

TOPCOAT® Standard Specifications for Metal

Specification Sheet

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*Quality You Can Trust Since 1886...
From North America's Largest Roofing Manufacturer™*

TOPCOAT STANDARD SPECIFICATIONS FOR METAL

PART 1 - GENERAL

1.01 RELATED SECTIONS / DOCUMENTS

Topcoat 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. Final determination of the fitness of the Topcoat System, or its components, for any given metal roof may not be made by any representative of GAFMC/Topcoat other than a member of Topcoat's Technical Department.

1.03 SUBMITTALS

Submit copy of Topcoat's 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 Roofing Membrane, Topcoat Flashing Grade, Topester Fabric, etc., by a single manufacturer (GAFMC Topcoat), which has produced this type of product successfully for not less than twenty (20) years. Provide secondary products only as approved by GAFMC Topcoat for use with the specified Topcoat Roofing System.
- B. **Installer Qualifications:** A single Installer or Firm ("Roofer") shall perform all work addressed in this section, and shall be certified by GAFMC Topcoat, for installation of the Topcoat Roofing System.
- C. **Installer Authorization:** Installer shall possess written authorization from GAFMC Topcoat, 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 (Flame-spread must pass ASTM #E-108 with 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 (2) weeks prior to scheduled commencement of roofing installation and associated work, conduct meeting at the project site with Installer, Architect/Owner, Topcoat representative and any other persons directly concerned with the performance of the work. The Installer shall record conference discussions to include 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 foreseeable 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.

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- B. Review Topcoat Roofing System requirements (Topcoat 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, certifying 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 which shall ensure there is no possibility of contamination. Store in a dry, well-ventilated, weather-tight place at temperatures between 50°F and 80°F until product is ready to be applied (keep from freezing). Do not stack material pallets more than two (2) 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 Topcoat recommendations and guarantee requirements as follows:

- A. Do not begin work if rain is expected within twenty-four hours of application, or if temperatures are expected to fall below 42°F during the duration of the job. (NOTE: SB-900 Flashing Grade 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 substrate temperatures exceed 120°F, Topcoat products should be applied during cooler periods of the day. 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. Taking into consideration the UV curing properties of Topcoat Roofing Membrane and Flashing Grade, allow for sufficient daylight hours necessary for curing of materials.

CAUTION: Other weather and environmental conditions to consider are mist, dew, condensation and relative humidity. These factors can lengthen Topcoat drying times. If various 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 Topcoat's Technical Department concerning questionable substrates, required additional information and recommended test patch materials.

1.11 GUARANTEE

Provide Topcoat System Guarantee per the requirement of the Building Owner and/or Project Architect. In order to obtain any 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 Topcoat's Technical Department prior to offering any Topcoat System Guarantee. Topcoat will refuse to offer a guarantee on any Topcoat System being installed over an unfit, unsound or inappropriate substrate.
- B. Installer must be a Certified Topcoat Contractor. 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 System Guarantee will not be issued for Topcoat System installations over a section of any roof unless otherwise approved in advance by the Topcoat Warranty Department.
- D. Immediately after contract award, Installer shall submit the appropriate section of the Topcoat System Guarantee Form to the Topcoat Warranty Department. Installer shall provide a copy of the roof

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drawing, plus a minimum of 6 photographs which include descriptions of the roof and all unusual flashing details, with the form.

- E. Installer shall provide Topcoat Warranty Department at least two (2) weeks notice for scheduling of on-site technical support / inspections.
- F. Topcoat Roofing Membrane must be spray-applied. Any installation where Topcoat Roofing Membrane will be applied by another method must be pre-approved in writing by the Topcoat Warranty Department.
- G. All gutters and roof areas which pond water for more than 48 hours after precipitation ceases are excluded from coverage under the Topcoat System Guarantee.
- G. Completed Guarantee Registration Card must be returned to the Topcoat Warranty Department with appropriate Installer and Building Owner signatures no later than 30 days after issuance by Topcoat.

1.20 Guarantee Systems (Required Membrane)

Platinum System:

- 1. Spray-Apply Base Coat (gray) of Topcoat Roofing Membrane at the rate of 1.50 gal per 100 square feet. 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.
- 2. Spray-Apply Finish Coat (white) of Topcoat Roofing Membrane at the rate of 1.75 gal per 100 square feet. 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 will provide proper adhesion. Allow a minimum of 24 hours drying time prior to allowing foot traffic or inspection of roof surface.
- 3. After at Least 24 Hours Has Elapsed, inspect the final roof surface for flaws, holidays, insufficient thickness, etc. Specified Topcoat Platinum System dry membrane thicknesses are 30 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.

