Section 07560

Liquid-Applied Roofing

United Coatings™ Unisil HS (Unisil HS II) Over Non-Metal Substrate

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PART 1 - GENERAL

* 1. SECTION INCLUDES
     1. This specification is intended to outline the requirements for application of the United Coatings™ roof coating, in conjunction with the appropriate product technical data sheets, over approved roof substrates in acceptable condition. Specific addenda address each surface at the end of this guide specification.
  2. RELATED SECTIONS
     1. Section 06100: Rough Carpentry: Roof blocking installation and requirements.
     2. Section 07620: Sheet Metal Flashing and Trim: Metal flashing and counter flashing installation and requirements.
     3. Section 15430: Plumbing Specialties: roof drains, scuppers, gutters and downspout installation and requirements.
  3. REFERENCES
     1. Factory Mutual (FM Global) - Approval Guide.
        1. Factory Mutual Standard 4470 - Approval Standard for Class 1 Roof Covers.
     2. Underwriters Laboratories (UL) - Roofing Systems and Materials Guide (TGFU R1306).
     3. 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 D 6083 - Standard Specification for Liquid Applied Acrylic Coating Used in Roofing
        6. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials.
        7. ASTM E 108 - Standard Test Methods for Fire Tests of Roof Coverings.
        8. ASTM G 26 - Practice for Operating Light-Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials.
        9. ASTM G 53 - Practice for Operating Light- and Water-Exposure Apparatus (Fluorescent UV-Condensation Type) for Exposure of Nonmetallic Materials.
     4. Sheet Metal and Air Conditioning Contractors National Association, 1nc. (SMACNA) - Architectural Sheet Metal Manual.
     5. National Roofing Contractors Association (NRCA).
     6. American Society of Civil Engineers (ASCE).
        1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
  4. DEFINITIONS
     1. 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.
  5. SYSTEM DESCRIPTION
     1. The United Coatings™ roofing work includes roofing, flashing and reinforcing of joints and junctions, and roof accessories integrally related to roof installation.
     2. Final determination of the fitness of the system, or its components, for any given roof may not be made by any representative of GAF/United Coatings™ other than a member of GAF’s Field Services Department.
     3. Provide an installed roof coating 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.
     4. GAF shall provide all primary roofing materials that are physically and chemically compatible when installed in accordance with manufacturers current application requirements.
  6. SUBMITTALS
     1. Submit under provisions of Section 01300.
     2. Product Data:
        1. Provide product data sheets for each type of product indicated in this section.
     3. Shop Drawings:
        1. Provide manufacturers standard details and approved shop drawings for the system specified.
  7. QUALITY ASSURANCE
     1. Manufacturer Qualifications: GAF shall provide a roofing system that meets or exceeds the criteria listed in this section.
     2. 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.
     3. Source Limitations: Components listed shall be provided by a single manufacturer or approved by the primary roofing manufacturer.
  8. PRE-INSTALLATION CONFERENCE
     1. 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™ roof coating 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.
  9. REGULATORY REQUIREMENTS
     1. Work shall be performed in a safe, professional manner, conforming to federal, state and local codes.
     2. UL Listing: Provide United Coatings™ Roof Coating 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.
  10. DELIVERY, STORAGE, AND HANDLING
      1. Store and handle United Coatings™ materials in a manner that will ensure there is no possibility of contamination.
      2. Store in a dry, well ventilated, weather tight location at temperatures between 50°F (10°C) and 90°F (32°C) until the products are ready to be applied (keep from freezing). Do not stack material pallets more than two (2) high.
      3. Do not subject existing roof to unnecessary loading of stockpiled materials.
      4. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.
  11. PROJECT CONDITIONS
      1. Weather:
         1. Proceed with roofing only when existing and forecasted weather conditions permit.
         2. Ambient temperatures shall be above 40°F (5°C) when applying silicone coatings.
      2. 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 40°F (5°C) during the duration of the job.
         2. Upper temperature restriction (both air and substrate) for application of United Coatings™ products is 110°F (43°C). If substrate temperatures exceed 110°F (43°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.
  12. WARRANTY [\*\*\*Choose Warranty Option\*\*\*](http://www.gaf.com/General/DocList.asp?WS=GAF&Silo=ARCH&App=PROD&UID=&CatID=85&ProdID=5&ProdName=Guarantees+%26+Warranties)
      1. 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: \*\*\* Select Applicable Product Term \*\*\*
            1. Ten (10) Years Labor and Material
            2. Fifteen (15) Years Labor and Material
            3. Twenty (20) Years Labor and Material
      2. Limited Product Warranty: Manufacturers standard form, in which GAF agrees to replace or reimburse the owner the portion of the products that leaks in the event of a manufacturing defect.

PART 2 - PRODUCTS

* 1. MANUFACTURERS
     1. 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; Web: www.gaf.com
     2. Substitutions: Not permitted.
     3. Requests for substitutions will be considered in accordance with provisions of Section 01600.
  2. COATINGS
     1. United Coatings™ Unisil HS (Unisil HS II) Roof Coating: A water-based high solids silicone coating that helps provides superior weatherproofing, ultraviolet resistance, biological resistance and fire retardancy over polyurethane foam insulation and other appropriate substrates. The pure silicone polymers are naturally fire retardant to provide long-term fire resistance, while the tight surface finish affectively resists the attachment of algae, mildew and mold organisms.
        1. Application Rate: 1.0 to 1.5 gal per 100 ft2 (4.07 to 6.11 L/ 10 m2) per coat.
        2. Application Method: Airless sprayer, brush, or roller.
        3. Application Temperature (air, surface): 40°F (5°C) - 110°F (43°C).
        4. Dry time: (light rain & foot traffic) White at 4 hours at 70°F (21°C) 50% relative humidity at 16 wet mils (406 microns).
  3. FLASHINGS, FABRIC AND BULKING AGENTS
     1. United Coatings™ Unisil Silicone Flashing: A thick, high-build, silicone sealant. It is designed to seal abnormal roof penetrations that cannot be covered with standard sprayers or rollers. United Coatings™ Unisil Silicone Flashing features include low odor, an easy application, fast moisture cure, and enhanced adhesion to a variety of substrates.
        1. Application Rate: 1.25 gal per 100 ft2 (5.09 L/10 m2) per coat. A minimum of 2 coats will be required.
        2. Application Method: Brush.
        3. Application Temperature (air, surface): 40°F (5°C) - 110°F (43°C).
        4. Clean up: Mineral spirits.
     2. United Coatings™ Roof Mate™ Fabric: tough, non-woven, stitch-bonded, heat-set polyester designed for roofing and flashing applications of all types. Available in 300ft rolls and varying widths.
        1. Length: 300 ft. (91 m), Width: 4 inch (102 mm), 6 inch (152 mm), 8 inch (203 mm), 12 inch (305 mm), 16 inch (406 mm), 20 inch (508 mm), 24 inch (610 mm).
        2. Length: 336ft (102 m), Width: 40” (1.02 m”).
     3. United Coatings™ UniTape Seam Tape: A polymer-backed woven polyester reinforcing fabric designed for application to a wide range of substrates where additional strength is required over seams, splits, transitions, protrusions, etc.
        1. Temperature Limits for Service -30°F - 180°F (-34°C - 82°C)
        2. Bond Time: Initial bond is immediate; full bond requires approximately 24 hours.
  4. PRIMERS, CLEANERS AND SEALANTS \*\*\* Delete materials not required\*\*\*
     1. Unisil Primer: A two component, water-based, 1 to 1 ratio primer specifically designed for optimizing the adhesion of Unisil HS over a concrete, metal, asphaltic, most non-TPO single-ply membranes, and existing coatings.
        1. Application Rate: 0.33 – 1.30 gal per 100 ft2 (1.34 - 5.30 L/10 m2).
        2. Application Method: Brush, roller or sprayer.
        3. Application Temperature (air, surface): 50°F (10°C) - 110°F (43°C).
        4. Dry Time: 1 hour at 75°F (24°C) at 50% relative humidity.
     2. Adhere-it® II: Is specifically developed for dramatically increasing the bond to new or weathered black EPDM surfaces. It is a low viscosity, pinkish liquid that chemically alters the black EPDM surface to which it is applied, creating a “lock and key” effect with the subsequent topcoat.
        1. Application Rate: 0.20 gal per 100 ft2 (0.81 L/10 m2).
        2. Application Method: pump-up sprayer.
        3. Application Temperature (air, surface): 50°F (10°C) to 110°F (43°C)
        4. Dry Time: 20 minutes. Should be power-washed after a minimum of 20 minutes and maximum of 2 hours.
     3. United Cleaning Concentrate: A highly effective cleaning agent that, when combined with water, penetrates the existing coating or substrate and allows contaminants to be flushed from the surface. It is non-toxic and leaves no pollutants or contaminating by-products to damage the environment. Used for the proper cleaning of existing elastomeric coating on roofs, metal surfaces, concrete and masonry substrates, as well as uncoated roof, deck and wall surfaces.
        1. Application Rate: 0.50 – 0.67 gallon per 100 ft2 (2.04 - 2.73 L/ 10m2).
        2. Application Method: Low pressure sprayer or broom.
  5. EQUIPMENT
     1. Airless Sprayer and Accessories: As recommended by GAF’s Technical Services.

