

SECTION 01 11 00
SUMMARY OF WORK

PART 1 — GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes a complete pressure washing and preparation of the existing roofing systems for a maintenance coating system to be installed.
- B. Related Work Specified Elsewhere:
 - 1. Section 06 - Rough Carpentry
 - 2. Section 07: Roof Restoration Acrylic Coating
 - 3. Section 07: Sheet Metal Flashing and Trim
 - 4. Section 09: Elastomeric Acrylic Wall Coating

1.3 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Identification: Manlio Silva Elementary School Roof Replacement Project
- 1. Project Location: Manlio Silva Elementary School 6250 Scott Creek Dr. Stockton, CA 95219
- B. Owner: Lodi Unified School District 880 N. Guild Ave Lodi, CA 95240
- C. General scope of work but not limited to;
 - 1. Includes a complete pressure washing of all roof areas including low slope roofing. Remove and dispose of all debris.
 - 2. Includes repair of all blisters in the existing roof membrane. Cut the existing blister and heat with a roofing torch to allow the blister to lay flat. Install Garla Prime VOC and allow to dry. Install one layer of Stressply IV Plus Mineral in a torch application over the repair area extending past the cut a minimum of 6".
 - 3. Three course all base flashing laps with one layer of Flashing Bond mastic, one layer of 6" Garmesh, one layer of Flashing Bond mastic, and embed roofing granules into the fresh mastic, allow to cure prior to application of the base coat / top coat.
 - 4. Repair all loose membrane, buckles, blisters, etc. at edge flashing, base flashing, and through field along with all details as needed for a complete prepared roof surface.
 - 5. Inspect all roof drains for loose bolts, tighten as needed, replace as needed. Ensure all drains baskets are in place.
 - 6. Install Tuff Stuff sealant applied at all roof pipe penetrations and all coping joints.
 - 7. Install Garla-Block Primer at a rate of 1/2 gallon per 100 square feet.
 - 8. Install Pyramic acrylic coating in two coats at 1.5 gal per sq per coat for a total of 3 gallons per square. Back roll both the base coat and top coat for complete adhesion, coverage, and mil thickness. Top coat is to be applied in a cross hatch pattern. Additional coats may be required for proper coverage.

9. Install Tuff Coat Architectural Wall Coating at all vertical concrete walls on the interior parapet surfaces.
10. Install new Dura Block Pipe Supports at all pipe/conduit locations.
11. Prepare and paint the gas lines in safety yellow.
12. Prepare and paint the drain baskets in safety yellow.
13. Prepare and paint all galvanized pipe that is rusted and as needed.

1.4 WORK COMPLETED BY THE DISTRICT

- A. No work will be completed by the district.

1.5 TYPE OF CONTRACT

- A. Work will be completed under a single prime contract.

1.6 USE OF PREMISES

- A. General: Contractor will have limited use of premises for construction operations.
- B. Use of site: Limit use of premises to work areas required. Do not disturb portions of the project site beyond areas in which the work is indicated.
- C. The building interior is off limits to the contractor. All access shall be from the exterior.
- D. The point of exterior access must be approved by the owner.
- E. Entrances: Keep all entrances serving the building clear and available to the owner, owner's employees, and emergency vehicles.
- F. Use of existing building: Maintain existing building in a weather tight condition throughout the construction period. Repair damage caused by construction operations. Protect building and occupants during construction.
- G. Vehicle Parking: Contractor parking is available on site and will need to be approved by the owner.
- H. Assume full responsibility for protection and safekeeping of materials stored on premises. Coordinate the location of materials and equipment to be stored on premises. Provide barricades, barriers, and enclosures as required to ensure safety.

1.7 OWNERS OCCUPANCY REQUIREMENTS

- A. The owner will occupy the building during the entire construction phase. Cooperate with the owner during construction operations to minimize owner conflicts and facilitate owner usage. Perform the work as to not interfere with owners operations.
- B. A minimum of 72 hours notice is needed for all activities that will affect the owners operations.

1.8 WORK RESTRICTIONS

- A. On site work hours: Work shall generally be performed from the hours of 7:00 am – 5:00 pm Monday through Friday except as otherwise indicated or approved by the owner.
 1. Weekend hours, early morning hours, utility shut down, and noisy activity requires owner's authorization a minimum of 72 hours in advance.

1.9 UNIT PRICES

- A. The following unit prices will be used to add or deduct from the total contract amount.
 - a. Unit-1 Replacement of dryrot wood roof decking, add a line items per square foot cost to proposal form.

- b. Unit-2 Replacement of dryrot wood fascia board, add a line item per square foot cost to proposal form.

1.10 SCHEDULE OF ALTERNATES

- A. Alternate 1 Building B Maintenance Work

1.11 PROJECT CONDITIONS

- A. Proceed with roofing work only when existing and forecasted weather conditions will permit a unit of work to be installed in accordance with manufacturer's recommendations and warranty requirements.
- B. Do not apply roofing insulation or membrane to damp deck surface.
- C. Do not expose materials subject to water or solar damage in quantities greater than can be weatherproofed during same day.

1.12 SEQUENCING AND SCHEDULING

- A. Sequence installation of roofing with related units of work specified in other sections to ensure that roof assemblies, including roof accessories, flashing, trim and joint sealers, are protected against damage from effects of weather, corrosion and adjacent construction activity.
- B. Complete all roofing field assembly work each day. Phased construction will not be accepted.

END OF SECTION 01 11 00 – SUMMARY OF WORK

SECTION 07 56 40
FLUID APPLIED ROOFING RESTORATION

1.GENERAL

1.1. SECTION INCLUDES

- A. Includes all labor, materials, and equipment to install an acrylic restoration coating over the properly prepared substrate.
- B. See section 011100 Summary of Work for a detailed scope of work.