Gold System:

- a. Spray-Apply Base Coat (gray) of Topcoat Roofing Membrane at a rate of 1.0 gallon per 100 square feet. 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) of Topcoat Roofing Membrane at a rate of 1.5 gal per 100 square feet. 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 will provide proper adhesion. Allow a minimum of 24 hours drying time prior to allowing foot traffic or inspection of roof surface.

Note: Platinum System Available to Master Elite/Pride contractors only

- c. After at Least 24 Hours Has Elapsed, inspect the final roof surface for flaws, holidays, insufficient thickness, etc. Specified Gold System 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.

Silver System:

- a. Spray-Apply Base Coat (white) of Topcoat Roofing Membrane at a rate of 1.0 gallon per 100 square feet. 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 Roofing Membrane at a rate of 1.0 gallon per 100 square feet. 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 will provide proper adhesion. Allow a minimum of 24 hours drying time prior to allowing foot traffic or inspection of roof surface.

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After at Least 24 Hours Has Elapsed, inspect the final roof surface for flaws, holidays, insufficient thickness, etc. Specified Silver System 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.

Bronze System:

- a. Spray-Apply Finish Coat (white) of Topcoat Roofing Membrane at a rate of 1.5 gal per 100 square feet. 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 Bronze System 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 repaired.

Bronze Solo System:

4. Spray-Apply Finish Coat (white) of Topcoat Solo at the rate of 1.0 gal per 100 square feet. Finish coat shall be applied parallel to the ribs of the roof panels. It should not be applied unless roof substrate is clean and will provide proper adhesion. Allow a minimum of 24 hours drying time prior to allowing foot traffic or inspection of roof surface.
5. After at Least 24 Hours Has Elapsed, inspect the final roof surface for flaws, holidays, insufficient thickness, etc. Specified Topcoat Bronze Solo System dry membrane thicknesses are 7 mils field and 67 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.

Note: Bronze Solo system Available to Master Elite/Pride contractors only.

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PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

Topcoat, (a subsidiary of 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. Additional drying time must be allowed 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 liquid to be applied as the first coat on corrugated asbestos panels ie "Transite" Precote provides for optimum adhesion of Topcoat products on "Transite Panels"

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

- B. Topcoat MB Plus: Water-based, low VOC, sprayable polymeric liquid which cures to form a seamless rubber membrane. To be applied as a primary coating over all residual asphalt, modified bitumen, BUR, Hypalon, and PVC. Promotes adhesion to asphalt based products as well as resists asphalt bleedthru.

Application Rate: 1.0 to 1.5 gal / 100 sf per coat
Application Method: Airless sprayer or roller
Application Temperature (air, surface): 42° - 120°F

Drying Time (75°F, 50% RH):
Approx 24 hrs per coat
Total Solids (by weight): 65% ± 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: Light blue-pigmented, water-based rust inhibitor to be applied over any areas of rust that remain on the substrate after pressure washing. Do not apply in temperatures under 42°F.

Application Rate: 1 gal/ 100 sf
Application Method: Brush or airless sprayer
Application Temperature (air, surface): 42° - 120°F
Drying Time (75°F, 50% RH):
Approximately 2 hours
Total Solids (by weight): 50% ± 1%
Specific Gravity / Weight per Gallon: 1.19 / 9.9 lbs
Viscosity (75°F): 5,000 ± 1,000 cps
Clean-up: Water before curing

- D. Topcoat XR-2000: White, water-based 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 in temperatures under 42°F.

Application Rate: 0.75 gallon / 100 sf
Application Method: Roller or airless sprayer
Application Temperature (air, surface): 42° - 120°F
Drying Time (75°F, 50% RH): Approximately 6 hours
Total Solids (by weight): 52.5% ± 1%
Specific Gravity / Weight per Gallon: 1.22 / 10.2 lbs
Viscosity (75°F): 3,500 ± 350 cps

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E. Topcoat Flashing Grade (Regular and Spray Formula):

Light-gray, water-based synthetic rubber sealant to be applied on all seams, fasteners, flashings and penetrations. Curing is enhanced by UV exposure. 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 in temperatures under 42°F.

