www.troyil.us
116 East Market / Troy, IL 62294

Fluid Applied Roofing Restoration
Labor only

NOTICE TO BIDDERS

The City of Troy seeks a qualified roofing contractor to install a Fluid Applied Roofing coating to the Public Works Maintenance Building.

The City of Troy is using the Omnia Partners of Illinois Purchasing Alliance program for Roofing Supplies and Related Products and Services. The roofing installer is responsible for supplying the right quantity of these roofing materials to complete the Troy Public Works Maintenance Building as detailed in the specification and is responsible for obtaining any additional materials that are required to properly install the specified roofing systems at no additional charge to the Owner. All materials needed to complete this project that are not listed on the OMNIA Partners Government Purchasing List of Materials must be supplied by the roofing installer and meet stated performance specification listed in this document.

Sealed bids will be accepted until **10am on Monday, May 9th**, at City Hall, 116 E. Market St, Troy, Illinois, 62294. Bids will be publicly opened and read at that time.

Proposal forms and bid specifications are available on-line at www.troyil.us.

Bidders must register with the Administration Office, Michele Colligan or Heather Klueter at 667-9924 extension 1.

All proposals must be made on the forms furnished by the City, and the entire set of documents submitted intact.

The City of Troy reserves the right to not open a sole bid and to waive, or not to waive, any irregularities in the bids and to determine which is the lowest and best bid for the work.

Bids shall be delivered prior to the time and at the place indicated above. Each proposal shall be placed in a sealed envelope endorsed "PUBLIC WORKS DEPARTMENT FLUID APPLIED ROOFING RESTORATON". Only sealed bids will be accepted. Questions may be directed to Robert Hancock, Public Works Director at (618) 667-4629 or rhancock@troyil.us

BID FORM

Pursuant to and in compliance with the Invitation to Bid and, relating to the above referenced project, the undersigned, hereby proposes and agrees to fully perform the work within the time stated and in strict accordance with the proposed Contract Documents, and Addenda thereto, for the following sum of money:

Bid Item	Lump Sum ($)
1. BASE BID (LABOR ONLY): Preparation and repairs of roofs for and completion of Fluid Applied Membrane to the Troy Public Works Department Maintenance Building.	
2. ALTERNATE #1 (LABOR ONLY): Preparation and repairs of roofs for and completion of Fluid Applied Membrane to the Troy Public Works Department Maintenance Building.	

All labor, materials, services, and equipment necessary for completion of the work as Bid Item #1.
If awarded this Contract the undersigned will execute a satisfactory Construction Contract and Certificate of insurance coverage, with the Owner for the entire work as per the Contract Documents within 10 days after notice of award. It is agreed that this proposal is subject to the Owners acceptance for a period of thirty (30) days from the above date.
The undersigned agrees to the following:

1. To furnish all labor and materials as specified.
2. To complete bid Item # 1 in_____calendar days
3. To begin work_____days after notice of award of contract.

Receipt is acknowledged of the following addenda:

No.	Addenda	Date
1		
2		
3		

Respectfully Submitted,

By:_____Date_____
(Signature)

_____
(Printed Name)

_____ _____
(Title) (Company)

LOCATIONS

1. Public Works Maintenance Building, 416 E. Center St. Troy, IL 62294
    a. Maintenance Building 13,000 sq. ft.

SCOPE OF WORK

BASE BID

1. Power wash the entire roof area removing all loose dirt and debris.
2. Completely remove existing seam coatings, mastics and sealants.
3. Repair any and all field and flashing seams according to good construction practices.
4. All metal panel fasteners must be checked and any loose fasteners must be tightened, or if necessary, replaced with oversized fasteners with neoprene washers.
5. Stitch-fasten metal panel laps together where gaps are greater than 1/8" wide.
6. Repair gaps, holes and joints in the metal roof with appropriate patching material.
7. Remove existing skylights (8) and repair area with installation of new metal panels.
8. Ensure scuppers, drains, gutters, penetrations and structures are firmly secured, watertight and in good working condition.
9. Ensure entire roof area promotes positive drainage.
10. Ensure entire roof area is dry and free from any dirt and debris
11. Immediately after cleaning, prime entire metal roof with Rust-Go Primer at a rate of .25 gal./100 sq. ft.
12. Allow to dry and cure thoroughly
13. Apply base coat of liquiTec at a rate of 2 gal./100 sq. ft.
14. Allow to dry and cure thoroughly, but no more than 72 hours before applying a top coat.
15. Apply a top coat of liquiTec at a rate of 2 gal./100 sq. ft.

