

## 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 modified bituminous roofing and roof coating systems.
- B. Related Work Specified Elsewhere:
  - 1. Section 06 - Rough Carpentry
  - 2. Section 07: Restoration of Existing Built-up Roofing
  - 3. Section 07: Sheet Metal Flashing and Trim
  - 4. Section 09: Painting

##### 1.3 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Identification: Summerville High School Restoration Project
- B. Project Location: Summerville High School 17555 Tuolumne Road, Tuolumne CA 95379
- C. Owner: Summerville Union High School District 17555 Tuolumne Road, Tuolumne CA 95379
- D. General scope of work but not limited to;
  - 1. Pressure wash the existing roofing surface, remove all debris, and prepare for roof restoration.
  - 2. Remove all walk pads from the roof surface and dispose of.
  - 3. Prime the entire roof surface with Garla Prime VOC at ½ gal per sq.
  - 4. Repair all blisters in the existing roof system per the specification with flashing bond mastic and gar mesh reinforcement.
  - 5. Three course all base flashing laps, wall laps, corners, pipes, penetrations etc. Install granules into the fresh mastic at all vertical surfaces.
  - 6. Cut the existing roofing system back from gravel stop edge 2", scrape all loose asphalt and debris for a clean surface. Prime the metal and 6" back onto the existing roof surface with Garla Prime VOC allow to completely dry. Install one layer of Flashing Bond mastic, apply one layer of Garmesh 6" reinforcement, apply one more layer of Flashing Bond mastic

7. Install Energizer K Plus FR at a rate of three (3) gallons per square, embed polyester firm into the wet coating. Immediately after brushing in the polyester install another three (3) gallons per square of Energizer K Plus FR. Immediately after the top coat of Energizer K Plus FR embed 60 lbs per square of white roofing granules into the Energizer K Plus FR coating.
  - A. Base bid 60lbs per sq of roofing granules. Alternate Bid is 40lbs per square and return to install Pyramic Coating
  - B. Install Pyramic acrylic coating in two coats at 1.5 gal per sq per coat for a total of 3 gallons per square. 30-45 day cure time will be required (Alternate Bid)
8. Install new wood blocks and straps at all conduits, gas lines, etc, all pipes are to be secured to the support block, utilize existing uni strut if possible.
9. Install 3'x4' Apoc or equal walk pads on all four sides of each HVAC unit and match the existing walk ways to roof access points.
10. Clean the existing gutters and reseal all gutter joints with Tuff Stuff urethane sealant.

#### **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.
  - A. The building interior is off limits to the contractor. All access shall be from the exterior.
  - B. The point of exterior access must be approved by the owner.
- C. Entrances: Keep all entrances serving the building clear and available to the owner, owner's employees, and emergency vehicles.
- D. 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.
- E. Vehicle Parking: Contractor parking is available on site and will need to be approved by the owner.
- F. 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 roof decking, add a line item per "lineal" foot cost to proposal form.

## **1.10 SCHEDULE OF ALTERNATES**

- A. Alternate #1 as noted above will include 40 pounds per square of white roofing granules to be embedded into the fluid applied coating in lieu of the specified 60 pounds per square in the base bid. The fluid applied coating will be allowed to cure for 30-45 days. Apply Pyramic acrylic base coat at 1.5 gal per square and Pyramic top coat at 1.5 gal per square.

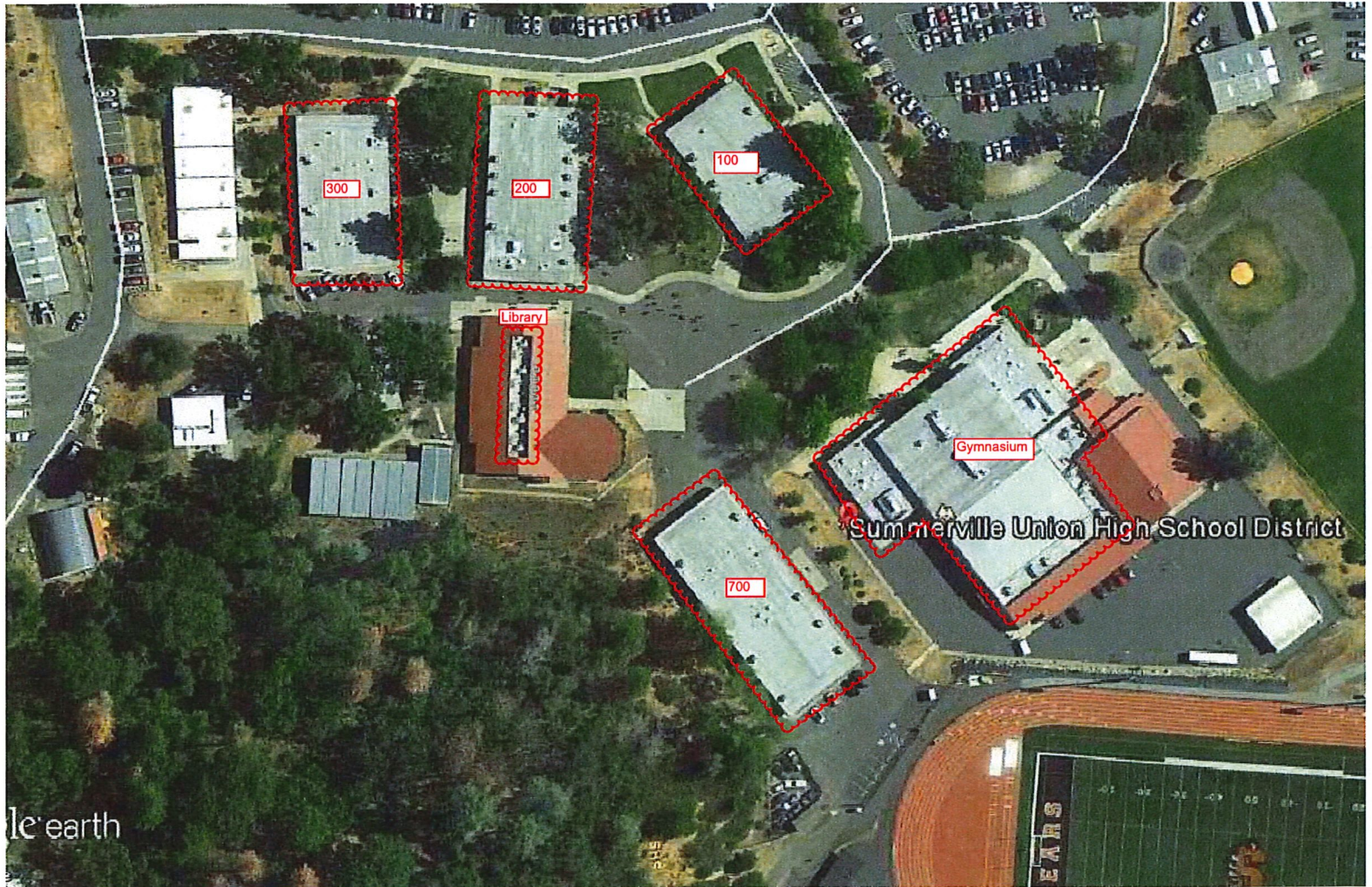
## **1.11 PROJECT CONDITIONS**

- 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 01 30 00**  
**SUBMITTALS**