Application Rate: 5 gal total / 125 ft (6" width)
Application Method: Brush or caulking gun (airless sprayer)
Application Temperature (air, surface): 42° - 120°F
Drying Time (75°F, 50% RH): Approx 24 hrs
Total Solids (by weight): 68% ± 1%
Specific Gravity / Weight per Gallon: 1.44 / 12.0 lbs
Viscosity – Regular (75°F): 225,000 ± 22,500 cps
Viscosity – Spray Form (75°F): 140,000 ± 14,000 cps
Clean-up: Water before curing

F. Topcoat Liquid Fabric Flashing Grade:

Light gray, water-based, flexible liquid seam sealer. Liquid Fabric can be used to seal horizontal seams on metal roofs without the use of Topester Fabric when horizontal seams are properly secured as per product application specifications.

Application Rate: 5 gal / 125 lf of seam (6" wide)
Application Method: Brush
Application Temperature (air, surface): 42° - 120°F
Drying Time (75°F, 50% RH): Approximately 24 - 48 hours
Total Solids (by weight): 71.7%
Specific Gravity / Weight per Gallon: 1.35 / 11.3 lbs
Elongation: 700%
Viscosity (75°F): 220,000 ± 20,000 cps
Clean-up: Water

G. SB-900 Solvent-Based Flashing Grade:

White, solvent-based flashing grade compound designed for use in a wider range of temperatures. This product offers unique flow properties which

allow encapsulation of fasteners with little to no tooling.

Application Rate: 5 gal / 150 ft. (6" width)
Application Method: Stiff-brush, trowel or caulking gun
Application Temperature: (air, surface): 20° - 120°F
Drying Time (75°F, 50% RH): Approximately 24 hours
Total Solids (by weight): 78.5% ± 1%
Specific Gravity / Weight per Gallon: 1.26 / 10.5 lbs
Viscosity (75°F): 500,000 ± 100,000 cps

H. Topcoat Topester Reinforcing Fabric:

Non-woven, spun-bonded polyester fabric that must be used in conjunction with Flashing Grade, SB-900 and/or FlexSeal at all seams, roof penetrations, joints or changes in plane that have high shear or stress. Use of Topester Fabric is mandatory on all horizontal seams (except corrugated metal and those with Liquid Fabric application) and penetrations. Topester Fabric Roll Sizes: 6" x 150', 12" x 150'

I. Topcoat Fastener Grade:

Light gray, water-based 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. Do not apply in temperatures under 42°F. Available in 1-qt. caulking tubes for easy dispensing and application.

Application Rate: Approx. 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
Total Solids (by weight): 69% ± 1%
Specific Gravity / Weight per Gallon: 1.47 / 12.2 lbs
Viscosity (75°F): 60,000 ± 6,000 cps

J. Topcoat Surface Seal SB:

Solvent-based, sprayable, thermoplastic rubber liquid, which cures to form a seamless rubber membrane. It is highly reflective, flexible and nearly impervious

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to water. Available in white, aluminum and custom colors. Can be applied in temperatures under 42°F. Surface Seal SB will not freeze and resists “wash-off” by rain before curing is complete. This product cannot be applied in some counties in the State of California.

Application Rate: 1.0 to 1.5 gal /
100 sf per coat
Application Method: Airless sprayer
Application Temperature (air, surface):
32° - 120°F
Drying Time (75°F, 50% RH):
Approximately 24 hours per coat
Total Solids (by weight): 64% ± 3%
Specific Gravity / Weight per Gallon:
1.20 / 10.1 lbs.
Viscosity (75°F): 11,000 ± 2,000 cps
Tensile Strength: 700 psi
Elongation: 650%
Clean-up: Mineral spirits

K. Topcoat Roofing Membrane:

Water-based, spray-applied liquid roofing membrane. Curing is enhanced by UV exposure. Available in white, gray, patina green and other standard as well as custom colors. Do not apply in temperatures under 42°F.

