



## SECTION 07560

### FLUID-APPLIED ROOFING

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#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Elastomeric membrane roofing for installation over existing roofing.

##### 1.2 RELATED SECTIONS

- A. Section 06100: Rough Carpentry: Roof blocking installation and requirements.
- B. Section 07620: Sheet Metal Flashing and Trim: Metal flashing and counter flashing installation and requirements.
- C. Section 15430: Plumbing Specialties: roof drains, scuppers, gutters and downspout installation and requirements.

##### 1.3 REFERENCES

- A. Factory Mutual (FM Global) - Approval Guide.
  - 1. Factory Mutual Standard 4470 - Approval Standard for Class 1 Roof Covers.
- B. Underwriters Laboratories (UL) - Roofing Systems and Materials Guide (TGFU R1306).
- C. ASTM International (ASTM) - Annual Book of ASTM Standards.
  - 1. ASTM D 1079 - Standard Terminology Relating to Roofing, Waterproofing, and Bituminous Materials.
  - 2. ASTM D 1653 - Standard Test Methods for Water Vapor Transmission of Organic Coating Films.
  - 3. ASTM D 4263 - Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
  - 4. ASTM D 4798 / D4798M – 1- Standard Practice for Accelerated Weathering Test Conditions and Procedures for Bituminous Materials (Xenon-Arc Method).
  - 5. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials.
  - 6. ASTM E 108 - Standard Test Methods for Fire Tests of Roof Coverings.
  - 7. ASTM G 26 - Practice for Operating Light-Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials.
  - 8. ASTM G 53 - Practice for Operating Light- and Water-Exposure Apparatus (Fluorescent UV-Condensation Type) for Exposure of Nonmetallic Materials.

- D. Sheet Metal and Air Conditioning Contractors National Association, 1nc. (SMACNA) - Architectural Sheet Metal Manual.
- E. National Roofing Contractors Association (NRCA).
- F. American Society of Civil Engineers (ASCE).
  - 1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

#### 1.4 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D1079 and the glossary of the National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual for definitions of roofing terms related to this section.

#### 1.5 SYSTEM DESCRIPTION

- A. The United Coatings™ roofing work includes roofing, flashing and reinforcing of joints and junctions, and roof accessories integrally related to roof installation.
- B. Final determination of the fitness of the system, or its components, for any given metal roof may not be made by any representative of GAF / United Coatings™ other than a member of GAF's Field Services Department.
- C. Provide an installed roofing membrane and base flashing system that does not permit the passage of water, and will withstand the design pressures calculated in accordance with the current revision of ASCE 7.
- D. GAF shall provide all primary roofing materials that are physically and chemically compatible when installed in accordance with manufacturers current application requirements.

#### 1.6 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. [ [Product Data](#) ]:
  - 1. Provide [ [Product Data](#) ] sheets for each type of product indicated in this section.
- C. Shop Drawings:
  - 1. Provide manufacturers standard details and approved shop drawings for the system specified.

#### 1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: GAF shall provide a roofing system that meets or exceeds the criteria listed in this section.
- B. Installer Minimum Qualifications:
  - 1. Installer shall be classified as a Premium Contractor as defined and certified by GAF.
  - 2. Installer shall be classified as a Master Select Contractor as defined and certified by GAF.
  - 3. Installer shall be classified as a Master Contractor as defined and certified by GAF.
  - 4. Installer shall be classified as an Authorized Contractor as defined and certified by GAF.

- C. Source Limitations: Components listed shall be provided by a single manufacturer or approved by the primary roofing manufacturer.

#### 1.8 PRE-INSTALLATION CONFERENCE

- A. Prior to scheduled commencement of the roofing installation and associated work, conduct a meeting at the project site with the installer, architect, owner, GAF representative and any other persons directly involved with the performance of the work. The installer shall record conference discussions to include decisions, agreements, and open issues and furnish copies of recorded discussions to each attending party. The primary purpose of the meeting is to review foreseeable methods and procedures related to roofing work.
  1. Tour representative areas of roofing substrates to inspect and discuss conditions of substrate, penetrations and other preparatory work to be performed.
  2. Review United Coatings™ roofing system requirements (United Coatings™ specifications, detail drawings and the Contract Documents).
  3. Review required submittals, both completed and in progress.
  4. Review and finalize the construction schedule related to roofing work, and verify availability of materials, installer's personnel, equipment and facilities needed to consistently make progress and avoid delays.
  5. Review required inspection(s), testing, and certifying, and material usage accounting procedures. Review forecasted weather conditions.
  6. Establish procedures for coping with unfavorable conditions, including the possibility of temporary roofing work.

