SECTION 07 52 00

MODIFIED BITUMINOUS ROOFING

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\*\* NOTE TO SPECIFIER \*\* GAF, Commercial Roofing Products modified bituminous roofing.
 .
 This section is based on the products of GAF, Commercial Roofing Products, which is located at:
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Parsippany, NJ 07054
 Toll Free Tel: (800)ROOF-411
 Tel: (973) 628-3000
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 Web: http:// [www.gaf.com](http://www.gaf.com)
 [ [Click Here](http://www.arcat.com/arcatcos/cos32/arc32667.cfm) ] for additional information.

 Founded in 1886, GAF Materials Corporation is one of the oldest manufacturers of commercial and residential roofing materials in the United States, and its proud tradition of innovation and excellence has made it one of the most respected.

 GAF Materials Corporation offers the most comprehensive line of quality roofing systems in the industry. Whether your design calls for an asphalt fiberglass shingle, a conventional built-up roof, modified bitumen, single-ply or composite system, GAF's superior products and roofing specifications will meet your needs for a complete single source installation. Today, GAF Materials Corporation employs over 3,300 people in 26 plants throughout the United States, and GAF products are available across the country and through select distribution centers worldwide.

 GAF Materials Corporation manufactures and supplies a complete line of products for the asphaltic roofing systems most commonly used in commercial applications: Conventional built-up roofing (BUR), modified bitumen roofing, GAF composite roof systems that combine select BUR and modified bitumen materials into a multi-ply composite construction and single ply roofing. Each system offers specific advantages in terms of economy, strength, construction, fire resistance and overall durability.

See our SpecWizard: [Click Here](http://www.arcat.com/specwizard/07550gaf/index.htm)

1. GENERAL
	1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Asphalt Modified Bituminous Roofing.
		2. Roof Insulation.
	1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 06 10 00: Rough Carpentry: Roof blocking installation and requirements.
		2. Section 07 62 00: Sheet Metal Flashing and Trim: Metal flashing and counter flashing installation and requirements.
		3. Section 22 30 00: Plumbing Specialties: roof drains, scuppers, gutters and downspout installation and requirements.
	1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. Factory Mutual (FM Global) - Approval Guide.
			1. Factory Mutual Standard 4470 - Approval Standard for Class 1 Roof Covers.
		2. Underwriters Laboratories (UL) - Roofing Systems and Materials Guide (TGFU R1306).
		3. American Society for Testing and Materials (ASTM) - Annual Book of ASTM Standards.
			1. ASTM C 208 - Standard Specification for Cellulose Fiber Insulating Board.
			2. ASTM C 728 - Standard Specification for Perlite Thermal Insulation Board.
			3. ASTM C 1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.

\*\* NOTE TO SPECIFIER \*\* Retain the next three paragraphs only if CRRC Rating Applies.

* + - 1. ASTM C 1371 - Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers.
			2. ASTM C 1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
			3. ASTM C 1371 - Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers.
			4. ASTM D 41 - Standard Specification for Asphalt Primer Used in Roofing, Dampproofing and Waterproofing.
			5. ASTM D 312 - Standard Specification for Asphalt Used in Roofing.
			6. ASTM D 1863 - Standard Specification for Mineral Aggregate Used on Built-Up Roofs.
			7. ASTM D 2178 - Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.
			8. ASTM D 3672 - Specification for Venting Asphalt-Saturated and Coated Inorganic Felt Base Sheet Used in Roofing.
			9. ASTM D 3909 - Standard Specification for Asphalt Roll Roofing (Glass Felt) Surfaced With Mineral Granules.
			10. ASTM D 4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
			11. ASTM D 4601 - Standard Specification for Asphalt-Coated Glass Fiber Base Sheet Used in Roofing.
			12. ASTM D 4897 - Standard Specification for Asphalt-Coated Glass-Fiber Venting Base Sheet Used in Roofing.
			13. ASTM D 6163 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
			14. ASTM D 6164 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.
			15. ASTM D 6222 - Standard Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using Polyester Reinforcements.

\*\* NOTE TO SPECIFIER \*\* Retain the next three paragraphs only if ENERGYSTAR Rating Applies.

* + - 1. ASTM E 903 - Standard Test Method for Solar Absorptance, Reflectance, and Transmission of Materials Using Integrating Spheres.
			2. U.S. Green Building Council (USGBC).
			3. Leadership in Energy and Environmental Design (LEED).
			4. California Title 24 Energy Efficient Standards.
			5. ENERGYSTAR.
			6. Cool Roof Rating Council (CRRC).
		1. Sheet Metal and Air Conditioning Contractors National Association, 1nc. (SMACNA) - Architectural Sheet Metal Manual.
		2. Asphalt Roofing Manufacturers Association (ARMA).
		3. National Roofing Contractors Association (NRCA).
		4. American Society of Civil Engineers (ASCE).
			1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
	1. DEFINITIONS
		1. Roofing Terminology: Refer to ASTM D1079 and the glossary of the National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual for definitions of roofing terms related to this section.
	2. LEED CERTIFICATION
		1. Provide a roofing system that will achieve or aid in the qualification of points satisfying
			1. Sustainable Site credit 7.2 - Heat Island Effect - Roof.
			2. Materials & Resource credit 3 - Material Reuse
			3. Materials & Resource credit 4 - Recycled Content.
			4. Materials & Resource credit 5 - Local and Regional Materials.
	3. PERFORMANCE REQUIREMENTS
		1. Provide an installed roofing membrane and base flashing system that does not permit the passage of water, and will withstand the design pressures calculated in accordance with the most current revision of ASCE 7.
		2. GAFMC shall provide all primary roofing materials that are physically and chemically compatible when installed in accordance with manufacturers current application requirements.
	4. SUBMITTALS
		1. Submit under provisions of Section 01 30 00.
		2. [ [Product Data](http://www.arcat.com/arcatcos/cos32/arc32667.cfm) ]: Provide [ [Product Data](http://www.arcat.com/arcatcos/cos32/arc32667.cfm) ] sheets for each type of product indicated in this section.
		3. Shop Drawings: Provide manufacturers standard details and approved shop drawings for the roof system specified.
		4. Samples: Provide samples of insulations, fasteners, membrane materials and accessories for verification of quality.
		5. Certification: Installer shall provide written documentation from the manufacturer of their authorization to install the roof system, and eligibility to obtain the warranty specified in this section.
		6. LEED Submittal: Coordinate with Section 01115 - Green Building Requirements, for LEED certification submittal forms and certification templates.
	5. QUALITY ASSURANCE
		1. Manufacturer Qualifications: GAFMC shall provide a roofing system that meets or exceeds all criteria listed in this section.
		2. Installer Qualifications:

\*\* NOTE TO SPECIFIER \*\* Delete installer classification not required.

* + - 1. Installer shall be classified as a Master Select Contractor as defined and certified by GAFMC.
			2. Installer shall be classified as a Master Contractor as defined and certified by GAFMC.
			3. Installer shall be classified as an Authorized Contractor as defined and certified by GAFMC.
		1. Source Limitations: Components listed shall be provided by a single manufacturer or approved by the primary roofing manufacturer.

\*\* NOTE TO SPECIFIER \*\* Only Diamond Pledge system. Delete if not required.

* + 1. Final Inspection: Manufacturer's representative shall provide a comprehensive final inspection after completion of the roof system. All application errors shall be addressed and final punch list completed.
	1. PRE-INSTALLATION CONFERENCE
		1. Prior to scheduled commencement of the roofing installation and associated work, conduct a meeting at the project site with the installer, architect, owner, GAF representative and any other persons directly involved with the performance of the work. The installer shall record conference discussions to include decisions, agreements, and open issues and furnish copies of recorded discussions to each attending party. The primary purpose of the meeting is to review foreseeable methods and procedures related to roofing work.
	2. REGULATORY REQUIREMENTS
		1. Work shall be performed in a safe, professional manner, conforming to all federal, state and local codes.
		2. Exterior Fire Test Exposure: Provide a roofing system achieving a UL Class rating for roof slopes indicated.

\*\* NOTE TO SPECIFIER \*\* Delete roof class rating not required.

* + - 1. UL Class A rating.
			2. UL Class B rating.
			3. UL Class C rating.
		1. Windstorm Classification: Provide a roofing system which will achieve the required uplift resistance as calculated in accordance with ASCE 7-05 or as listed in the current FM Approval Guide. Corners and perimeter areas shall be calculated in accordance with ASCE 7-05.

\*\* NOTE TO SPECIFIER \*\* Delete roof wind uplift rating not required.

* + - 1. 60 psf of uplift resistance.
			2. 75 psf of uplift resistance.
			3. 90 psf of uplift resistance.
			4. 120 psf of uplift resistance.
			5. 135 psf of uplift resistance.
			6. 150 psf of uplift resistance.
	1. DELIVERY, STORAGE, AND HANDLING
		1. Deliver roofing materials to the site in original containers, with factory seals intact. Products shall carry either a GAFMC or BMCA label.
		2. Store pail goods in their original undamaged containers in a clean, dry location within their specified temperature range.
		3. Store roll goods on end on pallets in a clean, dry, protected area. Take care to prevent damage to roll ends or edges. Do not double stack modified bitumen products.
		4. Do not expose materials to moisture in any form before, during or after delivery to the site. Reject delivery of materials that show evidence of contact with moisture.
		5. Remove manufacturer supplied plastic covers from materials provided with such. Use "breathable" type covers such as canvas tarpaulins to allow venting and protection from weather and moisture. Cover and protect materials at the end of each work day. Do not remove any protective tarpaulins until immediately before the material will be installed.
		6. Materials shall be stored above 55 degrees F (12.6 degrees C) a minimum of 24 hours prior to application.
		7. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.
	2. PROJECT CONDITIONS
		1. Weather:
			1. Proceed with roofing only when existing and forecasted weather conditions permit.
			2. SBS membranes shall not be applied during adverse weather or without precautionary measures in temperatures below 45 degree F (7.2 degree C).
	3. WARRANTY

\*\* NOTE TO SPECIFIER \*\* Delete warranty not required.

* + 1. Provide manufacturer's standard WeatherStopper Diamond Pledge Guarantee with single source coverage and no monetary limitation where the manufacturer agrees to repair or replace components in the roofing system, which cause a leak due to a failure in materials or workmanship.

\*\* NOTE TO SPECIFIER \*\* Delete warranty years not required.

* + - 1. Duration: Five (5) years from the date of completion.
			2. Duration: Ten (10) years from the date of completion.
			3. Duration: Twelve (12) years from the date of completion.
			4. Duration: Fifteen (15) years from the date of completion.
			5. Duration: Twenty (20) years from the date of completion.
			6. Duration: Twenty-five (25) years from the date of completion.
		1. Provide manufacturer's standard WeatherStopper Diamond Pledge Guarantee with single source Edge-to-Edge coverage and no monetary limitation where the manufacturer agrees to repair or replace components in the roofing system and pre-approved metal edge details which cause a leak due to a failure in materials or workmanship.

\*\* NOTE TO SPECIFIER \*\* Delete warranty years not required.

* + - 1. Duration: Five (5) years from the date of completion.
			2. Duration: Ten (10) years from the date of completion.
			3. Duration: Twelve (12) years from the date of completion.
			4. Duration: Fifteen (15) years from the date of completion.
			5. Duration: Twenty (20) years from the date of completion.
			6. Duration: Twenty-five (25) years from the date of completion.
		1. Provide manufacturer's standard WeatherStopper Diamond Pledge Guarantee with the WELL ROOF Advantage. Provides single source coverage and no monetary limitation, where the manufacturer agrees to repair or replace components in the roofing system, which cause a leak due to a failure in materials or workmanship.

\*\* NOTE TO SPECIFIER \*\* Delete warranty years not required.

* + - 1. Duration: Five (5) years from the date of completion.
			2. Duration: Ten (10) years from the date of completion.
			3. Duration: Twelve (12) years from the date of completion.
			4. Duration: Fifteen (15) years from the date of completion.
			5. Duration: Twenty (20) years from the date of completion.
			6. Duration: Twenty-five (25) years from the date of completion.
			7. Extension: GAFMC also guarantees to the original or first subsequent owner that coverage shall be extended by 25 percent of the original guarantee length, provided that the roof in inspected and maintained in accordance with the MAINTAINENCE section of this specification.
		1. Provide manufacturer's standard WeatherStopper System Pledge Guarantee with single source coverage and a monetary limitation of one (1) dollar per square foot where the manufacturer agrees to repair or replace components in the roof system, which cause a leak due to failure in materials or workmanship.