Application Rate: 1.0 to 1.5
gal / 100 sf per coat
Application Method: Airless sprayer
Application Temperature (air,
surface): 42° - 120°F
Drying Time (75°F, 50%
RH): Approximately 24 hours per coat
Total Solids (by weight): 71 ± 3%
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: 0.003 perm inch
(ASTM E96-80)
Freeze-Thaw Stability: Passes five (5)
cycles
Low Temperature Flexibility: 35 mil
dry film will bend 180° @
-30°F without fracturing
Weatherability - 1,000 hours Atlas
Weather-o-meter® exposure per
ASTM G-26

Tensile Strength: 150% of original
Elongation: 85% of original
2,000 hours Atlas Weather-o-meter®
exposure per ASTM G-26
No cracking, embrittlement, loss of
adhesion or discoloration
6,000 hours QUV® exposure, type
UVB bulb, per ASTM G-53
No cracking, embrittlement, loss of
adhesion or discoloration

L. Topcoat SKY-LITE:

Clear, solvent-based synthetic rubber sealer designed to protect and waterproof porous, deteriorated fiberglass skylight panels. Also available in a water-based version.

Application Rate: 2 coats at 1
gallon / 100 sf per coat
Application Method: Roller or brush
Application Temperature (air,
surface): 42° - 120°F
Drying Time (75°F, 50% RH):
Approximately 1 hour per coat
Total Solids (by weight): 40.2% ± 2%
Specific Gravity / Weight per Gallon:
0.91 / 7.6 lbs
Viscosity (75°F): 3,000 ± 400 cps
Clean-up: Mineral spirits

M. Topcoat FlexSeal (Regular and Low Viscosity – LV):

White, solvent-based synthetic elastomeric compound designed to line and waterproof interior and exterior gutters typically found in metal buildings. FlexSeal is capable of withstanding ponding water. This product is easiest to apply at temperatures over 42°F. A low viscosity version of FlexSeal (FlexSeal LV) is available for use in cold temperatures. FlexSeal LV can also be used on relatively flat metal surfaces because it is self-leveling.

Application Rate: 5 gal / 100 sf
Application Method: Trowel or stiff-bristle brush
Application Temperature (air,
surface): 20° - 120°F

Drying Time (75°F, 50%
RH): Approximately 24 hours
Dry Mil Thickness: 50
Total Solids (by weight): 77% ± 2%

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Specific Gravity / Weight per Gallon:

1.24 / 10.3 lbs

Viscosity – Regular (75°F): 500,000

± 100,000 cps

Viscosity – LV (75°F): 150,000

± 15,000 cps

- N. 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, which are beginning to rust through the coating. Heavy, flaking rust and scale must be removed by scraping, wirebrushing or grit blasting, followed by power washing with water. 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.

Application Rate: 1 gallon / 100 sf

Application Method: Brush or airless sprayer

Application Temperature (air, surface): 35° - 120°F

Drying Time (75°F, 50% RH): Approximately 2 hours

Total Solids (by weight): 60% ± 1%

Specific Gravity / Weight per Gallon: 1.21 / 10.1 lbs

Viscosity (75°F): 8,000 ± 1,000 cps

Clean-up: Mineral Spirits

- O. Fasteners: EverTite™ self-drilling stitching screws; hex-head, zinc-coated.
- P. Airless Sprayer and Accessories:
As recommended by Topcoat Technical Department for application of sprayable Topcoat products

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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 Topcoat.).
- B. Preparation of the Roof Substrate is the responsibility of the Installer. Installer shall address and correct all of the following:
- Treatment of excessive gaps
 - Installation of sheet metal crickets
 - Treatment of ponding water areas
 - Repair of dented / damaged panels
 - Re-tightening and replacement of fasteners
 - Thorough cleaning / Removal of existing paints and coatings
 - Treatment of residual asphalt
 - Treatment of rust areas
 - Priming of pre-finished metal panels
 - Miscellaneous items
- C. 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 Topcoat adhesion and water drainage, as well as, prevents shearing of Topcoat Fabric on metal edges.
- D. 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 a void larger than a 1/4 inch. 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. Then, the cricket flanges must 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.
- E. Treatment of Ponding Water Areas: Installer shall make every effort to mechanically 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.
- F. 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. Then, Topcoat Flashing Grade shall be used to seal all the newly created rib cap seams and fasteners. Should roof panels be severely damaged, Installer shall remove and replace damaged areas prior to application of Topcoat products.
- G. 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 which 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 / altered to facilitate the proper installation of the system.
- H. Thorough Cleaning / Removal of Existing Paints and Coatings: Metal substrate must be pressure-washed with water. A minimum working pressure of 3,000 psi shall be used to remove all dirt, dust, previous paints / coatings which 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

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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.

I. 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 MB+. Apply Topcoat MB+ to the entire asphaltic area to be treated.