#### 1.9 REGULATORY REQUIREMENTS

- A. Work shall be performed in a safe, professional manner, conforming to federal, state and local codes.
- B. UL Listing: Provide United Coatings™ Roofing System and component materials which have been evaluated by Underwriters Laboratories for flame-spread, and are listed in the "Underwriters Laboratory Roofing Materials and Systems Directory" for Class A construction over existing metal or other non-combustible roofing (Flame-spread shall pass ASTM E-108 and/or UL 790). Provide roof covering materials bearing UL approval marking on the container. This indicates that the material has been subjected to UL's examination, test procedures and follow-up inspection service.

#### 1.10 DELIVERY, STORAGE, AND HANDLING

- A. Store and handle United Coatings™ materials in a manner that will ensure there is no possibility of contamination.
- B. Store in a dry, well ventilated, weather tight location at temperatures between 50 degrees F (10 degrees C) and 80 degrees F (27 degrees C) until the products are ready to be applied (keep from freezing). Do not stack material pallets more than two (2) high.
- C. Do not subject existing roof to unnecessary loading of stockpiled materials.
- D. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

#### 1.11 PROJECT CONDITIONS

- A. Weather:
  - 1. Proceed with roofing only when existing and forecasted weather conditions permit.
  - 2. Ambient temperatures shall be above 45 degrees F (7.2 degrees C) when applying hot asphalt or water based adhesives.
  
- B. Proceed with roofing work only when existing and forecasted weather conditions will permit work to be performed in accordance with United Coatings™ recommendations and guarantee requirements as follows:
  - 1. Do not begin work if precipitation is expected within twenty-four hours of application, or if temperatures are expected to fall below 42 degrees F (6 Degrees C) during the duration of the job.
    - a. FlexSeal™ Sealant may be used in temperatures lower than 42 degrees F (6 Degrees C).
  - 2. Upper temperature restriction (both air and substrate) for application of United Coatings™ products is 105 degrees F (40 degrees C). If substrate temperatures exceed 105 degrees F (40 degrees C), United Coatings™ products shall be applied during cooler periods of the day. If this is not practical, the substrate shall be cooled with water, and then United Coatings™ products applied just after the water has flashed-off.
  - 3. No moisture may be present when applying United Coatings™ products. Taking into consideration the UV curing properties of United Coatings™ TCM, allow for sufficient daylight hours necessary for curing of materials.

## 1.12 WARRANTY

- A. Liquid Applied Diamond Pledge™ NDL Roof Guarantee: Manufacturers standard form, without money limitation, in which GAF agrees to repair leaks through the United Coatings™ products on the roof caused by manufacturing defects, natural deterioration of, or workmanship in applying, the United Coatings™ roofing system.
  - 1. Warranty Duration:
    - a. Ten (10) Years Labor and Material
    - b. Fifteen (15) Years Labor and Material
    - c. Twenty (20) Years Labor and Material
  
- B. Liquid Applied Emerald Pledge™ Limited Warranty: Manufacturers standard form, in which United Coatings™ agrees to repair leaks through the United Coatings™ products on the roof caused by manufacturing defects or natural deterioration of the United Coatings™ roofing system.
  - 1. Warranty Duration: Ten (10) Years.
  
- C. Limited Material Warranty: Manufacturers standard form, in which United Coatings™ agrees to reimburse the owner in the event of a manufacturing defect that adversely affects the performance of the United Coatings™ Membrane.
  - 1. Warranty Duration: Five (5) Years.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: GAF, Commercial Roofing Products Division, which is located at: 1 Campus Drive; Parsippany, NJ 07054; Toll Free Tel: 800-ROOF-411; Tel: 973-628-3000; Fax: 973-628-3451; Email: [technicalquestions@gaf.com](mailto:technicalquestions@gaf.com) ; Web: [www.gaf.com](http://www.gaf.com)
  
- B. Substitutions: Not permitted.

- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

## 2.2 COATINGS

- A. United Coatings™ Diathon Roof Coating: A water-based acrylic top coat for spray polyurethane foam that combines high solids emulsion polymers and potent biocides to provide superior durability, reflectivity, weatherproofing, and mildew resistance. Non-migrating fire-retardant chemicals are permanently locked into the cured coating to ensure long-term performance.
1. Application Rate: 1.0 to 1.5 gal / 100 sf (.51 to .80 l/sqm.) per coat
  2. Application Method: Airless sprayer or roller.
  3. Application Temperature (air, surface): 42 degrees (5.5 degrees C) - 120 degrees F (49 degrees C).
  4. Dry Time (75 degrees F (24 degrees C), 50 percent RH): Approx. 24 hrs. per coat.
  5. Clean up: Water before curing.
- B. United Coatings™ Diathon QS Roof Coating: A quick set water-based top coat for spray polyurethane foam designed to achieve wash-off resistance from a light rain or dew in approximately 30 minutes at 75°F (24°C), 50% R.H. It is an advanced acrylic elastomer coating that combines high solids, quick-setting emulsion polymers, reinforcing laminar pigments, and potent biocides to help provide superior durability, reflectivity, weatherproofing, and mildew resistance. Non-migrating fire retardant chemicals are permanently locked into the cured coating to help ensure long-term performance.
1. Application Rate: 1.0 to 1.5 gal / 100 sf (.51 to .80 l/sqm.) per coat
  2. Application Method: Airless sprayer or roller.
  3. Application Temperature (air, surface): 42 degrees (5.5 degrees C) - 120 degrees F (49 degrees C).
  4. Dry Time (75 degrees F (24 degrees C), 50 percent RH): Approx. 24 hrs. per coat.
  5. Clean up: Water before curing.
- C. United Coatings™ Diathon HT Roof Coating: A high tensile water-based top coat for spray polyurethane foam with superior physical properties, durability, weatherproofing, dirt and mildew resistance, ultraviolet resistance, and fire retardancy. Developed as a superior coating to help protect sprayed in-place polyurethane foam insulation from degradation caused by normal weathering, aging, and ultraviolet exposure. Diathon® HT Roof Coating has the ability to uniformly cover the profile of textured substrates. Its dense, tight finish helps repel dirt and pollutants while the elastomeric membrane remains permanently flexible.
1. Application Rate: 1.0 to 1.5 gal / 100 sf (.51 to .80 l/sqm.) per coat
  2. Application Method: Airless sprayer or roller.
  3. Application Temperature (air, surface): 42 degrees (5.5 degrees C) - 120 degrees F (49 degrees C).
  4. Dry Time (75 degrees F (24 degrees C), 50 percent RH): Approx. 24 hrs. per coat.
  5. Clean up: Water before curing.
- D. United Coatings™ Diathon Base Roof Coating: A water-based acrylic base coat for spray polyurethane foam. Developed for building film thickness prior to the application of an appropriate Diathon® Roof Coating. The system effectively helps protect sprayed polyurethane foam insulation from degradation caused by normal weathering, aging, and ultraviolet exposure.
1. Application Rate: 1.0 to 1.5 gal / 100 sf (.51 to .80 l/sqm.) per coat
  2. Application Method: Airless sprayer or roller.

3. Application Temperature (air, surface): 42 degrees (5.5 degrees C) - 120 degrees F (49 degrees C).
4. Dry Time (75 degrees F (24 degrees C), 50 percent RH): Approx. 24 hrs. per coat.
5. Clean up: Water before curing.

## 2.3 FLASHINGS, FABRIC AND BULKING AGENTS

- A. United Coatings™ Roof Mate Butter Grade Flashing: A high volume solids for low shrinkage providing increased tensile strength and elongation on problem roof areas. It is ideally suited for sealing mechanical fasteners and horizontal seams on metal roofs, as well as around flashings, drains and protrusions. Also used for encapsulating Roof Mate Fabric.
  1. Application Rate: apply up to 1/4" (6.4 mm) thickness
  2. Application Method: Putty Knife, spatula and stiff bristle brush.
  3. Application Temperature (ambient): minimum 50 degrees (10 degrees C).
  4. Dry Time: 1-4 hours depending on application thickness
  5. Clean-up: Water before curing.
- B. United Coatings™ Roof Mate Fabric: Non-woven, stitch-bonded polyester fabric that is used in conjunction with United Coatings™ TCM Flashing (Spray Formula) at all seams, roof penetrations, joints or changes in plane that have high shear or stress. Use of Roof Mate Fabric is mandatory on all horizontal seams (except corrugated metal and those with Roof Mate Liquid Fabric application) and penetrations.