\*\* NOTE TO SPECIFIER \*\* Delete warranty years not required.

* + - 1. Duration: Five (5) years from the date of completion.
			2. Duration: Ten (10) years from the date of completion.
			3. Duration: Twelve (12) years from the date of completion.
			4. Duration: Fifteen (15) years from the date of completion.
			5. Duration: Twenty (20) years from the date of completion.
		1. Provide GAFMC WeatherStopper Integrated Roofing System Guarantee where the manufacturer agrees to repair or replace the portion of the roofing materials, which have resulted in a leak due to a manufacturing defect or defects caused by ordinary wear and tear.

\*\* NOTE TO SPECIFIER \*\* Delete warranty years not required.

* + - 1. Duration: Five (5) years from the date of completion.
			2. Duration: Ten (10) years from the date of completion.
			3. Duration: Twelve (12) years from the date of completion.
			4. Duration: Fifteen (15) years from the date of completion.
			5. Duration: Twenty (20) years from the date of completion.
		1. Provide Manufacturers standard prorated material warranty where the manufacturer agrees to repair or replace to portion of the roofing materials that have resulted in a leak due to a manufacturing defect or defects caused by ordinary wear and tear.
			1. Duration: Ten (10) years.
1. PRODUCTS
	1. MANUFACTURERS
		1. Acceptable Manufacturer: GAF, Commercial Roofing Products, which is located at: 1 Campus Dr.; Parsippany, NJ 07054; Toll Free Tel: 800-ROOF-411; Tel: 973-628-3000; Fax: 973-628-3451; Email: SBenoit@gaf.com; Web: [www.gaf.com](http://www.gaf.com)

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
		2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.

\*\* NOTE TO SPECIFIER \*\* Delete insulation if not required.

* 1. INSULATION

\*\* NOTE TO SPECIFIER \*\* Delete insulation types not required.

* + 1. Rigid polyisocyanurate board, with a strong white or black fibrous glass facer conforming to or exceeding the requirements of ASTM C 1289 / FS HH-I-1972, EnergyGuard Polyiso, with the following characteristics:

\*\* NOTE TO SPECIFIER \*\* Provide project information.

* + - 1. Board Thickness:
			2. Thermal Resistance (LTTR value):
		1. Rigid tapered polyisocyanurate board, with a strong white or black fibrous glass facer conforming to or exceeding the requirements of ASTM C 1289 / FS HH-I-1972, EnergyGuard Tapered Polyiso, with the following characteristics:

\*\* NOTE TO SPECIFIER \*\* Provide project information.

* + - 1. Board Thickness:
			2. Thermal Resistance (LTTR value):
		1. Rigid polyisocyanurate foam insulation with 1/2 inch (13 mm) perlite roof insulation laminated to one side and a strong fibrous glass facer on the other; conforms to or exceeds the requirements of ASTM C 1289 / FS HH-I EnergyGuard Composite, with the following characteristics:

\*\* NOTE TO SPECIFIER \*\* Provide project information.

* + - 1. Board Thickness:
			2. Thermal Resistance (LTTR value):
		1. Rigid polyisocyanurate foam insulation with 1/2 inch (13 mm) gypsum laminated to one side and a strong fibrous glass facer on the other; conforms to or exceeds the requirements of ASTM C 1289 / FS HH-I EnergyGuard Composite, with the following characteristics:

\*\* NOTE TO SPECIFIER \*\* Provide project information.

* + - 1. Board Thickness:
			2. Thermal Resistance (LTTR value):
		1. Rigid polyisocyanurate foam insulation with 1/2 inch (13 mm) cellulose fiber board laminated to one side and a strong fibrous glass facer on the other; conforms to or exceeds the requirements of ASTM C 1289 / FS HH-I EnergyGuard Composite, with the following characteristics:

\*\* NOTE TO SPECIFIER \*\* Provide project information.

* + - 1. Board Thickness:
			2. Thermal Resistance (LTTR value):
		1. Expanded perlite mineral aggregate board conforming to or exceeding the requirements of FS HH-I-529b, ANSI/ASTM C 728. EnergyGuard Perlite, with the following characteristics:
			1. Board Density: 9 lb/cf (144 kg/cm) minimum.

\*\* NOTE TO SPECIFIER \*\* Provide project information.

* + - 1. Board Thickness:
			2. Thermal Resistance (R value):
		1. Overlayment board made of cellulose fiber conforming to or exceeding the requirements of FS LLL-I-535, Class C, ANSI/ASTM C 208, with the following characteristics:
			1. Board Thickness: 1/2 inch (13 mm).
			2. Thermal Resistance (R value) of: 1.32 (2.5C/W).

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. ROOF BOARD

\*\* NOTE TO SPECIFIER \*\* Delete roof board types not required.

* + 1. Underlayment or overlayment board with a water-resistant and silicone treated gypsum core with glass fiber facers embedded on both sides, and pre-primed on one side. GP Dens-Deck Prime Roof Board, distributed by GAFMC.
			1. Board Thickness:
			2. Thermal Resistance (R value) of:
		2. Underlayment or overlayment board with a water-resistant and silicone treated gypsum core with glass fiber facers embedded on both sides. GP Dens-Deck Roof Board, distributed by GAFMC.
			1. Board Thickness:
			2. Thermal Resistance (R value) of:
		3. Underlayment or overlayment board with a water-resistant and silicone treated gypsum core with glass fiber facers embedded on both sides and a factory-applied low perm, integrated, durable coating that enhances bond strength of the membrane system. GP Dens-Deck DuraGuard Roof Board, distributed by GAFMC.
			1. Board Thickness:
			2. Thermal Resistance (R value) of:
		4. Fiber-reinforced gypsum panel with an integral water-resistant core. Securock Roof Board by US Gypsum.
			1. Board Thickness: 1/4".
			2. Thermal Resistance (R value) of: .20.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. INSULATION ACCESSORIES
		1. Cant Strip: Factory fabricated rigid perlite strip cut at angles to provide a true 45 degree angle between horizontal and vertical surfaces, EnergyGuard Perlite Cant Strip, by GAFMC.
		2. Tapered Edge Strip: Factory fabricated rigid perlite strip cut at angles to provide a smooth transition between differences in elevation. EnergyGuard Tapered Edge Strip, by GAFMC.
	2. SHEET MATERIALS

\*\* NOTE TO SPECIFIER \*\* Delete membrane materials not required.

* + 1. Dry Sheathing Paper: Red Rosin Paper, unsaturated by other.

\*\* NOTE TO SPECIFIER \*\* Delete base sheets not required.

* + 1. Heavyweight asphalt coated glass fiber reinforced base sheet: Conforms to or exceeds requirements of ASTM D 4601, Type II, UL Type G2 BUR. Each roll contains three (3) squares (320 sf) of material, approximately 39.4 inches by 97.5 feet (1 m by 29.7 m); 68 lb (30.8 kg), GAFGLAS #75 base sheet by GAFMC.
		2. High performance, asphalt coated, glass fiber reinforced base sheet: Conforms to or exceeds requirements of ASTM D 4601, Type II, UL Type G2 BUR. Each roll contains two (2) squares (214 sf) of material, approximately 39.4 inches by 65.2 feet (1 m by 19.9 m); 80 lbs. (36.3 kg), GAFGLAS #80 ULTIMA base sheet by GAFMC.
		3. Asphalt coated, glass fiber reinforced, mechanically fastened venting base sheet: Conforms to or exceeds requirements of ASTM D 3672 Type II and ASTM D 4897, Type II and UL Type G2 BUR. Each roll contains one and a quarter squares of material, approximately 39.4 inches by 40.6 feet (1 m by 12.4 m); 73 lb (33 kg), GAFGLAS STRATAVENT Eliminator Nailable base sheet by GAFMC.
		4. Asphalt coated, glass fiber reinforced, asphalt applied venting base sheet, has 1/2 inch (13 mm) perforations, 3 in a row with groups spaced 3 inches (76 mm) apart on center: Conforms to or exceeds requirements of ASTM D 3672 Type II and ASTM D 4897, Type II and UL Type G2 BUR. Each roll contains one and a quarter squares of material, approximately 39.4 inches by 40.6 feet (1 m by 9.9 m); 73 lb (33.1 kg), GAFGLAS STRATAVENT Eliminator Perforated base sheet by GAFMC.
		5. Smooth surfaced modified bitumen membrane with a fiberglass reinforcing mat coated with flexible, SBS polymer-modified asphalt. Each roll contains one and one-half squares of material, approximately 39.4 inches by 50.3 feet (1 m by 15.3 m); 89 lb (40.3 kg), Ruberoid 20 base / ply sheet by GAFMC.
		6. Strong, resilient, smooth surfaced modified bitumen membrane with a non-woven polyester reinforcing mat coated with flexible, SBS polymer-modified asphalt. Conforms to or exceeds requirements of ASTM D 6164 Type I Grade S. Each roll contains one square of material, approximately 39.4 inches by 32.56 feet (1 m by 9.92 m), 91 lb (411 kg), Ruberoid Mop Smooth base / ply sheet by GAFMC.
		7. Strong, resilient, smooth surfaced modified bitumen membrane with a non-woven polyester reinforcing mat coated with flexible, SBS polymer-modified asphalt. Conforms to or exceeds requirements of ASTM D 6164 Type I Grade S. Each roll contains one and one half squares of material, approximately 39.4 inches by 49.5 feet (1 m by 15.1 m), 89 lb (41 kg), Ruberoid Mop Smooth 1.5 base / ply sheet by GAFMC.
		8. Strong, resilient, smooth surfaced SBS modified asphalt membrane. Strong fiberglass/polyester composite mat coated with SBS polymer-modified asphalt. Conforms to or exceeds the requirements of ASTM D 6162 Type II Grade S. Each roll contains one square of material, approximately 39.4 inches by 32.56 feet (1 m x 9.92 m), 92.5 lb (42kg), Ruberoid Dual Smooth roof membrane by GAFMC.
		9. Smooth surfaced modified bitumen membrane with a fiberglass reinforcing mat coated with flexible, SBS polymer-modified asphalt. Specifically designed for heat weld application. Conforms to or exceeds requirements of ASTM D 6163 Type I Grade S. Each roll contains one and one-half squares of material, approximately 39.4 inches by 50 feet (1 m by 15.2 m); 105 lb (41 kg), Ruberoid SBS Heat-Weld 25 base / ply sheet by GAFMC.
		10. Smooth surfaced modified bitumen membrane with a non-woven polyester reinforcing mat coated with flexible, SBS polymer-modified asphalt. Specifically designed for heat weld application. Conforms to or exceeds requirements of ASTM D 6164 Type I Grade S. Each roll contains one square of material, approximately 39.4 inches by 32.6 feet (1 m by 9.9 m), 104 lb (47.2 kg), Ruberoid SBS Heat-Weld Smooth base / ply sheet by GAFMC.

\*\* NOTE TO SPECIFIER \*\* Delete ply sheets not required.

* + 1. Asphalt coated glass fiber ply sheet, strong and lightweight. Conforms to or exceeds requirements of ASTM D 2178 Type IV and UL Type G1 BUR Each roll contains five (5) squares (530 sf) of material, approximately 39.4 inches by 161.8 feet (1 m by 49.3 m), 34.9 lb (20 kg), GAFGLAS Ply 4 ply sheet by GAFMC.
		2. Premium asphalt coated glass fiber ply sheet with flexible Design: Conforms to or exceeds requirements of ASTM D 2178 Type VI and UL Type G1 BUR. Each roll contains five (5) squares (530 sf) of material, approximately 39.4 inches by 161.8 feet (1 m by 49.3 m), 44 lb (20 kg), GAFGLAS FlexPly 6 ply sheet by GAFMC.

\*\* NOTE TO SPECIFIER \*\* Delete cap sheets not required.