J. Treatment of Rust Areas: All rust areas must be treated with Topcoat MP-300 to prevent further deterioration of the metal roof panels. Prior to 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 MP-300. A second coat of MP-300 is required for heavily rusted roof panel areas. Since MP-300 Rust Inhibitor is designed to adhere to rust, only rusted areas shall be addressed with the product. Installer must exercise special care when applying MP-300 in high temperature conditions (substrate approaching 120°F). Substrate temperatures must be kept below 120°F when applying MP-300. Areas where rust is very heavy on roof panels shall now be treated with two (2) applications of Topcoat MP-300 Rust Inhibitor. The second application of 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 Topcoat specifications. Roof panels which are corroded to the point where they have holes must be replaced.

K. Preparation of Test Patches: Installer shall prepare no less than three (3) 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 (1) square foot. After the test patches have been applied, allow at least one week of drying time before checking adhesion. Check adhesion by slicing an "X" (approx. 6" 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 Topcoat Technical Department concerning all adhesion test results.

L. 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 using and without use of Topcoat XR-2000. Based on test patch adhesion results, Installer shall apply XR-2000 on pre-finished metal panels per specifications. Please note that since XR-2000 has rust inhibiting properties, Topcoat MP-300 is not required where XR-2000 has been used.

M. Miscellaneous Items:

- Pitch Pans: For most situations, pitch pans shall be capped with sheet metal so they can be sealed with Topcoat products. Contact Topcoat's Technical Department for particulars.
- Neoprene Pipe Boots: Topcoat 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 FlexSeal prior to mechanical attachment with EverTite™ fasteners. Contact Topcoat's Technical Department for particulars.
- Open Ridge Vents: Open ridge vents (as shown in Detail Drawings) start to corrode on the inside, and over time, begin to leak. Topcoat highly recommends either replacement or installing sheet metal caps over the open ridge vents when they are rusted on the inside and/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. When this condition occurs, it may not allow for proper curing of the Flashing Grade material which may cause blisters

TOPCOAT STANDARD SPECIFICATIONS FOR METAL

- Condensate Lines: Topcoat 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.

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 Topcoat Detail Drawings. 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 Topcoat Detail Drawings):
1. Fasteners: All fasteners must be totally encapsulated in Topcoat Fastener Grade, Flashing Grade or SB-900. 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), Topcoat recommends use of SB-900 for colder climates, and 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, including the fasteners.
 3. Vertical Seams:
 - a. Ribbed: All ribbed panel vertical seams must be sealed with Topcoat Flashing Grade. 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 ½" bead of Topcoat Flashing Grade. 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 Topcoat's Technical Department for details on specific standing seam panels.
 - c. Standing "T" Seam: Both vertical seams of the standing "T" must be flashed with a ½" bead of Topcoat Flashing Grade brushed into the seams.
 - d. Inverted "J" Seam: In snowy climates and/or when roof leaks are suspected from this type of vertical seam, Topcoat 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 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. 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 ½" bead of Topcoat Flashing Grade. 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 (1) layer of Topester Fabric and then a final layer of Topcoat Flashing Grade to completely encapsulate the Fabric. 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 Liquid Fabric, horizontal seam must be made flush by installing two Evertite fasteners per flute.
 5. Cinch Straps at Panel Endlaps: Re-tighten cinch straps, as necessary. Surround each strap and fastener head with a bead of SB-900 or FlexSeal. Fully inject SB-900 or 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 SB-900 or FlexSeal. Feather the SB-900 or FlexSeal to prevent ponding water at the high side of the lap. Use of Topester Fabric is not required for cinch straps at panel endlaps.

TOPCOAT STANDARD SPECIFICATIONS FOR METAL

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. All voids and open areas in ridge cap must be filled with polyurethane foam prior to application of Topester Fabric and Flashing Grade. (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 ridgecap.)
7. Rakes: All fixed rake details for the roof must be secured and sealed with a 6" minimum width of Topcoat Flashing Grade 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 and Flashing Grade. For standing seam roof panels, contact Topcoat's Technical 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 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. For standing seam roof panels, contact Topcoat's Technical 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 Flashing Grade. Encapsulate all fasteners using Topcoat Flashing Grade. Do not bridge fasteners. Topester must be cut around all fasteners so Fabric lies flat.
10. Penetrations: Topcoat Flashing Grade 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 Flashing Grade, 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 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 and Topester Fabric. All exposed skylight fasteners shall be encapsulated with Topcoat Flashing Grade. Do not bridge fasteners. Topester must be cut around all fasteners so Fabric lies flat. After flashing work has been completed and Flashing Grade 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 FlexSeal.
13. Ponding Water Areas:
Contact the Topcoat Technical Department for particulars.