ALTERNATE #1

1. Power wash the entire roof area removing all loose dirt and debris.
2. Completely remove existing seam coatings, mastics and sealants.
3. Repair any and all field and flashing seams according to good construction practices.
4. All metal panel fasteners must be checked and any loose fasteners must be tightened, or if necessary, replaced with oversized fasteners with neoprene washers.
5. Stitch-fasten metal panel laps together where gaps are greater than 1/8" wide.
6. Repair gaps, holes and joints in the metal roof with appropriate patching material.
7. Remove existing skylights (8) and repair area with installation of new metal panels.
8. Ensure scuppers, drains, gutters, penetrations and structures are firmly secured, watertight and in good working condition.
9. Ensure entire roof area promotes positive drainage.
10. Ensure entire roof area is dry and free from any dirt and debris
11. Immediately after cleaning, prime entire metal roof with Rust-Go Primer at a rate of .25 gal./100 sq. ft.
12. Allow to dry and cure thoroughly
13. Apply base coat of White-Knight at a rate of 2 gal./100 sq. ft.
14. Allow to dry and cure thoroughly, but no more than 72 hours before applying a top coat.
15. Apply a top coat of White-Knight at a rate of 2 gal./100 sq. ft.

INSURANCE

Certificate of insurance. The city shall require all contractors performing public works projects or performing work on city property in connection with a purchase order, to maintain insurance of the types and with limits of liability not less than those set out below at the contractor's expense during the term (including the warranty period) of the purchase order from insurers reasonably acceptable to the city covering items, risks and operations required to fulfill the purchase order.

- Workers' compensation. Insurance that the contractor is obliged by law to carry that covers all of contractor's employees performing work under this purchase order ("worker compensation")
- Employer's liability insurance. Employer's liability insurance with a limit of $1,000,000 any one occurrence or the statutory requirement, whichever is greater. Such insurance shall protect the city as an alternate employer against claims asserted against the contractor by the contractor's workers as "borrowed servants," statutory employees or maritime employees ("employer' liability")
- Commercial or comprehensive general liability insurance. Commercial or comprehensive general liability insurance, including contractual liability coverage, with a limit of $1,000,000 any one occurrence. Such insurance shall include sudden and accidental pollution liability coverage.
- Automobile liability insurance. Automobile liability insurance with a combined bodily injury and property damage limit of $1,000,000 any one occurrence or the statutory requirement, whichever is greater, for all owned and leased vehicles.

SPECIFICATIONS

SECTION 07563
FLUID APPLIED ROOFING RESTORATION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Metal Roof Restoration (1.4.E)(2.6)

1.2 SYSTEM DESCRIPTION

A. Standing Seam Metal Roof Restoration Renovation: work includes:
   1. Field and Flashing: Repairs must be done according to good construction practices
   2. Metal Panel Fasteners: All must be checked. Any loose fasteners tightened, or if necessary, replaced with oversized fasteners
   3. Metal Panel Laps: Stitch-fasten metal panel laps together where gaps are greater than 1/8" wide.
   4. Metal Flashings: Repair/Replace metal flashings, pitch pockets, etc.
   5. Repair gaps, holes and joints in the metal roof with appropriate patching material.
   6. Primer: Install Rust-Go Primer at a rate of .25 gal./100 sq. ft.
   7. Completely remove existing seam coatings, mastics and sealants.
   8. Remove all skylights.
   9. Ensure scuppers, gutters, penetrations and structures are firmly secured, watertight and in good working condition.

1.3 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. Verification Samples: For each product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, and color.

E. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

F. 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.

1.4 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. Manufacturer Qualifications: Roofing system manufacturer shall have a minimum of 10 years' experience in manufacturing metal roofing products in the United States and be ISO 9001 certified. Maintains a "Certified" installer training program and a list of installing contractors. Has technically qualified personnel available to inspect the installation throughout the installation process at minimum of three times per week, and at completion. The Manufacturer shall submit a written report of each inspection to the owner. The Manufacturer has the primary responsibility for the system, following the minimum specified requirements. The Manufacturer is to provide a structural analysis of the proposed roofing system, signed and sealed by a professional engineer licensed to practice in the State of Illinois, to ensure that the system complies with local building codes. The Manufacturer shall sell product only to "Certified" or "Approved" contractors for this project

F. 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.

G. 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.

1.5 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.

1.6 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. Avoid stockpiling of materials on roofs without first obtaining acceptance from the Architect/Engineer.