1.2. RELATED SECTIONS

- A. Section 01110 – Summary of Work

1.3. REFERENCES

- A. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants.
- B. ASTM C 1250 - Standard Test Method for Nonvolatile Content of Cold Liquid-Applied Elastomeric Waterproofing Membranes.
- C. ASTM D 1863 - Standard Specification for Mineral Aggregate Used on Built-Up Roofs.
- D. ASTM D 4479 - Standard Specification for Asphalt Roof Coatings - Asbestos-Free.
- E. ASTM E 1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces
- F. ASTM G 21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
- G. SRI - Solar Reflectance Index calculated according to ASTM E 1980.
- H. South Coast AQMD Standards.
- I. SMACNA Architectural Sheet Metal Manual.
- J. ANSI/SPRI ES-1 - Testing and Certification Listing of Shop Fabricated Edge Metal
- K. National Roofing Contractors Association (NRCA) - Roofing and Waterproofing Manual.

1.4. SYSTEM DESCRIPTION

- A. Mineral Surface Roof Restoration: Renovation work includes:
 - 1. Surface preparation: Pressure wash the existing surface remove dirt, and debris.
 - 2. Fascia/Gravel Stop Edges: Cut back edges, prime, three course with mastic & mesh, install white roofing granules into fresh mastic.
 - 3. Parapets and Vertical Surfaces: Repair as needed, prime, three course with mastic & mesh all laps, corners & transitions. Install white roofing granules into fresh mastic.
 - 4. Metal Flashings: Repair/Replace metal flashings, pitch pockets, etc.
 - 5. Roof Repairs: Repair blisters, stressed or cracked membrane. Cut back, patch with primer/mastic/membrane.
 - 6. Primer: Prime entire roof surface.
 - 7. Coating: Install white acrylic coating over the entire roof surface.

1.5. SUBMITTALS

- A. Submit under provisions of Section 013000.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings: Submit shop drawings including installation details of roofing, flashing, fastening, insulation and vapor barrier, including notation of roof slopes and fastening patterns of insulation and base modified bitumen membrane, prior to job start.
- D. LEED Submittals: Provide documentation of how the requirements of Credit will be met:
 - 1. List of proposed materials with recycled content. Indicate post-consumer recycled content and pre-consumer recycled content for each product having recycled content.
 - 2. Product data and certification letter indicating percentages by weight of post-consumer and pre-consumer recycled content for products having recycled content.
 - 3. Product reflectivity and emissivity criteria to qualify for one point under the LEED credit category, Credit 7.2, Landscape & Exterior Design to Reduce Heat Island - Roof.
- E. Verification Samples: For each product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, and color.
- F. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- G. Provide written certification from the roofing system manufacturer certifying the applicator is currently authorized to install the specified roof system and ability to provide the specified warranty.
- H. Sample Warranty: Provide an unexecuted copy of the warranty specified for this project clearly stating the terms required of the owner, contractor, and manufacturer.
- I. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for periodic inspection and maintenance of all completed roofing work. Provide product warranty executed by the manufacturer. Assist Owner in preparation and submittal of roof installation acceptance certification as may be necessary in connection with fire and extended coverage insurance on roofing and associated work.

1.6. QUALITY ASSURANCE

- A. Perform Work in accordance with NRCA Roofing and Waterproofing Manual.
- B. Manufacturer Qualifications: Manufacturer: Company specializing in manufacturing products specified in this section with documented ISO 9001 certification and minimum twelve years and experience.
- C. Installer Qualifications: Company specializing in performing Work of this section with minimum five years documented experience and a certified Pre-Approved Garland Contractor.
- D. Installer's Field Supervision: Maintain a full-time Supervisor/Foreman on job site during all phases of roofing work while roofing work is in progress.
- E. Product Certification: Provide manufacturer's certification that materials are manufactured in the United States and conform to requirements specified herein, are chemically and physically compatible with each other, and are suitable for inclusion within the total roof system specified herein.

- F. Source Limitations: Obtain all components of roof system from a single manufacturer. Secondary products that are required shall be recommended and approved in writing by the roofing system Manufacturer. Upon request of the Architect or Owner, submit Manufacturer's written approval of secondary components in list form, signed by an authorized agent of the Manufacturer.

1.7. PRE-INSTALLATION CONFERENCE

- A. Convene a pre-roofing conference approximately two weeks before scheduled commencement of roofing system installation and associated work.
- B. Require attendance of installers of deck or substrate construction to receive roofing, installers of rooftop units and other work in and around roofing which must precede or follow roofing work including mechanical work, Architect, Owner, roofing system manufacturer's representative.
- C. Objectives include:
 - 1. Review foreseeable methods and procedures related to roofing work, including set up and mobilization areas for stored material and work area.
 - 2. Tour representative areas of roofing substrates, inspect and discuss condition of substrate, roof drains, curbs, penetrations and other preparatory work.
 - 3. Review structural loading limitations of deck and inspect deck for loss of flatness and for required attachment.
 - 4. Review roofing system requirements, Drawings, Specifications and other Contract Documents.
 - 5. Review and finalize schedule related to roofing work and verify availability of materials, installer's personnel, equipment and facilities needed to make progress and avoid delays.
 - 6. Review required inspection, testing, certifying procedures.
 - 7. Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions, including possibility of temporary roofing.
 - 8. Record conference including decisions and agreements reached. Furnish a copy of records to each party attending.

1.8. DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store products in manufacturer's unopened packaging with labels intact until ready for installation.
- B. Store all roofing materials in a dry place, on pallets or raised platforms, out of direct exposure to the elements until time of application. Store materials at least 4 inches above ground level and covered with "breathable" tarpaulins.
- C. Stored in accordance with the instructions of the manufacturer prior to their application or installation. Store roll goods on end on a clean flat surface. No wet or damaged materials will be used in the application.
- D. Store at room temperature wherever possible, until immediately prior to installing the roll. During winter, store materials in a heated location with a 50 degree F (10 degree C) minimum temperature, removed only as needed for immediate use. Keep materials away from open flame or welding sparks.
- E. Avoid stockpiling of materials on roofs without first obtaining acceptance from the Architect/Engineer.
- F. Adhesive storage shall be between the range of above 50 degree F (10 degree C) and below 80 degree F (27 degree C). Area of storage shall be constructed for flammable storage.