PART 3 - EXECUTION

* 1. SUBSTRATE CONDITIONS
     1. Installer shall verify adherence to the substrate with a field peel adhesion test, achieving a minimum result of 2.0 pounds per linear inch (PLI) [0.36 kilograms per linear centimeter (kg/cm)]. Questionable substrates shall be directed to GAF’s Field Services Department for resolution.
     2. Follow GAF’s substrate Preparation Guidelines at gaf.com.
  2. SYSTEM APPLICATION
     1. Refer to individual addenda at the end of this guide specification for preparation and application requirements for specific substrates.
        1. Addendum 1 - Resurfacing PVC & Hypalon® Substrates
        2. Addendum 2 - Resurfacing Asphaltic Substrates
        3. Addendum 3 - Resurfacing EPDM Substrate
        4. Addendum 4 - Resurfacing Structural Concrete & Corrugated Structural Transite Panels Substrates
        5. Addendum 5 – Resurfacing Spray Polyurethane Foam (SPF) Substrate
  3. INSPECTION INFORMATION
     1. Inspect Preliminary Work / Flashing Details for problem areas (e.g., gaps, cracks, fishmouths, air pockets, etc.) to ensure that work is complete and satisfactory.
     2. Inform Project Architect and GAF’s Field Services Department when all preliminary work and flashing details will be complete and the Installer is ready to proceed with application of United Coatings™ roof coating. Allow a minimum of two (2) weeks for the interim inspection to be made by the GAF’s Field Services Department.
     3. Any final roofing installation prior to this interim inspection is subject to rejection by the Project Architect and/or the GAF’s Field Services Department. Please be advised that Technical On-Site Support for instructing Certified Contractors in the proper application of the United Coatings™ roof coating is available. The first day of instruction is at no-charge to the Certified Contractor. Any additional days or return trips for instruction will be at a cost of $600.00 per day, plus all incurred travel expenses. The two (2) required inspections (interim and final) for the Liquid Applied Roofing Guarantees are free of charge. Additional inspections will be billed at a rate of $600.00 per day plus all incurred travel costs.
  4. OTHER ITEMS
     1. 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™ roof coating.
     2. 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.
     3. Special care shall be taken to avoid shading when spraying dark United Coatings™ roof coating colors. When applying a dark United Coatings™ roof coating 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.
     4. 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.
     5. It is strongly recommended that walkways designed for metal roofing systems be installed in all high traffic areas. Contact the GAF’s Technical Services Department for recommendations.
  5. REPAIRS
     1. In the event that the United Coatings™ roof coating is damaged or punctured, repairs are to be performed using United Coatings™ Unisil (Unisil II) Roof Coating and United Coatings™ Roof Mate™ Fabric (where necessary) as follows:
        1. Damaged areas are to be cut, cleaned and dried.
        2. Apply United Coatings™ Unisil (Unisil II) Roof Coating and feather out onto the existing United Coatings™ Unisil HS (Unisil HS II) coating.
        3. If a new penetration area has been cut, embed United Coatings™ Roof Mate™ Fabric with United Coatings™ Unisil (Unisil II) Roof Coating according to standard United Coatings™ Unisil specifications.

