

TOPCOAT® System Specifications – Metal

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Part 1 – General

1.01 RELATED SECTIONS/DOCUMENTS

GAF Materials Corporation (GAFMC) detail drawings, site-specific drawings and general provisions of the contract, including General, Supplementary and Special Conditions found in Division 7 Specification Sections, apply to the work addressed in this section.

1.02 SYSTEM DESCRIPTION

Extent of TOPCOAT® Roofing System work is indicated on the drawings and is further defined by provisions of this section, which includes roofing, flashing, and reinforcing of joints and junctions, and roof accessories integrally related to roof installation. Areas to be re-roofed include existing metal roofs as indicated on drawings. Should a questions arise as to the appropriateness of the TOPCOAT® Roof Coating System for any given metal roof, please contact GAFMC's Contractor Service Department.

1.03 SUBMITTALS

Submit copy of TOPCOAT® technical product data sheets, installation instructions, and samples for each type of required roofing product.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Provide primary products, including TOPCOAT® Elastomeric Roofing Membrane, TOPCOAT® Flashing Grade, TOPESTER Fabric, etc., by a single manufacturer (GAFMC), which has produced this type of product successfully for not less than twenty (20) years. Provide secondary products only as approved by GAFMC for use with the specified TOPCOAT® Roofing System.
- B. Installer Qualifications: A single Installer or firm ("Installer") shall perform all work addressed in this section, and shall be certified by GAFMC, for installation of the TOPCOAT® Roofing System.
- C. Installer Authorization: Installer shall possess written authorization from GAFMC, which certifies they are approved for installation of the TOPCOAT® Roofing System.

1.05 REGULATORY REQUIREMENTS

- A. FM Listing: Provide TOPCOAT® Roofing System and component materials which have been evaluated by Factory Mutual System for flame-spread and are listed in "Factory Mutual Approval Guide" for Class I construction over existing metal roofing (flame spread must be in accordance with ASTM #E-108). Provide roof covering materials bearing FM approval marking on package or container, which indicates that material has been subjected to FM's examination, test procedures, follow-up inspection services and approval.
- B. UL Listing: Provide TOPCOAT® Roofing System and component materials which have been evaluated by Underwriters Laboratories for flame-spread, and are listed in "Underwriters Laboratory Roofing Materials and Systems Directory" for Class A construction over existing metal or other non-combustible roofing (unlimited slope). Provide roof-covering materials bearing UL approval marking on container, which indicates that material, has been subjected to UL's examination, test procedures and follow-up inspection service.

1.06 INSURANCE CERTIFICATES

Assist owner in preparation and submittal of roof installation acceptance certification as may be necessary in connection with extended coverage insurance on roofing and associated work.

1.07 PRE-INSTALLATION MEETING

Approximately two weeks prior to scheduled commencement of roofing installation and associated work, conduct meeting at the project site with Installer, Architect/Owner, GAFMC representative and any other persons directly concerned with the performance of the work. The Installer shall record conference discussions, including decisions and agreements reached (or disagreements), and furnish copies of recorded discussions to each attending party. The main purpose of this meeting is to review methods and procedures related to roofing work, including but not necessarily limited to the following:

- A. Tour representative areas of roofing substrates to inspect and discuss conditions of substrate, penetrations, and other preparatory work to be performed.
- B. Review TOPCOAT® Roofing System requirements and specifications (GAFMC specifications, detail drawings, and other contract documents).
- C. Review required submittals, both completed and yet to be completed.
- D. Review and finalize 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.
- E. Review required inspection(s), testing, certifications, and material usage accounting procedures.
- F. Review weather and forecasted weather conditions, as well as procedures for coping with unfavorable conditions, including possibility of temporary roofing work.

1.08 DELIVERY, STORAGE AND PROTECTION

Store and handle TOPCOAT® materials in a manner that shall ensure there is no possibility of contamination. Store in a dry, well ventilated, weathertight place at temperatures between 50°F and 80°F until product is ready to be applied. Do not allow product to freeze. Do not stack material pallets more than two high. Do not subject existing roof to unnecessary loading of stockpiled materials. Please note that all TOPCOAT® water-based products are packaged in plastic containers.

1.09 ENVIRONMENTAL CONDITIONS

Proceed with roofing work only when existing and forecasted weather conditions will permit work to be performed in accordance with GAFMC recommendations and guarantee requirements, as follows:

- A. Do not begin work if rain is expected within 24 hours of application or if temperatures are expected to fall below 42°F during the duration of the job. (NOTE: SB-900 Flashing Grade, Surface Seal SB and FlexSeal can be used in temperatures lower than 42°F. Therefore, they are excluded from this temperature restriction.)
- B. Upper temperature restriction (both air and substrate) for application of TOPCOAT® products is 120°F. If this is not practical, the substrate can be cooled with water, and then TOPCOAT® products applied just after the water has flashed off. No moisture can be present when applying TOPCOAT® products.
- C. Allow for sufficient daylight hours necessary for curing of materials, taking into consideration the UV curing properties of TOPCOAT® Elastomeric Roofing Membrane and TOPCOAT® Flashing Grade.
- D. CAUTION: Other weather and environmental conditions to consider are mist, dew, condensation and relative humidity. These factors can lengthen drying times. If TOPCOAT® products are exposed to rain before they are completely dry, product may "wash off" the roof.

1.10 SUBSTRATE CONDITIONS

If any questions arise regarding the compatibility of TOPCOAT® products with an existing substrate, Installer shall prepare test patches to check adhesion (addressed in Part 3 of this specification). Always contact GAFMC's Contractor Services Department concerning questionable substrates, required additional information and recommended test patch materials.