1.9. PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. Weather Condition Limitations: Do not apply roofing system during inclement weather or when a 40 percent chance of precipitation or greater is expected.
- C. Proceed with roofing work only when existing and forecasted weather conditions will permit unit of work to be installed in accordance with manufacturer's recommendations and warranty requirements.
- D. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.
- E. When applying materials with spray equipment, take precautions to prevent over spray and/or solvents from damaging or defacing surrounding walls, building surfaces, vehicles or other property. Care should be taken to do the following:
 - 1. Close air intakes into the building.
 - 2. Have a dry chemical fire extinguisher available at the jobsite.
 - 3. Post and enforce "No Smoking" signs.
- F. Avoid inhaling spray mist; take precautions to ensure adequate ventilation.
- G. Protect completed roof sections from foot traffic for a period of at least 48 hours at 75 degrees F (24 degrees C) and 50 percent relative humidity or until fully cured.
- H. Take precautions to ensure that materials do not freeze.
- I. Minimum temperature for application is 40 degrees F (4 degrees C) and rising for solvent based materials and 50 degrees F (10 degrees C) and rising for water based.

1.10. WARRANTY

- A. Upon completion of the work, provide the Manufacturer's Warranty.
 - 1. Warranty Period:
 - a. 5 years from date of acceptance.
- B. Installer is to guarantee all work against defects in materials and workmanship for a period indicated following final acceptance of the Work.
 - 1. Warranty Period:
 - a. 3 years from date of acceptance.

2.PRODUCTS

2.1. MANUFACTURERS

- A. Acceptable Manufacturer or equal: Garland Company, Inc. (The), which is located at: 3800 E. 91st St.; Cleveland, OH 44105; Local Representative: Richard Jones: (559) 647-1196 rjones@garlandind.com Web Site:www.garlandco.com
- B. The Products specified are intended and the Standard of Quality for the products required for this project. If other products are proposed the bidder must disclose in the bid the manufacturer and the products that they intend to use on the Project. If no manufacturer and products are listed, the bid may be accepted only with the use of products specified.
 - 1. Bidder will not be allowed to change materials after the bid opening date.
 - 2. If alternate products are included in the bid, the products must be submitted a minimum of seven (7) days prior to the bid date for review and be equal to or exceed the products specified. Supporting technical data shall be submitted to the Architect/

- Owner for approval prior to acceptance.
3. In making a request for substitution, the Bidder/Roofing Contractor represents that it has:
 - a. Personally investigated the proposed product or method, and determined that it is equal or superior in all respects to that specified.
 - b. Will provide the same guarantee for substitution as for the product and method specified.
 - c. Will coordinate installation of accepted substitution in work, making such changes as may be required for work to be completed in all respects.
 - d. Will waive all claims for additional cost related to substitution, which consequently become apparent.
 - e. Cost data is complete and includes all related cost under his/her contract or other contracts, which may be affected by the substitution.
 - f. Will reimburse the Owner for all redesign cost by the Architect for accommodation of the substitution.
 4. Architect/ Owner reserves the right to be the final authority on the acceptance or rejection of any or all bids, proposed alternate roofing systems or materials that has met ALL specified requirement criteria.
 5. Failure to submit substitution package, or any portion thereof requested, will result in immediate disqualification and consideration for that particular contractors request for manufacturer substitution.

2.2. ROOF RESTORATION SYSTEM MINERAL SURFACE ROOFS

- A. Asphalt Primer: Install primer at a rate of ½ gallon per 100 square feet at all areas to be three coursed.
 1. Garla Prime VOC
- B. Acrylic Primer: Install at a rate of 1/2 gallon per 100 square feet to all roof areas.
 1. Primer: Garla-Block
- C. Coating Base Coat: Install at a rate of 1.5 gallons per 100 square feet.
 1. Coating: Pyramic Plus Lo
- D. Coating Top Coat. Install at a rate of 1.5 gallons per 100 square feet.
 1. Coating: Pyramic Plus Lo
- E. Mastic: Install three course treatment at all penetrations and wall flashing laps.
 1. Flashing Bond Mastic
- F. Mesh: Install three course treatment at all penetrations and wall flashing laps.
 1. Garmesh 6"

2.3. ACCESSORIES:

- A. Nails and Fasteners: Non-ferrous metal or galvanized steel, except that hard copper nails shall be used with copper; aluminum or stainless steel nails shall be used with aluminum; and stainless steel nails shall be used with stainless steel, Fasteners shall be self-clinching type of penetrating type as recommended by the deck manufacturer. Fasten nails and fasteners flush-driven through flat metal discs not less than 1 inch (25 mm) diameter. Omit metal discs when one-piece composite nails or fasteners with heads not less than 1 inch (25 mm) diameter are used.
- B. Urethane Sealant - Tuff-Stuff: One part, non-sag sealant as approved and furnished by the membrane manufacturer for moving joints.
 1. Tensile Strength, ASTM D 412: 250 psi
 2. Elongation, ASTM D 412: 950%
 3. Hardness, Shore A ASTM C 920: 35

4. Adhesion-in-Peel, ASTM C 92: 30 pli
- C. Pitch Pocket Sealer - Seal-Tite: Two part, 100% solids, self-leveling, polyurethane sealant for filling pitch pans as recommended and furnished by the membrane manufacturer.
 1. Durometer, ASTM D 2240: 40-50 Shore
 2. Elongation, ASTM D 412: 250%
 3. Tensile Strength, ASTM D 412: 200 @ 100 mil