**PART 1 – GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Contract General Conditions.
- B. See also contract general conditions for additional requirements especially those regarding requests for ALTERNATIVES OR EQUALS and for SUBSTITUTIONS.

**1.02 SUMMARY**

- A. This Section specifies administrative and procedural requirements for submittals required for performance of the Work, including:
  - 1. Contractor's construction schedule
  - 2. Submittal schedule
  - 3. Shop Drawings
  - 4. Product Data
  - 5. Samples.
- B. Administrative Submittals: Refer to other Division-1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:
  - 1. Permits
  - 2. Applications for payment
  - 3. Performance and payment bonds
  - 4. Insurance certificates
  - 5. List of Subcontractors.

**1.03 SUBMITTAL PROCEDURES**

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
  - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.
  - 2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
    - a. The Architect shall return without action any submittals requiring coordination with other submittals until related submittals are coordinated.
  - 3. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for resubmittals.
    - a. See General Conditions and Supplementary General Conditions for additional requirements.
    - b. If an intermediate submittal is necessary, process the same as the initial submittal.



- c. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.
- B. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
  - 1. Provide a space approximately 4" x 5" on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
  - 2. Include the following information on the label for processing and recording action taken:
    - a. Project name
    - b. Date
    - c. Name and address of Architect
    - d. Name and address of Contractor
    - e. Name and address of subcontractor
    - f. Name and address of supplier
    - g. Name of manufacturer
    - h. Number and title of appropriate Specification Section
    - i. Drawing number and detail references, as appropriate.
- C. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Architect using a transmittal form. Submittals received from sources other than the Contractor will be returned without action.

On the transmittal Record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.

#### **1.05 SHOP DRAWINGS**

- A. Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.
- B. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:
  - Dimensions
  - Identification of products and materials included
  - Compliance with specified standards
  - Notation of coordination requirements
  - Notation of dimensions established by field measurement.
- C. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2" x 11" but no larger than 30" x 42".
- D. Submittals: Submit one correctable translucent reproducible print and six (6) blue- or black-line print for the Architect's review; the reproducible and one print will be returned.

Do not use Shop Drawings without an appropriate final stamp indicating action taken in connection with construction.

#### **1.06 PRODUCT DATA**

- A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as "Shop Drawings."
  - 1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:
    - Manufacturer's printed recommendations,
    - Compliance with recognized trade association standards,
    - Compliance with recognized testing agency standards,
    - Application of testing agency labels and seals,
    - Notation of dimensions verified by field measurement,
    - Notation of coordination requirements.
  - 2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
- B. Submittals: Submit a minimum of six (6) copies of each required submittal as well as additional copies as required by the Architect, (the actual number of submittals and distribution required shall be determined by the Trustees Representative at the Preconstruction Conference). The Architect will return two sets marked with action taken and corrections or modifications required.
- C. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities.
  - 1. Do not proceed with installation until an applicable copy of Product Data applicable is in the installer's possession.
  - 2. Do not permit use of unmarked copies of Product Data in connection with construction.

#### **1.07 SAMPLES**

- A. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture and pattern.
  - 1. Mount, display, or package Samples in the manner specified to facilitate review of qualities indicated. Prepare Samples to include the following:
    - Generic description of the Sample
    - Sample source
    - Product name or name of manufacturer
    - Compliance with recognized standards

Availability and delivery time.

2. Submit Samples for review of kind, color, pattern, and texture, for a final check of these characteristics with other elements, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.

- B. Preliminary submittals: Where Samples are for selection of color, pattern, texture or similar characteristics from a range of standard choices, submit a full set of choices for the material or product.

Preliminary submittals will be reviewed and returned with the Architect's mark indicating selection and other action.

- C. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit 3 sets; one will be returned marked with the action taken.

Maintain sets of Samples, as returned, at the Project site, for quality comparisons throughout the course of construction.

- D. Distribution of Samples: Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work.

Field Samples specified in individual Sections are special types of Samples. Field Samples are full-size examples erected on site to illustrate finishes, coatings, or finish materials and to establish the standard by which the Work will be judged.

#### **1.08 ARCHITECTS ACTION**

- A. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Architect will review each submittal, mark to indicate action taken, and return promptly.

Compliance with specified characteristics is the Contractor's responsibility.

- B. Action Stamp: The Architect will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:

1. Final Unrestricted Release: Where submittals are marked "Approved," that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.
2. Final-But-Restricted Release: When submittals are marked "Approved as Noted," that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
3. Returned for Resubmittal: When submittal is marked "Not Approved, Revise and Resubmit," do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.
  - a. Do not permit submittals marked "Not Approved, Revise and Resubmit"



to be used at the Project site, or elsewhere where Work is in progress.

- b. Note: Any work performed prior to receiving a FULLY APPROVED submittal shall be done at the contractors own risk and is subject to being replaced if any of the submittal requirements are not met.

**PART 2 – PRODUCTS NOT USED**

**PART 3 – EXECUTION NOT USED**

**END OF SECTION 01300**

**SECTION 07563**  
**FLUID APPLIED ROOFING RESTORATION**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Work described in this section includes preparation of the existing roof system and application of a complete roof surface restoration system per manufacturer's recommendations.
- B. Includes all items and accessories for a complete warrantied watertight roofing system.