E. Storage temperatures should be between 60°F to 80°F (15.6° to 26.7°C) and not exceed 110°F (43.3°C). Indoor ventilated storage is recommended Ensure jobsite storage is in a shaded and ventilated area. Do not store in direct sunlight. Keep materials away from open flame or welding sparks.

1.7 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 precipitation 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.

   1. Minimum temperature for application is 50°F (10°C) and rising.

1.8 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 plus 5 (10 years): 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.

1.9 Warranty Period:

A. 2 years from date of acceptance.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Garland Company, Inc. (The), which is located at: 3800 E. 91st St.; Cleveland, OH 44105; Toll Free Tel: 800-321-9336; Tel: 216-641-7500; Fax: 216-641-0633; Email:request info (); Web:http://www.garlandco.com

B. The City of Troy using the Omnia Partners Government Purchasing Alliance program for Roofing Supplies and Related Products and Services, as priced by and awarded to Garland/DBS, Inc., resulting from the competitively solicited Sealed Bid # PW1925 issued by the Racine County. The roofing installer is responsible for supplying the right quantity of these roofing materials to complete the (City of Troy) as detailed in this specification and is responsible for obtaining any additional materials that are required to properly install the specified roofing systems at no additional charge to the Owner. All materials needed to complete this project that are not listed on the OMNIA Partners Government Purchasing List of Materials attachment provided in this specification, but that are required in this specification, must be supplied by the roofing installer and meet stated performance specification listed in this document.

2.2 ROOF RESTORATION SYSTEM FOR METAL ROOF SYSTEMS

A. LiquiTec System:
   1. Primer: Rust-Go Primer
   2. Base Coating: LiquiTec Base or LiquiTec
   3. Coating: LiquiTec Base or LiquiTec
   4. Flashing: Repair or replace as needed. LiquiTec Base or LiquiTec
   5. Reinforcement: Grip Polyester Soft or Unibond ST
   6. Surfacing: None.

B. White-Knight Plus WC:
   1. Primer: Rust-Go Metal Primer.
   2. Base: White-Knight Plus WC Base Coat
   3. Coating: White-Knight Plus WC:
   4. Flashing: White-Knight Plus WC.
   5. Reinforcement: Grip Polyester Soft or Unibond ST
   6. Surfacing: None.

C.

2.3 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 —Coating: LiquiTec or LiquiTec Base: Multi-purpose, 100% solids, two-part, fast-cure, polyurea

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.

ROOF PREPARATION AND REPAIR

A. General: All necessary field and flashing repairs must be done according to good construction practices, including replacement of all metal that is deemed unsalvageable or unsafe. the removal of all wet insulation and defective materials as identified through a moisture detection survey such as an infrared scan and replacement with like-materials.

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 existing 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. Repair existing roof membrane as necessary to provide a sound substrate for the fluid-applied membrane.

F. All metal fasteners must be checked and any loose fasteners must be tightened, or if necessary, replaced with oversized fasteners with neoprene washers. Missing fasteners must be replaced.

G. Stitch-fasten metal panel laps together where gaps are greater than 1/8” wide.

H. Repair gaps, holes and joints in the metal roof with appropriate patching materials.

1. Remove any skylights and make necessary repair with new metal.

J. Carefully power wash all roof surfaces with greater than 2,000 PSI pressure to remove debris, rust, scale, dirt, dust, chalking, peeling or flaking coatings, etc. Do not force water into the roof system or damage roof surfaces.

K. Wearing personal protective clothing and equipment, remove algae, mildew or fungus with a Garland D7 or Simple Green Oxy Solve and scrubbing with a push broom scrub brush. Rinse at least twice to be sure all cleaning agents and contaminants are completely removed to prevent adhesion issues.

L. Rust must be removed using the most rigorous method suitable for each particular job to ensure substrate is smooth and free of loose rust.

M. For optimal metal surface preparation to enhance coating adhesion, grit blasting is recommended.

N. Wipe galvanized metal surfaces clean with MEK prior to application.

O. If the roof becomes contaminated with dirt, dust or other particles at any time during the application of the LiquiTec system, then cleaning measures must be taken to restore the surface to a suitable condition.