1.11 WARRANTY

Provide GAFMC/ TOPCOAT® System Guarantee per the requirement of the Building Owner and/or Project Architect. In order to obtain any GAFMC/ TOPCOAT® System Guarantee, the following conditions apply:

- A. Determination of the appropriateness of the TOPCOAT® Roofing System for any given metal roof must be obtained from GAFMC's Contractor Services Department prior to offering any GAFMC/ TOPCOAT® System Guarantee. GAFMC will not offer a guarantee on any TOPCOAT® System being installed over an unfit, unsound, or inappropriate substrate.
- B. Installer must be a Certified GAFMC Contractor. GAFMC/ TOPCOAT® System Guarantee work cannot be sub-contracted to a non-certified applicator.
- C. TOPCOAT® Roofing System must be applied to the full area of the roof. A GAFMC/TOPCOAT® System Guarantee will not be issued for GAFMC System installations over a section of any roof unless otherwise approved in advance by GAFMC's Contractor Services Department.
- D. Installer shall provide GAFMC Contractor Services Department at least two weeks notice for scheduling of on-site technical support/inspections.
- E. TOPCOAT® Elastomeric Roofing Membrane should be spray-applied. Any installation where TOPCOAT® Roofing Membrane will be applied by another method must be pre-approved by GAFMC's Contractor Services Department.
- F. All gutters and roof areas which pond water for more than 48 hours after precipitation ceases are excluded from coverage under the GAFMC/ TOPCOAT® System Guarantee.

See limited warranty and guarantee for complete coverage and restrictions.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

GAF Materials Corporation

2.02 MATERIALS - GENERAL

Note Drying Times: Listed drying times for various TOPCOAT® products are directly affected by environmental conditions and thickness of application. Allow additional drying time when experiencing high relative humidity, low temperatures and/or very thick product application to prevent improper curing and/or product "wash-off".

A. TOPCOAT® Precote

Clear, solvent-based thermoplastic primer sealer to be applied as the first coat on corrugated asbestos panels, i.e. "Transite". Precote provides for optimum adhesion of TOPCOAT® products on "Transite Panels". Do not apply at temperatures below 42°F. Substrate temperatures must be below 120°F when applying product.

Application Rate:	1 gallon/100 sf
Application Method:	Brush or roller
Application Temp (air, surface):	42° - 120°F
Dry Time (75F, 50%RH):	Approx. 30 minutes
Total Solids (by weight):	28.4% ± 1%
Specific Gravity:	0.86 ± 0.1
Weight per Gallon:	7.2 ± 0.5 lbs
Viscosity (75°F):	200 ± 100 cps

B. TOPCOAT® MB Plus



TOPCOAT® MB Plus is a water-based acrylic low VOC, sprayable polymeric liquid, which cures to form a seamless rubber membrane. Covers and protects most roof surfaces including modified bitumen (smooth and granulated), smooth BUR, Hypalon, PVC, and metal. For metal roofs, MB Plus is used to prime residual asphalt. MB Plus is an ENERGY STAR® qualified reflective product, which will help in reducing building temperatures, and meets the stringent standards set by the Cool Roof Rating CouncilSM for solar reflectance and thermal emittance. It is highly reflective, flexible, and due to unique emulsion chemistry, resists unsightly bleed-through over asphalt substrates better than solvent-based systems. Available in white (for maximum reflectivity) and custom colors. It is non-flammable, presents minimal hazard to the applicator or the environment, and cleans up with water. Do not apply at temperatures below 42°F. Substrate temperatures must be below 120°F when applying product.

Application Rate:	1.0 to 3.0 gallons/100 sq.ft. total
Application Method:	Airless sprayer or roller
Application Temp (air, surface):	42° - 120°F
Drying Time (75°F, 50% RH):	Approximately 24 hours per coat
Wet Mil Thickness:	(1.0 Gallon/100SF) - 16 wet mils
Dry Mil Thickness:	(1.0 Gallon/100SF) - 9 dry mils
Total Solids (by weight):	65% ± 2%
Total Solids (by volume):	54% ± 2%
Specific Gravity:	1.32 ± 0.1
Weight per Gallon:	11.0 ± 0.5 lbs.
Viscosity (75°F):	15,000 ± 2,000 cps
Tensile Strength:	150 psi
Elongation:	275%
Clean-up:	Water before curing

C. TOPCOAT® MP-300 Rust Inhibitor

TOPCOAT® MP-300 is a light blue, water-based acrylic industrial primer/rust inhibitor that must be applied to any areas of rust before TOPCOAT® Flashing Grade or TOPCOAT® Elastomeric Roofing Membrane can be applied. Heavy, flaking rust and scale must be removed by scraping, wire brushing or grit blasting, followed by power washing with water. MP-300 can be used to brush-treat small-scattered areas of rust or it can be sprayed over areas of widespread rust. It is non-flammable, VOC compliant, and cleans up with water. Do not apply at temperatures below 42°F. Substrate temperatures must be below 120°F when applying product.

Application Rate:	1 gallon/100 sq.ft.
Application Method:	Brush or airless sprayer
Application Temp (air, surface):	42° - 120°F
Drying Time (75°F, 50% RH):	Approximately 2 hours
Wet Mil Thickness:	(1.0 Gallon/100SF) - 16 wet mils
Dry Mil Thickness:	(1.0 Gallon/100SF) - 6 dry mils
Total Solids (by weight):	50% ± 1%
Total Solids (by volume):	40% ± 2%
Specific Gravity:	1.19 ± 0.1
Weight per Gallon:	9.9 ± 0.5 lbs
Viscosity (75°F):	5,000 ± 1,000 cps
Clean-up:	Water before curing

D. TOPCOAT® XR-2000

TOPCOAT® XR-2000 is a white, water-based 100% acrylic adhesion promoting primer designed to enhance the adhesion of the TOPCOAT® Roofing System to pre-finished metal roofing, including those containing fluoropolymers such as Kynar® or siliconized polyesters. Due to the wide variety of pre-applied finishes, suitability of XR-2000 must be tested on an individual basis. Do not apply at temperatures below 42°F. Substrate temperatures must be below 120°F when applying product.