* + 1. Granule surfaced modified bitumen sheet containing a core of non-woven glass fiber mat coated with flexible SBS polymer-modified asphalt. Conforms to or exceeds the requirements of ASTM D 6163 Type I Grade G. Each roll contains one square of material, approximately 39.4 inches by 33.6 feet (1 m by 10.3 m), 95.9 lbs (46.3 kg), Ruberoid 30 roof membrane by GAFMC.
		2. Fire resistant, granule surfaced modified bitumen membrane with a non-woven fiberglass reinforcing mat coated with flexible SBS polymer-modified asphalt. Conforms to or exceeds the requirements of ASTM D 6163 Type I Grade G. Each roll contains one square (9.3 sm) of material, approximately 39.4 inches by 33.7 feet (1 m by 10.3 m), 95.9 lb (43.5 kg), Ruberoid 30 FR roof membrane by GAFMC.
			1. Color: to be selected by owner or architect from standard GAFMC selections.
		3. ENERGY STAR listed modified bitumen membrane with a non-woven fiberglass reinforcing mat coated with flexible SBS polymer-modified asphalt, granule surfacing and a white elastomeric coating. Conforms to or exceeds the requirements of ASTM D 6163 Type I Grade G. Each roll contains one square (9.3 sm) of material, approximately 39.4 inches by 33.6 feet (1 m by 10.3 m), 92 lb (42 kg), Ruberoid EnergyCap SBS 30FR roof membrane by GAFMC.
		4. Granule-surfaced modified bitumen membrane with a non-woven polyester reinforcing mat coated with flexible, SBS polymer-modified asphalt. Conforms to or exceeds requirements of ASTM D 6164 Type I Grade G. Each roll contains one square of material, approximately 39.4 inches by 32.56 feet (1 m by 9.92 m), 90 lb (41 kg), Ruberoid Mop Granule roof membrane by GAFMC.
			1. Color: to be selected by owner or architect from standard GAFMC selections.
		5. Fire resistant modified bitumen membrane with a non-woven polyester reinforcing mat coated with flexible, SBS polymer-modified asphalt. Conforms to or exceeds the requirements of ASTM D 6164 Type I Grade G. Each roll contains one (1) square of material, approximately 39.4 inches by 32.8 feet (1 m by 10 m), 102.5 lb (46.49 kg), Ruberoid Mop 170 FR roof membrane by GAFMC.
			1. Color: to be selected by owner or architect from standard GAFMC selections.
		6. Heavy-duty, fire-retardant, granule-surfaced modified bitumen membrane with a non-woven polyester reinforcing mat coated with flexible, SBS polymer-modified asphalt. Conforms to or exceeds requirements of ASTM D 6164 Type II Grade G. Each roll contains one square of material, approximately 39.4 inches by 32.56 feet (1 m by 9.92 m), 103.7 lb (46.04 kg), Ruberoid Mop FR roof membrane by GAFMC.
			1. Color: to be selected by owner or architect from standard GAFMC selections.
		7. Fire-retardant, granule-surfaced modified bitumen membrane with a dual carrier, fiberglass and non-woven polyester reinforcing mat coated with flexible, SBS polymer-modified asphalt. Conforms to or exceeds the requirements of ASTM D 6162 Type II Grade G. Each roll contains one square of material, approximately 39.4 inches by 32.56 feet (1 m by 9.92 m), 104.9 lb (47.6 kg), Ruberoid SBS Dual FR roof membrane by GAFMC.
			1. Color: to be selected by owner or architect from standard GAFMC selections.
		8. Smooth surfaced modified bitumen membrane with a non-woven polyester reinforcing mat coated with APP polymer-modified asphalt. Conforms to or exceeds requirements of ASTM D 6222 Type I Grade S. Each roll contains one square of material, approximately 39.6 inches by 32.25 feet (1 m by 9.8 m), 83.2 lb (37.8 kg) Ruberoid Torch Smooth roof membrane by GAFMC.
		9. Granule surfaced modified bitumen membrane with a non-woven polyester reinforcing mat coated with APP polymer-modified asphalt. Conforms to or exceeds requirements of ASTM D 6222 Type I Grade G. Each roll contains one square of material, approximately 39.6 inches by 32.3 feet (1 m by 9.8 m), 99 lb (44.9 kg) Ruberoid Torch Granule roof membrane by GAFMC.
			1. Color: to be selected by owner or architect from standard GAFMC selections.
		10. Heavy-duty, fire retardant, granule surfaced modified bitumen membrane with a non-woven polyester reinforcing mat coated with APP polymer-modified asphalt. Conforms to or exceeds the requirements of ASTM D 6222 Type II Grade G. Each roll contains 3/4 square of material, approximately 39.6 inches by 32.3 feet (1 m by 9.8 m), 102 lb (46.3 kg) Ruberoid Torch FR roof membrane by GAFMC.
			1. Color: to be selected by owner or architect from standard GAFMC selections.
		11. ENERGYSTAR listed, fire resistant modified bitumen membrane with a non-woven polyester reinforcing mat coated with APP polymer-modified asphalt, granule surfacing and a white elastomeric coating. Conforms to or exceeds the requirements of ASTM D 6222 Type I Grade G. Each roll contains 3/4 square of material, approximately 39.5 inches by 32.4 feet (1 m by 10.3m), 106 lb (48.1 kg) Ruberoid EnergyCap Torch Plus FR roof membrane by GAFMC.
		12. ENERGYSTAR listed, fire resistant modified bitumen membrane with a non-woven polyester reinforcing mat coated with APP polymer-modified asphalt, granule surfacing and a white elastomeric coating. Conforms to or exceeds the requirements of ASTM D 6222 Type I Grade G. Each roll contains 3/4 square of material, approximately 39.5 inches by 32.4 feet (1 m by 10.3m), 106 lb (48.1 kg) Ruberoid EnergyCap Torch Granule FR roof membrane by GAFMC.
		13. Granule surfaced modified bitumen membrane with a non-woven polyester reinforcing mat coated with flexible, SBS polymer-modified asphalt. Specifically designed for heat weld application. Conforms to or exceeds requirements of ASTM D 6164 Type I Grade G. Each roll contains one (1) square of material, approximately 39.6 inches by 32.6 feet (1 m by 9.9 m), 104.4 lb (47.4 kg), Ruberoid SBS Heat-Weld Granule roof membrane by GAFMC.
			1. Color: to be selected by owner or architect from standard GAFMC selections.
		14. Premium, heavy-duty asphalt modified bitumen membrane containing a core of non-woven polyester mat coated with flexible, SBS polymer-modified asphalt designed for heat weld application. Conforms to or exceeds requirements of ASTM D 6164 Type II Grade G. Each roll contains one square of material, approximately 39.4 inches by 33.6 feet (1 m by 10.3 m) 108 lb, Ruberoid SBS Heat-Weld Plus roof membrane by GAFMC.
		15. Fire-retardant, granule surfaced modified bitumen membrane with a non-woven polyester reinforcing mat coated with flexible, SBS polymer-modified asphalt. Specifically designed for heat weld application. Conforms to or exceeds the requirements of ASTM D 6164 Type I Grade G. Each roll contains one (1) square of material, approximately 39.6 inches by 32.6 feet (1 m by 9.92 m), 104 lb (47.2 kg), Ruberoid SBS Heat-Weld 170FR roof membrane by GAFMC.
			1. Color: to be selected by owner or architect from standard GAFMC selections.
		16. ENERGY STAR listed, fire resistant, coated granule surfaced modified bitumen membrane containing a core of non-woven polyester mat coated with flexible, SBS polymer-modified asphalt designed for heat weld application. Conforms to or exceeds requirements of ASTM D 6164 Type II Grade G. Each roll contains one square of material, approximately 39.6 inches by 32.75 feet (1 m by 9.98 m) 108lbs (46.3 kg), Ruberoid EnergyCap SBS Heat-Weld Plus FR roof membrane by GAFMC.
		17. Heavy-duty, fire-retardant, granule surfaced modified bitumen membrane with a non-woven polyester reinforcing mat coated with flexible, SBS polymer-modified asphalt. Specifically designed for heat weld application. Conforms to or exceeds requirements of ASTM D 6164 Type II Grade G. Each roll contains one square (9.3 sm) of material, approximately 39.6 inches by 32.6 feet (1 m by 9.9 m), 105 lb (47.6 kg), Ruberoid SBS Heat-Weld Plus FR roof membrane by GAFMC.
			1. Color: to be selected by owner or architect from standard GAFMC selections.
	1. FLASHING MATERlALS

\*\* NOTE TO SPECIFIER \*\* Delete flashing materials not required.

* + 1. Heavyweight asphalt coated glass fiber reinforced base sheet: Conforms to or exceeds requirements of ASTM D 4601, Type II, UL Type G2 BUR. Each roll contains three (3) squares (320 sf) of material, approximately 39.4 inches by 97.5 feet (1 m by 29.7 m); 68 lb (30.8 kg), GAFGLAS #75 base sheet by GAFMC.
		2. High performance, asphalt coated, glass fiber reinforced base sheet: Conforms to or exceeds requirements of ASTM D 4601, Type II, UL Type G2 BUR. Each roll contains two (2) squares (214 sf) of material, approximately 39.4 inches by 65.2 feet (1 m by 19.9 m); 80 lbs. (36.3 kg), GAFGLAS #80 ULTIMA base sheet by GAFMC.
		3. Asphalt coated, glass fiber reinforced, mechanically fastened venting base sheet: Conforms to or exceeds requirements of ASTM D 3672 Type II and ASTM D 4897, Type II and UL Type G2 BUR. Each roll contains one and a quarter squares of material, approximately 39.4 inches by 40.6 feet (1 m by 12.4 m); 73 lb (33 kg), GAFGLAS STRATAVENT Eliminator Nailable base sheet by GAFMC.
		4. Asphalt coated, glass fiber reinforced, asphalt applied venting base sheet, has 1/2 inch (13 mm) perforations, 3 in a row with groups spaced 3 inches (76 mm) apart on center: Conforms to or exceeds requirements of ASTM D 3672 Type II and ASTM D 4897, Type II and UL Type G2 BUR. Each roll contains one and a quarter squares of material, approximately 39.4 inches by 40.6 feet (1 m by 9.9 m); 73 lb (33.1 kg), GAFGLAS STRATAVENT Eliminator Perforated base sheet by GAFMC.
		5. Smooth surfaced modified bitumen membrane with a fiberglass reinforcing mat coated with flexible, SBS polymer-modified asphalt. Each roll contains one and one-half squares of material, approximately 39.4 inches by 50.3 feet (1 m by 15.3 m); 89 lb (40.3 kg), Ruberoid 20 base / ply sheet by GAFMC.
		6. Strong, resilient, smooth surfaced modified bitumen membrane with a non-woven polyester reinforcing mat coated with flexible, SBS polymer-modified asphalt. Conforms to or exceeds requirements of ASTM D 6164 Type I Grade S. Each roll contains one square of material, approximately 39.4 inches by 32.56 feet (1 m by 9.92 m), 91 lb (411 kg), Ruberoid Mop Smooth base / ply sheet by GAFMC.
		7. Strong, resilient, smooth surfaced modified bitumen membrane with a non-woven polyester reinforcing mat coated with flexible, SBS polymer-modified asphalt. Conforms to or exceeds requirements of ASTM D 6164 Type I Grade S. Each roll contains one and one half squares of material, approximately 39.4 inches by 49.5 feet (1 m by 15.1 m), 89 lb (41 kg), Ruberoid Mop Smooth 1.5 base / ply sheet by GAFMC.
		8. Strong, resilient, smooth surfaced SBS modified asphalt membrane. Strong fiberglass/polyester composite mat coated with SBS polymer-modified asphalt. Conforms to or exceeds the requirements of ASTM D 6162 Type II Grade S. Each roll contains one square of material, approximately 39.4 inches by 32.56 feet (1 m x 9.92 m), 92.5 lb (42kg), Ruberoid Dual Smooth roof membrane by GAFMC.
		9. Smooth surfaced modified bitumen membrane with a fiberglass reinforcing mat coated with flexible, SBS polymer-modified asphalt. Specifically designed for heat weld application. Conforms to or exceeds requirements of ASTM D 6163 Type I Grade S. Each roll contains one and one-half squares of material, approximately 39.4 inches by 50 feet (1 m by 15.2 m); 105 lb (41 kg), Ruberoid SBS Heat-Weld 25 base / ply sheet by GAFMC.
		10. Smooth surfaced modified bitumen membrane with a non-woven polyester reinforcing mat coated with flexible, SBS polymer-modified asphalt. Specifically designed for heat weld application. Conforms to or exceeds requirements of ASTM D 6164 Type I Grade S. Each roll contains one square of material, approximately 39.4 inches by 32.6 feet (1 m by 9.9 m), 104 lb (47.2 kg), Ruberoid SBS Heat-Weld Smooth base / ply sheet by GAFMC.

\*\* NOTE TO SPECIFIER \*\* Delete ply sheets not required.