2.4. EDGE TREATMENT AND ROOF PENETRATION FLASHINGS

- A. Flashing Boot - Rubbertite Flashing Boot: Neoprene pipe boot for sealing single or multiple pipe penetrations adhered in approved adhesives as recommended and furnished by the membrane manufacturer.
- B. Vents and Breathers: Heavy gauge aluminum and fully insulated vent that allows moisture and air to escape but not enter the roof system as recommended and furnished by the membrane manufacturer.
- C. Pitch pans, Rain Collar 24 gauge stainless or 20oz (567gram) copper. All joints should be welded/soldered watertight. See details for design.
- D. Drain Flashings should be 4lb (1.8kg) sheet lead formed and rolled.
- E. Plumbing stacks should be 4lb (1.8kg) sheet lead formed and rolled.
- F. Liquid Flashing - Tuff-Flash: An asphaltic-polyurethane, low odor, liquid flashing material designed for specialized details unable to be waterproofed with typical modified membrane flashings.
 1. Tensile Strength, ASTM D 412: 400 psi
 2. Elongation, ASTM D 412: 300%
 3. Density @77 degrees F 8.5 lb/gal typical
- G. Fabricated Flashings: Fabricated flashings and trim are specified in Section 07620.
 1. Fabricated flashings and trim shall conform to the detail requirements of SMACNA "Architectural Sheet Metal Manual" and/or the CDA Copper Development Association "Copper in Architecture - Handbook" as applicable.
- H. Manufactured Roof Specialties: Manufactured copings, fascia, gravel stops, control joints, expansion joints, joint covers and related flashings and trim are specified in Section 07710.
 1. Manufactured roof specialties shall conform to the detail requirements of SMACNA "Architectural Sheet Metal Manual" and/or the NRCA "Roofing and Waterproofing Manual" as applicable.

3.EXECUTION

3.1. EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Verify that work penetrating the roof deck, or which may otherwise affect the roofing, has been properly completed.
- C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2. ROOF PREPARATION AND REPAIR

- A. General:
 1. Repair existing roof flashings at curbs and parapet walls
 2. Remove all wet, deteriorated, blistered or delaminated roofing membrane or insulation

- and fill in any low spots occurring as a result of removal work to create a smooth, even surface for application of new roof membranes.
3. Install new wood nailers as necessary to accommodate insulation/recovery board or new nailing patterns.
 4. Existing roof surfaces shall be primed as necessary and allowed to dry prior to installing the roofing system.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
 - C. Repair all defects such as deteriorated roof decks; replace saturated insulation board, replace loose or brittle membrane or membrane flashings. Verify that exiting conditions meet the following requirements:
 1. Existing membrane is either fully adhered or that the membranes mechanical fasteners are secured and functional.
 2. Application of roofing materials over a brittle roof membrane is not recommended.
 - D. Remove all loose dirt and foreign debris from the roof surface. Do not damage roof membrane in cleaning process.
 - E. Clean and seal all parapet walls, gutters and coping caps, and repair any damaged metal where necessary. Seal watertight all fasteners, pipes, drains, vents, joints and penetrations where water could enter the building envelope.
 - F. Clean the entire roof surface by removing all dirt, algae, paint, oil, talc, rust or foreign substance. Use a 10 percent solution of TSP (tri-sodium phosphate), Simple Green and warm water. Scrub heavily soiled areas with a brush. Rinse with fresh water to remove all TSP solution. Allow roof to dry thoroughly before continuing.
 - G. Repair existing roof membrane as necessary to provide a sound substrate for the liquid membrane. All surface defects (cracks, blisters, tears) must be repaired with similar materials.

3.3. INSTALLATION

- A. General Installation Requirements:
 1. Install in accordance with manufacturer's instructions. Apply to minimum coating thickness required by the manufacturer.
 2. Cooperate with manufacturer, inspection and test agencies engaged or required to perform services in connection with installing the roof system.
 3. Insurance/Code Compliance: Where required by code, install and test the roofing system to comply with governing regulation and specified insurance requirements.
 4. Protect work from spillage of roofing materials and prevent materials from entering or clogging drains and conductors. Replace or restore work damaged by installation of the roofing system.
 5. All primers must be top coated within 24 hours of application. Re-prime If more time passes after priming.
 6. Keep roofing materials dry during application. Phased construction can be allowed as long as no, more than 7 days pass between coats excluding primers.
 7. Coordinate counter flashing, cap flashings, expansion joints and similar work with work specified in other Sections under Related Work.
 8. Coordinate roof accessories and miscellaneous sheet metal accessory items, including piping vents and other devices with work specified in other Sections under Related Work.
- B. Mineral Surface Roof Restoration: Renovation work includes:
 1. Surface preparation: Pressure wash the existing surface remove dirt, and debris.
 2. Fascia/Gravel Stop Edges: Cut back edges 2", prime with Garla-Prime VOC allow to dry, three course with Flashing Bond mastic & Garmesh, install white roofing granules

- into fresh mastic.
3. Parapets and Vertical Surfaces: Repair as needed, prime with Garla Prime VOC, three course with Flashing Bond mastic & Garmesh all laps, corners & transitions. Install white roofing granules into fresh mastic.
 4. Metal Flashings: Repair/Replace metal flashings, pitch pockets, etc.
 5. Roof Repairs: Repair blisters, stressed or cracked membrane. Cut back, patch with Garla Prime VOC primer/ Flashing Bond mastic/Stressply membrane.
 6. Primer: Prime new repair areas with Garla-Block primer.
 7. Coating: Install Pyramic white acrylic coating over the entire roof surface at a rate of 1.5 gallons per 100 sq ft base coat and 1.5 gallons per 100 sq ft top coat.
 - a. Apply Pyramic Acrylic Coating in a uniform manner.
 - b. Use special attention to coating flashings and other critical areas to build adequate membrane thickness.
 - c. Use multiple coats on verticals to prevent sagging.
 - d. Apply at 3.0 gallons per 100 sq ft. over the entire roof surface in two coats.