## 2.5 EQUIPMENT

- C. Airless Sprayer and Accessories: As recommended by GAF's Technical Services.

## PART 1 EXECUTION

### 1.1 SUBSTRATE CONDITIONS

- A. Installer shall prepare test patches to check adhesion. Questionable substrates shall be directed to GAF's Field Services Department for resolution.
- B. Preparation of Test Patches: Installer shall prepare no less than three (3) test patches for all questionable roof substrates to verify adhesion of United Coatings™ products. Minimum test patch size shall be one square foot (0.1 sqm.). After the test patches have been applied, allow at least one week of drying time before checking adhesion. Check adhesion by slicing an "X" (approx. 6 inches (152 mm) in size) near the center of the test patch. Then try to remove the United Coatings™ material at the center of the "X" with a spatula. Test patches shall be labeled and photographed to document adhesion test results. Installer shall consult with the GAF's Technical Services Department concerning all results.

### 1.2 PREPARATION OF SUBSTRATE

- A. Moisture Scan: A moisture scan shall be performed on the roof system to determine the suitability of the existing roof for application of a United Coatings™ roofing system. Any wet or deteriorated areas shall be removed and replaced.
- B. Preparation of the Roof substrate is the responsibility of the installer, who shall address and correct all of the conditions listed in this section. Examine substrates to receive new roofing. Do not proceed with the installation of the United Coatings™

roofing system until unsatisfactory conditions have been corrected in a manner acceptable to the manufacturer (GAF).

- C. Treatment of Ponding Water Areas: Installer shall make every effort to mechanically eliminate all ponding water areas on the roof prior to application of United Coatings™ products. Ponding water is defined as water that does not properly drain and remains on the roof for more than 48 hours after precipitation stops. Ponding water areas that cannot be eliminated shall be treated with FlexSeal™ Sealant prior to application of other United Coatings™ products.
- D. Thorough Cleaning / Removal of Existing Paints and Coatings: The substrate shall be pressure-washed with water. A minimum working pressure of 2,000 psi (13MPa) (shall be used to remove all delaminating paint and coatings, dirt, dust, and waste products (oil, oil-based roof cements, solvents, grease, animal fats, etc.). All existing silicone-based sealants shall be completely removed from the roof substrate prior to application of United Coatings™ products. The operator of the pressure washing equipment shall take special care in avoiding the introduction of water into the existing roof membrane. When encountering roof substrates that have living organisms such as algae, mold or fungus, a bleach solution shall be used to kill and remove these organisms during the roof cleaning.
- E. Deteriorated Seams/Cracks: Repair all delaminated or open seams using method acceptable to the manufacturer.
- F. Pitch Pans: Pitch pans shall be capped with sheet metal so they may be sealed with United Coatings™ products.
- G. Condensate Lines: Condensate lines shall be installed from HVAC units to gutters as part of the overall drainage system. The type of piping used for condensate lines may vary depending on local building codes.

### 1.3 FLASHING APPLICATION AND INSPECTION INFORMATION

- A. Preliminary work consists of substrate preparation and all flashing details. After completion of substrate preparation, all flashing details, penetrations and curbs shall be flashed with either 6 inches (152 mm) or 12 inches (305 mm) Roof Mate Fabric and United Coatings™ Roof Mate Butter Grade in accordance with United Coatings™ Detail Drawings. Roof Mate Butter Grade shall be feathered at the edges (see current United Coatings™ Detail Drawings) so that water may flow over the various flashing details.
- B. Parapet Walls: All parapet wall details within the roof system shall be secured and sealed with a 6 inches (152 mm) minimum width of United Coatings™ Roof Mate Butter Grade and Roof Mate Fabric. All voids and open areas shall be filled with polyurethane foam prior to application of Roof Mate Fabric and Roof Mate Butter Grade.
- C. Curb Flashings: All curb flashings, including cricket details, shall be flashed with at least a 6 inches (152 mm) width of Roof Mate Fabric and Roof Mate Butter Grade. Encapsulate all fasteners using United Coatings™ Roof Mate Butter Grade. Do not bridge fasteners. Roof Mate Fabric shall be cut around all fasteners so fabric lies flat.
- D. Penetrations: United Coatings™ Roof Mate Butter Grade shall be applied around the base of the penetration, extending at least 4 inches (101 mm) onto the vertical and 4 inches (101 mm) onto the base. Embed a 6 inches (152 mm) width of Roof Mate Fabric using additional Roof Mate Butter Grade, as necessary. Cut Roof Mate Fabric to accommodate the shape of the penetration. Both the top and bottom of neoprene

