



since 1895

SECTION 07563

FLUID APPLIED ROOFING RESTORATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Single Ply Roof Restoration (1.4.E)(2.6)

1.2 RELATED SECTIONS

1.3 REFERENCES

- A. ASTM C 92 - Standard Test Methods for Sieve Analysis and Water Content of Refractory Materials.
- B. ASTM C 1250 - Standard Test Method for Nonvolatile Content of Cold Liquid-Applied Elastomeric Waterproofing Membranes.
- C. ASTM D 92 - Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester.
- D. ASTM D 93 - Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester.
- E. ASTM D 412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.
- F. ASTM D 562 - Standard Test Method for Consistency of Paints Measuring Krebs Unit (KU) Viscosity Using a Stormer-Type Viscometer.
- G. ASTM D 624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
- H. ASTM D 816 - Standard Test Methods for Rubber Cements.
- I. ASTM D 1002 - Standard Test Method for Apparent Shear Strength of Single-Lap-Joint Adhesively Bonded Metal Specimens by Tension Loading (Metal-to-Metal).
- J. ASTM D 1475 - Standard Test Method For Density of Liquid Coatings, Inks, and Related Products.
- K. ASTM D 1876 - Standard Test Method for Peel Resistance of Adhesives (T-Peel Test).
- L. ASTM D 2196 - Standard Test Methods for Rheological Properties of Non-Newtonian Materials by Rotational (Brookfield type) Viscometer.

- M. ASTM D 2240 - Standard Test Method for Rubber Property-Durometer Hardness.
- N. ASTM D 2369 - Standard Test Method for Volatile Content of Coatings.
- O. ASTM D 3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings.
- P. ASTM D 4209 - Standard Practice for Determining Volatile and Nonvolatile Content of Cellulosics, Emulsions, Resin Solutions, Shellac, and Varnishes.
- Q. ASTM D 4212 - Standard Test Method for Viscosity by Dip-Type Viscosity Cups.
- R. ASTM D 5040 - Standard Test Methods for Ash Content of Adhesives.
- S. 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).
- T. ASTM E 1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces
- U. ASTM G 21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
- V. SRI - Solar Reflectance Index calculated according to ASTM E 1980.
- W. National Roofing Contractors Association (NRCA) - Roofing and Waterproofing Manual.

1.4 SYSTEM DESCRIPTION

- A. Single Ply Roof Restoration Renovation: work includes:
 1. Surface preparation: Remove membrane chalking, dust, dirt, and debris.
 2. Roof/Solar Array Repairs: Install new UniBond Membrane, roll in, and coat with White Knight Plus.
 3. Apply White Knight Plus Base Coat at a rate of 2.0 gallons per square to all seams, projections and valleys, allow to dry and apply 2.0 gallons per square to the rest of the field of the roof

1.5 SUBMITTALS

- A. 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.
- B. Verification Samples: For each product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, and color.
- C. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- D. 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.

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. 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. Review roofing system requirements, Drawings, Specifications and other Contract Documents.
 3. 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.
 4. Review required inspection, testing, certifying procedures.
 5. Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions, including possibility of temporary roofing.
 6. 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. 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 Warranty, warranting that, if a leak develops in the roof during the term of this warranty, due to defective material, the manufacturer shall provide the Owner, at the Manufacturer's expense, with the materials necessary to return the defective area to a watertight condition.
 - 1. Warranty Period:
 - a. 10 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 \(\)](mailto:request info ()); Web:www.garlandco.com.

2.2 ROOF RESTORATION SYSTEM FOR SINGLE PLY ROOFS

- A. White-Knight Plus/ White-Stallion Plus:
 - 1. Primer: None.
 - 2. Coating: White-Knight Plus/ White-Stallion Plus.

3. Array Flashing: Repair.
4. Reinforcement: Install 4" UniBond and roll in, then apply White-Knight Plus F

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until membrane have been properly prepared.

3.2 ROOF PREPARATION AND REPAIR

- A. General:
 1. Existing roof surfaces shall be cleaned 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. Remove all loose dirt and foreign debris from the roof surface. Do not damage roof membrane in cleaning process.
- D. Clean the entire roof surface by removing all dirt, algae, paint, oil, talc, rust or foreign substance. Simple Green and warm water. Scrub lightly soiled areas with a brush. Rinse with fresh water to remove all solution. Allow roof to dry thoroughly before continuing.
- E. Repair existing roof membrane as necessary to provide a sound substrate for the liquid membrane. All surface defects (cracks, blisters, tears) must be repaired with similar materials.

3.3 INSTALLATION

- A. Single Ply Roof Restoration Renovation: work includes:
 1. Surface preparation: Remove membrane chalking, dust, dirt, and debris.
 2. Reinforcement: Base coat and treatment of field seams:
 - a. Application of White-Knight Plus/ Stallion Plus or White-Knight Plus WC on Array seams.
 - 1) Verify that the surface to be coated is properly prepared.
 - 2) Restore the surface to a suitable condition if roof surface becomes contaminated with dirt, dust or other materials that will interfere with adhesion of the UniBond and coatings.
 - 3) Apply materials must be applied at specified dry film thickness.
 - 4) Apply White-Knight/ Stallion Plus or White-Knight Plus WC at minimum 4.5 inch wide stripe over all seams at 2.0 gallons per 100 SF.
 - b. Application of White-Knight Plus/ Stallion Plus or White-Knight Plus WC on field of the roof.
 - 1) Verify that the surface to be coated is properly prepared.
 - 2) Restore the surface to a suitable condition if roof surface becomes contaminated with dirt, dust or other materials that will interfere with adhesion of the coatings.
 - 3) Apply materials must be applied at specified dry film thickness at the seams, valleys, and projections at a rate of 2.0 gallons per square, Allow to dry.
 - 4) Apply White-Knight/ Stallion Plus or White-Knight Plus WC at minimum over all field at 2.0 gallons per 100 SF.

3.4 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.

3.5 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.

3.6 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.

3.7 FINAL INSPECTION

- A. At completion of roofing installation and associated work, meet with Contractor, 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. Following the final inspection, provide written notice of acceptance of the installation from the roofing system manufacturer.

3.8 PROTECTION

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

3.9 SCHEDULES

A. Coatings:

1. Coating: White-Knight Plus/ White-Stallion Plus: Highly reflective multi- purpose, single-component aliphatic urethane, liquid waterproofing membrane.
 - a. Tensile Strength: ASTM D 412, 2100 psi
 - b. Tear Resistance: ASTM D 624, 160 lbs./in
 - c. Elongation: ASTM D 412, 320%
 - d. Density @ 77 degrees F (25 degrees C, ASTM D 2939) 10.4 lb./gal (1.2 g/m³)
 - e. Flash Point: ASTM D 93, 110 degrees F min. (43 degrees C)
 - f. Non-Volatile: ASTM D 75, Typical 83%
 - g. Viscosity @ 77 degrees F (25 degrees C); Brookfield RVT, #4 Spindle 10 rpm 9200 cP
 - h. Wet Film Thickness @ 2 gal./100 sq. ft. (0.82 l/m²)
 - i. VOC: 225 g/l
 - j. Reflectance: 0.87
 - k. Emittance: 0.89
 - l. SRI: 110

END OF SECTION