**END OF SECTION**

**ADDENDUM 1** – **Resurfacing PVC & Hypalon® Substrates**

* 1. PREPARATION OF SUBSTRATE
     1. Moisture Survey: A moisture survey shall be performed on the roof to determine the suitability of the existing roof for application of a United Coatings™ roof coating. Any wet or deteriorated areas shall be removed and replaced.
     2. 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™ roof coating until unsatisfactory conditions have been corrected in a manner acceptable to the manufacturer (GAF).
     3. 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.
     4. Thorough Cleaning / Removal of Existing Paints and Coatings: The substrate shall be power washed with water. A minimum working pressure of 2,000 psi (13.79 MPa) (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.
     5. Deteriorated Seams/Cracks: Repair all delaminated or open seams using method acceptable to the manufacturer.
     6. Pitch Pans: Pitch pans shall be capped with sheet metal so they may be sealed with United Coatings™ products.
     7. 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.
     8. Application of Primer: Prime using Unisil primer at the rate of 0.33 gal per 100 ft2 (1.34 L/10 m2).
  2. FLASHING APPLICATION
     1. 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 a 6 inch (152 mm) or 12 inch (305 mm) Roof Mate™ Fabric and United Coatings™ Unisil Flashing Grade in accordance with United Coatings™ Detail Drawings. United Coatings™ Unisil Flashing Grade shall be feathered at the edges (see current United Coatings™ Detail Drawings) so that water may flow over the various flashing details.
     2. Parapet Walls: All parapet wall details within the roof system shall be secured and sealed with a 12 inch (305 mm) minimum width of United Coatings™ Roof Mate™ Fabric with United Coatings™ Unisil Flashing Grade.
     3. Curb Flashings: All curb flashings, including cricket details, shall be flashed with a 12 inch (305 mm) width of Roof Mate™ Fabric and United Coatings™ Unisil Flashing Grade. Encapsulate all fasteners using United Coatings™ Unisil Flashing Grade. Do not bridge fasteners. Roof Mate™ Fabric shall be cut around all fasteners so fabric lies flat.
     4. Penetrations: United Coatings™ Unisil Flashing Grade shall be applied around the base of the penetration, extending at least 6 inches (152 mm) onto the vertical and 6 inches (152 mm) onto the base. Embed a 12 inch (305 mm) width of Roof Mate™ Fabric using additional United Coatings™ Unisil Flashing 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™ Unisil Flashing Grade and Roof Mate™ Fabric as described above.
     5. Skylights: Curb skylights shall be treated in the same fashion as curb flashings. After flashing work has been completed and the coating has cured, treat deteriorated fiberglass skylight panels with United Coatings™ Acrysheen Sealer.
     6. Gutters: Trowel or brush apply FlexSeal™ Sealant to the interior or exterior gutters incorporating 12 inch (305 mm) United Coatings™ Roof Mate™ Fabric at all gutter seams. Gutter shall be completely clean and dry before applying FlexSeal™ Sealant.
     7. 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.
     8. Inspect Preliminary Work / Flashing Details for problem areas (e.g., gaps, cracks, fishmouths, air pockets, etc.) to ensure that work is complete and satisfactory.
  3. FIELD OF ROOF APPLICATION AND RATES\*\*\* Delete terms not required\*\*\*
     1. Resurfacing PVC & Hypalon® Substrates 10 year System:
        1. Conduct moisture survey and remove/replace all wet areas.
        2. Repair membrane including seams, penetrations, flashings, curbs, and terminations with like materials.
        3. Power wash roof to ensure it is free of dirt, debris, oil and other contaminants that could negatively affect adhesion. United Cleaning Concentrate is recommended to clean the roof. Allow the roof to completely dry.
        4. Before applying the United Coatings™ Unisil HS (Unisil HS II), an adhesion test is required to ensure an adhesion minimum of 2.0 PLI (0.36 kg/cm). Test patches to be applied with the rates listed below.
        5. Prime using Unisil primer at the rate of 0.33 gal per 100 ft2 (1.34 L/10m2).
        6. Treat all penetrations, drains, curbs, and scuppers as listed above.
        7. Treat seams:
           1. **Loose seams** to be treated with a 6 inch (15.2 cm) wide band [12 inches (30.5 cm) at the perimeter and transitions] of United Coatings™ Unisil Silicone Flashing at 1.25 gal per 100 ft2 (5.09 L/m2), United Coatings™ Roof Mate™ Fabric, and 1.25 gal per 100 ft2 (5.09 L/m2) United Coatings™ Unisil Silicone Flashing.
           2. **Vertical and Horizontal seams** to be treated with 1.25 gal per 100 ft2 (5.09 L/m2) of United Coatings™ Unisil Silicone Flashing.
        8. Apply first coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 0.75 gal per 100 ft2 (3.06 L/m2). Allow coating to dry (enough to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
        9. Apply second coat of United Coatings™ Unisil HS at the rate of 0.75 gal per 100 ft2 (3.06 L/m2). Allow coating to dry (enough to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
        10. When coating is dry enough to walk on, inspect the final roof surface for flaws, areas of insufficient coverage, insufficient thickness, etc. The specified United Coatings™ dry roof coating thickness is 23 mils in the field of the roof. All unsatisfactory areas must be repaired within 24 hours.
     2. Resurfacing PVC & Hypalon® Substrates 15 year System:
        1. Conduct moisture survey and remove/replace all wet areas.
        2. Repair membrane including seams, penetrations, flashings, curbs, and terminations with like materials.
        3. Power wash roof to ensure it is free of dirt, debris, oil and other contaminants that could negatively affect adhesion. United Cleaning Concentrate is recommended to clean the roof. Allow the roof to completely dry.
        4. Before applying the United Coatings™ Unisil HS (Unisil HS II), an adhesion test is required to ensure an adhesion minimum of 2.0 PLI (0.36 kg/cm). Test patches to be applied with the rates listed below.
        5. Prime using Unisil primer at the rate of 0.33 gal per 100 ft2 (1.34 L/10m2).
        6. Treat all penetrations, drains, curbs, and scuppers as listed above.
        7. Treat seams:
           1. **Loose seams** to be treated with a 6 inch (152 cm) wide band [12 inches (305 cm) at the perimeter and transitions] of United Coatings™ Unisil Silicone Flashing at 1.25 gal per 100 ft2 (5.09 L/m2), United Coatings™ Roof Mate™ Fabric, and 1.25 gal per 100 ft2 (5.09 L/m2) United Coatings™ Unisil Silicone Flashing.
           2. **Vertical and Horizontal seams** to be treated with 1.25 gal per 100 ft2 (5.09 L/m2) of United Coatings™ Unisil Silicone Flashing.
        8. Apply first coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 1.0 gal per 100 ft2 (4.07 L/m2). Allow coating to dry (enough to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
        9. Apply second coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 1.0 gal per 100 ft2 (4.07 L/m2). Allow coating to dry (enough to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
        10. When coating is dry enough to walk on, inspect the final roof surface for flaws, areas of insufficient coverage, insufficient thickness, etc. The specified United Coatings™ roof coating thickness is 31 mils in the field of the roof. All unsatisfactory areas must be repaired within 24 hours.
     3. Resurfacing PVC & Hypalon® Substrates 20 year System:
        1. Conduct moisture survey and remove/replace all wet areas.
        2. Repair membrane including seams, penetrations, flashings, curbs, and terminations with like materials.
        3. Power wash roof to ensure it is free of dirt, debris, oil and other contaminants that could negatively affect adhesion. United Cleaning Concentrate is recommended to clean the roof. Allow the roof to completely dry.
        4. Before applying the United Coatings™ Unisil HS (Unisil HS II), an adhesion test is required to ensure an adhesion minimum of 2.0 PLI (0.36 kg/cm). Test patches to be applied with the rates listed below.
        5. Prime using Unisil primer at the rate of 0.33 gal per 100 ft2 (1.34 L/10m2).
        6. Treat all penetrations, drains, curbs, and scuppers as listed above.
        7. Treat seams:
           1. **Loose seams** to be treated with a 6 inch (152 cm) wide band [12 inches (305 cm) at the perimeter and transitions] of United Coatings™ Unisil Silicone Flashing at 1.25 gal per 100 ft2 (5.09 L/m2), United Coatings™ Roof Mate™ Fabric, and 1.25 gal per 100 ft2 (5.09 L/m2) United Coatings™ Unisil Silicone Flashing.
           2. **Vertical and Horizontal seams** to be treated with 1.25 gal per 100 ft2 (5.09 L/m2) of United Coatings™ Unisil Silicone Flashing.
        8. Apply first coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 1.5 gal per 100 ft2 (6.11 L/m2). Allow coating to dry (enough to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
        9. Apply second coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 1.0 gal per 100 ft2 (4.07 L/m2). Allow coating to dry (enough to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
        10. After a minimum of 24 hours has elapsed, inspect the final roof surface for flaws, areas of insufficient coverage, insufficient thickness, etc. The specified United Coatings™ roof coating thickness is 38 mils in the field of the roof. All unsatisfactory areas must be repaired.