3.4. INSTALLATION EDGE TREATMENT AND ROOF PENETRATION FLASHING

- A. Fabricated Flashings: Fabricated flashings and trim are provided as specified in Section 07620.
 1. Fabricated flashings and trim shall conform to the detail requirements of SMACNA "Architectural Sheet Metal Manual" and/or the Copper Development Association "Copper in Architecture - Handbook" as applicable.
- B. Manufactured Roof Specialties: Manufactured copings, fascia, gravel stops, control joints, expansion joints, joint covers and related flashings and trim are provided as specified in Section 07710.
 1. Manufactured roof specialties shall conform to the detail requirements of SMACNA "Architectural Sheet Metal Manual" and/or the National Roofing Contractor's Association "Roofing and Waterproofing Manual" as applicable.
- C. Metal Edge:
 1. Inspect the nailers to assure proper attachment and configuration.
 2. Run one ply over the edge. Assure coverage of all wood nailers. Fasten plies with ring shank nails at 8 inches (203 mm) o.c.
 3. Install continuous cleat and fasten at 6 inches (152 mm) o.c.
 4. Install new metal edge hooked to continuous cleat and set in bed of roof cement. Fasten flange to wood nailers every 3 inches (76 mm) o.c. staggered.
 5. Prime metal edge at a rate of 100 square feet per gallon and allow to dry.
 6. Strip in flange with base flashing ply covering entire flange in bitumen with 6 inches (152 mm) on to the field of roof. Assure ply laps do not coincide with metal laps.
 7. Install a second ply of modified flashing ply in bitumen over the base flashing ply, 9 inches (228 mm) on to the field of the roof. Seal outside edge with rubberized cement.
- D. Coping Cap:
 1. Minimum flashing height is 8 inches (203 mm) above finished roof height. Maximum flashing height is 24 inches (609 mm). Prime vertical wall at a rate of 100 square feet per gallon and allow to dry.
 2. Set cant in bitumen. Run all field plies over cant a minimum of 2 inches (50 mm).
 3. Install base flashing ply covering entire wall and wrapped over top of wall and down face with 6 inches (152 mm) on to field of the roof and set in cold asphalt. Nail membrane at 8 inches (203 mm) o.c.
 4. Install a second ply of modified flashing ply in bitumen over the base flashing ply, 9 inches (228 mm) on to the field of the roof. Apply a three-course application of mastic and mesh at all seams and allow to cure and install white roofing granules into the fresh mastic.
 5. Install coping cap per manufacturer's recommendations.

- E. Surface Mounted Counterflashing:
1. Minimum flashing height is 8 inches (203 mm) above finished roof height. Maximum flashing height is 24 inches (609 mm). Prime vertical wall at a rate of 100 square feet per gallon and allow to dry.
 2. Set cant in bitumen. Run all field plies over cant a minimum of 2 inches (50 mm).
 3. Install base flashing ply covering wall set in bitumen with 6 inches (152 mm) on to field of the roof.
 4. Install a second ply of modified flashing ply in bitumen over the base flashing ply, 9 inches (228 mm) on to the field of the roof. Apply a three-course application of mastic and mesh at all vertical seams and allow to cure and install white roofing granules into the fresh mastic.
 5. Apply butyl tape to wall behind flashing. Secure termination bar through flashing, butyl tape and into wall. Alternatively use caulk to replace the butyl tape.
 6. Secure counterflashing set on butyl tape above flashing at 8 inches (203 mm) o.c. and caulk top of counterflashing.
- F. Curb Detail/Air Handling Station:
1. Minimum curb height is 8 inches (203 mm) above finished roof height. Prime vertical at a rate of 100 square feet per gallon and allow to dry.
 2. Set cant in bitumen. Run all field plies over cant a minimum of 2 inches (50 mm).
 3. Install base flashing ply covering curb set in bitumen with 6 inches (152 mm) on to field of the roof.
 4. Install a second ply of modified flashing ply in bitumen over the base flashing ply, 9 inches (228 mm) on to the field of the roof. Apply a three-course application of mastic and mesh at all vertical seams and allow to cure and install white roofing granules into the fresh mastic.
 5. Install pre-manufactured counterflashing with fasteners and neoprene washers or per manufacturer's recommendations.
 6. Set equipment on neoprene pad and fasten as required by equipment manufacturer.
- G. Roof Drain:
1. Plug drain to prevent debris from entering plumbing.
 2. Taper insulation to drain minimum of 24 inches (609 mm) from center of drain.
 3. Install two base flashing plies (40 inch square minimum) in bitumen.
 4. Set lead/copper flashing (30 inch square minimum) in 1/4 inch (6 mm) bed of mastic. Run lead/copper into drain a minimum of 2 inches (50 mm). Prime lead/copper at a rate of 100 square feet per gallon and allow to dry.
 5. Run roof system plies over drain. Cut out plies inside drain bowl.
 6. Install modified membrane (48 inch square minimum) in bitumen.
 7. Install clamping ring and assure that all plies are under the clamping ring.
 8. Remove drain plug and install strainer.
- H. Plumbing Stack:
1. Minimum stack height is 12 inches (609 mm).
 2. Run roof system over the entire surface of the roof. Seal the base of the stack with elastomeric sealant.
 3. Prime flange of new sleeve. Install properly sized sleeves set in 1/4 inch (6 mm) bed of roof cement.
 4. Install base flashing ply in bitumen.
 5. Install membrane in bitumen.
 6. Caulk the intersection of the membrane with elastomeric sealant.
 7. Turn sleeve a minimum of 1 inch (25 mm) down inside of stack.

3.5. CLEANING

- A. Clean-up and remove daily from the site all wrappings, empty containers, paper, loose particles and other debris resulting from these operations.
- B. Remove asphalt markings from finished surfaces.

- C. Repair or replace defaced or disfigured finishes caused by Work of this section.

3.6. PROTECTION

- A. Provide traffic ways, erect barriers, fences, guards, rails, enclosures, chutes and the like to protect personnel, roofs and structures, vehicles and utilities.
- B. Protect exposed surfaces of finished walls with tarps to prevent damage.
- C. Plywood for traffic ways required for material movement over existing roofs shall be not less than 5/8 inch (16 mm) thick.
- D. In addition to the plywood listed above, an underlayment of minimum 1/2 inch (13 mm) recover board is required on new roofing.
- E. Special permission shall be obtained from the Manufacturer before any traffic shall be permitted over new roofing.