P. Ensure roof is dry prior to application.

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. Adequate coating thickness is essential to performance. If the applicator is unfamiliar in gauging application rates, we suggest that a controllable area be measured and the specified material be applied. In all cases, all minimum specified material must be applied and proper minimum dry film thicknesses must be achieved. Care must be taken to ensure that all areas completed including all flashings, roof penetrations, etc. are coated sufficiently to ensure a watertight seal.
3. Cooperate with manufacturer, inspection and test agencies engaged or required to perform services in connection with installing the roof system
4. Insurance/Code Compliance: Where required by code, install and test the roofing system to comply with governing regulation and specified insurance requirements.
5. 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
6. All primers must be top coated within 24 hours of application. Re-prime if more time passes after priming.
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. Standing Seam Metal Roof Restoration Renovation: work includes:

1. Surface preparation: Remove debris, rust, scale, dirt, dust, flaking and peeling coatings, etc.
2. Fascia Edges: Inspect and make repairs to membrane..
3. Metal Flashings: Repair/Replace metal flashings, pitch pockets, etc.
4. Roof Repairs: Repair gaps, holes and joints in the metal system with appropriate patching materials.
5. Coating Mixing Procedure:
   a. Mix Part A liquid for one minute using an electric heavy duty power drill and Jiffy mixer blade.
   b. Slowly pour contents of Part B jug, located inside the Part A pail, into the Part A container and mix the two components together for two minutes moving the Jiffy blade from top to bottom and along the sides to ensure the product is thoroughly mixed.
   C Always mix entire kit contents together as packaged. Do not break down into smaller quantities.

6. Application of LiquiTec Base or LiquiTec and Reinforcement:
   a. Apply base coat of LiquiTec at a rate of 2 gal. / 100 sq. ft.
   b. Allow to dry and cure thoroughly but not more than 72 hours.
   c. Apply top coat of LiquiTec at a rate of 2 gal. / 100 sq. ft.
7. Liquid Flashings:
   a. All flashings are coated in the same manner as the field.
   b. Vertical liquid flashings shall run a minimum of 4" onto the horizontal surface

8. (Optional): Application of Non-Skid Surface
   a. Apply coating at 1.0 gallons per 100 SF and immediately broadcast dry roofing granules or 20-40 mesh silica sand into wet coating and back-roll to set

34 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.

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.

B. Perform field inspection and [and testing] as required under provisions of Section 01410.

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 a produce an installation that is free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

E. Advise 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. Primers:
   1. Rust-Go Metal Primer:
      a. Flash Point: 40 degrees F (4.4 degrees C) min
      b. Solids by Weight: 69.9% plus/minus 2.0%
      c. Solids by Volume: 52.5% plus/minus 2.0%
      d. Viscosity @ 77 degrees F (25 degrees C):70 plus/minus 5 KU

B. Base:
   1. Base Coating: LiquiTec Base: Multi-purpose, 100% solids, two-part, fast-cure, polyurea liquid waterproofing membrane having the following characteristics:
      a. Elongation, ASTM D 412: 800%
      b. Tensile Strength, ASTM D 412: 2500 psi
      c. Tear Resistance, ASTM D 624: 449 lbs./in
      d. Low Temperature Flexibility, ASTM D 522: -60 degrees F (-51.1 degrees C)
      e. Hardness, ASTM D 2240 (Shore A): 80
      f. Dynamic Impact Resistance (Fully Reinforced System): ASTM D 5635, 37 joules
      g. Static Puncture Resistance (Fully Reinforced System): ASTM D 5602, 20 kg
      h. Tensile-Tear Resistance (Fully Reinforced System): ASTM D 4073, 274 lbf
      i. Tensile Load Strain (Fully Reinforced System): ASTM D 4073, 193 lbf/in.
      j. Toughness: (Fully Reinforced System): 46 in.-lbf/in²
      k. Dry Film Thickness (Fully Reinforced System), 90-100 mils
      l. Lap Shear Strength (MB Seam with coating): ASTM D 7379, 231 lbf/in.
      m. Density @ 77 degrees F (25 degrees C, ASTM D 2939) 9.6 lb./gal (1.2 g/m3)
      n. Flash Point: ASTM D 93, 110 degrees F min. (43 degrees C)
      o. VOC: 0 g/l
      p. Microbial Resistance: ASTM G21, No Microbial Growth
      q. Water Leakage Resistance: ASTM D7281, Pass

C. Reinforcement:
   1. Grip Polyester Soft: Soft polyester reinforcing fabric.
      a. Tensile Strength ASTM D 3766, 57.1 lbs (25.9 kg).
      b. Tear Strength, 16.1 lbs (7.30 kg).
      c. Elongation ASTM D 3786, 61.65%
      d. Weight per Area, 3 oz./sq yd. (102 g/m2)

e. Mullen Burst, ASTM D 3786: 176 lbs. (80.2 kg)