* + 1. Asphalt coated glass fiber ply sheet, strong and lightweight. Conforms to or exceeds requirements of ASTM D 2178 Type IV and UL Type G1 BUR Each roll contains five (5) squares (530 sf) of material, approximately 39.4 inches by 161.8 feet (1 m by 49.3 m), 34.9 lb (20 kg), GAFGLAS Ply 4 ply sheet by GAFMC.
		2. Premium asphalt coated glass fiber ply sheet with flexible Design: Conforms to or exceeds requirements of ASTM D 2178 Type VI and UL Type G1 BUR. Each roll contains five (5) squares (530 sf) of material, approximately 39.4 inches by 161.8 feet (1 m by 49.3 m), 44 lb (20 kg), GAFGLAS FlexPly 6 ply sheet by GAFMC.

\*\* NOTE TO SPECIFIER \*\* Delete cap sheets not required.

* + 1. Granule surfaced modified bitumen sheet containing a core of non-woven glass fiber mat coated with flexible SBS polymer-modified asphalt. Conforms to or exceeds the requirements of ASTM D 6163 Type I Grade G. Each roll contains one square of material, approximately 39.4 inches by 33.6 feet (1 m by 10.3 m), 95.9 lbs (46.3 kg), Ruberoid 30 roof membrane by GAFMC.
		2. Fire resistant, granule surfaced modified bitumen membrane with a non-woven fiberglass reinforcing mat coated with flexible SBS polymer-modified asphalt. Conforms to or exceeds the requirements of ASTM D 6163 Type I Grade G. Each roll contains one square (9.3 sm) of material, approximately 39.4 inches by 33.7 feet (1 m by 10.3 m), 95.9 lb (43.5 kg), Ruberoid 30 FR roof membrane by GAFMC.
			1. Color: to be selected by owner or architect from standard GAFMC selections.
		3. ENERGY STAR listed modified bitumen membrane with a non-woven fiberglass reinforcing mat coated with flexible SBS polymer-modified asphalt, granule surfacing and a white elastomeric coating. Conforms to or exceeds the requirements of ASTM D 6163 Type I Grade G. Each roll contains one square (9.3 sm) of material, approximately 39.4 inches by 33.6 feet (1 m by 10.3 m), 92 lb (42 kg), Ruberoid EnergyCap SBS 30FR roof membrane by GAFMC.
		4. Granule-surfaced modified bitumen membrane with a non-woven polyester reinforcing mat coated with flexible, SBS polymer-modified asphalt. Conforms to or exceeds requirements of ASTM D 6164 Type I Grade G. Each roll contains one square of material, approximately 39.4 inches by 32.56 feet (1 m by 9.92 m), 90 lb (41 kg), Ruberoid Mop Granule roof membrane by GAFMC.
			1. Color: to be selected by owner or architect from standard GAFMC selections.
		5. Fire resistant modified bitumen membrane with a non-woven polyester reinforcing mat coated with flexible, SBS polymer-modified asphalt. Conforms to or exceeds the requirements of ASTM D 6164 Type I Grade G. Each roll contains one (1) square of material, approximately 39.4 inches by 32.8 feet (1 m by 10 m), 102.5 lb (46.49 kg), Ruberoid Mop 170 FR roof membrane by GAFMC.
			1. Color: to be selected by owner or architect from standard GAFMC selections.
		6. Heavy-duty, fire-retardant, granule-surfaced modified bitumen membrane with a non-woven polyester reinforcing mat coated with flexible, SBS polymer-modified asphalt. Conforms to or exceeds requirements of ASTM D 6164 Type II Grade G. Each roll contains one square of material, approximately 39.4 inches by 32.56 feet (1 m by 9.92 m), 103.7 lb (46.04 kg), Ruberoid Mop FR roof membrane by GAFMC.
			1. Color: to be selected by owner or architect from standard GAFMC selections.
		7. Fire-retardant, granule-surfaced modified bitumen membrane with a dual carrier, fiberglass and non-woven polyester reinforcing mat coated with flexible, SBS polymer-modified asphalt. Conforms to or exceeds the requirements of ASTM D 6162 Type II Grade G. Each roll contains one square of material, approximately 39.4 inches by 32.56 feet (1 m by 9.92 m), 104.9 lb (47.6 kg), Ruberoid SBS Dual FR roof membrane by GAFMC.
			1. Color: to be selected by owner or architect from standard GAFMC selections.
		8. Smooth surfaced modified bitumen membrane with a non-woven polyester reinforcing mat coated with APP polymer-modified asphalt. Conforms to or exceeds requirements of ASTM D 6222 Type I Grade S. Each roll contains one square of material, approximately 39.6 inches by 32.25 feet (1 m by 9.8 m), 83.2 lb (37.8 kg) Ruberoid Torch Smooth roof membrane by GAFMC.
		9. Granule surfaced modified bitumen membrane with a non-woven polyester reinforcing mat coated with APP polymer-modified asphalt. Conforms to or exceeds requirements of ASTM D 6222 Type I Grade G. Each roll contains one square of material, approximately 39.6 inches by 32.3 feet (1 m by 9.8 m), 99 lb (44.9 kg) Ruberoid Torch Granule roof membrane by GAFMC.
			1. Color: to be selected by owner or architect from standard GAFMC selections.
		10. Heavy-duty, fire retardant, granule surfaced modified bitumen membrane with a non-woven polyester reinforcing mat coated with APP polymer-modified asphalt. Conforms to or exceeds the requirements of ASTM D 6222 Type II Grade G. Each roll contains 3/4 square of material, approximately 39.6 inches by 32.3 feet (1 m by 9.8 m), 102 lb (46.3 kg) Ruberoid Torch FR roof membrane by GAFMC.
			1. Color: to be selected by owner or architect from standard GAFMC selections.
		11. ENERGYSTAR listed, fire resistant modified bitumen membrane with a non-woven polyester reinforcing mat coated with APP polymer-modified asphalt, granule surfacing and a white elastomeric coating. Conforms to or exceeds the requirements of ASTM D 6222 Type I Grade G. Each roll contains 3/4 square of material, approximately 39.5 inches by 32.4 feet (1 m by 10.3m), 106 lb (48.1 kg) Ruberoid EnergyCap Torch Plus FR roof membrane by GAFMC.
		12. ENERGYSTAR listed, fire resistant modified bitumen membrane with a non-woven polyester reinforcing mat coated with APP polymer-modified asphalt, granule surfacing and a white elastomeric coating. Conforms to or exceeds the requirements of ASTM D 6222 Type I Grade G. Each roll contains 3/4 square of material, approximately 39.5 inches by 32.4 feet (1 m by 10.3m), 106 lb (48.1 kg) Ruberoid EnergyCap Torch Granule FR roof membrane by GAFMC
		13. Granule surfaced modified bitumen membrane with a non-woven polyester reinforcing mat coated with flexible, SBS polymer-modified asphalt. Specifically designed for heat weld application. Conforms to or exceeds requirements of ASTM D 6164 Type I Grade G. Each roll contains one (1) square of material, approximately 39.6 inches by 32.6 feet (1 m by 9.9 m), 104.4 lb (47.4 kg), Ruberoid SBS Heat-Weld Granule roof membrane by GAFMC.
			1. Color: to be selected by owner or architect from standard GAFMC selections.
		14. Premium, heavy-duty asphalt modified bitumen membrane containing a core of non-woven polyester mat coated with flexible, SBS polymer-modified asphalt designed for heat weld application. Conforms to or exceeds requirements of ASTM D 6164 Type II Grade G. Each roll contains one square of material, approximately 39.4 inches by 33.6 feet (1 m by 10.3 m) 108 lb, Ruberoid SBS Heat-Weld Plus roof membrane by GAFMC.
		15. Fire-retardant, granule surfaced modified bitumen membrane with a non-woven polyester reinforcing mat coated with flexible, SBS polymer-modified asphalt. Specifically designed for heat weld application. Conforms to or exceeds the requirements of ASTM D 6164 Type I Grade G. Each roll contains one (1) square of material, approximately 39.6 inches by 32.6 feet (1 m by 9.92 m), 104 lb (47.2 kg), Ruberoid SBS Heat-Weld 170FR roof membrane by GAFMC.
			1. Color: to be selected by owner or architect from standard GAFMC selections.
		16. ENERGY STAR listed, fire resistant, coated granule surfaced modified bitumen membrane containing a core of non-woven polyester mat coated with flexible, SBS polymer-modified asphalt designed for heat weld application. Conforms to or exceeds requirements of ASTM D 6164 Type II Grade G. Each roll contains one square of material, approximately 39.6 inches by 32.75 feet (1 m by 9.98 m) 108lbs (46.3 kg), Ruberoid EnergyCap SBS Heat-Weld Plus FR roof membrane by GAFMC.
		17. Heavy-duty, fire-retardant, granule surfaced modified bitumen membrane with a non-woven polyester reinforcing mat coated with flexible, SBS polymer-modified asphalt. Specifically designed for heat weld application. Conforms to or exceeds requirements of ASTM D 6164 Type II Grade G. Each roll contains one square (9.3 sm) of material, approximately 39.6 inches by 32.6 feet (1 m by 9.9 m), 105 lb (47.6 kg), Ruberoid SBS Heat-Weld Plus FR roof membrane by GAFMC.
			1. Color: to be selected by owner or architect from standard GAFMC selections.
		18. Fire retardant modified bitumen membrane containing a high tensile woven fiberglass scrim, coated with SBS polymer-modified asphalt and covered with a protective foil facing with built-in moisture control channels. Conforms to or exceeds requirements of ASTM D 6298. Each roll contains one square of material, approximately 39.75 inches by 33.4 feet (1 m by 10.1 m); 101 lb (45.8 kg), Ruberoid ULTRACLAD SBS flashing membrane by GAFMC.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. BITUMEN / ADHESIVE

\*\* NOTE TO SPECIFIER \*\* Delete products not required.

* + 1. Asphalt bitumen: ASTM D 312.

\*\* NOTE TO SPECIFIER \*\* Delete types not required.

* + - 1. Type III.
			2. Type IV.
		1. SEBS Asphalt Bitumen: ASTM D 312.

\*\* NOTE TO SPECIFIER \*\* Delete types not required.

* + - 1. Type III.
			2. Type IV.
		1. SBS Adhesive: Conforms to ASTM D 4586, LeakBuster Matrix 102 SBS Membrane Adhesive, by GAFMC.
		2. SBS Cement: Conforms to ASTM D 4586, LeakBuster Matrix 201 Premium SBS Flashing Cement, by GAFMC.
		3. SBS Cement: Conforms to ASTM D 4586, LeakBuster Matrix 202 SBS Flashing Cement, by GAFMC.
		4. Roof Cement: Conforms to ASTM D 4586, LeakBuster Matrix 203 Plastic Roof Cement, by GAFMC.
		5. Asphalt Primer: Conforms to ASTM D 41, LeakBuster Matrix 307 Premium Asphalt Primer, by GAFMC.
		6. Insulation Adhesive: Oly-Bond 500 distributed by GAFMC.
		7. Insulation Adhesive: Oly-Bond 500 SpotShot distributed by GAFMC.
		8. Insulation Adhesive: Oly-Bond 500 Green distributed by GAFMC.
		9. Insulation Adhesive: Oly-Bond 500 SpotShot Green distributed by GAFMC.

\*\* NOTE TO SPECIFIER \*\* It is the responsibility of those involved with the design of the building to attain indemnification for the attachment and integrity of the Insta-Stik Product. GAFMC assumes no responsibility for the Insta-Stik product or its performance within the system.

* + 1. Insulation Adhesive: Insta-Stik by Dow Chemical.

\*\* NOTE TO SPECIFIER \*\* Delete surfacing materials not required.

* 1. SURFACING
		1. Ceramic coated, diamond cut granules. Conforms to ASTM D 451 and D 452. Available in 5 gallon pails weighting 60lbs, Mineral Shield Granules by GAFMC.
			1. Color: to be selected by owner or architect from standard GAFMC selections
		2. Mineral aggregate conforming to ASTM D 1863 by other.

\*\* NOTE TO SPECIFIER \*\* Delete coating materials not required.