**1.2 RELATED SECTIONS**

- A. Section 06100 - Rough Carpentry: Roof blocking installation and requirements.
- B. Section 07620 - Sheet Metal Flashing and Trim: Metal cap flashing and expansion joints.
- C. Section 07620 - Sheet Metal Flashing and Trim: Weather protection for base flashings.
- D. Section 07710 - Manufactured Roof Specialties: Counter flashing gravel stops, and fascia, scuppers, gutters and downspouts.
- E. Section 15430 - Plumbing Specialties: Piping vents and roof drains.

**1.3 REFERENCES**

- A. ASTM C 78 - Standard Test Method for Flexural Strength of Concrete.
- B. ASTM C 92 - Standard Test Methods for Sieve Analysis and Water Content of Refractory Materials.
- C. ASTM C 109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars.
- D. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants.
- E. ASTM C 1250 - Standard Test Method for Nonvolatile Content of Cold Liquid-Applied Elastomeric Waterproofing Membranes.
- F. ASTM D 5 - Standard Test Method for Penetration of Bituminous Materials.
- G. ASTM D 36 - Standard Test Method for Softening Point of Bitumen.
- H. ASTM D 43 - Standard Specification for Coal Tar Primer Used in Roofing, Dampproofing, and Waterproofing.
- I. ASTM D 71 - Standard Test Method for Relative Density of Solid Pitch and Asphalt.
- J. ASTM D 75 - Standard Practice for Sampling Aggregates.
- K. ASTM D 92 - Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester.
- L. ASTM D 93 - Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester.

- M. ASTM D 113 - Standard Test Method for Ductility of Bituminous Materials.
- N. ASTM D 412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.
- O. ASTM D 562 - Standard Test Method for Consistency of Paints Measuring Krebs Unit (KU) Viscosity Using a Stormer-Type Viscometer.
- P. ASTM D 624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
- Q. ASTM D 816 - Standard Test Methods for Rubber Cements.
- R. ASTM D 1002 - Standard Test Method for Apparent Shear Strength of Single-Lap-Joint Adhesively Bonded Metal Specimens by Tension Loading (Metal-to-Metal).
- S. ASTM D 1370 - Standard Test Method for Contact Compatibility Between Asphaltic Materials (Oliensis Test).
- T. ASTM D 1475 - Standard Test Method For Density of Liquid Coatings, Inks, and Related Products.
- U. ASTM D 1863 - Standard Specification for Mineral Aggregate Used on Built-Up Roofs.
- V. ASTM D 1876 - Standard Test Method for Peel Resistance of Adhesives (T-Peel Test).
- W. ASTM D 2042 - Standard Test Method for Solubility of Asphalt Materials in Trichloroethylene.
- X. ASTM D 2196 - Standard Test Methods for Rheological Properties of Non-Newtonian Materials by Rotational (Brookfield type) Viscometer.
- Y. ASTM D 2240 - Standard Test Method for Rubber Property-Durometer Hardness.
- Z. ASTM D 2369 - Standard Test Method for Volatile Content of Coatings.
- AA. ASTM D 2939 - Standard Test Methods for Emulsified Bitumens Used as Protective Coatings.
- BB. ASTM D 3111 - Standard Test Method for Flexibility Determination of Hot-Melt Adhesives by Mandrel Bend Test Method.
- CC. ASTM D 3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings.
- DD. ASTM D 4209 - Standard Practice for Determining Volatile and Nonvolatile Content of Cellulosics, Emulsions, Resin Solutions, Shellac, and Varnishes.
- EE. ASTM D 4212 - Standard Test Method for Viscosity by Dip-Type Viscosity Cups.
- FF. ASTM D 4402 - Standard Test Method for Viscosity Determination of Asphalt at Elevated Temperatures Using a Rotational Viscometer.
- GG. ASTM D 4479 - Standard Specification for Asphalt Roof Coatings - Asbestos-Free.
- HH. ASTM D 5040 - Standard Test Methods for Ash Content of Adhesives.
- II. ASTM D 5420 - Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact).

- JJ. ASTM E 1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces
- KK. ASTM G 21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
- LL. SRI - Solar Reflectance Index calculated according to ASTM E 1980.
- MM. South Coast AQMD Standards.
- NN. SMACNA Architectural Sheet Metal Manual.
- OO. ANSI/SPRI ES-1 - Testing and Certification Listing of Shop Fabricated Edge Metal
- PP. National Roofing Contractors Association (NRCA) - Roofing and Waterproofing Manual.

#### 1.4 SYSTEM DESCRIPTION

- A. Built-Up Smooth or Mineral Modified Surface Restoration: Renovation work includes:
  1. Surface preparation: Remove loose mineral, dust, dirt, and debris with high pressure water. Clean all debris from jobsite.
  2. Fascia Edges: Cut back edges 2". Prime, coat with mastic, mesh, mastic.
  3. Parapets and Vertical Surfaces: Prime, coat all laps and corners, with mastic, mesh, mastic and granule. Replace all bad or loose base flashings with new membrane.
  4. Metal Flashings: Repair/Replace metal flashings, pitch pockets, etc. Install mastic around all pipes, penetrations, etc.
  5. Roof Repairs: Repair blisters, stressed or cracked membrane. Cut back, patch with primer/mastic/membrane.
  6. Primer: Prime entire roof surface.
  7. Base Coat: Apply base coat over entire roof surface.
  8. Reinforcement: Install full fabric reinforcement/ topcoat entire roof surface.
  9. Install roofing minerals into the coating while it is wet and let coating cure for 30 days and then paint with reflective coating the entire roof area and all base flashings / walls.

#### 1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- 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. 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 written and signed limited labor and materials Warranty, warranting that, if a leak develops in the roof during the term of this warranty, due either to defective material or defective workmanship by the installing contractor, the manufacturer shall provide the Owner, at the Manufacturer's expense, with the labor and material necessary to return the defective area to a watertight condition.
  - 1. Warranty Period:
    - a. 5 years from date of acceptance plus 5 additional years after required inspection by Garland.
- 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. 2 years from date of acceptance.