Application Rate:	0.75 gallon/100 sq.ft.
Application Method:	Airless sprayer or roller
Application Temperature (air, surface):	42° - 120°F
Drying Time (75°F, 50% RH):	Approximately 6 hours
Recommended Wet Mil Thickness:	12 wet mils
Recommended Dry Mil Thickness:	5 dry mils
Total Solids (by weight):	52.5% + 1%
Total Solids (by volume):	40% ± 1%
Specific Gravity:	1.22 ± 0.1
Weight per Gallon:	10.2 ± 0.5 lbs
Viscosity (75°F):	3,500 ± 350 cps
Clean-up:	Water before curing

E. TOPCOAT® Flashing Grade (Regular and Spray Formula)

TOPCOAT® Flashing Grade is a light gray, water-based 100% acrylic synthetic rubber sealant which is applied to seams, fasteners, flashings, and penetrations prior to the application of the TOPCOAT® Elastomeric Roofing Membrane. Like the TOPCOAT® Roofing Membrane, it has superior adhesion, flexibility, and resistance to ultraviolet degradation. A sprayable version of Flashing Grade (Flashing Grade Spray Formula) is available for use. Flashing Grade Spray Formula has all the same properties as regular Flashing Grade, but is lower in viscosity. Do not apply at temperatures below 42°F. Substrate temperatures must be below 120°F when applying product.

Application Rate (seams):	5 gallons/125 ft. (6" width)
Application Method:	Brush or caulking gun
Application Method - Spray Formula:	Airless sprayer
Application Temp (air, surface):	42° - 120°F
Drying Time (75°F, 50% RH):	Approximately 24 hours
Recommended Wet Mil Thickness:	105 wet mils
Recommended Dry Mil Thickness:	60 dry mils
Total Solids (by weight):	68% ± 1%
Total Solids (by volume):	56% ± 2%
Specific Gravity:	1.44 ± 0.1
Tensile:	225 psi ± 10%
Weight per Gallon:	12.0 ± 0.5 lbs
Viscosity (75°F):	225,000 ± 22,500 cps
Clean-up:	Water before curing

F. TOPCOAT® Liquid Fabric Flashing Grade

TOPCOAT® Liquid Fabric Flashing Grade is a light gray, water-based acrylic polymer flexible liquid fabric seam sealer which does not require reinforcing fabric and reduces horizontal seam labor by 50%. Do not apply at temperatures below 42°F. Substrate temperatures must be below 120°F when applying product.

Application Rate:	5 gallons/125 lineal ft. of seam (6" wide)
Application Method:	Brush or airless sprayer
Application Temp (air, surface):	42° - 120°F
Drying Time (75°F, 50% RH):	Approximately 24 - 48 hours
Recommended Wet Mil Thickness:	105 wet mils
Recommended Dry Mil Thickness:	60 dry mils
Total Solids (by weight):	71.7% ± 2%
Total Solids (by volume):	55% ± 2%
Specific Gravity:	1.35 ± 0.1
Tensile:	250 psi ± 10%
Weight per Gallon:	11.3 ± 0.5 lbs
Elongation:	700%
Viscosity (75°F):	130,000 ± 15,000 cps
Clean-up:	Water before curing

G. TOPESTER Reinforcing Fabric

TOPESTER Fabric is a non-woven, spun bonded 100% polyester web that must be used in conjunction with TOPCOAT® Flashing Grade, SB-900 and FlexSeal at all penetrations, joints, or changes in plane that are subjected to high shear or stress.

Average Weight (Ounces per square yard) per ASTM D1117:	1.5
Average Tensile Strength per ASTM D1628:	44 psi
Average Elongation at break per ASTM 1628:	53%
Trapezoidal Tear Strength per ASTM D2263:	18.5 lbs

H. TOPCOAT® Fastener Grade

TOPCOAT® Fastener Grade is a light gray, water-based 100% acrylic synthetic elastomeric sealant with unique flow properties designed to encapsulate exposed metal roof fasteners. It offers all of the advantages of TOPCOAT® Flashing Grade, including high UV resistance and water clean-up. In addition, its unique flow properties allow for easy application to exposed metal roof fasteners with no tooling. Fastener Grade is available in 1-qt. tubes for easy dispensing and application. Do not apply at temperatures below 42°F. Substrate temperatures must be below 120°F when applying product.

Application Rate:	Approximately 275 fasteners/1-qt. tube
Application Method:	Caulking gun
Application Temperature (air, surface):	42° - 120°F
Drying Time (75°F, 50% RH):	Approximately 24 hours
Wet Mil Thickness:	105 wet mils
Dry Mil Thickness:	60 dry mils
Total Solids (by weight):	69% ± 1%
Total Solids (by volume):	56% ± 2%
Weight per Gallon:	12.0 ± 0.5 lbs
Viscosity (75°F):	60,000 ± 6,000 cps
Clean-up:	Water before curing



I. TOPCOAT® Surface Seal SB

TOPCOAT® Surface Seal SB is a solvent-based, sprayable thermoplastic rubber liquid, which cures to form a seamless rubber membrane. It is highly reflective, provides extra protection, and is highly flexible to accommodate temperature related expansion and contraction of the roof system. Surface Seal SB is an ENERGY STAR® qualified reflective product, which will help in reducing building temperatures, and meets the stringent standards set by the Cool Roof Rating CouncilSM for solar reflectance and thermal emittance. Available in white, aluminum and custom colors. Ideal for application on most commercial roofs in temperatures as low as 32°F, providing product is stored at room temperature prior to installation. Can also be used in conjunction with Surface Seal SB Primer. Substrate temperatures must be below 120°F when applying product.