* 1. COATING
		1. Fibered Roof Coating: Conforming to or exceeding, ASTM D 2824, Type III, heavy bodied with special reinforcing fibers,LeakBuster Matrix 303 Premium Fibered Aluminum Roof Coating by GAFMC,
		2. Non-Fibered Roof Coating: Conforming to or exceeding, ASTM D 2824, Type I, premium, high aluminum content, LeakBuster Matrix 304 Non-Fibered Aluminum Roof Coating by GAFMC,
		3. Fibered Asphalt Coating: Conforming to or exceeding ASTM D 1227, Type IV, LeakBuster Matrix 305 Fibered Asphalt Emulsion by GAFMC.
		4. Non- Fibered Asphalt Coating: Conforming to or exceeding ASTM D 1227, Type III, LeakBuster Matrix 306 Non-Fibered Asphalt Emulsion by GAFMC..
		5. Water-based, low VOC, sprayable polymeric liquid, which cures to form a seamless rubber membrane. Highly reflective and ENERGY STAR qualified, available in 5 gal., 55 gal and 330 gal . TOPCOAT MB Plus by GAFMC.
			1. Color: to be selected by owner or architect from standard GAFMC selections.
		6. Low VOC sprayable styrene acrylic based liquid roof coating. Highly reflective and ENERGY STAR qualified available in 5 gallons and 55 gallons, LeakBuster Matrix 322 by GAFMC
		7. Fire resistant, water based low VOC sprayable acrylic which cures to form a seamless rubber membrane. Highly reflective liquid available in 5 gal., 55 gal and 330 gal, TOPCOAT FireShield MB by GAFMC
		8. Fire resistant, solvent based sprayable liquid thermoplastic rubber sealant which cures to form a seamless rubber membrane. Highly reflective liquid available in 5 gal., 55 gal and 330 gal, TOPCOAT FireShield SB by GAFMC.

\*\* NOTE TO SPECIFIER \*\* Retain the next paragraph if an EnergyCap product is specified.

* + 1. Highly reflective brilliant white water based low VOC elastomeric coating which cures to form a seamless rubber membrane. Available in 5 gal., 55 gal and 330 gal, TOPCOAT EnergyCote Coating by GAFMC.

\*\* NOTE TO SPECIFIER \*\* Retain the following Paragraph for Plaza Deck Drainage.

* 1. PROTECTION PAD / DRAINAGE BOARD
		1. Drainage board constructed of rigid plastic with a filter fabric. Designed to hinder the passage of dust, sand, dirt, or mortar, while allowing the passage of water through the board, maintaining an unobstructed path to the drain locations.
		2. Protection mat constructed of materials compatible with both the roof membrane and pavers. Pads should be cut to extend a minimum of 2" beyond the pedestal, stringer or other stand to be installed.

\*\* NOTE TO SPECIFIER \*\* Retain the following Paragraph for Plaza Deck Traffic Surface.

* 1. TRAFFIC SURFACE
		1. Precast Concrete Pavers without Paver Stands - Precast concrete pavers, typically 24" X 24" or 30" X 30" with a 2" to 3" thickness. Constructed of 5000 to 6000 psi compressive strength concrete, often provided with clips, dowels or other connectors to obtain a smooth transition between adjacent pavers.
		2. Precast Concrete Pavers with Paver Stands - Precast concrete pavers, typically 24" X 24" or 30" X 30" with a 2" to 3" thickness. Constructed of 5000 to 6000 psi compressive strength concrete, installed on plastic paver stands that are provided with shims or other height adjustment.
		3. Cast-in-Place Concrete - Cast-in-place concrete, typically with a 3" to 4" thickness, wire mesh reinforcement and 5000 to 6000 psi compressive strength. Considered to be a monolithic surface, requiring drainage at the surface level as well as at the roof membrane.
		4. Stones, Brick or Tile, set in Sand Bed - Specialty paving stones set in a 2" to 3" sand bed.
		5. Paving Stones, Brick or Tile, set in Mortar Bed - Specialty paving stones set in a 1" to 2" mortar bed. Considered to be a monolithic surface, requiring drainage at the surface level as well as at the roof membrane.
		6. Wood Decking, Loose-Laid - Pressure-treated lumber, cedar, or redwood decking constructed into panels of a size readily handled, i.e. 4' X 4'. Panels can be constructed to rest only on their corners, or secured to stringers. Often provided with clips, dowels or other connectors to obtain a smooth transition between adjacent panels. Alternatively, the decking can be secured directly to the stringers. Stringers are typically constructed of 2" X 4" or 2" X 6" lumber laid flat, but can incorporate a vertical component designed to taper the decking to allow a flat traffic surface when the roof surface is sloped.
		7. Granulated Rubber Playtiles - Granulated rubber pads rated for use as a play surface due to their cushioning and compressibility, incorporating drainage channels on the underside. Typically provided with clips, dowels or other connectors to obtain a smooth transition between adjacent pavers.
	2. ACCESSORIES

\*\* NOTE TO SPECIFIER \*\* Delete accessories not required.

* + 1. Mechanical Fasteners:
			1. DrillTec Standard Roofing Fastener: Alloy steel fastener with CR-10 coating with a .215 inch (5.46 mm) diameter thread: Factory Mutual Standard 4470 Approved, #3 Phillips truss head or hex head.
			2. DrillTec ASAP 3P Fastener: Assembled screw and 3 inches (76 mm) locking plastic plate. Alloy steel fastener with CR-10 coating with a .215 inch (5.46 mm) diameter thread: Factory Mutual Standard 4470 Approved, #3 Phillips truss head.
			3. DrillTec ASAP 3S Fastener: Assembled screw and 3 inches (76 mm) steel plate. Alloy steel fastener with CR-10 coating with a .215 inch (5.46 mm) diameter thread: Factory Mutual Standard 4470 Approved, #3 Phillips truss head.
			4. DrillTec Polymer GypTec Fastener: Glass-filled nylon auger with 1" (25mm) with major thread diameter of .675. To be used with 3" steel plate for insulation. Miami Dade and Factory Mutual Standard 4470 approved (for insulation attachment).
			5. DrillTec HD Screws: Heavy duty gauge alloy steel fastener with CR-10 coating with a .245 inch (6.2 mm) diameter thread: Factory Mutual Standard 4470 Approved, #3 Phillips truss head for use on wood, concrete and steel decks.
			6. DrillTec XHD Screws: Heavy gauge alloy steel fastener with CR-10 coating with a .275" diameter thread. Factory Mutual Standard 4470 Approved, #3 Phillips truss head for use on heavy steel decks, O.S.B or aluminum roof decks.
			7. DrillTec SXHD Screws: Heavy gauge alloy steel fastener with CR-10 coating with a .320" diameter thread. Factory Mutual Standard 4470 Approved, #3 Phillips truss head for use on specific FM assemblies on heavy steel decks.
			8. DrillTec Lite-Deck Fastener: A large diameter reinforced nylon screw with a #3 square drive flat head. Tread diameter of .375 inch (9.5 mm) and shank diameter of .312 inch (7.9 mm). Uses a 3 inches (76 mm) Metal Round Plate fastening system.
			9. DrillTec CR Base Sheet Fastener: G-90 galvanized, CR-10 Corrosion resistant coating with 1.125 inch (29 mm) by 1 inch (25 mm) head and 1.75 inches (44 mm) leg length. Preassembled with 2.75 inches (70 mm) diameter Galvalume steel roof disc.
			10. DrillTec CR 1.2 Base Sheet Fastener: G-90 galvanized, CR-10 Corrosion resistant coating with 1.125 inch (29 mm) by 1 inch (25 mm) head and 1.2 inches (30 mm) leg length. Preassembled with 2.75 inches (70 mm) diameter Galvalume steel roof disc.
			11. Nail-Tite Type-R Fasteners: Self-locking one-piece fastener for securing base ply when roofing over existing poured gypsum roof decks. Shank: 1 inch (25 mm) tapered cone precision formed from corrosion resistant galvanized (G-90) steel. Cap: 1-1/4 inches (32 mm) round cap formed from corrosion resistant Galvalume (AZ-55) steel, reinforced to resist cupping during driving. The shank is securely wedged to cap forming rigid one-piece fastener, by E. S. Products.
		2. Plates:
			1. DrillTec AccuTrac Insulation Plates: Galvalume coated steel 3" (76 mm) square plates recessed or flat bottom. Miami Dade and Factory Mutual Standard 4470 Approved and suitable for use with DrillTec standard fasteners, DrillTec heavy duty fasteners, DrillTec extra heavy duty fasteners. Made for east use with DrillTec AccuTrac stand up tool
			2. DrillTec Accuseam Plates: Galvalume coated steel 3" (76 mm) diameter plates. Miami Dade and Factory Mutual Standard 4470 Approved and suitable for use with DrillTec Philips head fasteners and DrillTec extra heavy duty fasteners. Made for east use with DrillTec AccuTrac stand up tool
			3. DrillTec Insulation Plates: Galvalume, 3" (76 mm) diameter, suitable for use with DrillTec Standard and HD screws, and DrillTec Spikes. Special design available for use with DrillTec Polymer Screws.
			4. DrillTec XHD Plates: Galvalume, 2 3/8" (60 mm) diameter, with a barbed underside. Suitable for use with DrillTec Standard, HD, and XHD Screws, and DrillTec Spikes.
			5. DrillTec SXHD Plates: Galvalume, 2 3/4" (70 mm) diameter, with a double barbed underside. Required for use with DrillTec SXHD Screws, HD Screws and DrillTec Spikes for specific FM assemblies.
			6. DrillTec SHD Plates: Galvalume, 2" (51 mm) diameter, with a double barbed underside. Suitable for use with DrillTec Standard, HD, XHD, and SXHD Screws, and DrillTec Spikes.
			7. DrillTec Lite-Deck Plate: Galvalume, plate with extra wide diameter designed specifically for Lite-Deck Fastener.
			8. DrillTec 3 inches (51 mm) Locking Plastic Plates: Made of high strength polyolefin. The screw head locks under the lip into the slotted configuration to prevent screw pop-up.
			9. DrillTec Locking Impact Nail: Factory Assembled, G-90 Galvalume Coated fastener designed to install base sheets or insulation to gypsum or cementitious wood fiber. 1.8 inches (46 mm) to 4.8 inches (122 mm) lengths available with a 2.7 inches (69 mm) diameter plate.
		3. Nails
			1. DrillTec CD-10 Fastener: Hammer-in, non-threaded fastener designed to secure insulation to structural concrete. Alloy steel fastener with a CR-10 coating and a .270 /.277 inch (6.8/7.0 mm) split diameter.
			2. DrillTec Spikes: Hammer-in, non-threaded fastener designed to secure insulation and membrane to structural concrete. Alloy steel fastener with a CR-10 coating and a .250 shank diameter.
			3. DrillTec Masonry Anchor: Zinc alloy anchor with stainless steel or zinc plated steel pin available in either 1/4" or 3/16" diameter. Designed to attach termination bars to concrete or masonry walls.
			4. Threaded Cap Nail: Annular-threaded electro-galvanized with yellow di-chromate coating, with 1 inch (25 mm) round or square cap, as manufactured by the Simplex Nail Corporation.
			5. Two-Piece Tube Nail: 1 inch (25 mm) diameter cap; when the nail is driven down through the tube of first part that was installed, the nail hooks up to provide backout resistance), as manufactured by The Simplex Corporation.
			6. Tape and N12 BAB or N12 FAB Staples, by Senco.
		4. One Way Vents:
			1. Pressure relief device consisting of a one-piece spun aluminum vent pre-flashed with modified bitumen. Internally, the vent contains a neoprene valve that allows air pressure and moisture vapor to escape out of the system without allowing additional air and moisture vapor to return. The One Way MVent, by Mweld.

\*\* NOTE TO SPECIFIER \*\* Not for use over active pipes that emit steam or excessive moisture vapor, condensation may occur. Not for use over boiler or heater/furnace vent pipes.