**ADDENDUM 2 – Resurfacing Asphaltic Substrates**

* 1. PREPARATION OF SUBSTRATE
     1. GAF recommends that new asphaltic membranes and repairs age at least 30 days; 90 days is Ideal.
     2. Moisture Survey: A moisture survey shall be performed on the roof to determine the suitability of the existing roof for application of a United Coatings™ roof coating. Any wet or deteriorated areas shall be removed and replaced.
     3. Preparation of the roof substrate is the responsibility of the installer, who shall address and correct all of the conditions listed in this section. Do not proceed with the installation of the United Coatings™ roof coating until unsatisfactory conditions have been corrected in a manner acceptable to the manufacturer (GAF).
     4. Treatment of damaged/deteriorated membrane: Any areas where the membrane has torn, cracked and/or buckled must be repaired using similar or compatible products manufactured by GAF. Any wet insulation must be replaced as part of the roofing repair. Allow 24 hours drying time before application of other United Coating™ products.
     5. 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.
     6. Membrane Cleaning: If it is a new asphaltic substrate (less than 5 years) the surface may be cleaned using pressured air and dry broom. NOTE: If there is excessive dirt accumulation on new asphaltic membranes that cannot be removed by the dry cleaning method, it must be power-washed and cleaned with UCC (United Cleaning Concentrate). For aged substrates (5 or more years) the roof substrate must be carefully pressure washed with water. Use an approximate working pressure of 2,000 psi (13.79 MPa), depending on condition of roof, to remove all dirt, dust, chalking, loose materials, etc. Take care not to damage the roof surface or force water into the roof system. Use hot water and mild detergent to remove grease and/or oils from the roof substrate. If mildew or algae are present, use bleach to treat these areas, then pressure wash surface.
     7. Deteriorated Seams: Repair all delaminated or open seams using method acceptable to the manufacturer.
     8. Pitch Pans: Pitch pans shall be capped with sheet metal so they may be sealed with United Coatings™ products.
     9. 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.
     10. Do not apply over gravel surfaced asphaltic substrates.
     11. Application of Primer: Prime using Unisil primer at the rate of 0.67 - 1.33 gal per 100 ft2 (2.73 – 5.42 L/10 m2).
  2. FLASHING APPLICATION
     1. 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 a 6 inch (152 mm) or 12 inch (305 mm) United Coatings™ Roof Mate™ Fabric and United Coatings™ Unisil Flashing Grade in accordance with United Coatings™ Detail Drawings. United Coatings™ Unisil Flashing Grade shall be feathered at the edges (see current United Coatings™ Detail Drawings) so that water may flow over the various flashing details.
     2. Parapet Walls: All parapet wall details within the roof system shall be secured and sealed with a 12 inch (305 mm) minimum width of United Coatings™ Roof Mate™ Fabric with United Coatings™ Unisil Flashing Grade. All voids and open areas shall be filled with polyurethane foam prior to application of Roof Mate™ Fabric and United Coatings™ Unisil Flashing Grade.
     3. Curb Flashings: All curb flashings, including cricket details, shall be flashed with a 12 inches (305 mm) width of United Coatings™ Roof Mate™ Fabric and United Coatings™ Unisil Flashing Grade. Encapsulate all fasteners using United Coatings™ Unisil Flashing Grade. Do not bridge fasteners. Roof Mate™ Fabric shall be cut around all fasteners so fabric lies flat.
     4. Penetrations: United Coatings™ Unisil Flashing Grade shall be applied around the base of the penetration, extending at least 6 inches (152 mm) onto the vertical and 6 inches (152 mm) onto the base. Embed a 12 inch (305 mm) width of Roof Mate™ Fabric using additional United Coatings™ Unisil Flashing 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™ Unisil Flashing Grade and Roof Mate™ Fabric as described above.
     5. Skylights: Curb skylights shall be treated in the same fashion as curb flashings. After flashing work has been completed and the coating has cured, treat deteriorated fiberglass panels with United Coatings™ Acrysheen Sealer.
     6. Gutters: Trowel or brush apply FlexSeal™ Sealant to the interior or exterior gutters incorporating 12 inch (305 mm) United Coatings™ Roof Mate™ Fabric at all gutter seams. Gutter shall be completely clean and dry before applying FlexSeal™ Sealant.
     7. 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.
     8. Inspect Preliminary Work / Flashing Details for problem areas (e.g., gaps, cracks, fishmouths, air pockets, etc.) to ensure that work is complete and satisfactory.
  3. FIELD OF ROOF APPLICATION AND RATES\*\*\* Delete terms not required\*\*\*
     1. Resurfacing Asphaltic Substrates 10 year System:
        1. Conduct moisture survey and remove/replace all wet areas.
        2. Repair membrane including seams, penetrations, flashings, curbs, and terminations with like materials.
        3. If it is a new asphaltic substrate (less than 5 years), the surface may be cleaned using pressured air and dry brooms. NOTE: If there is excessive dirt accumulation on new asphaltic membranes that cannot be removed by the dry cleaning method, it must be power-washed and cleaned with UCC (United Cleaning Concentrate). For aged substrates (5 or more years) the roof substrate must be power washed to ensure it is free of dirt, debris, oil and other contaminants that could negatively affect adhesion. United Cleaning Concentrate is recommended to clean the roof. Allow the roof to completely dry.
        4. Before applying the United Coatings™ Unisil HS (Unisil HS II), an adhesion test is required to ensure an adhesion minimum of 2.0 PLI (0.36 kg/cm) (0.36 kg/cm). Test patches to be applied with the rates listed below.
        5. Prime using Unisil primer at the rate of 0.67 - 1.33 gal per 100 ft2 (2.73 – 5.42 L/10 m2).
        6. Treat all penetrations, drains, curbs, and scuppers as listed above.
        7. Treat seams:
           1. **Loose seams** to be treated with a 6 inch (15.2 cm) wide band [12 inches (30.5 cm) at the perimeter and transitions] of United Coatings™ Unisil Silicone Flashing at 1.25 gal per 100 ft2 (5.09 L/m2), United Coatings™ Roof Mate™ Fabric, and 1.25 gal per 100 ft2 (5.09 L/m2) United Coatings™ Unisil Silicone Flashing.
           2. **Vertical and Horizontal seams** to be treated with 1.25 gal per 100 ft2 (5.09 L/m2) of United Coatings™ Unisil Silicone Flashing.
        8. Apply first coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 1.00 gal per 100 ft2 (4.07 L/m2). Allow coating to dry (enough to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
        9. Apply second coat of United Coatings™ Roofing Membrane at the rate of 0.75 gal per 100 ft2 (3.06 L/m2). Allow coating to dry (enough to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
        10. When coating is dry enough to walk on, inspect the final roof surface for flaws, areas of insufficient coverage, insufficient thickness, etc. The specified United Coatings™ roof coating thickness is 27 mils in the field of the roof. All unsatisfactory areas must be repaired within 24 hours.
     2. Resurfacing Asphaltic Substrates 15 year System:
        1. Conduct moisture survey and remove/replace all wet areas.
        2. Repair membrane including seams, penetrations, flashings, curbs, and terminations with like materials.
        3. If it is a new asphaltic substrate (less than 5 years), the surface may be cleaned using pressured air and dry brooms. NOTE: If there is excessive dirt accumulation on new asphaltic membranes that cannot be removed by the dry cleaning method, it must be power-washed and cleaned with UCC (United Cleaning Concentrate). For aged substrates (5 or more years) the roof substrate must be power washed to ensure it is free of dirt, debris, oil and other contaminants that could negatively affect adhesion. United Cleaning Concentrate is recommended to clean the roof. Allow the roof to completely dry.
        4. Before applying the United Coatings™ Unisil HS (Unisil HS II), an adhesion test is required to ensure an adhesion minimum of 2.0 PLI (0.36 kg/cm). Test patches to be applied with the rates listed below.
        5. Prime using Unisil primer at the rate of 0.67 - 1.33 gal per 100 ft2 (2.73 – 5.42 L/10 m2).
        6. Treat all penetrations, drains, curbs, and scuppers as listed above.
        7. Treat seams:
           1. **Loose seams** to be treated with a 6 inch (15.2 cm) wide band [12 inches (30.5 cm) at the perimeter and transitions] of United Coatings™ Unisil Silicone Flashing at 1.25 gal per 100 ft2 (5.09 L/m2), United Coatings™ Roof Mate™ Fabric, and 1.25 gal per 100 ft2 (5.09 L/m2) United Coatings™ Unisil Silicone Flashing.
           2. **Vertical and Horizontal seams** to be treated with 1.25 gal per 100 ft2 (5.09 L/m2) of United Coatings™ Unisil Silicone Flashing.
        8. Apply first coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 1.25 gal per 100 ft2 (5.09 L/m2). Allow coating to dry (enough to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
        9. Apply second coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 1.00 gal per 100 ft2 (4.07 L/m2). Allow coating to dry (enough to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
        10. When coating is dry enough to walk on, inspect the final roof surface for flaws, areas of insufficient coverage, insufficient thickness, etc. The specified United Coatings™ roof coating thickness is 35 mils in the field of the roof. All unsatisfactory areas must be repaired within 24 hours.
     3. Resurfacing Asphaltic Substrates 20 year System:
        1. Conduct moisture survey and remove/replace all wet areas.
        2. Repair membrane including seams, penetrations, flashings, curbs, and terminations with like materials.
        3. If it is a new asphaltic substrate (less than 5 years), the surface may be cleaned using pressured air and dry brooms. NOTE: If there is excessive dirt accumulation on new asphaltic membranes that cannot be removed by the dry cleaning method, it must be power-washed and cleaned with UCC (United Cleaning Concentrate). For aged substrates (5 or more years) the roof substrate must be power washed to ensure it is free of dirt, debris, oil and other contaminants that could negatively affect adhesion. United Cleaning Concentrate is recommended to clean the roof. Allow the roof to completely dry.
        4. Before applying the United Coatings™ Unisil HS (Unisil HS II), an adhesion test is required to ensure an adhesion minimum of 2.0 PLI (0.36 kg/cm). Test patches to be applied with the rates listed below.
        5. Prime using Unisil primer at the rate of 0.67 - 1.33 gal per 100 ft2 (2.73 – 5.42 L/10 m2).
        6. Treat all penetrations, drains, curbs, and scuppers as listed above.
        7. Treat all seams:
           1. **Loose seams** to be treated with a 6 inch (15.2 cm) wide band [12 inches (30.5 cm) at the perimeter and transitions] of United Coatings™ Unisil Silicone Flashing at 1.25 gal per 100 ft2 (5.09 L/m2), United Coatings™ Roof Mate™ Fabric, and 1.25 gal per 100 ft2 (5.09 L/m2) United Coatings™ Unisil Silicone Flashing.
           2. **Vertical and Horizontal seams** to be treated with 1.25 gal per 100 ft2 (5.09 L/m2) of United Coatings™ Unisil Silicone Flashing.
        8. Apply first coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 1.50 gal per 100 ft2 (6.11 L/m2). Allow coating to dry (enough to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
        9. Apply second coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 1.25 gal per 100 ft2 (5.09 L/m2). Allow coating to dry (enough to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
        10. When coating is dry enough to walk on, inspect the final roof surface for flaws, areas of insufficient coverage, insufficient thickness, etc. The specified United Coatings™ roof coating thickness is 42 mils in the field of the roof. All unsatisfactory areas must be repaired within 24 hours.