#### **PART 2 PRODUCTS**

##### **2.1 MANUFACTURERS**

- A. Acceptable Manufacturer: Garland Company, Inc. (The), 3800 E. 91st St.; Cleveland, OH 44105; Toll Free Tel: 800-321-9336; Tel: 216-641-7500; Fax: 216-641-0633; Web Site:)
- B. Local Contact: Rich Jones (559) 647-1196
- C. 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 equal to or exceed the products specified. Supporting technical data shall be submitted to the Architect/ Owner for approval a minimum of ten (10) days prior to the bid date for review.
  - 3. In making a request for substitution, the Bidder/Roofing Contractor represents that it has:
    - 4. Personally investigated the proposed product or method, and determined that it is equal or superior in all respects to that specified.
    - 5. Will provide the same guarantee for substitution as for the product and method specified.
    - 6. Will coordinate installation of accepted substitution in work, making such changes as may be required for work to be completed in all respects.
    - 7. Will waive all claims for additional cost related to substitution, which consequently become apparent.
    - 8. Cost data is complete and includes all related cost under his/her contract or other contracts, which may be affected by the substitution.
    - 9. Will reimburse the Owner for all redesign cost by the Architect for accommodation of the substitution.
    - 10. 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.
    - 11. Failure to submit substitution package, or any portion thereof requested, will result in immediate disqualification

## **2.2 ROOF RESTORATION SYSTEM FOR BUILT-UP SMOOTH OR MINERAL MODIFIED SURFACE ROOFS**

- A. Energizer K Plus FR:
  - 1. Primer: Garla-Prime VOC
  - 2. Coating: Energizer K Plus FR
  - 3. Flashing: Replace deteriorated flashings, three course all existing laps and granule
  - 4. Reinforcement: full fabric reinforcement.
    - a. Grip Polyester Firm
  - 5. Surfacing:
    - a. Minerals at 40 lbs per square
    - b. Coating at 1.5 gallons per square base coat, 1.5 gallons per square top coat.  
To be applied after 30-45 days from completion of restoration work.

## **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. Walkway Pads - As recommended and furnished by the membrane manufacturer set in approved adhesive to control foot traffic on roof top surface and provide a durable system compliant non-slip walkway.
- C. 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
- D. Urethane Adhesive - Green-Lock Structural Adhesive: Single component, 100% solids structural adhesive as furnished and recommended by the membrane manufacturer.
  - 1. Elongation, ASTM D 412: 300%
  - 2. Hardness, Shore A, ASTM C 920: 50
  - 3. Shear Strength, ASTM D 1002: 300 psi

## **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.
- 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:
  - 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, etc. as needed for a complete new roofing system.
  - 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.

## **PART 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. Remove existing roof flashings from curbs and parapet walls down to the surface of the roof. Remove existing flashings at roof drains and roof penetrations as noted at the pre bid meeting or marked for correction.
  - 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. When mechanically attached, the fastening pattern for the insulation/recovery board shall be as recommended by the specific product manufacturer.
  - 5. 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.
- H. Pre-Treatment of Known Growth - General Surfaces: Once areas of moss, mold, algae and other fungal growths or vegetation have been removed and surfaces have also been thoroughly cleaned, apply a biocide wash at a maximum spread rate of 0.2 gallons/square (0.08 liters/m), to guard against subsequent infection. Allow to dry onto absorbent surfaces before continuing with the application. On non-absorbent surfaces, allow to react before thoroughly rinsing to remove all traces of the solution.

### 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.
  - 7. Phased construction will not be allowed, base coat, reinforcement, top coat, and granules will be completed in one pass then allowed to cure 30-45 days prior to the white reflective coating.
  - 8. Coordinate counter flashing, cap flashings, expansion joints and similar work with work specified in other Sections under Related Work.
  - 9. 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. Renovation work includes:
  - 1. Surface preparation: Remove all loose roofing granules, dirt and foreign debris from the roof surface.
  - 2. Flashing:
    - a. Fascia Edges: Cut back edges 2". Prime, coat with mastic, mesh, and mastic.
    - b. Parapets and Vertical Surfaces: Prepare parapet walls and vertical surfaces where indicated, with asphalt primer. Allow primer to dry tack free. Apply flashing plies as follows:
      - 1) With brush grade flashing adhesive.
      - 2) Solidly adhere flashing membrane to substrate and nail using termination bar.

- 3) Seal all vertical laps of flashing membrane with a three-course application of Flashing Bond and fiberglass mesh.
- c. Metal Flashings: Repair/Replace metal flashings, pitch pockets, etc.
3. Primer: Prime entire roof surface at 1/2 gallon per 100 SF.
4. Reinforcement: Install full fabric reinforcement/ topcoat entire roof surface.
  - a. Run fabric parallel to the low edge using a shingling method up the slope with minimum 3 inch fabric laps.
  - b. After positioning reinforcement to roll out, apply Coating about 40 inches wide to surface where reinforcement ply is to be applied at 3.0-3.5 gallons per 100 SF.
  - c. Do not apply too far ahead of fabric so coating does not dry before fabric can be embedded.
  - d. Immediately roll a 36 inch width of reinforcement into wet coating.
  - e. Use care to lay the fabric tight to the roof surface without air pockets, wrinkles, fishmouths, etc.
  - f. After embedding reinforcement into the Coating, apply additional coating to completely saturate the fabric at 3.0-3.5 gallons per 100 SF.
5. Coating: Apply top coat as soon as possible after embedding reinforcement.
  - a. Apply Energizer K Plus FR Coating to entire roof surface at 3.0-3.5 gallons per 100 SF.
6. Surfacing: Install roofing minerals into the coating while it is wet at 40 lbs per square. Let coating cure for 30-45 days and then paint with reflective coating all roof and wall/base flashings.

#### 3.4 INSTALLATION EDGE TREATMENT AND ROOF PENETRATION FLASHING

- A. Fabricated Flashings:
  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.
  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. Raised Metal Edge:
  1. Inspect the nailer 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 nailer 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.
- E. 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 install granules.
  5. Install coping cap per manufacturer's recommendations.
- F. 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 install granules.
  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.
- G. 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 install granules.
  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.
- H. Exhaust Fan:
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 plies over cant a minimum of 2 inches (50 mm).
  3. Install base flashing ply covering curb with 6 inches (152 mm) on to field of the roof.
  4. Install a second ply of modified flashing ply installed over the base flashing ply, 9 inches (228 mm) on to field of the roof. Attach top of membrane to top of wood curb and nail at 8 inches (203 mm) o.c. Apply a three-course application of mastic and mesh at all vertical seams and install granules.