Application Rate:	1.0 to 1.5 gallons/100 sq.ft. per coat
Application Method:	Airless sprayer, roller or brush
Application Temp (air, surface):	32° - 120°F
Drying Time (75°F, 50% RH):	Approximately 24 hours per coat
Wet Mil Thickness:	(1.0 Gallon/100SF) - 16 wet mils
Dry Mil Thickness:	(1.0 Gallon/100SF) - 8 dry mils
Total Solids (by weight):	64% ± 3%
Total Solids (by volume):	50% ± 2%
Specific Gravity:	1.20 ± 0.09
Weight per Gallon:	10.1 ± 0.5 lbs.
Viscosity (75°F):	11,000 ± 2,000 cps
Tensile Strength:	700 psi
Elongation:	650%
Clean-up:	Mineral Spirits



K. TOPCOAT® Elastomeric Roofing Membrane

TOPCOAT® Elastomeric Roofing Membrane is a water-based 100% acrylic spray-applied liquid which cures to form a seamless elastomeric roofing membrane specially designed to seal the entire roof. TOPCOAT® Elastomeric Roofing Membrane is an ENERGY STAR® qualified reflective product, which will help in reducing building temperatures, and meets the stringent standards set by the Cool Roof Rating CouncilSM for solar reflectance and thermal emittance. It offers high tensile strength and elongation, and is virtually undamaged by extended exposure to solar ultraviolet energy. Ultraviolet rays enhance curing. It is low in VOC, non-flammable, and presents minimal hazard to the applicator and the environment. It is available in white (for maximum reflectivity) and 15 standard colors. Custom tinting is available upon request. Do not apply at temperatures below 42°F. Substrate temperatures must be below 120°F when applying product.

Application Rate:	1.0 to 3.0 gallons/100 sq.ft. total
Application Method:	Airless sprayer
Application Temp (air, surface):	42° - 120°F
Drying Time (75°F, 50% RH):	Approximately 24 hours per coat
Wet Mil Thickness:	(1.0 Gallon/100SF) - 16 wet mils
Dry Mil Thickness:	(1.0 Gallon/100SF) - 9 - 10 dry mils
Total Solids (by weight):	71% ± 3%
Total Solids (by volume):	58% ± 2%
Specific Gravity:	1.48 ± 0.06
Weight per Gallon:	12.3 ± 0.5 lbs
Viscosity (75°F):	19,000 ± 3,000 cps
pH:	10.0 ± 1.0
Elongation:	375% ± 25%
Tensile Strength:	275 ± 25 psi
Water Permeability:	5.28 perm inch (ASTM D-1653)
Freeze-Thaw Stability:	Passes five (5) cycles
Low Temp Flexibility:	35 mil dry film will bend 180° @ -30°F without fracturing
Weatherability :	1,000 hours Atlas Weather-o-meter® exposure per ASTM D-412, ASTM G-26. Tensile Strength: 150% of original Elongation: 85% of original 1,500 hours Atlas Weather-o-meter® exposure per ASTM D-412, ASTM G-26. No cracking, embrittlement, loss of adhesion or discoloration 2,000 hours UV exposure, type UV bulb, per ASTM G-53. No cracking, embrittlement, loss of adhesion, or discoloration
Clean-up:	Water and mild soap

L. TOPCOAT® SKY-LITE

TOPCOAT® Sky-Lite is a clear, solvent-based, synthetic rubber sealer designed to protect porous, deteriorated fiberglass skylight panels. It is offered in a water-based version when flammability and VOC content are a concern. Do not apply at temperatures below 42°F. Substrate temperatures must be below 120°F when applying product.

Application Rate:	1 gallon/100 sq.ft. per coat
Application Method:	Roller or brush
Application Temp (air, surface):	42° - 120°F
Drying Time (75°F, 50% RH):	Approximately 1 hour per coat
Total Solids (by weight):	40.2% ± 2%
Total Solids (by volume):	35% ± 2%
Specific Gravity:	0.91 ± 0.1
Weight per Gallon:	7.6 ± 0.5 lbs
Viscosity (75°F):	3,000 ± 400 cps
Clean-up:	Mineral Spirits, Toluene, Xylene

M. TOPCOAT® FlexSeal

TOPCOAT® FlexSeal is a white solvent-based synthetic elastomeric sealant designed to line and waterproof interior and exterior gutters on many buildings. FlexSeal is extremely flexible and durable. Like all solvent-based products, the surface must be completely free of moisture before application. A low viscosity version of FlexSeal (FlexSeal LV) is available for use in confined areas. FlexSeal LV can also be used on relatively flat metal surfaces because it is self-leveling. This product is easiest to apply at temperatures above 32°F. Substrate temperatures must be below 120°F when applying product.

Application Rate:	5 gallons/100 sq.ft.
Application Method:	Trowel or stiff bristle brush
Application Temp (air, surface):	32° – 120°F
Drying Time (75°F, 50% RH):	Approximately 24 hours
Recommended Wet Mil Thickness:	85 wet mils
Recommended Dry Mil Thickness:	50 dry mils
Total Solids (by weight):	77% + 2%
Total Solids (by volume):	66% + 2%
Specific Gravity:	1.24 + 0.1
Tensile:	485 psi ± 10%
Weight per Gallon:	10.3 + 0.5 lbs
Viscosity (75°F):	600,000 ± 100,000 cps
LV - Viscosity (75°F):	150,000 ± 15,000 cps
Clean-up:	Mineral Spirits, Toluene, Xylene

N. TOPCOAT® Surface Seal SB Primer

TOPCOAT® Surface Seal SB Primer is a light gray, solvent-borne thermoplastic rubber-based, industrial primer/rust inhibitor that must be applied to any areas of rust before TOPCOAT® Surface Seal SB Roofing Membrane can be applied. It is ideal for priming aluminum coated metal roofs that are beginning to rust through the coating. Surface Seal SB Primer can be used to brush-treat small-scattered areas of rust, or it can be sprayed over areas of widespread rust. Heavy, flaking rust and scale must be removed by scraping, wire brushing or grit blasting, followed by power washing with water. Do not apply at temperatures below 32° F. Substrate temperatures must be below 120°F when applying product.

Application Rate:	1 gallon/100 sq.ft.
Application Method:	Airless Sprayer or brush
Application Temperature (air, surface):	32° – 120°F
Drying Time (75°F, 50% RH):	Approximately 2 hours
Wet Mil Thickness:	16 wet mils
Dry Mil Thickness:	7 dry mils
Total Solids (by weight):	60% ± 2%
Total Solids (by volume):	45% ± 2%
Specific Gravity:	1.21 0.1
Weight per Gallon:	10.1 +/- 0.5 lbs
Viscosity (75°F):	10,000 ± 2,000 cps
Clean-up:	Mineral Spirits

O. Fasteners

EverTite™ self-drilling stitching screws; hex-head, zinc-coated.