D. Coatings:
1. Coating: LiquiTec: Multi-purpose, 100% solids, two-part, fast-cure, polyurea liquid waterproofing membrane having the following characteristics:
   a. Elongation, ASTM D 412: 800%
   b. Tensile Strength, ASTM D 412: 2500 psi
   c. Tear Resistance, ASTM D 624: 449 lbs./in
   d. Low Temperature Flexibility, ASTM D 522: -60 degrees F (-51.1 degrees C)
   e. Hardness, ASTM D2240 (Shore A): 80
   f. Dynamic Impact Resistance (Fully Reinforced System): ASTM D 5635, 37 joules
   g. Static Puncture Resistance (Fully Reinforced System): ASTM D 5147, 135 lb/in
   h. Tensile-Tear Resistance (Fully Reinforced System): ASTM D 4073, 274 lbf
   i. Tensile Load Strain (Fully Reinforced System): ASTM D 4073,193 lbf/in.
   j. Toughness: (Fully Reinforced System): ASTM D 5147 46 in.-lbf/in²
   k. Dry Film Thickness (Fully Reinforced System), 90-100 mils
   l. Lap Shear Strength (MB Seam with coating): ASTM D 7379, 231 lbf/in.
   m. Density @ 77 degrees F (25 degrees C), ASTM D 2939) 9.6 lb./gal (1.2 g/m3)
   n. VOC: 0 g/l
   o. Microbial Resistance: ASTM G21, No Microbial Growth
   p. Water Leakage Resistance: ASTM D7281, Pass
   q. Initial Reflectance: 0.84
   r. Initial Emittance: 0.88
   s. Initial SRI: 105

E. Liquid Flashings
1. Coating: LiquiTec: Multi-purpose, 100% solids, two-part, fast-cure, polyurea liquid waterproofing membrane having the following characteristics:
   a. Elongation, ASTM D 412: 800%
   b. Tensile Strength, ASTM D 412: 2500 psi
   c. Tear Resistance, ASTM D 624: 449 lbs./in
   d. Low Temperature Flexibility, ASTM D 522: -60 degrees F (-51.1 degrees C)
   e. Hardness, ASTM D 2240 (Shore A): 80
   f. Dynamic Impact Resistance (Reinforced System): ASTM D 5635, 37 joules
   g. Static Puncture Resistance (Reinforced System): ASTM D 5602, 20 kg
   h. Tensile-Tear Resistance (Fully Reinforced System): ASTM D 4073, 274 lbf .
   i. Tensile Load Strain (Fully Reinforced System): ASTM D 4073, 135 lbf.in .
   j. Toughness: ASTM D 5147 46 in.-lbf/in² .
   k. Dry Film Thickness (Fully Reinforced System), 70-80 mils
   l. Lap Shear Strength (MB Seam with coating): ASTM D7379,
   m. 231 lbf/in.
   n. Density @ 77 degrees F (25 degrees C, ASTM D 2939) 9.6 lb./gal (1.2 g/m3)
   o. VOC: 0 g/l
   p. Microbial Resistance: ASTM G 21, No Microbial Growth
   q. Water Leakage Resistance: ASTM D7281, Pass
   r. Initial Reflectance: 0.84
   s. Initial Emittance: 0.88
   t. Initial SRI: 105
2. Coating: LiquiTec Base:
   a. Elongation, ASTM D 412: 800%
   b. Tensile Strength, ASTM D 412: 2500 psi
   c. Tear Resistance, ASTM D 624: 449 lbs./in
   d. Low Temperature Flexibility, ASTM D522: -60 degrees F (-51.1 degrees C)
   e. Hardness, ASTM D2240 (Shore A): 80
   f. Dynamic Impact Resistance (Fully Reinforced System): ASTM D 5635, 37 joules
   g. Static Puncture Resistance (Fully Reinforced System): ASTM D 5602, 20 kg
   h. Tensile-Tear Resistance (Fully Reinforced System): ASTM D 4073,
   i. Tensile Load Strain (Fully Reinforced System): ASTM D 4073,
   j. Toughness: ASTM D 5147 , 46 in.-lbf/in²

k. Dry Film Thickness (Fully Reinforced System), 70-80 mils
l. Lap Shear Strength (MB Seam with coating): ASTM D 7379, 231 lbf/in.
m. Density @ 77 degrees F (25 degrees C). ASTM D 2939 9.6 lb./gal (1.2 g/m3)
n. VOC: 0 g/l
o. Microbial Resistance: ASTM G 21, No Microbial Growth
p. Water Leakage Resistance: ASTM D7281, Pass

END OF SECTION