pipe boots shall be flashed using United Coatings™ Roof Mate Butter Grade and Roof Mate Fabric as described above.

- E. Skylights: Curb skylights shall be treated in the same fashion as curb flashings. The entire perimeter shall be flashed with a minimum 6 inches (152 mm) width of United Coatings™ Roof Mate Butter Grade and Roof Mate Fabric. All exposed skylight fasteners shall be encapsulated with United Coatings™ Roof Mate Butter Grade. Do not bridge fasteners. Roof Mate Fabric shall be cut around all fasteners so the fabric lies flat.
- F. Gutters: Trowel or brush apply FlexSeal™ Sealant to the interior or exterior gutter incorporating 6 inches (152 mm) Roof Mate Fabric at all gutter seams. Gutter shall be completely clean and dry before applying FlexSeal™ Sealant.
- G. Ponding Water Areas: The severity of the ponding water condition will determine the requirements for additional preparation. Contact the GAF's Technical Services Department for information.
- H. Inspect Preliminary Work / Flashing Details for problem areas (e.g., gaps, cracks, fishmouths, air pockets, etc.) to ensure that work is complete and satisfactory.

#### 1.4 OTHER ITEMS

- A. Installer shall take photographs of representative roof areas, including detail work, before work commences, after the surface has been properly prepared, after all flashing and detail work has been performed, and after the spray application of the United Coatings™ membrane.
- B. Installer shall provide the following support for on-site inspections by a representative from GAF's Field Services Department (list is not comprehensive):
  - 1. Representative from the installer's company who has authority to make binding decisions
  - 2. Required means to access all areas of the treated roof.
  - 3. Previous photographs of the roof, including test patch results, as applicable
  - 4. United Coatings™ products and application equipment required to repair roof areas where destructive tests are to be performed by GAF's Field Services Department.
- C. Special care shall be taken to avoid shading when spraying dark United Coatings™ Roofing Membrane colors. When applying a dark United Coatings™ Membrane color, Installer shall always spray wet material onto wet material to ensure that spray lines do not appear. United Coatings™ strongly recommends the installation of any dark-colored finish coat by spraying two lighter coats (instead of one heavy coat) using a smaller tip size. Installer should also use the roof ribs or standing seams to terminate each spray pass.
- D. Installer shall take special care when moving spray hoses and other equipment on the roof so that flashing work and encapsulated fastener heads are not damaged. Also, all spray equipment shall remain on the ground for the duration of the job.
- E. If there will be an extended period of time (6 months or greater) between application of base and finish coats, the use of United Coatings™ white for the base coat (versus gray) is recommended. The base coat shall be thoroughly cleaned before applying the finish coat.
- F. It is strongly recommended that walkways be installed in all high traffic areas. Contact the GAF's Technical Services Department for recommendations.



## 1.5 REPAIRS

- A. In the event that the United Coatings™ membrane is damaged or punctured, repairs are to be performed using United Coatings™ Roof Mate Butter Grade and Roof Mate Fabric (where necessary) as follows:
1. Damaged areas are to be cut, cleaned and dried.
  2. Apply Roof Mate Butter Grade, and feather out onto the existing United Coatings™ membrane.
  3. If a new penetration area has been cut, embed Roof Mate Fabric into the Flashing Grade according to standard United Coatings™ specifications.
  4. Once the Roof Mate Butter Grade has cured, United Coatings™ white or appropriate United Coatings™ color may be applied for aesthetic uniformity.
  5. For required repairs during cold weather conditions (i.e., below 42 degrees F (5.6 degrees C), United Coatings™ Roof Mate Butter Grade or FlexSeal™ Sealant shall be used in lieu of water-based Flashing Grade.

END OF SECTION