5. Install metal exhaust fan over the wood nailers and flashing to act as counterflashing. Fasten per manufacturer's recommendation.
- I. 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. Run roof system plies over drain. Cut out plies inside drain bowl.
    4. Set lead/copper flashing (30 inch square minimum) in 1/4 inch 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. Install base flashing ply (40 inch square minimum) in bitumen.
    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.
  - J. 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 APPLICATION OF SURFACING**

- A. Prior to installation of surface, obtain approval from manufacturer as to work completed. On average, at least 30-45 days are required prior to final surfacing.
- B. Allow all cold applied mastics and coating to properly dry and cure before coating application.
- C. Paint all exposed roofing with manufacturer's base coat acrylic coating installed at a rate of one and a half (1.5) gallons per square, back roll entire installation required.
- D. Paint all exposed roofing with manufacturer's Energy Star top coat acrylic coating installed at a rate of one and a half (1.5) gallons per square, back roll entire installation required. Complete coverage is required with a clean finished appearance.

### **3.6 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.

### **3.7 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.

### **3.8 FIELD QUALITY CONTROL**

- A. Require attendance of roofing materials manufacturers' representatives at site during installation of the roofing system.
- B. Perform field inspection and [and testing] as required under provisions of Section 01410.
- C. Correct defects or irregularities discovered during field inspection.
- D. Inspection: Provide manufacturer's field observations at the project start-up and a minimum of two days per week throughout the course of construction. Provide a punch walk inspection and report as well as a final inspection upon completion of the work.
- E. Warranty shall be issued upon manufacturer's acceptance of the installation.
- F. Field observations shall be performed by a representative employed full-time by the manufacturer and whose primary job description is to assist, inspect and approve membrane installations for the manufacturer.
- G. Provide observation reports from the representative indicating procedures followed, weather conditions and any discrepancies found during inspection.
- H. Provide a final report from the representative, certifying that the roofing system has been satisfactorily installed according to the project specifications, approved details and good general roofing practice.

### **3.9 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.

### **3.10 PROTECTION**

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

### 3.11 SCHEDULES

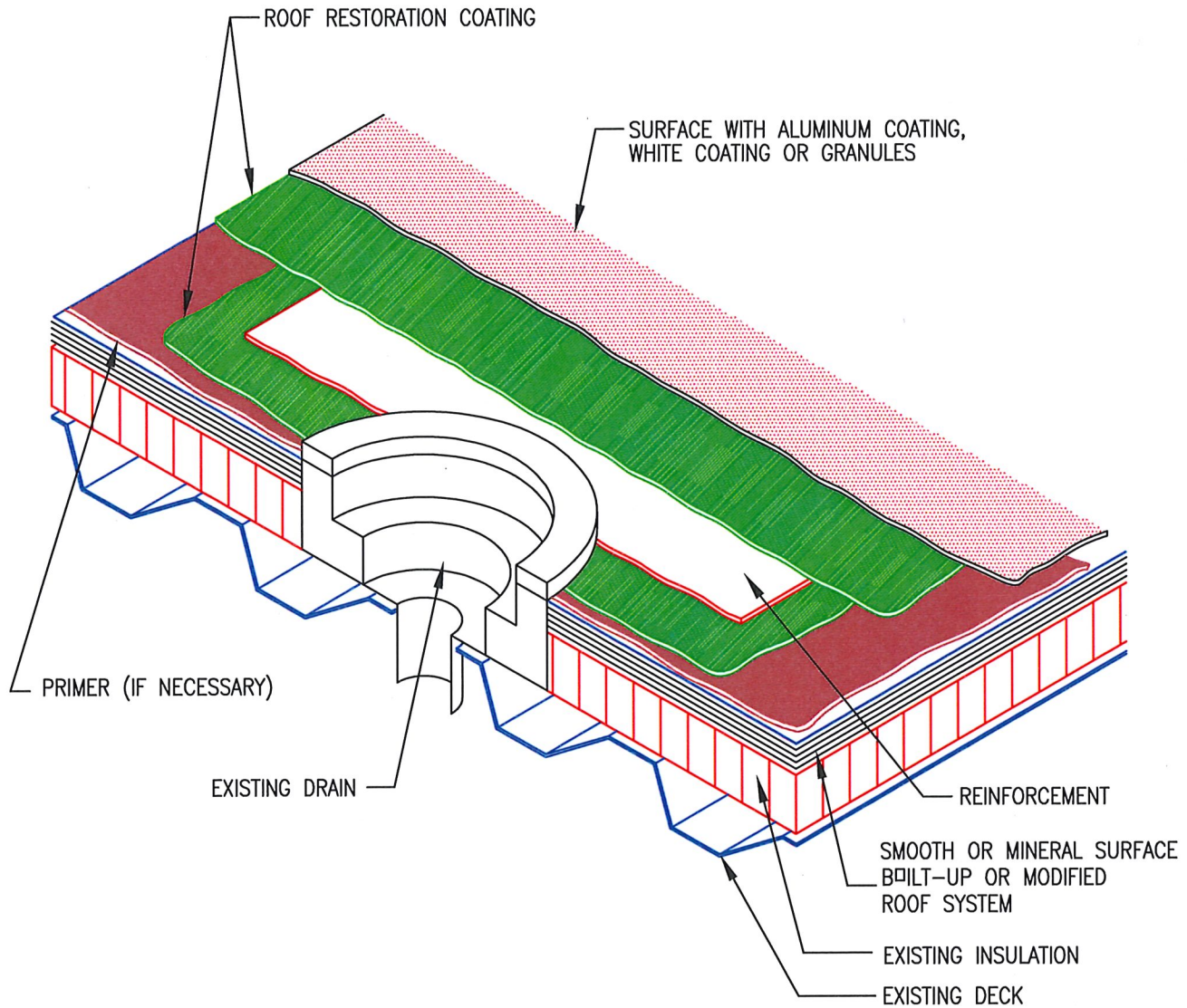
- A. Coatings:
  - a. Compound Stability: Passes 200 degrees F (93.3 degrees C)
  - 2. Coating: Energizer K Plus FR: Multi-purpose: rubberized, liquid waterproofing membrane designed to restore and upgrade fire ratings on existing smooth surfaced SBS, aged APP, and built-up roof surfaces.
    - a. Non-Volatile, ASTM C 1250: Typical 80%
    - b. Density, ASTM D 1475: 10 lbs./gal (1.21 g/cm<sup>3</sup>)
    - c. Viscosity @ 77 degrees F (25 degrees C), Brookfield RVT, Spindle #5, 50 rpm: Typical 15,000/25,000 cP
    - d. Flash Point, ASTM D 93: Minimum 100 degrees F (37.7 degrees C)
    - e. Elongation @ 77 degrees F (25 degrees C), ASTM D 412: Typical 275%
    - f. Water Absorption: Less than 0.7%
    - g. Compound Stability: Passes 200 degrees F (93.3 degrees C)
    - h. Accelerated Weathering Test (Q-UV; UVB-313 bulbs): Passes 2,000 hrs. exposure.
    - i. Wet Film Thickness @ 6 gal. (22.7 l), 96 mils (2,438 microns)
    - j. VOC: 250 g/l
- B. Reinforcement/Base Coat
  - 1. Grip Polyester Firm: Strong, rigid polyester reinforcing fabric.