P. Airless Sprayer and Accessories

As recommended by GAFMC's Contractor Services Department for application of sprayable TOPCOAT® products.

PART 3 - EXECUTION

3.01 PREPARATION OF SUBSTRATE

- A. Examine substrates to receive new roofing. Do not proceed with installation of the TOPCOAT® Roofing System until unsatisfactory conditions have been corrected in a manner acceptable to the manufacturer (GAFMC).
- B. Preparation of the roof substrate is the responsibility of the Installer. Installer shall be responsible for the following:
1. Treatment of excessive gaps
 2. Installation of sheet metal crickets (required as per specifications)
 3. Treatment of ponding water areas
 4. Repair of dented/damaged panels
 5. Re-tightening and replacement of fasteners
 6. Thorough cleaning/removal of existing paints and coatings*
 7. Treatment of residual asphalt
 8. Treatment of rust areas
 9. Priming of pre-finished metal panels
 10. Miscellaneous items

*** In the event that pre-existing coatings will not or cannot be removed, please contact GAFMC's Contractor Services Department.**

1. Treatment of Excessive Gaps: All large or excessive gaps existing between roof panels must be closed or made flush with EverTite™ self-drilling fasteners. Closed-celled foam strips or polyurethane foam may be used to pre-fill voids larger than 1/4 inch before applying TOPCOAT® Flashing Grade. Foam shall be shaped with a utility knife or other method to create a cant strip which facilitates both adhesion and water drainage, as well as preventing shearing of TOPESTER Fabric on metal edges.

2. Installation of Sheet Metal Crickets: Sheet metal crickets must be installed according to manufacturer's specifications (minimum 26 gauge metal - heavier gauge required for larger crickets) on the high side of all curb units. Vertical ribs shall be cut a minimum of 2" from the cricket to allow both the cricket flanges to mount flush to the metal panel and facilitate water drainage. Cut vertical ribs shall then be treated in the same fashion as an excessive gap. New crickets shall be "sealed" by placing a continuous bead of TOPCOAT® FlexSeal under the flanges before they are mechanically attached to the curb unit and metal roof panel. The cricket flanges must then be stitch-screwed to the curb unit and metal roof panel while the FlexSeal is still wet, using EverTite™ fasteners. This procedure shall apply to installation of all new crickets and curbs.

3. Treatment of Ponding Water Areas: Installer shall make every effort to eliminate all ponding water areas on the roof prior to application of TOPCOAT® products ("ponding water" is defined as water which does not properly drain and remains for more than 48 hours after precipitation stops). Ponding water areas, which cannot be eliminated, shall be treated with FlexSeal LV prior to application of other TOPCOAT® products.

4. Repair of Dented/Damaged Panels: Installer shall repair dented and/or damaged metal roof panels. Dents shall be mechanically removed to the maximum extent possible. If ribs are broken, Installer shall cover the broken rib area with a sheet metal cap. Sheet metal rib caps must be "sealed" to the roof by applying TOPCOAT® Flashing Grade over the entire broken rib area to be capped prior to attaching the cap with EverTite™ fasteners. TOPCOAT® Flashing Grade shall then be used to seal all the newly created rib cap seams and fasteners. Installer shall remove and replace severely damaged roof panels prior to application of TOPCOAT® products.

5. Re-tightening and Replacement of Fasteners: All fasteners must be re-tightened, secured or replaced, as necessary. All stripped fasteners must be replaced with larger diameter fasteners, and the area re-secured by adding a new fastener next to the one that was stripped. All missing fasteners must be replaced. In evaluating a roofing substrate for the application of the TOPCOAT® System, it is important to note the manner in which the roof is fastened. The fastening pattern may have to be modified/alterd to facilitate the proper installation of the system.

6. Thorough Cleaning/Removal of Existing Paints and Coatings: Metal substrate must be pressure washed with water. Use minimum working pressure of 3,000 psi to remove all dirt, dust, previous paints/coatings that are delaminating and waste products (oil, oil-based roof cements, solvents, grease, animal fats, etc.). Roto-spray tip is required to expedite metal panel cleaning. All existing silicone-based sealants must be completely removed from roof substrate prior to application of TOPCOAT® products. In some cases, a sand injection system may be required during the pressure washing to obtain proper adhesion for TOPCOAT® products. When encountering roof substrates that have living organisms such as algae, mold or fungus, a bleach solution shall be used to kill/remove these organisms during the roof cleaning, before the pressure wash.

7. Treatment of Residual Asphalt: Installer shall make every effort to remove asphaltic roofing elements. Removal efforts must include use of methods such as pressure washing, scrapers, wire brushes, electrical drill wire-wheels, or other similar tools. Residual asphalt is defined as asphaltic material remaining after the exercise of all required removal efforts, and exists when there is asphaltic material greater in thickness than 3 mils over an area greater than 1 square foot. Residual asphaltic areas are to be addressed with TOPCOAT® MB Plus. Apply TOPCOAT® MB Plus as a primer to the entire asphaltic area to be treated.

8. Treatment of Rust Areas: All rust areas must be treated with TOPCOAT® MP-300 to prevent further deterioration of the metal roof panels. **Roof panels that are corroded to the point where they have holes must be replaced.** Prior to TOPCOAT® MP-300 application, remove all loose, flaking or powdery rust by wire brushing if it has not been removed during the pressure washing. All rust shall be completely covered by the TOPCOAT® MP-300. Since TOPCOAT® MP-300 Rust Inhibitor is designed to adhere to rust, only rusted areas shall be treated with the product. Installer must exercise special care when applying TOPCOAT® MP-300 in high temperature conditions (substrate approaching 120°F). Substrate temperatures must be kept below 120°F when applying TOPCOAT® MP-300. Areas where rust is very heavy on roof panels shall now be treated with two applications of TOPCOAT® MP-300 Rust Inhibitor. The second application of TOPCOAT® MP-300 is only required on heavily rusted areas. This will help prevent rust bleed-through after roof panels have been properly prepared in accordance with GAFMC specifications.