* + 1. Standard Vents:
			1. A spun aluminum vent, pre-flashed with modified bitumen designed to waterproof soil pipes and roofing protrusions. The Standard MVent, by Mweld.
		2. Adjustable Vents:
			1. A two-piece roof-flashing unit consisting of a pre-flashed spun aluminum base and a flexible upper boot, allowing for waterproofing of tall or awkward roof protrusions. The Adjustable MVent, by Mweld.
		3. Plumbing Vents:
			1. A pre-flashed with modified bitumen membrane and is designed to waterproof vent pipes. It can be used as a pipe cover to replace finger and cap flashing on standard vent pipe details. The Pre-Flashed Plumbing Vent, by Mweld.
		4. Drains:
			1. A spun aluminum (or copper) roof drain with gravel guard, strainer cap, and waterproofing plumbing seal attached. Pre-flashed with modified bitumen and available in full and insert sizes to accommodate new construction and retrofit applications. The MDrain, by Mweld.
			2. A Pre-flashed metal through-wall roof drain designed for easy installation to aid in quick lateral removal of water. The Mscupper, by Mweld.
		5. Sealant Pans:
			1. A structural urethane outer shell, bonded to the roof surface, filled with a urethane rubber sealant. The urethane sealant conforms to the shape of any roof penetration through a roof surface to protect the roof system from moisture. The M-Curb and M-Thane, by Mweld.
		6. Expansion Joint Covers:
			1. Factory fabricated assemblies used to accommodate three-dimensional joints in a roof structure. Heavy reinforced flexible cover with a flexible flame retardant foam bellows for support. Nailing flanges conform to curb irregularities. The Metalastic Expansion Joint Cover, by GAFMC.
		7. Gravel Guard:
			1. Three-piece fascia system with roof flange design that creates water and wind proof seals at the building perimeter. The Gravel Guard MB, by GAFMC.
		8. Low VOC, water based coating system that provides outstanding flame spread and penetration protection to combustible roof decks in the event of fire. Using patent pending FireShield technology, provides UL Class A performance with torch applied or self adhering modified bitumen roof systems. FireOut Fire Barrier Coating by GAFMC.
		9. Coats the exposed asphalt bleed-out at the seams of BUR and Modified Bitumen roofs. Color matched to help the seams blend in over time with the color of white cap sheets and special order colors. SeamCote Elastomeric Protective Coating by GAFMC.
		10. Solvent based, trowel grade synthetic elastomeric sealant. Durable and UV resistant suitable for use where caulk is typically used. Available in 10 oz. tubes, TOPCOAT FlexSeal Caulk Grade by GAFMC.
		11. Commercial grade roofing sealant that provides a 100% watertight seal that keeps water out at roof protrusions, step flashings, skylights, chimneys, vents, gutters and other penetrations or openings. Available in 10 oz. tubes, TOPCOAT FlexSeal Roofing Sealant by GAFMC.
		12. Non-woven, 100% fully spun-bonded polyester fabric used in conjunction with TOPCOAT Flashing Grade, SB-900 and FlexSeal at all penetrations, joints or other high shear or stress areas. TOPCOAT Topester Fabric by GAFMC.
1. EXECUTION
	1. EXAMINATION
		1. Verify that the surfaces and site conditions are ready to receive work.
		2. Verify that the deck is supported and secured.
		3. Verify that the deck is clean and smooth, free of depressions, waves or projections and properly sloped to drains, valleys, eaves, scuppers or gutters.
		4. Verify that the deck surfaces are dry and free of ice or snow.
		5. Verify that all roof openings or penetrations through the roof are solidly set, and that all flashings are tapered.
	2. SUBSTRATE PREPARATION

\*\* NOTE TO SPECIFIER \*\* Delete roof deck not required.

* + 1. Steel Deck:

\*\* NOTE TO SPECIFIER \*\* FM requirements may supersede those set forth in this section. Consult the current FM Guide for more information.

* + - 1. Metal decks shall be a minimum uncoated thickness of 22 gauge (0.8 mm) and shall have a G-90 galvanized finish on all panels.
			2. Decks shall comply with the gauge and span requirements in the current Factory Mutual FM Approval Guide and be installed in accordance with Loss Prevention Data Sheet 1-28 or specific FM approval.

\*\* NOTE TO SPECIFIER \*\* Delete if re-roofing not required.

* + - 1. When re-roofing over steel decks, surface corrosion shall be removed, and repairs to severely corroded areas made. Loose or inadequately secured decking shall be fastened, and irreparable or otherwise defective decking shall be replaced.
		1. Structural Concrete Deck:
			1. Minimum deck thickness for structural concrete is 4 inches (102 mm).

\*\* NOTE TO SPECIFIER \*\* Concrete decks that are poured over non-vented metal decks or pans that remain in place may trap moisture in the deck beneath the roof system and are not acceptable.

* + - 1. Only poured in place concrete decks that provide bottom side drying are acceptable.
			2. The roof deck shall be properly cured prior to application of the roofing system. Curing agents shall be checked for compatibility with roofing materials. Prior to the installation of the roof assemblies, evaluation of the surface moisture and deck's dryness by the use of ASTM D-4263 or hot bitumen test procedures shall be conducted.
			3. The deck shall be smooth, level and cannot be wet or frozen.
			4. Treat cracks greater than 1/8 inch (3 mm) in width in accordance with the deck manufacturer's recommendations.
			5. Sumps for the roof drains shall be provided in the casting of the deck.
			6. When insulation or roofing is to be adhered with hot asphalt, prime the deck with asphalt/concrete primer, ASTM D 41 at the rate of one gallon per 100 square feet (0.4 l/sm). Allow the primer to dry prior to the application of the roofing system.

\*\* NOTE TO SPECIFIER \*\* Delete if re-roofing not required.

* + - 1. With retrofit roof applications, it is required that the deck be inspected for defects. Defects are to be corrected per the deck manufacturer's recommendations prior to the roofing application.
		1. Precast Concrete Decks
			1. Precast concrete decks are usually manufactured as planks or slabs and constructed of steel reinforced Portland cement and solid aggregate; often they are made with hollow cores to minimize their weight.
			2. It is the responsibility of the engineer, architect, building owner or the roofing contractor to determine the fitness of a deck for direct membrane application to a concrete deck.
			3. If the deck is determined to be wet, it must be allowed to dry.
			4. All deformed panels must be replaced.
			5. Joints must be filled with a masonry grout to correct imperfections between slabs and feathered to provide a slope not greater than 1/4 " per foot (6.4 mm/m), for non-insulated assemblies or 1/8" per foot (3 mm/m) for insulated assemblies.
			6. Fill depressions with masonry grout and treat cracks greater than 1/8" (3 mm) width in accordance with the deck manufacturer's recommendations.
			7. If the joints cannot be grouted and finished smooth, then a leveling course of lightweight insulating concrete (minimum 2" (51 mm) thickness) must be applied. Do not seal joints between the slabs; leave open to permit venting and drying of roof fill from below.
			8. When applying roofing or insulation directly to the deck with asphalt, prime with asphalt/concrete primer, ASTM D41, at a rate of 1 gal/square (.4 L/m2) and allow the primer to dry prior to the application of the roofing system. Hold back bitumen at the joints approximately 4"(102 mm)to prevent bitumen drippage.
		2. Wood Deck (Plank / Heavy Timber):

\*\* NOTE TO SPECIFIER \*\* Tongue and groove or shiplap lumber is preferred to square edge material since subsequent shrinkage or warping of square edge planks may cause ridging of the roof system above adjacent boards.

* + - 1. Wood boards shall be at least 1 inch (25 mm) nominal thickness and have a nominal width of 4 feet 6 inches (1372 mm).
			2. All boards shall have a bearing on rafters at each end and be securely nailed.
			3. Lumber shall be kiln dried.
			4. Preservatives or fire retardants used to treat decking shall be compatible with roofing materials.
			5. Decking shall be kept dry and roofed promptly after installation.
			6. Knotholes or large cracks in excess of 1/4 inch (6 mm) shall be covered with securely nailed sheet metal.
			7. Light metal wall ties or other structural metal exposed on top of the wood deck shall be covered with one ply of a heavy roofing sheet, such as Stratavent Eliminator Nailable Base Sheet, extending 2 inches to 6 inches (51 mm to 152 mm) beyond the metal in all directions. Nail in place before applying the base ply.
			8. Attach an acceptable base sheet through flat metal caps or use nails with attached 1 inch (25 mm) square or round metal caps that have a minimum withdrawal resistance of 40 pounds each (178 N).
			9. Tape and staple fastening systems may be used on wood decks when they comply with local building codes.

\*\* NOTE TO SPECIFIER \*\* Delete if re-roofing not required.

* + - 1. In all retrofit roof applications, it is required that deck be inspected for defects. Any defects are to be corrected per the deck manufacturer's recommendations and standards of the APA/Engineered Wood Association prior to new roof application.
		1. Plywood Deck:
			1. Plywood sheathing shall be exterior grade, minimum 4 ply, and not less than 15/32 inch (12 mm) thick.
			2. Preservatives or fire retardants used to treat the decking shall be compatible with roofing materials.
			3. The deck shall be installed over joists that are spaced 24 inches (610 mm) o.c. or less.
			4. The deck shall be installed so that all four sides of each panel bear on and are secured to joist and cross blocking. "H" clips are not acceptable.
			5. Panels shall be installed with a 1/8 inch to 1/4 inch (3 mm to 6 mm) gap between panels and shall match vertically at joints to within 1/8 inch (3mm).
			6. Decking shall be kept dry and roofed promptly after installation.
			7. Light metal wall ties or other structural metal exposed on top of the wood deck shall be covered with one ply of a heavy roofing sheet, such as Stratavent Eliminator Nailable Base Sheet, extending 2 inches to 6 inches (51 mm to 152 mm) beyond the metal in all directions. Nail in place before applying the base ply.
			8. Tape and staple fastening systems may be used on wood decks when they comply with local building codes.
			9. Attach an acceptable base sheet through flat metal caps or use nails with attached 1 inch (25 mm) square or round metal caps that have a minimum withdrawal resistance of 40 pounds each (178 N).
		2. Oriented Strand Board (OSB) Deck:
			1. Oriented Strand Board shall carry a Structural 1 rating when used as a decking material.
			2. Preservatives or fire retardants used to treat decking shall be compatible with roofing materials.
			3. The deck shall be installed over joists that are spaced 24 inches (610 mm) o.c. or less.
			4. The deck shall be installed so that all four sides of each panel bear on and are secured to joist and cross blocking; the APA/Engineered Wood Association (APA) recommendations. "H" clips are not acceptable.
			5. Panels shall be installed with a 1/8 inch to 1/4 inch (3 mm to 6 mm) gap between panels and shall match vertically at joints to within 1/8 inch (3mm).
			6. Decking shall be kept dry and roofed promptly after installation.
			7. Tape and staple fastening systems may be used on wood decks when they comply with local building codes.
			8. When light metal wall ties or other structural metal are exposed on top of the wood deck, cover them with a heavy ply of a roofing sheet, such as Stratavent Eliminator Nailable Base Sheet, extending 2 inches to 6 inches (51 mm to 152 mm) beyond the metal in all directions. Nail in place before applying the base ply.
			9. Tape and staple fastening systems may be used on wood decks when they comply with local building codes.
			10. Attach an acceptable base sheet through flat metal caps or use nails with attached 1 inch (25 mm) square or round metal caps that have a minimum withdrawal resistance of 40 pounds each (178 N).
		3. Lightweight Insulating Concrete Deck

\*\* NOTE TO SPECIFIER \*\* Individual deck manufacturer's standards apply when their specifications exceed the minimum thickness, compressive strength, or density requirements.

* + - 1. Lightweight insulating concrete decks are required to have a minimum thickness of 2 inches (51 mm), a minimum compressive strength of 125 psi (0.86 MPa) and a minimum density of 22 pcf (352 kg/sm).
			2. The lightweight insulating deck/fill shall be installed by an applicator approved by the deck manufacturer.
			3. The roof system shall be installed immediately following deck curing to prevent damage from exposure to precipitation. The deck manufacturer determines the minimum curing time and maximum exposure limitations.
			4. LWIC shall not be poured during rainy periods. Deck areas that have frozen before they have cured shall be removed and replaced. Decks which receive precipitation prior to installation of the roof membrane shall be checked for moisture content and dryness.
			5. Where the mean January temperature (Reference current ASHRAE Fundamentals Handbook) is below 40 degrees F (4.4 degrees C), lightweight insulating concrete decks shall be poured and roofed between April 1 and October 31. This type of deck is unacceptable in Alaska.
			6. Lightweight insulating concrete decks are acceptable only on slopes up to 1 inch per foot (83 mm/m).
			7. Do not attach insulation directly to lightweight concrete decks. Over old, dry decks, additional board insulation may be solidly mopped to an approved mechanically attached anchor sheet (base sheet).
		1. Cementitious Wood Fiber
			1. Decks shall be protected from the weather during storage and application; any wet or deformed decking shall be removed and replaced.
			2. Cementitious wood fiber decks shall not be installed over high humidity occupancies.
			3. Cementitious wood fiber decks shall have a minimum design load as recommended by the manufacturer.
			4. All cementitious wood fiber deck panels shall be anchored against uplift and lateral movement.
			5. The deck shall be installed level. Any deflection, irregularities, or otherwise damaged panels shall be corrected or replaced.
			6. Install a mechanically attached base sheet prior to installation of insulation or roofing membrane.
		2. Gypsum
			1. Gypsum decks shall be smooth and free from deflections or ridges.
			2. An average fastener withdrawal resistance as recommended by the fastener manufacturer shall be obtained; however, at no time shall it be less than 40 lbs. (178 N) per fastener.
			3. Wet or frozen poured gypsum decks are not suitable to receive a roof.
			4. Poured-in-place gypsum roof decks contain a large percentage of moisture. All necessary precautions shall be taken to avoid the entrapment of moisture under the roofing system. In addition to ventilation of the underside to allow for proper curing, topside and perimeter venting shall be implemented.
		3. Recover
			1. Suitable roofs for recover shall be free of dust, dirt, debris, and any contaminants that may adversely affect the performance of the new roof. Areas of substantial deck deflection or membrane imperfections shall be corrected prior to installing any new roofing.
			2. For recover installations over single-ply, fluid applied, coal tar and metal roofs, contact GAF Contractor Services for prior approval and technical requirements.
			3. Taking test cuts to verify the existing roof construction and condition. Three test cuts shall be made for roofs under 100 squares (930 sm) and one test cut per 100 squares (930 sm) above the minimum amount.
			4. Existing substrates and insulation (if applicable) shall be dry over the majority of the roof area. Wet or deteriorated areas of insulation and substrate shall be removed and replaced with new materials. When adhering insulation or new roofing directly to the existing roof surface, the existing roof system components shall be well attached to each other and their substrate.
			5. All applicable code requirements shall be met for recover over an existing roofing system.

