. Elongation, Minimum, ASTM D1682: 60 percent.

d. Tear Strength, Minimum, ASTM D1117: 16 lbf (7.3 kg) avg..

e. Weight: 3 oz./sq. yd (102 g/sq. m).

F. Fasteners: Factory-coated steel fasteners and metal plates meeting corrosion-resistance provisions in FM 4470; designed for fastening roofing membrane components to substrate; tested by manufacturer for required pullout strength; and acceptable to roofing system manufacturer.

G. Miscellaneous Accessories: Provide miscellaneous accessories recommended by roofing system manufacturer.

PART 3 - EXECUTION

3.1 PREPARATION

A. Shut down air intake equipment in the vicinity of the Work in coordination with the Owner. Cover air intake louvers before proceeding with re-coating work that could affect indoor air quality or activate smoke detectors in the ductwork.

1. Verify that rooftop utilities and service piping affected by the Work have been shut off before commencing Work.

B. Maintain roof drains in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drains and conductors. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.

1. Do not permit water to enter into or under existing membrane roofing system components that are to remain.

3.2 ROOFING COATING PREPARATION

A. Existing Flashing and Detail Preparation: Repair flashings, gravel stops, copings, and other roof-related sheet metal and trim elements. Reseal joints, replace loose or missing fasteners, and replace components where required to leave in a watertight condition.

1. Do not damage metal counterflashings that are to remain. Replace metal counterflashings damaged during removal with counterflashings of same metal, weight or thickness, and finish.

B. Membrane Surface Preparation:

1. Remove loose granular aggregate from granular aggregate-surfaced built-up bituminous roofing using a power broom.

2. Remove blisters, rides, buckles, protruding fastener buttons, and other substrate irregularities from existing membrane that would inhibit application of uniform waterproof coating.

3. Broom clean existing substrate.

4. Substrate Cleaning: Clean substrate of contaminants such as dirt, debris, oil, and grease that can affect adhesion of coating by power washing at maximum 2,000 psi.

a. Dispose of waste water in accordance with requirements of authorities having jurisdiction.

5. Verify that existing substrate is dry before proceeding with application of coating. Spot check substrates with an electrical capacitance moisture-detection meter.

C. Verify adhesion of products before proceeding with application.

D. Surface Priming: Prime surfaces to receive coating using coating manufacturer's recommended product for surface material. Apply at application rate recommended by manufacturer.

1. Ensure primer does not puddle and substrate has complete coverage.

2. Allow to cure completely prior to application of coating.

E. Membrane Repair: Repair membrane at locations with irregularities using seam sealer mastic and reinforcing fabric.

F. Membrane Seam Reinforcement: Reinforce membrane seams using seam sealer mastic and reinforcing fabric overlapping onto field of existing membrane not less than width required by roof coating manufacturer.

3.3 ROOF COATING APPLICATION

A. Coating, Restorative: Once seam sealer mastic has adequately cured, coat prepared roof membrane and flashing surfaces with restorative coating in number of coats and thickness of application recommended in writing by manufacturer for application.

B. Coating, Acrylic Emulsion: Apply top coating in number of coats and thickness of application recommended in writing by manufacturer for application. Apply to dry and fully cured substrate. Apply minimum of two coats. Allow to cure between coats.

C. Joint Sealant: Apply joint sealant at terminations and penetrations of coatings as required to maintain weathertight application.

D. Seal all single-ply gutter seams with seam sealer and polyester reinforcing fabric. Allow to cure completely before proceeding. Coat entire single-ply cutter system with liquid-applied top coating at a rate of three (3) gallons per square. Remove prior repairs and prepare prior to coating application.

3.4 DISPOSAL

A. Collect demolished materials and place in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

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

B. Transport and legally dispose of demolished materials off Owner's property.

3.5 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period.

B. Correct deficiencies in or remove coating that does not comply with requirements, repair substrates, and reapply coating.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 070150.73