9. Preparation of Test Patches: Installer shall prepare no less than three test patches for all questionable roof substrates (Kynar®-500 or other fluoropolymers, coatings which contain silicone, etc.) to verify adhesion of TOPCOAT® products. Minimum test patch size shall be one square foot. After the test patches have been applied, allow at least 7 days of drying time before checking adhesion. Check adhesion by slicing an "X" (approx. 6" in size) near the center of the test patch. Then try to remove the TOPCOAT® 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 GAFMC Contractor Services Department concerning all adhesion test results.

10. Priming of Pre-Finished Metal Panels: Where roof panel surfaces are known or suspected to contain Kynar®-500, other fluoropolymers or silicone, test patches shall be prepared both with and without the use of TOPCOAT® XR-2000. Based on test patch adhesion results, Installer shall apply TOPCOAT® XR-2000 on pre-finished metal panels per specifications. Note: Since TOPCOAT® XR-2000 has rust inhibiting properties, TOPCOAT® MP-300 is not required where XR-2000 has been used.

11. Miscellaneous Items:

- a. Pitch Pans: For most situations, pitch pans shall be capped with sheet metal so they can be sealed with TOPCOAT® Flashing Grade/TOPESTER Fabric, Flex Seal/TOPESTER Fabric or FlexSeal. Contact GAFMC's Contractor Services Department for specific requirements.
- b. Neoprene Pipe Boots: GAFMC recommends installation of neoprene boots prior to flashing work being performed for certain types of pipe penetrations. Neoprene boots must first be sealed to the roof using a bead of TOPCOAT® FlexSeal prior to mechanical attachment with EverTite™ fasteners. Contact GAFMC's Contractor Services Department for specific requirements.
- c. Open Ridge Vents: Open ridge vents (as shown in detail drawings) start to corrode on the inside, and, over time, begin to leak. GAFMC highly recommends either replacement or installing sheet metal caps over the open ridge vents when they are rusted on the inside or located in a harsh environment (e.g., salt water areas). Also, sheet metal caps shall be installed when leaks are suspected from the vents. Installation of a cap on the ridge vent will prevent water entry while allowing air to continue to flow through the vent. Do not seal weep holes on the vents. Inadequate roof ventilation may cause blistering in the TOPCOAT® Roofing System due to inside air "blowing-out" through roof panel seams.
- d. Condensate Lines: GAFMC recommends installation of condensate lines from HVAC units to gutters as part of the overall roofing contract. Type of piping used for condensate lines may vary depending on local building codes. Lines must be securely fastened to panel ribs. Damage to roof membrane caused by HVAC units not properly drained will not be covered by the GAFMC Warranty.

3.02 APPLICATION AND INSPECTION INFORMATION

- A. Preliminary Work/Flashing Details: Preliminary work consists of substrate preparation (addressed earlier in specifications) and all flashing details. After completion of substrate preparation, all flashing details, horizontal seams, penetrations and curbs must be flashed with either 6" or 12" TOPESTER Fabric and TOPCOAT® Flashing Grade in accordance with GAFMC detail drawings. TOPCOAT® Flashing Grade must be feathered at the edges so that water can easily flow over the various flashing details. Additional flashing requirements are as follows (see also current GAFMC Detail Drawings):
 1. Fasteners: All fasteners must be totally encapsulated in TOPCOAT® Fastener Grade, Flashing Grade or FlexSeal. In some cases, brushing may be required to obtain the proper feathering around fasteners. For fasteners found in the field of the roof (i.e., not at seams or roof penetrations), GAFMC recommends use of TOPCOAT® FlexSeal for colder climates, and TOPCOAT® Fastener Grade for warmer/hot climates.
 2. Gutter Straps: All gutter straps that are fastened above roof panels must be totally encapsulated with TOPCOAT® Flashing Grade or FlexSeal, including the fasteners.
 3. Vertical Seams:
 - a. Ribbed: All ribbed panel vertical seams must be sealed with TOPCOAT® Flashing Grade or FlexSeal. Feather Flashing Grade until seam is no longer visible while brushing in the direction parallel to the seam.
 - b. Standing Seam: All standing vertical seams must be sealed with a 1/2" bead of TOPCOAT® Flashing Grade or FlexSeal. Feather Flashing Grade until seam is no longer visible while brushing in the direction parallel to the seam. (NOTE: This does not apply to inverted "J" standing seams – see below for details on this type of seam.) Contact GAFMC's Contractor Services Department for details on specific standing seam panels.