\*\* NOTE TO SPECIFIER \*\* Proper drainage of the new roof system is required to eliminate ponding. Provisions shall be made to insure the new roof system has proper drainage, i.e., placement of additional roof drains, use of tapered insulation, use of crickets, etc., as appropriate.

* + - 1. When Stratavent Eliminator Venting Base Sheet is used as the first ply, the surface of the old smooth membrane shall be primed using Matrix 307 Asphalt/concrete Primer and allowed to dry.

\*\* NOTE TO SPECIFIER \*\* It is highly recommended and in certain circumstances, required, that a moisture survey be made to determine the extent of wet insulation and moisture entrapment. Contact GAFMC Contractor Services for more information on moisture surveys.
 \*\* NOTE TO SPECIFIER \*\* GAFMC does not recommend partial recover or re-roofing of a single roof area due to the potential for defects in the portion of the roof system not replaced or negatively affecting the performance of the new membrane. When required by project conditions or budget considerations, GAF requires full separation of the old and new roof areas by means of a full curb mounted expansion joint or area divider installed to provide a complete watertight seal or break between areas. Tie-in constructions, in which the old and new membranes are adhered directly to each other and stripped in are not acceptable for coverage under certain guarantees.

* 1. INSTALLATION - GENERAL
		1. Install GAFMC's Ruberoid roofing system according to all current application requirements in addition to those listed in this section.

\*\* NOTE TO SPECIFIER \*\* Provide selected specification number if required. Delete if provision not used.

* + 1. GAFMC Specification #: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
		2. When the slope of the roof is 1/2 inch (13 mm) per foot (305 mm) or greater, install all plies parallel with the slope of the roof, and install intermediate wood nailers as required for the specific roof slope. Plies shall extend over ridges and nailed on 6 inches (152 mm) centers
		3. Start the application of membrane plies at the low point of the roof or at the drains, so that the flow of water is over or parallel to, but never against the laps.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. BITUMEN
		1. Do not mix different types of asphalt.
		2. Use only ASTM D 312, Type III or Type IV Steep Asphalt. On slopes up to 1/2 inch per foot (40 mm/1000 mm), flat ASTM Type III asphalt may be used. Type IV asphalt shall be used on all slopes greater than 1/2 inches (13 mm) per foot (40 mm/1000 mm).
		3. Application with hot asphalt requires continuous, uniform interply mopping rates of 25 lb +/- 20 percent per 100 square feet (1.2 kg/sm) of roof area.
		4. Application temperature of the asphalt shall be at the Equiviscous Temperature (EVT) with a tolerance of +/- 25 degrees F (13.9 degrees C), at which a viscosity of 125 centipoise is attained. When using mechanical asphalt applicators, the target viscosity shall be 75 centipoise.
		5. For all SBS modified asphalt flashings; the minimum application temperature of the asphalt shall be at the EVT or 425 degrees F (218 degrees C), whichever is greater, with a rolling bank (puddle) of mopping asphalt across the full width of the roll.
		6. Do not heat the asphalt to or above its flash point or hold the asphalt at temperatures above the finished blowing temperature for more than 4 hours.
		7. Do not keep heated tankers above 325 degrees F (163 degrees C) overnight.

\*\* NOTE TO SPECIFIER \*\* Insulation. Delete if not required.

* 1. INSULATION - GENERAL
		1. Do not apply roof insulation or roofing until all other work trades have completed jobs that require them to traverse the deck on foot or with equipment. A vapor retarder coated lightly with asphalt may be applied to protect the inside of the structure prior to the insulation and final roofing installation. Before the application of the insulation, any damage or deterioration to the vapor retarder shall be repaired.
		2. Do not install wet, damaged or warped insulation boards.
		3. Install insulation boards with staggered board joints in one direction (unless taping joint).
		4. Install insulation boards snug. Gaps between board joints shall not exceed 1/4 inch (6 mm). All gaps in excess of 1/4 inch (6 mm) shall be filled with like insulation material.
		5. Wood nailers shall be 3-1/2 inches (89 mm) minimum width or 1 inch (25 mm) wider than metal flange. They shall be of equal thickness as the insulation with a minimum 1 inch (25 mm) thickness. All nailers shall be securely fastened to the deck.
		6. Do not kick insulation boards into place.
		7. Miter and fill the edges of the insulation boards at ridges, valleys and other changes in plane to prevent open joints or irregular surfaces. Avoid breaking or crushing of the insulation at the corners.
		8. Do not install insulation over old lightweight insulating concrete decks without the use of a vapor retarder. Insulation shall not be installed over new lightweight insulating concrete.
		9. Cant strips shall be installed at the intersection of the roof and all walls, parapets, curbs, or transitions approaching 90 degrees, to be flashed. They shall be approximately 4 inches (102 mm) in horizontal and 4 inches (102 mm) in vertical dimension. The face of the cant shall have an incline of not more than 45 degrees with the roof.
		10. Roof tape, if required over insulation joints, shall be laid evenly, smoothly and embedded in a uniform coating of hot steep asphalt with 4 inches (102 mm) end laps. Care shall be taken to assure smooth application of tape, and full embedment of the tape in the asphalt.
		11. Do not install any more insulation than will be completely waterproofed each day.

\*\* NOTE TO SPECIFIER \*\* Insulation. Delete if not required.

* 1. INSULATION - BASE LAYER

\*\* NOTE TO SPECIFIER \*\* Mechanically fastened. Delete if not required.

* + 1. The insulation shall be securely attached to the roof deck. A minimum FMRC 1-60 attachment is recommended. Refer to FMRC Approval Guide for FM fastening patterns. Factory Mutual requires fastener density increased in corner areas for FM 1-60 and perimeter, and corner area fastener density increases for FM 1-90 or greater. Refer to FM Loss Prevention Data Sheets 1-7, 1-28 and 1-49.
		2. Use only fasteners with a minimum 3 inch (76 mm) stress plate when mechanically attaching insulation. Do not attach insulation with nails.

\*\* NOTE TO SPECIFIER \*\* Asphalt Adhered. Delete if not required.

* + 1. Install insulation layers, maximum 4 feet by 4 feet (1.22m by 1.22m) board size, in a full and uniform mopping of hot asphalt applied at the rate of 25 lb/square (1.2 kg/sm) +/- 20 percent. Press each board firmly into place. Stagger the joints of additional layers in relation to the insulation joints in the layer(s) below by a minimum of 6 inches (152 mm) to eliminate continuous vertical gaps.

\*\* NOTE TO SPECIFIER \*\* Oly Bond. Delete if not required.

* + 1. The substrate shall be free of debris, dust, dirt, oil, grease and standing water before applying the adhesive.
		2. Install insulation layers applied with beads of Oly Bond 500 spaced 12 inches (305 mm) O.C. Approximate coverage rate is one (1) gallon per 100 square feet (0.42 l/sm), depending on the substrate. Allow the foam to rise 1/2 inch to 3/4 inch (13 mm to 19 mm). Press each board firmly into place. Stagger the joints of additional layers in relation to the insulation joints in the layer(s) below by a minimum of 6 inches (152 mm) to eliminate continuous vertical gaps.

\*\* NOTE TO SPECIFIER \*\* Insta-Stik. Delete if not required.

* + 1. The substrate shall be free of debris, dust, dirt, oil, grease and standing water before applying the adhesive.
		2. Install insulation layers applied with 3/4 inch (19 mm) beads of Insta-Stik spaced 12 inches (305 mm) O.C. Press each board firmly into place. Stagger the joints of additional layers in relation to the insulation joints in the layer(s) below by a minimum of 6 inches (152 mm) to eliminate continuous vertical gaps.

\*\* NOTE TO SPECIFIER \*\* Loose Laid. Delete if not required.

* + 1. Loose lay the base layer of insulation for subsequent layers to be simultaneously attached. Minimal fastening shall be performed to avoid movement of the boards.

\*\* NOTE TO SPECIFIER \*\* Insulation. Delete if not required.

* 1. INSULATION - SUBSEQUENT LAYERS

\*\* NOTE TO SPECIFIER \*\* Simultaneous Attachment. Delete if not required.

* + 1. The insulation shall be securely attached to the roof deck. A minimum FMRC 1-60 attachment is recommended. Refer to FMRC Approval Guide for FM fastening patterns. Factory Mutual requires fastener density increased in corner areas for FM 1-60 and perimeter, and corner area fastener density increases for FM 1-90 or greater. Refer to FM Loss Prevention Data Sheets 1-7, 1-28 and 1-49.
		2. Multiple layers of insulation of the same, non-tapered insulation material may be simultaneously mechanically fastened with approved fasteners and plates through the top layer of insulation to the structural deck. Individual layers of insulation shall not exceed 3 inches (7.6 mm) in thickness and total thickness of all layers shall not exceed 15 inches (381 mm) without written approval of GAF Contractor Services.
		3. Use only fasteners with a minimum 3 inch (76 mm) stress plate when mechanically attaching insulation. Do not attach insulation with nails.

\*\* NOTE TO SPECIFIER \*\* Asphalt Adhered. Delete if not required.

* + 1. Install insulation layers, maximum 4 feet by 4 feet (1220 mm by 1220 mm) board size, in a full and uniform mopping of hot asphalt applied at the rate of 25 lb/square (1.2 kg/sm) +/- 20 percent. Press each board firmly into place. Stagger the joints of additional layers in relation to the insulation joints in the layer(s) below by a minimum of 6 inches (152 mm) to eliminate continuous vertical gaps.

\*\* NOTE TO SPECIFIER \*\* Oly Bond. Delete if not required.

* + 1. The substrate shall be free of debris, dust, dirt, oil, grease and standing water before applying the adhesive.
		2. Install insulation layers applied with beads of Oly Bond 500 spaced 12 inches (305 mm) O.C. Approximate coverage rate is one (1) gallon per 100 square feet (0.42 l/sm), depending on the substrate. Allow the foam to rise 1/2 inch to 3/4 inch (13 mm to 19 mm). Press each board firmly into place. Stagger the joints of additional layers in relation to the insulation joints in the layer(s) below by a minimum of 6 inches (152 mm) to eliminate continuous vertical gaps.

\*\* NOTE TO SPECIFIER \*\* Insta-Stik. Delete if not required.

* + 1. The substrate shall be free of debris, dust, dirt, oil, grease and standing water before applying the adhesive.
		2. Install insulation layers applied with 3/4 inch (19 mm) beads of Insta-Stik spaced 12 inches (305 mm) O.C. Press each board firmly into place. Stagger the joints of additional layers in relation to the insulation joints in the layer(s) below by a minimum of 6 inches (152 mm) to eliminate continuous vertical gaps.
		3. Do not install more insulation than can be completely waterproofed each day.
	1. BASE SHEET

\*\* NOTE TO SPECIFIER \*\* When fastening base sheets using screws and plates without insulation, the plate shall be of a design that allows it to lie flat on the deck.

\*\* NOTE TO SPECIFIER \*\* Mechanically Attached Base. Delete if not required.