**ADDENDUM 3 – Resurfacing EPDM Substrate**

* 1. PREPARATION OF SUBSTRATE
     1. Moisture Survey: A moisture survey shall be performed on the roof to determine the suitability of the existing roof for application of a United Coatings™ roof coating. Any wet or deteriorated areas shall be removed and replaced.
     2. Preparation: Preparation of the roof substrate is the responsibility of the installer, who shall address and correct all of the conditions listed in this section. Do not proceed with the installation of the United Coatings™ roof coating until unsatisfactory conditions have been corrected in a manner acceptable to the manufacturer (GAF).
     3. 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.
     4. Deteriorated Seams: Repair all delaminated or open seams using method acceptable to the manufacturer.
     5. Pitch Pans: Pitch pans shall be capped with sheet metal so they may be sealed with United Coatings™ products.
     6. 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.
     7. Membrane Cleaning: Roof substrate must be carefully pressure washed with water. Use an approximate working pressure of 2,000 psi (13.79MPa), depending on condition of roof, to remove all dirt, dust, chalking, loose materials, etc. Take care not to damage the roof surface or force water into the roof system. Use hot water and mild detergent to remove grease and/or oils from the roof substrate. If mildew or algae are present, use bleach to treat these areas, then pressure wash surface.
     8. Application of Primer: Prime with Adhere-It II Primer at the rate of 0.20 gal per 100 ft2 (0.81 L/10 m2) **AND** Unisil Primer at the rate of 0.33 gal per 100 ft2 (1.34 L/10 m2).
  2. FLASHING APPLICATION
     1. 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 a 6 inch (152 mm) or 12 inch (305 mm) width United Coatings™ Roof Mate™ Fabric and United Coatings™ Unisil Flashing Grade in accordance with United Coatings™ Detail Drawings. United Coatings™ Unisil Flashing Grade shall be feathered at the edges (see current United Coatings™ Detail Drawings) so that water may flow over the various flashing details.
     2. Parapet Walls: All parapet wall details within the roof system shall be secured and sealed with a 12 inch (305 mm) minimum width of United Coatings™ Roof Mate™ Fabric with United Coatings™ Unisil Flashing Grade. All voids and open areas shall be filled with polyurethane foam prior to application of Roof Mate™ Fabric and United Coatings™ Unisil Flashing Grade.
     3. Curb Flashings: All curb flashings, including cricket details, shall be flashed with at least a 12 inch (305 mm) width of United Coatings™ Roof Mate™ Fabric and United Coatings™ Unisil Flashing Grade. Encapsulate all fasteners using United Coatings™ Unisil Flashing Grade. Do not bridge fasteners. Roof Mate™ Fabric shall be cut around all fasteners so fabric lies flat.
     4. Penetrations: United Coatings™ Unisil Flashing Grade shall be applied around the base of the penetration, extending at least 6 inches (152 mm) onto the vertical and 6 inches (152 mm) onto the base. Embed a 12 inch (305 mm) width of Roof Mate™ Fabric using additional United Coatings™ Unisil Flashing 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™ Unisil Flashing Grade and Roof Mate™ Fabric as described above.
     5. Skylights: Curb skylights shall be treated in the same fashion as curb flashings. After the flashing work is completed and the coating has cured, treat deteriorated fiberglass skylight panels with United Coatings™ Acrysheen Sealer.
     6. Gutters: Trowel or brush apply FlexSeal™ Sealant to the interior or exterior gutters incorporating 12 inch (305 mm) United Coatings™ Roof Mate™ Fabric at all gutter seams. Gutter shall be completely clean and dry before applying FlexSeal™ Sealant.
     7. 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.
     8. Inspect Preliminary Work / Flashing Details for problem areas (e.g., gaps, cracks, fishmouths, air pockets, etc.) to ensure that work is complete and satisfactory.
  3. FIELD OF ROOF APPLICATION AND RATES