- c. Standing "T" Seam: Both vertical seams of the standing "T" must be flashed with a 1/2" bead of TOPCOAT® Flashing Grade or FlexSeal brushed into the seams.
 - d. Inverted "J" Seam: In snowy climates and/or when roof leaks are suspected from this type of vertical seam, GAFMC requires re-crimping the short leg of the seam all the way under the horizontal portion of the inverted "J" seam. Then brush or trowel apply TOPCOAT® Flashing Grade or FlexSeal over the newly created single lock vertical seam. Portable seamers can be purchased or leased to do the re-crimping.
 - e. Corrugated: All corrugated panel vertical seams must be sealed with TOPCOAT® Flashing Grade or FlexSeal. Feather Flashing Grade until seam is no longer visible while brushing in the direction parallel to the seam.
 - f. Batten: Both vertical seams of the batten must be flashed with a 1/2" bead of TOPCOAT® Flashing Grade or FlexSeal. Feather Flashing Grade until seam is no longer visible while brushing in the direction parallel to the seam.
4. Horizontal Seams: All horizontal seams must be reinforced with at least a 6" wide layer of TOPCOAT® Flashing Grade, one layer of TOPESTER Fabric and then a final layer of TOPCOAT® Flashing Grade to completely encapsulate the Fabric. TOPCOAT® Flashing Grade must be feathered at least 1" beyond each side of the 6" width to allow water to flow over the seam. TOPESTER Fabric must be cut around all fasteners so it lies flat. For ribbed roof panels, the TOPESTER Fabric must be applied over panel ribs in continuous lengths. A minimum 2" overlap is required for all splices in TOPESTER Fabric. (NOTE: TOPESTER Fabric is not required for horizontal seams on corrugated roofing panels. Horizontal seams must be secured with EverTite™ fasteners on the high side of every other corrugation spaced no more than 6" on center.) Note: When using TOPCOAT® Liquid Fabric Flashing Grade, horizontal seam must be made flush by installing two EverTite™ fasteners per flute.
 5. Cinch Straps at Panel End laps: Re-tighten cinch straps, as necessary. Surround each strap and fastener head with a bead of TOPCOAT® FlexSeal. Fully inject FlexSeal into the cinch strap water channel to displace all air and moisture within the channel. Then seal the entire lap, strap and fastener heads with a minimum 6" width of FlexSeal. Feather the FlexSeal to prevent ponding water at the high side of the lap. Use of TOPESTER Fabric is not required for cinch straps at panel end laps.
 6. Ridge Caps: Except as noted, all ridge caps must be flashed with a 6" or 12" width of TOPESTER Fabric and TOPCOAT® Flashing Grade or FlexSeal. All voids and open areas in ridge cap must be filled with polyurethane foam prior to application of TOPESTER Fabric and TOPCOAT® Flashing Grade or FlexSeal. (NOTE: In the case of metal "Z" closures which are located within 2" of the ridge cap edge, remove all exposed existing sealant and apply a liberal bead of TOPCOAT® Flashing Grade to all sides of the "Z" closure where they intersect with both the roof panel and ridge cap.)
 7. Rakes: All fixed rake details for the roof must be secured and sealed with a 6" minimum width of TOPCOAT® Flashing Grade or FlexSeal and TOPESTER Fabric. If fixed rake metal is fastened to top of roof panel rib and extends back onto roof, trim off excess metal and follow horizontal seam flashing procedures. All voids and open areas must be filled with polyurethane foam prior to application of TOPESTER Fabric or FlexSeal and Flashing Grade. For standing seam roof panels, contact GAFMC's Contractor Services Department for particulars.
 8. Parapet Walls: All parapet wall details for the roof must be secured and sealed with a 6" minimum width of TOPCOAT® Flashing Grade or FlexSeal and TOPESTER Fabric. If parapet wall flashing metal is fastened to top of roof panel rib and extends back onto roof, trim off excess metal and follow horizontal seam flashing procedures. All voids and open areas must be filled with polyurethane foam prior to application of TOPESTER Fabric and Flashing Grade or FlexSeal. For standing seam roof panels, contact GAFMC's Contractor Services Department for particulars.

9. Curb Flashings: All curb flashings, including cricket details, must be flashed with at least a 6" width of TOPESTER Fabric and TOPCOAT® Flashing Grade or FlexSeal. Encapsulate all fasteners using TOPCOAT® Flashing Grade or FlexSeal. Do not bridge fasteners. TOPESTER must be cut around all fasteners so Fabric lies flat.
 10. Penetrations: TOPCOAT® Flashing Grade or FlexSeal shall be applied around base of unit extending at least 4" on vertical and 4" on base. Embed 6" width of TOPESTER Fabric using additional TOPCOAT® Flashing Grade or FlexSeal, as necessary. Cut TOPESTER Fabric to accommodate the shape of the penetration. Both the top and bottom of neoprene pipe boots shall be flashed using TOPCOAT® Flashing Grade or FlexSeal and TOPESTER Fabric as described above.
 11. Skylights: Curb skylights shall be treated in the same fashion as curb flashings. The entire perimeter of flush-mounted skylights must be flashed with a minimum 6" width of TOPCOAT® Flashing Grade or FlexSeal and TOPESTER Fabric. All exposed skylight fasteners shall be encapsulated with TOPCOAT® Flashing Grade or FlexSeal. Do not bridge fasteners. TOPESTER must be cut around all fasteners so Fabric lies flat. After flashing work has been completed and TOPCOAT® Flashing Grade or FlexSeal has cured, treat deteriorated fiberglass skylight panels with TOPCOAT® SKY-LITE material.
 12. Gutters: Trowel/brush apply FlexSeal to the interior or exterior gutter incorporating 6" TOPESTER Fabric at all gutter seams. Ensure gutter is completely clean and dry before applying TOPCOAT® FlexSeal.
 13. Ponding Water Areas: Contact the GAFMC's Contractor Services Department.
- B. Inspect Preliminary Work/Flashing Details for problem areas (e.g., gaps, cracks, fish mouths, air pockets, etc.) to ensure that work is complete and satisfactory.
1. Inform Project Architect and GAFMC Guarantee Services Department when all preliminary work and flashing details will be complete and the Installer is ready to proceed with application of TOPCOAT® Roofing Membrane. Allow a minimum of two weeks for the interim inspection to be made by GAFMC's Contractor Services Department. Any final roofing installation prior to this interim inspection is subject to rejection by the Project Architect and/or GAFMC's Contractor Services Department. Please be advised that technical on-site support for instructing certified contractors in the proper application of the TOPCOAT® Roofing System is available.
- C. Membrane Application:
1. 15-Year Labor and Material System: 15-Year Labor and Material NDL Guarantee available to Master and Master Select Contractors.
 - a. Spray-apply base coat (gray) of TOPCOAT® Elastomeric Roofing Membrane at the rate of 1.50 gallons per 100 sq.ft. Base coat shall be applied parallel to the ribs of roof panels. Allow at least 24 hours drying time, and then inspect the base coat for defects, flaws or holidays. Correct any unsatisfactory conditions.
 - b. Spray-apply finish coat (white) of TOPCOAT® Elastomeric Roofing Membrane at the rate of 1.75 gallons per 100 sq.ft. Finish coat shall be applied parallel to the ribs of the roof panels. It should not be applied unless the base coat is clean and dry and will provide proper adhesion. Allow a minimum of 24 hours drying time prior to allowing foot traffic or inspection of roof surface.
 - c. After at least 24 hours has elapsed, inspect the final roof surface for flaws, holidays, insufficient thickness, etc. Specified TOPCOAT® Diamond Pledge 15 Year NDL System dry membrane thicknesses are 30 – 32 mils field and 90 mils on seams and flashing details. At completion of all work, seams should not be visible on the roof. All unsatisfactory areas must be repaired.