3.7. FIELD QUALITY CONTROL

- A. Require attendance of roofing materials manufacturers' representatives at site during installation of the roofing system a minimum of two (2) days per week.
- B. Perform field inspection as required under provisions of manufacturers requirements.
- C. Correct defects or irregularities discovered during field inspection.

3.8. FINAL INSPECTION

- A. At completion of roofing installation and associated work, meet with Contractor, Architect, installer, installer of associated work, roofing system manufacturer's representative and others directly concerned with performance of roofing system.
- B. Walk roof surface areas, inspect perimeter building edges as well as flashing of roof penetrations, walls, curbs and other equipment. Identify all items requiring correction or completion and furnish copy of list to each party in attendance.
- C. If core cuts verify the presence of damp or wet materials, the installer shall be required to replace the damaged areas at his own expense.
- D. Repair or replace deteriorated or defective work found at time above inspection as required to produce an installation that is free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- E. Architect upon completion of corrections.
- F. Following the final inspection, provide written notice of acceptance of the installation from the roofing system manufacturer.

3.9. PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

3.10. SCHEDULES

- A. Coating:
 - 1. Pyramic: White Elastomeric Roof Coating
 - a. Pyramic Plus Lo Acrylic Roof Coating: White, Non Toxic, Fire Retardant Roof

Coating.

1. Non Volatile 63%
2. Density 11.7lb. / gal
3. VOC <50 gal./l
4. Reflectance 0.83
5. Emittance 0.90
6. SRI 104

END OF SECTION

SECTION 09800

ELASTOMERIC ACRYLIC WALL COATING

PART 1 – GENERAL

1. SUMMARY

- A. This specification is for a one component, low solvent, emulsified poly-resin architectural wall coating. It damp proofs and beautifies all types of exterior and interior masonry surfaces such as concrete, brick work, stucco and exterior insulating finishing systems (EIFS).

2. RELATED SECTIONS

- A. Drains, Vents, Ducts, Penetrations: Section 07700
- B. Cast-In-Place Concrete: Section 03300
- C. Repairs and cleaning of masonry surfaces: Section 04500
- D. Repairs to expansion joints and application of joint sealants: Section: 07900

3. SUBMITTALS

- A. Product Data: Submit manufacturer's standard submittal package including specification, installation instructions, and general information for each waterproofing material.
- B. Applicator Qualifications: Submit a current qualified applicator certificate from the specified waterproofing manufacturer.

4. QUALIFICATIONS

- A. Primary elastomeric coating materials shall be products from a single manufacturer. The primary manufacturer shall recommend any secondary materials. Manufacturer shall have a minimum of 10 years experience in the manufacturing of materials of this type.
- B. Applicators shall have a minimum of 5 years experience in the application of damp proofing materials of the type specified. Applicator shall be an authorized applicator from the specified damp proofing manufacturer.
- C. Pre-bid Job Walk: Ten (10) working days prior to bid opening there is to be a mandatory pre-bid job walk. Anyone not attending the pre bid job walk will not be allowed to bid the project. All products considered an equal to the specified product or any changes in the scope of work or installation or specifications must be presented at the pre bid job walk. If a change in the specification is accepted, it will be considered as an alternate and will be presented as a bid amendment issued five (5) working days prior to the bid opening. No other changes to the specification or bid documents will be accepted.
- D. Pre-Installation Conference: Just prior to commencement of the elastomeric coating system, meet at the site with a representative of the coating manufacturer. The elastomeric coating contractor, the general contractor, the architect and other parties

affected by this section. Review methods and procedures, substrate conditions, scheduling and safety.

5. DELIVERY, STORAGE AND HANDLING

- A. Store all coating materials in the original unopened containers between 50° - 80°F (10° - 26°C) until ready for use.
- B. Follow the special handling or storage requirements of the manufacturer for cold weather, hot weather, etc.
- C. Safety: Refer to all applicable data, including but not limited to, MSDS sheets, PDS sheets, product labels, and specific instructions for specific personal protection requirements.
- D. Ventilation: Provide adequate ventilation to prevent the accumulation of hazardous fumes during application.
- E. Environmental requirements: Proceed with work of this section only when existing and forecasted weather conditions will permit the application to be performed in accordance with the manufacturer's recommendations.

6. WARRANTY

- A. The contractor shall guarantee that all work performed will be free from defects in materials and workmanship. The contractor is to provide a 5 year labor/workmanship warranty. Upon notice of defect in writing, the contractor within one year after completion of work shall, at his own expense, make all necessary repairs or replacements of the defective work in question.
- B. A 5-year, material warranty is available with this system provided it has been installed by a Garland Approved Applicator and is installed according to this specification.

PART 2 – PRODUCTS

1. MANUFACTURERS

- A. The design is based upon coating systems engineered and manufactured by The Garland Company or approved equals:
 - The Garland Company
3800 East 91st Street
Cleveland, Ohio 44105
Telephone: (559) 647-1196
Website: www.garlandco.com
- B. The Products specified are intended and the Standard of Quality for the products required for this project. If other products are proposed the bidder must disclose in the bid the manufacturer and the products that they intend to use on the Project. If no manufacturer and products are listed, the bid may be accepted only with the use of products specified.
 - 1. Bidder will not be allowed to change materials after the bid opening date.
 - 2. If alternate products are included in the bid, the products must be submitted a minimum of seven (7) days prior to the bid date for review and be equal to or exceed the products specified. Supporting technical data shall be submitted to the Architect/ Owner for approval prior to acceptance.
 - 3. In making a request for substitution, the Bidder/Roofing Contractor represents that it has:
 - a. Personally investigated the proposed product or method, and

- determined that it is equal or superior in all respects to that specified.
- b. Will provide the same guarantee for substitution as for the product and method specified.
 - c. Will coordinate installation of accepted substitution in work, making such changes as may be required for work to be completed in all respects.
 - d. Will waive all claims for additional cost related to substitution, which consequently become apparent.
 - e. Cost data is complete and includes all related cost under his/her contract or other contracts, which may be affected by the substitution.
 - f. Will reimburse the Owner for all redesign cost by the Architect for accommodation of the substitution.
4. Architect/ Owner reserves the right to be the final authority on the acceptance or rejection of any or all bids, proposed alternate roofing systems or materials that has met ALL specified requirement criteria.
 5. Failure to submit substitution package, or any portion thereof requested, will result in immediate disqualification and consideration for that particular contractors request for manufacturer substitution.