### 3.12 OWNER SUPPLIED MATERIALS

- A. The district will only supply the quantity listed in the owner supplied materials section of this specification below. All additional materials and accessories will be the full responsibility of the contractor to provide and install per the specification and project requirements.
- B. Any material or accessories required for the installation of the roof system in excess of the district provided material must be supplied by the Contractor and added into the bid cost proposal. It is up to the Contractor to determine the precise amount of material required for the completion of this project; and to provide excess material, as required. The cost to handle and break flashing metal from the District provided flat stock is contractor's responsibility and to be added into the bid cost proposal.
- C. All required flashings as required per each specification section for plumbing, electrical, gas, etc. will be the Contractors responsibility to provide and install as well as to be included in the bid cost.
- D. All materials not specifically included in the owner supplied materials section will be the responsibility of the contractor to provide and install in compliance with section 07 56 30.
- E. Freight charges of owner supplied materials will be the responsibility of the owner.
- F. Contractor must coordinate and take delivery of materials, count all materials and ensure it matches the list below, unload and properly locate materials at the job site, and properly protect, cover and store at jobsite.
- G. Contractor must be able to provide certification in writing from roof system manufacturer that the contractor is approved to install the specified roof system and provide all warranty requirements of section 07 56 30.

1. Materials specifically provided by the Owner (Base Bid)
  - a. 5 – VersiPly Mineral surface sheet (75 sq ft per roll)
  - b. 918 – Energizer K Plus FR (5 gallon pail, can be changed to 55 gal drum)
  - c. 85 – Polyester Firm (1000 sq ft per roll)
  - d. 60 – Flashing Bond Mastic (5 gal pail)
  - e. 30 – Tuff Stuff Urethane Sealant (10.1 oz tube)
  - f. 77 – Garla-Prime VOC (5 gal pail)
  - g. 20 – Garmesh (150' x 6")
  - h. 918 – White Roofing Granules (50 lb Bag)
  - i. 10 – GreenLock Flashing Adhesive (3.5 gallon)
2. Alternate Bid (All materials in base bid plus the below materials)
  - a. 20 – Pyramic Acrylic Coating, Base Coat (55 gal drum)
  - b. 20 – Pyramic Acrylic Coating, Top Coat (55 gal drum)
  - c. 612 – White Roofing Granules (in lieu of the 918 noted above)

**END OF SECTION**

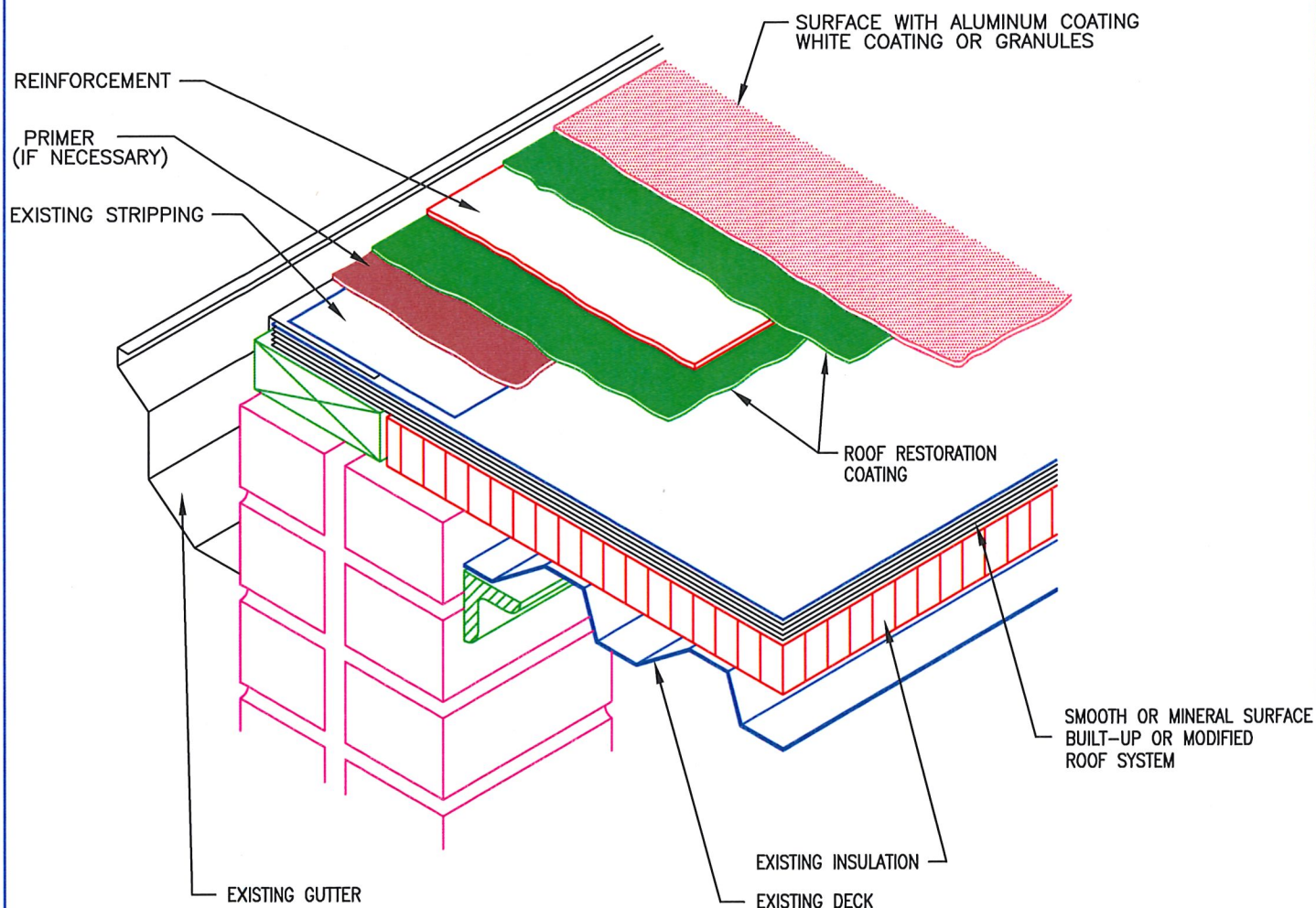


THE GARLAND COMPANY, INC.  
 GARLAND CANADA, INC.  
 THE GARLAND COMPANY UK, LTD

DETAIL:

DRAIN DETAIL

SMOOTH/MINERAL MODIFIED RESTORATION



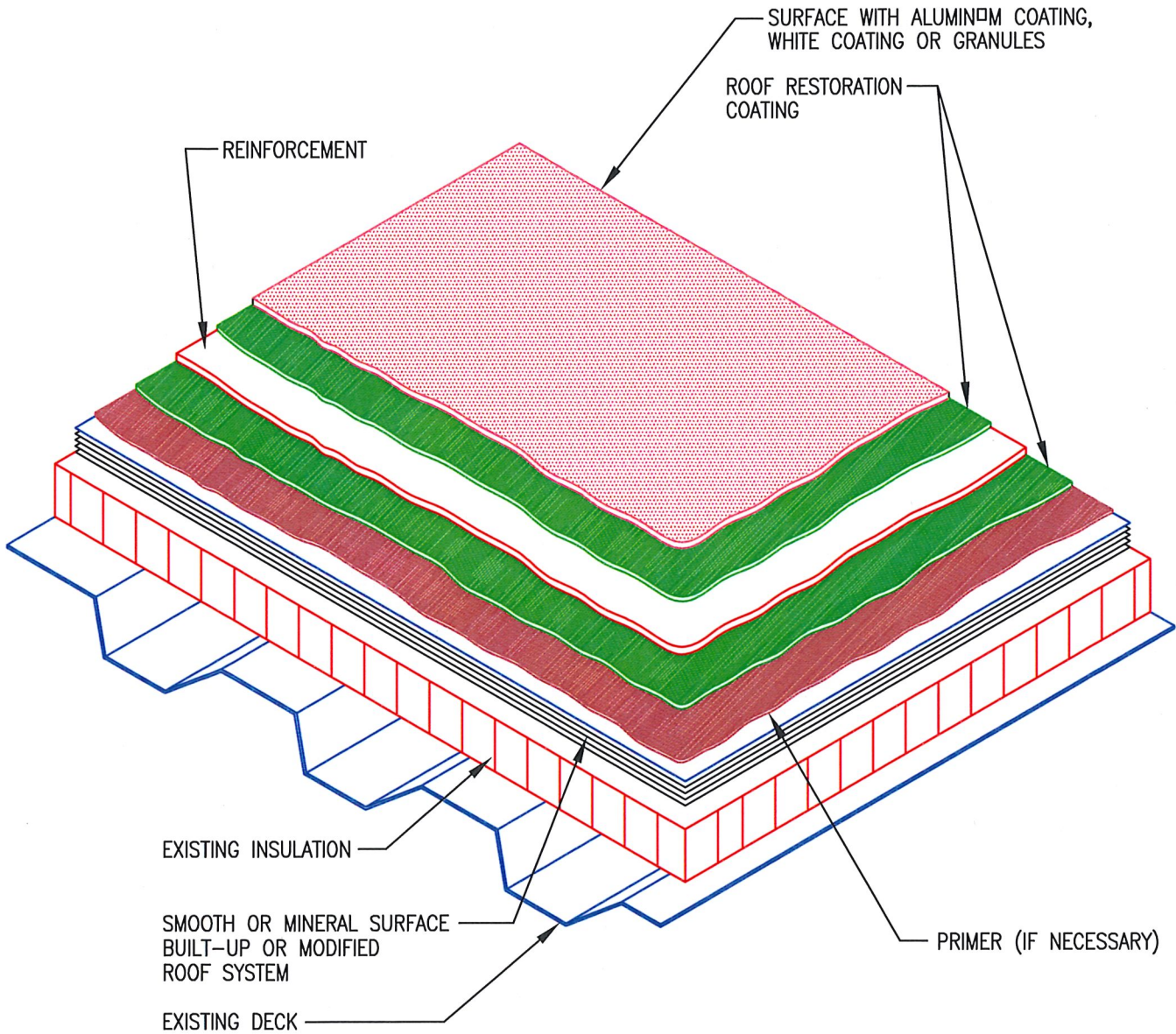
THE GARLAND COMPANY, INC.  
GARLAND CANADA, INC.  
THE GARLAND COMPANY UK, LTD

DETAIL:

EDGE DETAIL

SMOOTH/MINERAL MODIFIED RESTORATION



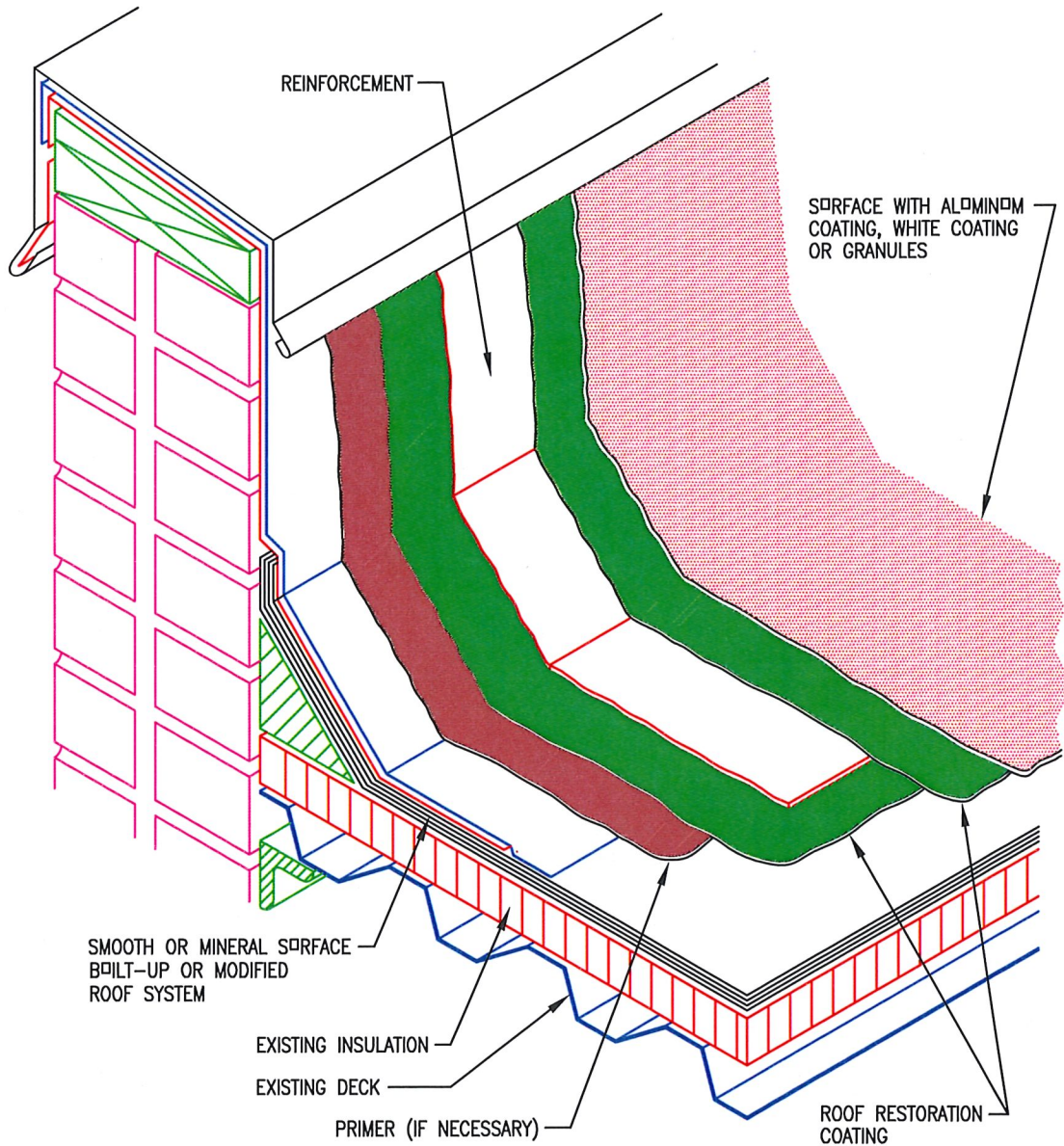


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DETAIL:

FIELD DETAIL

SMOOTH/MINERAL MODIFIED RESTORATION



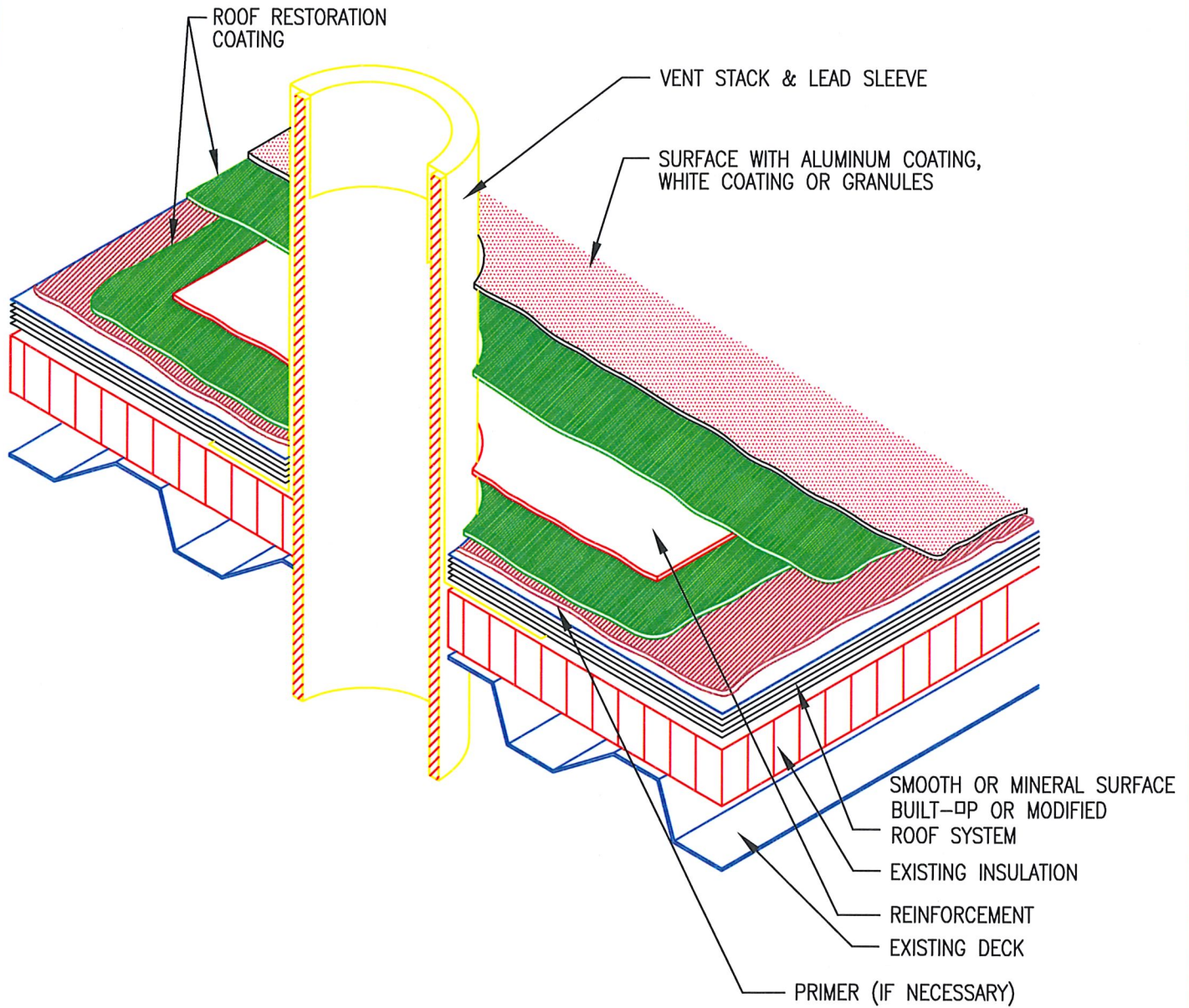
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DETAIL:

# FLASHING DETAIL

SMOOTH/MINERAL MODIFIED RESTORATION





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DETAIL:

# PIPE DETAIL

SMOOTH/MINERAL MODIFIED RESTORATION