\*\*\* Delete terms not required\*\*\*

* + 1. Resurfacing EPDM Substrates 10 year System:
       1. Conduct moisture survey and remove/replace all wet areas.
       2. Repair membrane including seams, penetrations, flashings, curbs, and terminations with like materials.
       3. Power wash roof to ensure it is free of dirt, debris, oil and other contaminants that could negatively affect adhesion. United Cleaning Concentrate is recommended to clean the roof. Allow the roof to completely dry.
       4. Before applying the United Coatings™ Unisil HS (Unisil HS II), an adhesion test is required to ensure an adhesion minimum of 2.0 PLI (0.36 kg/cm). Test patches to be applied with the rates listed below.
       5. Prime with Adhere-It II Primer at the rate of 0.20 gal per 100 ft2 (0.81 L/10 m2) **AND** Unisil Primer at the rate of 0.33 gal per 100 ft2 (1.34 L/10 m2).
       6. Treat all penetrations, drains, curbs, and scuppers as listed above.
       7. Treat seams:
          1. **Loose seams** to be treated with a 6 inch (15.2 cm) wide band [12 inches (30.5 cm) at the perimeter and transitions] of United Coatings™ Unisil Silicone Flashing at 1.25 gal per 100 ft2 (5.09 L/m2), United Coatings™ Roof Mate™ Fabric, and 1.25 gal per 100 ft2 (5.09 L/m2) United Coatings™ Unisil Silicone Flashing.
          2. **Vertical and Horizontal seams** to be treated with 1.25 gal per 100 ft2 (5.09 L/m2) of United Coatings™ Unisil Silicone Flashing.
       8. Apply first coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 0.75 gal per 100 ft2 (3.06 L/m2). Allow coating to dry (enough to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
       9. Apply second coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 0.75 gal per 100 ft2 (3.06 L/m2). Allow coating to dry (enough to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
       10. When coating is dry enough to walk on, inspect the final roof surface for flaws, areas of insufficient coverage, insufficient thickness, etc. The specified United Coatings™ roof coating thickness is 23 mils in the field of the roof. All unsatisfactory areas must be repaired within 24 hours.
    2. Resurfacing EPDM Substrates 15 year System:
       1. Conduct moisture survey and remove/replace all wet areas.
       2. Repair membrane including seams, penetrations, flashings, curbs, and terminations with like materials.
       3. Power wash roof to ensure it is free of dirt, debris, oil and other contaminants that could negatively affect adhesion. United Cleaning Concentrate is recommended to clean the roof. Allow the roof to completely dry.
       4. Before applying the United Coatings™ Unisil HS (Unisil HS II), an adhesion test is required to ensure an adhesion minimum of 2.0 PLI (0.36 kg/cm). Test patches to be applied with the rates listed below.
       5. Prime with Adhere-It II Primer at the rate of 0.20 gal per 100 ft2 (0.81 L/10 m2) **AND** Unisil Primer at the rate of 0.33 gal per 100 ft2 (1.34 L/10 m2).
       6. Treat all penetrations, drains, curbs, and scuppers as listed above.
       7. Treat seams:
          1. **Loose seams** to be treated with a 6 inch (15.2 cm) wide band [12 inches (30.5 cm) at the perimeter and transitions] of United Coatings™ Unisil Silicone Flashing at 1.25 gal per 100 ft2 (5.09 L/m2), United Coatings™ Roof Mate™ Fabric, and 1.25 gal per 100 ft2 (5.09 L/m2) United Coatings™ Unisil Silicone Flashing.
          2. **Vertical and Horizontal seams** to be treated with 1.25 gal per 100 ft2 (5.09 L/m2) of United Coatings™ Unisil Silicone Flashing.
       8. Apply first coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 1.0 gal per 100 ft2 (4.07 L/m2) Allow coating to dry (enough to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
       9. Apply second coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 1.0 gal per 100 ft2 (4.07 L/m2). Allow coating to dry (enough to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
       10. When coating is dry enough to walk on, inspect the final roof surface for flaws, areas of insufficient coverage, insufficient thickness, etc. The specified United Coatings™ roof coating thickness is 31 mils in the field of the roof. All unsatisfactory areas must be repaired within 24 hours.
    3. Resurfacing EPDM Substrates 20 year System:
       1. Conduct moisture survey and remove/replace all wet areas.
       2. Repair membrane including seams, penetrations, flashings, curbs, and terminations with like materials.
       3. Power wash roof to ensure it is free of dirt, debris, oil and other contaminants that could negatively affect adhesion. United Cleaning Concentrate is recommended to clean the roof. Allow the roof to completely dry.
       4. Before applying the United Coatings™ Unisil HS (Unisil HS II), an adhesion test is required to ensure an adhesion minimum of 2.0 PLI (0.36 kg/cm). Test patches to be applied with the rates listed below.
       5. Prime with Adhere-It II Primer at the rate of 0.20 gal per 100 ft2 (0.81 L/10 m2) **AND** Unisil Primer at the rate of 0.33 gal per 100 ft2 (1.34 L/10 m2).
       6. Treat all penetrations, drains, curbs, and scuppers as listed above.
       7. Treat seams:
          1. **Loose seams** to be treated with a 6 inch (15.2 cm) wide band [12 inches (30.5 cm) at the perimeter and transitions] of United Coatings™ Unisil Silicone Flashing at 1.25 gal per 100 ft2 (5.09 L/m2), United Coatings™ Roof Mate™ Fabric, and 1.25 gal per 100 ft2 (5.09 L/m2) United Coatings™ Unisil Silicone Flashing.
          2. **Vertical and Horizontal seams** to be treated with 1.25 gal per 100 ft2 (5.09 L/m2) of United Coatings™ Unisil Silicone Flashing.
       8. Apply first coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 1.5 gal per 100 ft2 (6.11 L/m2). Allow coating to dry (enough to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
       9. Apply second coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 1.0 gal per 100 ft2 (4.07 L/m2). Allow coating to dry (enough to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
       10. When coating is dry enough to walk on, inspect the final roof surface for flaws, areas of insufficient coverage, insufficient thickness, etc. The specified United Coatings™ roof coating thickness is 38 mils in the field of the roof. All unsatisfactory areas must be repaired within 24 hours.