2. 10-Year Labor, 15-Year Material System: 10-Year Labor/15-Year Material NDL Guarantee available to Master and Master Select Contractors.
 - a. Spray-apply base coat (gray) of TOPCOAT® Elastomeric Roofing Membrane at a rate of 1.0 gallon per 100 sq.ft. Base coat shall be applied parallel to the ribs of roof panels. Allow at least 24 hours drying time, and then inspect the base coat for defects, flaws, or holidays. Correct any unsatisfactory conditions.
 - b. Spray-apply finish coat (white) of TOPCOAT® Elastomeric Roofing Membrane at a rate of 1.5 gallons per 100 sq.ft. Finish coat shall be applied parallel to the ribs of the roof panels. It should not be applied unless the base coat is clean and dry and will provide proper adhesion. Allow a minimum of 24 hours drying time prior to allowing foot traffic or inspection of roof surface.
 - c. After at least 24 hours has elapsed, inspect the final roof surface for flaws, holidays, insufficient thickness, etc. Specified 10 Year Labor, 15 Year Material Diamond Pledge NDL Guarantee dry membrane thicknesses are 23 mils field and 83 mils on seams and flashing details. At completion of all work, seams should not be visible on the roof. All unsatisfactory areas must be repaired.
3. 10-Year Labor & Material System: 10-Year Labor and Material NDL Guarantee available to Master and Master Select Contractors.
 - a. Spray-apply base coat (white) of TOPCOAT® Elastomeric Roofing Membrane at a rate of 1.0 gallon per 100 sq.ft. Base coat shall be applied parallel to the ribs of roof panels. Allow at least 24 hours drying time, then inspect the base coat for defects, flaws, or holidays. Correct any unsatisfactory conditions.
 - b. Spray-apply finish coat (white – must be same color as used for base coat) of TOPCOAT® Elastomeric Roofing Membrane at a rate of 1.0 gallon per 100 sq.ft. Finish coat shall be applied parallel to the ribs of the roof panels. It should not be applied unless the base coat is clean and dry and will provide proper adhesion. Allow a minimum of 24 hours drying time prior to allowing foot traffic or inspection of roof surface.
 - c. After at least 24 hours has elapsed, inspect the final roof surface for flaws, holidays, insufficient thickness, etc. Specified 10 Year Labor, 10 Year Material Diamond Pledge NDL Guarantee dry membrane thicknesses are 18 mils field and 78 mils on seams and flashing details. At completion of all work, seams should not be visible on the roof. All unsatisfactory areas must be repaired.
4. 5-Year Labor & Material System: 5-Year Labor and Material NDL Guarantee available to Master and Master Select Contractors.
 - a. Spray-apply finish coat (white) of TOPCOAT® Elastomeric Roofing Membrane at a rate of 1.5 gallons per 100 sq.ft. Finish coat shall be applied parallel to the ribs of the roof panels. Allow a minimum of 24 hours drying time prior to allowing foot traffic or inspection of roof surface.
 - b. After at least 24 hours has elapsed, inspect the final roof surface for flaws, holidays, insufficient thickness, etc. Specified 5 Year Labor, 5 Year Material Diamond Pledge NDL Guarantee dry membrane thicknesses are 14 mils field and 74 mils on seams and flashing details. At completion of all work, seams should not be visible on the roof. All unsatisfactory areas must be

3.03 OTHER ITEMS

- A. Installer shall take photographs of representative roof areas, including detail work, at the following intervals (minimum):
1. Before work commences
 2. After roof has been thoroughly cleaned and prepared for application of TOPCOAT® Roofing System products
 3. After all flashing and detail work has been performed
 4. After spray application of TOPCOAT® Elastomeric Roofing Membrane
- B. Installer shall provide the following support for on-site inspections by a representative from GAFMC's Contractor Services Department:
1. Representative from Installer's company who has authority to make binding decisions
 2. Required means to access all areas of the treated roof (e.g., various ladders)
 3. Previous photographs of the roof including test patch results, as applicable
 4. TOPCOAT® products and application equipment required to repair roof areas where destructive tests are performed by GAFMC's Contractor Services Department
- C. Special care must be taken to avoid shading when spraying dark TOPCOAT® Elastomeric Roofing Membrane colors. When applying a dark TOPCOAT® Membrane color, Installer must be very careful to always spray wet material onto wet material so that spray lines do not appear. GAFMC highly recommends installation of any dark-colored finish coat by spraying two lighter coats (instead of one heavy coat) using a smaller orifice spray tip. 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. 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 applications of base and finish coats, GAFMC recommends use of TOPCOAT® white for the base coat (versus gray). Base coat must be thoroughly cleaned before application of the finish coat.
- F. It is strongly recommended that walkways designed for metal roofing systems be installed in all high traffic areas. Contact the GAFMC's Contractor Services Department for recommendations.
- G. Repairs to TOPCOAT® Elastomeric Roofing Membrane: In the event that the TOPCOAT® Membrane is damaged or punctured, for example, through the installation of new roof equipment, etc., make repairs using TOPCOAT® Flashing Grade and TOPESTER Fabric (where necessary) as follows:
1. Damaged areas are to be cut, cleaned, and dried.
 2. Apply Flashing Grade and feather out onto the existing TOPCOAT® Elastomeric Roofing Membrane.
 3. If new penetration area has been cut, embed TOPESTER Fabric into TOPCOAT® Flashing Grade according to standard GAFMC specifications.
 4. Once Flashing Grade has cured, TOPCOAT® white or appropriate TOPCOAT® color may be applied for aesthetic uniformity.
 5. For required repairs during cold weather conditions (i.e., below 42°F), TOPCOAT® Flashing Grade or FlexSeal must be used in lieu of water-based Flashing Grade.

For application questions, please contact GAFMC Contractor Services at 1-800-766-3411.

Note: Repair leaks promptly to avoid adverse effects, including mold growth.

For specific TOPCOAT® specification documents and construction details, please contact the GAF Materials Corporation Architectural Information Services department at 1-800-522-9224.