Inspect Preliminary Work / Flashing Details for problem areas (e.g., gaps, cracks, fishmouths, air pockets, etc.) to ensure that work is complete and satisfactory.
- C. Inform Project Architect and Topcoat Warranty 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 (2) weeks for the interim inspection to be made by the Topcoat Technical Department.
Any final roofing installation prior to this interim inspection is subject to rejection by the Project Architect and/or the Topcoat Technical Department. Please be advised that Technical On-Site Support for instructing Certified Contractors in the proper application of the Topcoat Roofing System 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 \$475.00 per day, plus all incurred travel expenses. The two (2) required inspections (interim and final) for the Topcoat Bronze, Silver and Gold Systems are free of charge. Additional inspections will be billed at a rate of \$ 475.00 per day plus all incurred travel costs.

3.03 OTHER ITEMS

TOPCOAT STANDARD SPECIFICATIONS FOR METAL

A. Installer shall take photographs of representative roof areas, including detail work, at the following intervals (minimum):

- Before work commences
- After roof has been thoroughly cleaned and prepared for application of Topcoat Roofing System products
- After all flashing and detail work has been performed
- After spray application of Topcoat Roofing Membrane

B. Installer shall provide the following support for on-site inspections by a representative from Topcoat's Technical Department (list is not comprehensive):

- Representative from Installer's company who has authority to make binding decisions
- Required means to access all areas of the treated roof (e.g., various ladders)
- Previous photographs of the roof including test patch results, as applicable
- Topcoat products and application equipment required to repair roof areas where destructive tests are to be performed by the Topcoat Technical Department

C. Special care must be taken to avoid shading when spraying dark Topcoat 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. Topcoat 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. Also, all spray equipment shall remain on the ground for the duration of the job.

E. If there will be an extended period of time (6 months or greater) between application of base and finish coats, recommend use of Topcoat white for the base coat (versus gray). Also, 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 Topcoat Technical Department for recommendations.

G. Repairs to Topcoat Membrane

In the event that the Topcoat membrane is damaged or punctured, for example, through the installation of new roof equipment, etc., repairs are to be made using Topcoat Flashing Grade and Topester Fabric (where necessary) as follows:

- Damaged areas are to be cut, cleaned and dried.
- Apply Flashing Grade, feather out onto the existing Topcoat membrane.
- If new penetration area has been cut, embed Topester Fabric into Flashing Grade according to standard Topcoat specifications.
- Once Flashing Grade has cured, Topcoat white or appropriate Topcoat color may be applied for aesthetic uniformity.
- For required repairs during cold weather conditions (i.e., below 42 °F), Topcoat SB-900 Flashing Grade or FlexSeal must be used in lieu of water-based Flashing Grade

H. System Guarantee Transfer Fee

- Effective immediately, a guarantee transfer fee of \$500 (plus travel expenses) will be charged when transferring a Topcoat System Guarantee to another Building Owner.

I. Guarantee Extensions

Existing Topcoat Systems which are nearing the completion of their guarantee period may be eligible to receive extended Topcoat System Guarantee coverage. In order to be considered for another (5-10) years of System Guarantee coverage, the following procedures must be followed:

- Contact the Topcoat Technical Department to schedule a roof evaluation. Please allow two (2) weeks to schedule inspection.

TOPCOAT STANDARD SPECIFICATIONS FOR METAL

- Certified Applicator brings roof up to current Topcoat specifications as determined by the Technical Department. Upon completion of all preparation work, existing roof shall be recoated with the appropriate

amount of Topcoat Roofing Membrane as determined by the following chart.

Original System Warranty	Extended Warranty Period	Topcoat Gallons Per Square
Two Year System	5 years	1.50 ga/100 sf one coat
	10 years	2.00 ga/100 sf two coats
Five Year System	5 years	1.00 ga/100 sf one coat
	10 years	1.75 ga/100 sf one coat
Ten Year System	5 years	1.00 ga/100 sf one coat
	10 years	1.50 ga/100 sf one coat