2. MATERIALS

- A. Emulsified Acrylic Coating: Tuff-Coat for damp proofing and beautifying all types of exterior and interior masonry surfaces such as concrete, brick work, stucco and exterior insulation finish systems (EFIS).

Tuff-Coat has the following physical properties:

Tensile Strength: 160 psi (ASTM D-2370)

Elongation: 585% (ASTM D-2370)

Water Vapor Permeability @ 10 mils: 20 Perms (ASTM D-1653)

Solids by Volume: 47.4%

- B. where quick permanent repairs are desired. (Coating will not adhere to Gar-Rock Compound).
- C. Epoxy-based patching compound: Fill-Loc Crack Repair is a two-component, VOC compliant, 100% solids epoxy patching product designed to make repairs to small surface imperfections prior to applying a thin coating.
- D. Polyester Tape: Dura-Walk Polyester Tape is a fusion bonded fabric polyester designed to be reinforcement fabric over cracks or joints.
- E. Nontoxic Biodegradable Cleaner: B-Clean is a heavy duty chemical formulation designed to clean a variety of masonry substrates including concrete, brick, stone, aggregate, and block surfaces.
- F. Misc. Accessories: All items incorporated into this system shall be compatible with and approved by coating manufacturer.

NOTE: Allow additional material for rough or irregular surfaces and up to 10% for material loss during application and differences in substrate porosity.

PART 3 – EXECUTION

1. EXAMINATION

- A. Verify that substrate is ready to receive work; surface is clean, dry and free from projections and depressions, loose scale, sand, curing compounds, grease, oil, asphalt, loose coatings need removed and other foreign deposits.
- B. Do not begin work until concrete substrate has cured 28 days, minimum. Water cured treatment of concrete is preferred. Resin or water based curing compound should not be used. Non-compatible curing agents must be removed prior to application.
- C. The work shall not be started when temperature is under 50°F (10°C) or when precipitation is imminent.
- D. Verify that all other work involved with this area, done under other sections, has been completed and accepted by the architect and general contractor prior to starting the waterproofing application.
- E. Concrete surface pH level must not be higher than 11 prior to coating.
- F. Damaged areas of concrete, mortar joints or EFIS should be repaired prior to coating.

2. PREPARATION

- A. Clean substrate to remove any and all surface contaminants. Surfaces to be coated must be cleaned to a sound surface. Refer to your Garland representative for specific preparation techniques.
- B. Mask-off all adjoining areas that are not to receive the elastomeric wall coating.
- C. Provide a suitable workstation to mix the coating materials.
- D. Concrete: Special attention should be given to smoothness of surface and freedom from contaminants, including paint or previous coatings. Consult your Garland representative for alternate procedures for coating over existing paint. Such procedures are highly dependent on specific job conditions. Curing compounds, if used, shall be removed either by blast media or etching. In the event specifications are not met, the following corrective procedures are recommended.
- E. Cleaning Methods:
 - 1. Nontoxic Biodegradable Cleaner: Nontoxic Biodegradable Concrete & Masonry Cleaner: Scrape, sand, or wire brush all hard or glossy surfaces and residual contaminants to assure effective cleaning. Use the most abrasive methods necessary to remove all contaminants that will inhibit the cleaning solution from properly saturating the substrate. Rinse the substrate to be treated thoroughly with clean water to remove excess debris and dampen the surface. Beginning at the top of the substrate working down to the bottom, generously apply the B-Clean solution directly to the affected areas using overlapping patterns. Allow the solution to soak into surface for 20-30 minutes. Do NOT allow surface to dry. Reapply a light mist of the solution intermittently to ensure the surface remains damp. Depending on the degree of contamination and exposure a stiff bristle brush may be required once the solution reacts. Next, using overlapping patterns rinse the surface from top to bottom with water. Additional applications may be required dependent upon the severity of the contaminant, using the same approach as above. Allow the substrate sufficient time to dry.

2. Solvent & Acid Cleaners: Wipe up grease or oil with a solvent and absorbent material. Disposal of this material should be in accordance with local laws and codes. Wash with solvent-alkaline cleaners diluted one part cleaner and five parts water. Rinse thoroughly with clean water. If evidence of oil film remains as indicated by water "beading," etch surface with 10% solution muriatic acid. Agitate surface with stiff bristle broom; then rinse with clean water. Remove curing compounds by etching with 10% muriatic acid followed by clean water rinse. Allow to thoroughly dry before applying coating. Grinding or sandblasting can remove heavy deposits of contaminants. Any residual traces of asphalt stains must be sealed with an epoxy primer to avoid staining of light colored top coats. Apply primer in two coats and allow a minimum of 48 hours cure time.
- F. Cracks less than 1/16" (1.5 mm) wide shall be sealed after cleaning has been performed using an elastomeric hybrid sealant. Crack shall be cleared of all loose debris, dirt and widened slightly at the surface to accommodate elastomeric hybrid sealant. Apply elastomeric hybrid sealant by knifing into crack or gunning over crack surface, followed by tooling to match adjacent surface profile, pressing the sealant into the crack cavity to fill completely.
- G. Cracks 1/16" (1.5 mm) to 1/8" (3.0 mm) wide shall be routed to a 1/4" to 1/2" groove, backer rod shall be installed, groove shall be caulked with elastomeric hybrid sealant. Fill grooves flush with adjacent surfaces.
- H. Allow sufficient curing time for all sealants to dry-through before proceeding with elastomeric coating application – at least 1 hour not exceeding 3 hours prior to stripe coating with approved elastomeric coating.
- I. All sealed expansion joints or sealant repairs must be stripe coated within 1-3 hours with a half inch nap roller or approved brush extending the coating a minimum of 2 inches past the perimeter of the joints sealant or sealant repair ensuring a good protective base of the elastomeric coating is present.
- I. Defective mortar or stucco areas should be repaired using a cement-based patching compound.