**ADDENDUM 4** **– Resurfacing Structural Concrete & Corrugated Structural Transite Panels Substrates**

* 1. PREPARATION OF SUBSTRATE
     1. Moisture Survey: A moisture survey shall be performed on the roof to determine the suitability of the existing roof for application of a United Coatings™ roof coating. Any wet or deteriorated areas shall be removed and replaced. Structural concrete must contain less than 8% moisture.
     2. Preparation of the Roof substrate is the responsibility of the installer, who shall address and correct all of the conditions listed in this section. Do not proceed with the installation of the United Coatings™ roof coating until unsatisfactory conditions have been corrected in a manner acceptable to the manufacturer (GAF).
     3. 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.
     4. Thorough Cleaning / Removal of Existing Paints and Coatings: The substrate shall be power washed with water. A minimum working pressure of 2,000 psi (13.79 MPa) (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.
     5. Deteriorated Seams/Cracks: Repair all delaminated or open seams using method acceptable to the manufacturer.
     6. Treat structural joints with backer rod and compatible sealant, then treat with United Coatings™ Roof Mate Fabric and United Coatings™ Silicone
     7. Treat control joints or transite gaps in excess of 1/16” (1.6 mm) with a compatible caulk.
     8. Pitch Pans: Pitch pans shall be capped with sheet metal so they may be sealed with United Coatings™ products.
     9. 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.
     10. Application of Primer: Prime with Unisil Primer at the rate of 0.50 - 1.0 gal per 100 ft2 (2.04 - 4.07 L/10 m2).
  2. FLASHING APPLICATION
     1. 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 a 6 inch (152 mm) or a 12 inch (305 mm) width of Roof Mate™ Fabric and United Coatings™ Unisil Flashing Grade in accordance with United Coatings™ Detail Drawings. United Coatings™ Unisil Flashing Grade shall be feathered at the edges (see current United Coatings™ Detail Drawings) so that water may flow over the various flashing details.
     2. Parapet Walls: All parapet wall details within the roof system shall be secured and sealed with a 12 inch (305 mm) minimum width of United Coatings™ Roof Mate™ Fabric with United Coatings™ Unisil Flashing Grade. All voids and open areas shall be filled with polyurethane foam prior to application of Roof Mate™ Fabric and United Coatings™ Unisil Flashing Grade.
     3. Curb Flashings: All curb flashings, including cricket details, shall be flashed with at least a 12 inch (305 mm) width of United Coatings™ Roof Mate™ Fabric and United Coatings™ Unisil Flashing Grade. Encapsulate all fasteners using United Coatings™ Unisil Flashing Grade. Do not bridge fasteners. Roof Mate™ Fabric shall be cut around all fasteners so fabric lies flat.
     4. Penetrations: United Coatings™ Unisil Flashing Grade shall be applied around the base of the penetration, extending at least 6 inches (152 mm) onto the vertical and 6 inches (152 mm) onto the base. Embed a 12 inch (305 mm) width of Roof Mate™ Fabric using additional United Coatings™ Unisil Flashing 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™ Unisil Flashing Grade and Roof Mate™ Fabric as described above.
     5. Skylights: Curb skylights shall be treated in the same fashion as curb flashings. After flashing is completed and the coating has cured, treat deteriorated fiberglass skylight panels with United Coatings™ Acrysheen Sealer.
     6. Gutters: Trowel or brush apply FlexSeal™ Sealant to the interior or exterior gutters incorporating 12 inch (305 mm) United Coatings™ Roof Mate™ Fabric at all gutter seams. Gutter shall be completely clean and dry before applying FlexSeal™ Sealant.
     7. 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.
     8. Inspect Preliminary Work / Flashing Details for problem areas (e.g., gaps, cracks, fishmouths, air pockets, etc.) to ensure that work is complete and satisfactory
  3. FIELD OF ROOF APPLICATION AND RATES

\*\*\* Delete terms not required\*\*\*

* + 1. Resurfacing Structural Concrete & Structural Corrugated Transite Panel Substrates 10 year System:
       1. Conduct moisture survey and remove/replace all wet areas.
       2. Repair membrane including seams, penetrations, flashings, curbs, and terminations with like materials.
       3. Power wash roof to ensure it is free of dirt, debris, oil and other contaminants that could negatively affect adhesion. United Cleaning Concentrate is recommended to clean the roof. Allow the roof to completely dry.
       4. Before applying the United Coatings™ Unisil HS (Unisil HS II), an adhesion test is required to ensure an adhesion minimum of 2.0 PLI (0.36 kg/cm). Test patches to be applied with the rates listed below.
       5. Prime with Unisil Primer at the rate of 0.50 - 1.0 gal per 100 ft2 (2.03 - 4.07 L/10 m2).
       6. Treat all penetrations, drains, curbs, and scuppers as listed above.
       7. Treat seams:
          1. **Loose seams** to be treated with a 6 inch (15.2 cm) wide band [12 inches (30.5 cm) at the perimeter and transitions] of United Coatings™ Unisil Silicone Flashing at 1.25 gal per 100 ft2 (5.09 L/m2), United Coatings™ Roof Mate™ Fabric, and 1.25 gal per 100 ft2 (5.09 L/m2) United Coatings™ Unisil Silicone Flashing.
          2. **Vertical and Horizontal seams** to be treated with 1.25 gal per 100 ft2 (5.09 L/m2) of United Coatings™ Unisil Silicone Flashing.
       8. Apply first coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 0.75 gal per 100 ft2 (3.05 L/m2). Allow coating to dry (enough to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
       9. Apply second coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 1.00 gal per 100 ft2 (4.07 L/m2). Allow coating to dry (enough to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
       10. When coating is dry enough to walk on, inspect the final roof surface for flaws, areas of insufficient coverage, insufficient thickness, etc. The specified United Coatings™ roof coating thickness is 27 mils in the field of the roof. All unsatisfactory areas must be repaired within 24 hours.
    2. Resurfacing Structural Concrete & Structural Corrugated Transite Panel Substrates 15 year System:
       1. Conduct moisture survey and remove/replace all wet areas.
       2. Repair membrane including seams, penetrations, flashings, curbs, and terminations with like materials.
       3. Power wash roof to ensure it is free of dirt, debris, oil and other contaminants that could negatively affect adhesion. United Cleaning Concentrate is recommended to clean the roof. Allow the roof to completely dry.
       4. Before applying the United Coatings™ Unisil HS (Unisil HS II), an adhesion test is required to ensure an adhesion minimum of 2.0 PLI (0.36 kg/cm). Test patches to be applied with the rates listed below.
       5. Prime with Unisil Primer at the rate of 0.50 - 1.0 gal per 100 ft2 (2.04 - 4.07 L/10 m2).
       6. Treat all penetrations, drains, curbs, and scuppers as listed above.
       7. Treat all seams:
          1. **Loose seams** to be treated with a 6 inch (15.2 cm) wide band [12 inches (30.5 cm) at the perimeter and transitions] of United Coatings™ Unisil Silicone Flashing at 1.25 gal per 100 ft2 (5.09 L/m2), United Coatings™ Roof Mate™ Fabric, and 1.25 gal per 100 ft2 (5.09 L/m2) United Coatings™ Unisil Silicone Flashing.
          2. **Vertical and Horizontal seams** to be treated with 1.25 gal per 100 ft2 (5.09 L/m2) of United Coatings™ Unisil Silicone Flashing.
       8. Apply first coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 1.25 gal per 100 ft2 (5.09 L/m2). Allow coating to dry (enough to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
       9. Apply second coat of United Coatings™ Unisil HS at the rate of 1.00 gal per 100 ft2 (4.07 L/m2). Allow at least 24 hours drying time, and then inspect the base coat for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
       10. When coating is dry enough to walk on, inspect the final roof surface for flaws, areas of insufficient coverage, insufficient thickness, etc. The specified United Coatings™ roof coating thickness is 35 mils in the field of the roof. All unsatisfactory areas must be repaired within 24 hours.
    3. Resurfacing Structural Concrete & Structural Corrugated Transite Panel Substrates 20 year System:
       1. Conduct moisture survey and remove/replace all wet areas.
       2. Repair membrane including seams, penetrations, flashings, curbs, and terminations with like materials.
       3. Power wash roof to ensure it is free of dirt, debris, oil and other contaminants that could negatively affect adhesion. United Cleaning Concentrate is recommended to clean the roof. Allow the roof to completely dry.
       4. Before applying the United Coatings™ Unisil HS (Unisil HS II), an adhesion test is required to ensure an adhesion minimum of 2.0 PLI (0.36 kg/cm). Test patches to be applied with the rates listed below.
       5. Prime with Unisil Primer at the rate of 0.50 - 1.0 gal per 100 ft2 (2.04 - 4.07 L/10 m2).
       6. Treat all penetrations, drains, curbs, and scuppers as listed above.
       7. Treat seams:
          1. **Loose seams** to be treated with a 6 inch (15.2 cm) wide band [12 inches (30.5 cm) at the perimeter and transitions] of United Coatings™ Unisil Silicone Flashing at 1.25 gal per 100 ft2 (5.09 L/m2), United Coatings™ Roof Mate™ Fabric, and 1.25 gal per 100 ft2 (5.09 L/m2) United Coatings™ Unisil Silicone Flashing.
          2. **Vertical and Horizontal seams** to be treated with 1.25 gal per 100 ft2 (5.09 L/m2) of United Coatings™ Unisil Silicone Flashing.
       8. Apply first coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 1.50 gal per 100 ft2 (6.11 L/m2). Allow coating to dry (enough to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
       9. Apply second coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 1.25 gal per 100 ft2 (5.09 L/m2). Allow coating to dry (enough to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
       10. When coating is dry enough to walk on, inspect the final roof surface for flaws, areas of insufficient coverage, insufficient thickness, etc. The specified United Coatings™ dry roof coating is 42 mils in the field of the roof. All unsatisfactory areas must be repaired within 24 hours.