3. INSTALLATION

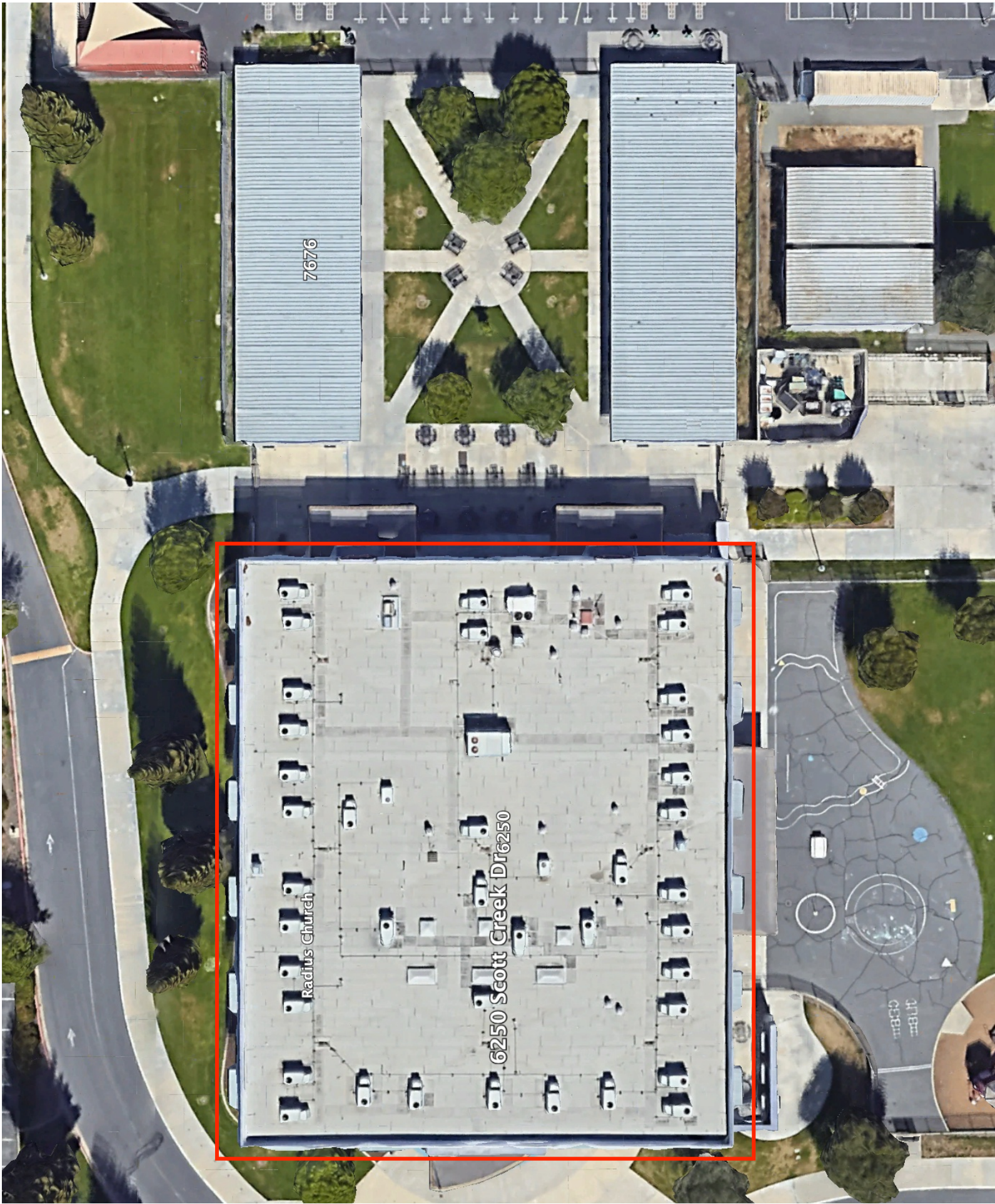
- A. Technical Advice: The installation of this elastomeric coating system shall be accomplished in the presence of, or with the advice of the manufacturer's technical representative.
- B. Joint Treatment:
 1. Non-moving Cracks: Stripe coats all non-moving cracks. Fill the crack first with a bead of Tuff-Stuff MS sealant and strike flush. After filling, apply Tuff-Coat for a distance of 2" on each side of the crack 16-20 mils thick and allow curing. When applying the elastomeric coating system on the wall, go over the stripe coat to achieve a total thickness of 48-52 mils.
 2. Moving Cracks: Remove all dirt and loose chips of concrete from the crack. Fill with Tuff-Stuff MS and strike flush with the wall surface. Center 4" wide piece of polyester tape over the crack and adhere it firmly and thoroughly to the wall. Stripe coat 16-20 mils of Tuff-Coat over the polyester tape and for 2" on each side of the crack. When applying the elastomeric coating system on the wall, go over the stripe coat to achieve a total thickness of 48-52 mils.
 3. Control Joints: Place a backer material (solvent expanded plastic such as polyethylene or polypropylene) in joint. The backer material should be oversized so it can be compressed into the joint and flush to the wall surface. Apply a bead of Tuff-Stuff MS sealant over the backer rod sealing the joint and strike flush with the wall surface.

- C. Elastomeric Coating: Apply Tuff-Coat to secure a total minimum coverage of 2 gallons per 100 square feet (total wet film thickness 32 mils). Product shall be applied by phenolic core roller or airless spray at a rate of 100-200 sq. ft. per gallon depending on the porosity and roughness of the surface with a minimum 2 coat process.

3.4. FIELD QUALITY CONTROL

- A. The contractor for work under this section shall maintain a quality control program specifically to verify compliance with this specification. A daily log shall be kept to record actions in the field.
- B. Inspections: A minimum of three (Substrate, Application and Final) inspections by an approved manufacturer's representative, will be required on all projects requiring a warranty.

END OF SECTION



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ARLEN GREEN