**ADDENDUM 5** **– Resurfacing SPF Substrates**

* 1. PREPARATION OF SUBSTRATE
     1. Moisture Survey: A moisture survey shall be performed on the roof to determine the suitability of the existing roof for application of a United Coatings™ roof coating. Any wet or deteriorated areas shall be removed and replaced.
     2. 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™ roof coating until unsatisfactory conditions have been corrected in a manner acceptable to the manufacturer (GAF).
     3. 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.
     4. Thorough Cleaning / Removal of Existing Paints and Coatings: The substrate shall be power washed with water. A minimum working pressure of 2,000 psi (13.79 MPa) (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.
     5. Pitch Pans: Pitch pans shall be capped with sheet metal so they may be sealed with United Coatings™ products.
     6. 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.
  2. FLASHING APPLICATION
     1. 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 a 6 inch (152 mm) or 12 inch (305 mm) width of United Coatings™ Roof Mate™ Fabric and United Coatings™ Unisil Flashing Grade in accordance with United Coatings™ Detail Drawings. United Coatings™ Unisil Flashing Grade shall be feathered at the edges (see current United Coatings™ Detail Drawings) so that water may flow over the various flashing details.
     2. Parapet Walls: SPF is self-flashing and should be adhered to all adjacent surfaces. Repair any minor separations from shrinkage with United Coatings™ Unisil Flashing Grade.
     3. Curb Flashings: SPF is self-flashing and should be adhered to all adjacent surfaces. Repair any minor separations from shrinkage with United Coatings™ Unisil Flashing Grade.
     4. Penetrations: SPF is self-flashing and should be adhered to all adjacent surfaces. Repair any minor separations from shrinkage with United Coatings™ Unisil Flashing Grade.
     5. Skylights: Curb skylights shall be treated in the same fashion as curb flashings. Treat deteriorated fiberglass skylight panels with United Coatings™ Acrysheen Sealer.
     6. Gutters: Trowel or brush apply FlexSeal™ Sealant to the interior or exterior gutters incorporating 12 inch (305 mm) United Coatings™ Roof Mate™ Fabric at all gutter seams. Gutter shall be completely clean and dry before applying FlexSeal™ Sealant.
     7. 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.
     8. Inspect Preliminary Work / Flashing Details for problem areas (e.g., gaps, cracks, fishmouths, air pockets, etc.) to ensure that work is complete and satisfactory.
  3. FIELD OF ROOF APPLICATION AND RATES

\*\*\* Delete terms not required\*\*\*

* + 1. Resurfacing SPF Substrates 10 year System:
       1. Conduct moisture survey and remove/replace all wet areas.
       2. Repair membrane including penetrations, flashings, curbs, and terminations with like materials.
       3. Power wash roof to ensure it is free of dirt, debris, oil and other contaminants that could negatively affect adhesion. United Cleaning Concentrate is recommended to clean the roof. Allow the roof to completely dry.
       4. Before applying the United Coatings™ Unisil HS (Unisil HS II), an adhesion test is required to ensure an adhesion minimum of 2.0 PLI (0.36 kg/cm). Test patches to be applied with the rates listed below.
       5. Apply first coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 1.00 gal per 100 ft2 (4.07 L/m2). Allow coating to dry (to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
       6. Apply second coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 0.75 gal per 100 ft2 (3.05 L/m2). Allow coating to dry (to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
       7. When coating is dry enough to walk on, inspect the final roof surface for flaws, areas of insufficient coverage, insufficient thickness, etc. The specified United Coatings™ roof coating thickness is 27 mils in the field of the roof. All unsatisfactory areas must be repaired within 24 hours.
    2. Resurfacing SPF Substrates 15 year System:
       1. Conduct moisture survey and remove/replace all wet areas.
       2. Repair membrane including penetrations, flashings, curbs, and terminations with like materials.
       3. Power wash roof to ensure it is free of dirt, debris, oil and other contaminants that could negatively affect adhesion. United Cleaning Concentrate is recommended to clean the roof. Allow the roof to completely dry.
       4. Before applying the United Coatings™ Unisil HS (Unisil HS II), an adhesion test is required to ensure an adhesion minimum of 2.0 PLI (0.36 kg/cm). Test patches to be applied with the rates listed below.
       5. Apply first coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 1.25 gal per 100 ft2 (5.09 L/m2). Allow coating to dry (to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
       6. Apply second coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 1.00 gal per 100 ft2 (4.07 L/m2). Allow coating to dry (to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
       7. When coating is dry to walk on, inspect the final roof surface for flaws, areas of insufficient coverage, insufficient thickness, etc. The specified United Coatings™ dry membrane thickness is 35 mils in the field of the roof. All unsatisfactory areas must be repaired within 24 hours.
    3. Resurfacing SPF Substrates 20 year System:
       1. Conduct moisture survey and remove/replace all wet areas.
       2. Repair membrane including penetrations, flashings, curbs, and terminations with like materials.
       3. Power wash roof to ensure it is free of dirt, debris, oil and other contaminants that could negatively affect adhesion. United Cleaning Concentrate is recommended to clean the roof. Allow the roof to completely dry.
       4. Before applying the United Coatings™ Unisil HS (Unisil HS II), an adhesion test is required to ensure an adhesion minimum of 2.0 PLI (0.36 kg/cm). Test patches to be applied with the rates listed below.
       5. Apply first coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 1.50 gal per 100 ft2 (6.11 L/m2). Allow coating to dry (to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
       6. Apply second coat of United Coatings™ Unisil HS (Unisil HS II) at the rate of 1.25 gal per 100 ft2 (5.09 L/m2). Allow coating to dry (to walk on), and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions. Do **NOT** exceed 24 hours between coats.
       7. When coating is dry enough to walk on, inspect the final roof surface for flaws, areas of insufficient coverage, insufficient thickness, etc. The specified United Coatings™ dry membrane thickness is 42 mils in the field of the roof. All unsatisfactory areas must be repaired within 24 hours.