* + 1. Base Sheet:
			1. Roll the base sheet out over the substrate and allow it to relax. Lap the base sheet so the flow of water is over or parallel to, but never against the laps.
			2. Lap the base sheet 2 inches (51 mm), and 4 inches (102 mm) on the ends. Keeping the base sheet taut, push out all wrinkles and buckles ahead as fastening proceeds.
			3. Turn base sheet up to the top of the cant.
			4. Stagger adjacent end laps a minimum of 18 inches (457 mm).
			5. A minimum FMRC 1-60 attachment is recommended. Refer to FMRC Approval Guide for FM Fastening patterns. Factory Mutual requires fastener density increases in perimeter and corner zones for FM 1-60 and FM 1-90 or greater. Refer to FM Loss Prevention Data Sheets 1-7, 1-28, 1-29 and 1-49.
		2. Interply Sheets:

\*\* NOTE TO SPECIFIER \*\* Delete number of interply sheets not required.

* + - 1. One-ply interply application: Install full width ply sheets, lapping 2 inches (51 mm) on the sides and 4 inches (10.2 cm) on the ends. Stagger adjacent end laps a minimum of 18 inches (457 mm) apart. Where installed over base sheet, stagger ply sheet's side and end laps from underlying plies.
			2. Two-ply interply application: Install 19-11/16 inches (500 mm) and 39-3/8 inches (1000 mm) width starter plies, and follow with a second 39 3/8 inches (1000 mm) width sheet with a maximum of 17-11/16 inches (449 mm) exposure, applied shingle fashion. Lap felts 20-11/16 inches (526 mm) with an 18-11/16 inches (475 mm) exposure and 6 inches (152 mm) on end laps. Stagger adjacent end laps a minimum of 18 inches (457 mm).
			3. Three ply interply application: Install starter strips of 13-1/8 inches (333 mm), 26-1/4 inches (667 mm) and 39-3/8 inches (1000 mm) widths and follow with a second full 39-3/8 inches (1000 mm) width sheet with a maximum 11 1/8 inches (283 mm) exposure, applied shingle style. Lap felts 26-15/16 inches (684 mm) with a 127/16 inches (316 mm) exposure and lap 6 inches(152 mm) at ends. Stagger adjacent end laps a minimum of 18 inches (457 mm).
			4. Four-ply application: Install starter strips of 9-7/8 inches (251 mm), 19-11/16 inches (500 mm), 29-1/2 inches (749 mm) and 39-3/8 inches (1000 mm) widths and follow with a second full 39 3/8 inches (1000 mm) width sheet with a maximum 7-7/8 inches (200 mm) exposure, applied shingle style. Lap felts 30-1/16 inches (764 mm) with a 9-5/16 inches (236 mm) exposure and lap 6 inches (152 mm) at ends. Stagger adjacent end laps a minimum of 18 inches (457 mm).

\*\* NOTE TO SPECIFIER \*\* Stratavent Perforated System base sheet and Interply sheets. Delete if not required.

* + 1. Base Sheets:

\*\* NOTE TO SPECIFIER \*\* Delete 2 of 3 applications of perforated base sheet not required.

* + - 1. Roll out perforated base sheet dry, granule-surface down, directly over isocyanurate insulation
			2. Roll out perforated base sheet dry, granule-surface down, directly over the asphalt primed structural concrete deck
			3. Roll out perforated base sheet dry, granule-surface down, directly over the asphalt primed existing smooth built up roof.
			4. Lap the base sheet 2 inches (51 mm), and 4 inches (102 mm) on the ends, with adjacent laps a minimum of 18 inches (457 mm) apart.
			5. Turn base sheet past the top of the cant and continue up the vertical wall terminating at final base flashing height.
			6. At edge terminations, turn the membrane down the face of the wall 2 inches (51 mm).
			7. Install the subsequent system ply/plies in hot asphalt over the perforated base sheet.
		1. Interply Sheets:

\*\* NOTE TO SPECIFIER \*\* Delete 3 of 4 applications of the number of interply sheets not required.

* + - 1. One-ply interply application: Install full width ply sheets, lapping 2 inches (51 mm) on the sides and 4 inches (102 mm) on the ends. Stagger adjacent end laps a minimum of 18 inches (457 mm) apart. Where installed over base sheet, stagger ply sheet's side and end laps from underlying plies.
			2. Two-ply interply application: Install 19-11/16 inches (500 mm) and 39-3/8 inches (1000 mm) width starter plies, and follow with a second 39-3/8 inches (1000 mm) width sheet with a maximum of 17-11/16 inches (449 mm) exposure, applied shingle fashion. Lap felts 20-11/16 inches (526 mm) with an 18-11/16 inches (475 mm) exposure and 6 inches (152 mm) on end laps. Stagger adjacent end laps a minimum of 18 inches (457 mm).
			3. Three ply interply application: Install starter strips of 13-1/8 inches (333 mm), 26-1/4 inches (667 mm) and 39-3/8 inches (1000 mm) widths and follow with a second full 39-3/8 inches (1000 mm) width sheet with a maximum 11-1/8 inches (283 mm) exposure, applied shingle style. Lap felts 26-15/16 inches (684 mm) with a 12-7/16 inches (316 mm) exposure and lap 6 inches (152 mm) at ends. Stagger adjacent end laps a minimum of 18 inches (457 mm).
			4. Four-ply application: Install starter strips of 9-7/8 inches (251 mm), 19-11/16 inches (500 mm), 29-1/2 inches (749 mm) and 39-3/8 inches (1000 mm) widths and follow with a second full 39-3/8 inches (1000 mm) width sheet with a maximum 7-7/8 inches (200 mm) exposure, applied shingle style. Lap felts 30-1/16 inches (764 mm) with a 9-5/16 inches (236 mm) exposure and lap 6 inches (152 mm) at ends. Stagger adjacent end laps a minimum of 18 inches (457 mm).

\*\* NOTE TO SPECIFIER \*\* Stratavent Nailable System (LWIC) base sheet and Interply sheets. Delete if not required.

* + 1. Base Sheet:
			1. Roll the base sheet out over the lightweight insulating concrete deck and allow it to relax. Lap the base sheet so the flow of water is over or parallel to, but never against the laps.
			2. Lap the base sheet 2 inches (51 mm), and 4 inches (102 mm) on the ends. Keeping the base sheet taut, push out all wrinkles and buckles ahead as fastening proceeds.
			3. Turn base sheet up to the top of the cant and continue up the vertical wall terminating at final base flashing height.
			4. Stagger adjacent end laps a minimum of 18 inches (457 mm).
			5. A minimum FMRC 1-60 attachment is recommended. Refer to FMRC Approval Guide for FM Fastening patterns. Factory Mutual requires fastener density increases in perimeter and corner zones for FM 1-60 and FM 1-90 or greater. Refer to FM Loss Prevention Data Sheets 1-7, 1-28, 1-29 and 1-49.
		2. Interply Sheets:

\*\* NOTE TO SPECIFIER \*\* Delete 3 of 4 applications of the number of interply sheets not required.

* + - 1. One-ply interply application: Install full width ply sheets, lapping 2 inches (51 mm) on the sides and 4 inches (102 mm) on the ends. Stagger adjacent end laps a minimum of 18 inches (457 mm) apart. Where installed over base sheet, stagger ply sheet's side and end laps from underlying plies.
			2. Two-ply interply application: Install 19-11/16 inches (500 mm) and 39-3/8 inches (1000 mm) width starter plies, and follow with a second 39-3/8 inches (1000 mm) width sheet with a maximum of 17-11/16 inches (449 mm) exposure, applied shingle fashion. Lap felts 20-11/16 inches (526 mm) with an 18-11/16 inches (475 mm) exposure and 6 inches (152 mm) on end laps. Stagger adjacent end laps a minimum of 18 inches (457 mm).
			3. Three ply interply application: Install starter strips of 13-1/8 inches (333 mm), 26-1/4 inches (667 mm) and 39-3/8 inches (1000 mm) widths and follow with a second full 39-3/8 inches (1000 mm) width sheet with a maximum 11-1/8 inches (283 mm) exposure, applied shingle style. Lap felts 26-15/16 inches (684 mm) with a 12-7/16 inches (316 mm) exposure and lap 6 inches (152 mm) at ends. Stagger adjacent end laps a minimum of 18 inches (457 mm).
			4. Four-ply application: Install starter strips of 9-7/8 inches (251 mm), 19-11/16 inches (500 mm), 29-1/2 inches (749 mm) and 39-3/8 inches (1000 mm) widths and follow with a second full 39 3/8 inches (1000 mm) width sheet with a maximum 7-7/8 inches (200 mm) exposure, applied shingle style. Lap felts 30-1/16 inches (764 mm) with a 9-5/16 inches (236 mm) exposure and lap 6 inches (152 mm) at ends. Stagger adjacent end laps a minimum of 18 inches (457 mm).

\*\* NOTE TO SPECIFIER \*\* Mopped Base and Ply sheets. Delete if not required.

* + 1. Base / Interply Sheets:
			1. Type III and Type IV asphalt may be used on slopes less than 3 inches per foot (250 mm per 1000 mm). Type IV shall be used on any slopes greater than 3 inches per foot (250 mm per 1000 mm).
			2. Asphalt shall be applied in a full uniform layer, at a rate of 25 lb/100 sf (1.2 kg/sm).
			3. Base Sheet: Install full width base sheets, lapping 2 inches (51 mm) on the sides and 4 inches (102 mm) on the ends. Stagger adjacent end laps a minimum of 18 inches (457 mm) apart. Turn all plies up and over the cant strip by 2 inches (51 mm).

\*\* NOTE TO SPECIFIER \*\* Delete 3 of 4 applications of the number of interply sheets not required.

* + - 1. One-ply interply application: Install full width ply sheets, lapping 2 inches (51 mm) on the sides and 4 inches (102 mm) on the ends. Stagger adjacent end laps a minimum of 18 inches (457 mm) apart. Where installed over base sheet, stagger ply sheet's side and end laps from underlying plies.
			2. Two-ply interply application: Install 19-11/16 inches (500 mm) and 39-3/8 inches (1000 mm) width starter plies, and follow with a second 39-3/8 inches (1000 mm) width sheet with a maximum of 17-11/16 inches (449 mm) exposure, applied shingle style. Lap felts 20-11/16 inches (526 mm) with an 18-11/16 inches (475 mm) exposure and 6 inches (152 mm) on end laps. Stagger adjacent end laps a minimum of 18 inches (457 mm).
			3. Three ply interply application: Install starter strips of 13-1/8 inches (333 mm), 26-1/4 inches (667 mm) and 39-3/8 inches (1000 mm) widths and follow with a second full 39-3/8 inches (1000 mm) width sheet with a maximum 11-1/8 inches (283 mm) exposure, applied shingle style. Lap felts 26-15/16 inches (684 mm) with a 12-7/16 inches (316 mm) exposure and lap 6 inches (152 mm) at ends. Stagger adjacent end laps a minimum of 18 inches (457 mm).
			4. Four-ply application: Install starter strips of 9-7/8 inches (251 mm), 19-11/16 inches (500 mm), 29-1/2 inches (749 mm) and 39-3/8 inches (1000 mm) widths and follow with a second full 39-3/8 inches (1000 mm) width sheet with a maximum 7-7/8 inches (200 mm) exposure, applied shingle style. Lap felts 30-1/16 inches (764 mm) with a 9-5/16 inches (236 mm) exposure and lap 6 inches (152 mm) at ends. Stagger adjacent end laps a minimum of 18 inches (457 mm).
	1. SURFACING APPLICATION

\*\* NOTE TO SPECIFIER \*\* Delete surfacing sheet not required.

\*\* NOTE TO SPECIFIER \*\* HOT ASPHALT CAP SHEET. Delete if not required.

* + 1. Cap Sheet:
			1. For slopes less than 1/2 inch per foot (42 mm per meter), Type III or IV asphalt may be used. Type IV shall be used on all slopes 1/2 inch per foot (42 mm per meter) and over. Asphalt shall be applied at its EVT temperature or 425 degree F (218 degree C), whichever is greater, in a uniform layer, without voids, at a rate of 25 lb/square (1.2 kg/sm) +/- 20 percent. The mopping stroke will be such that the side lap is covered with asphalt last. A rolling bank (puddle) of mopping asphalt shall be maintained across the full width of the roll.
			2. Cap sheet application: Install full width cap sheets, lapping minimum 3 inches (76 mm) on the sides and 6 inches (152 mm) on ends. Stagger adjacent end laps a minimum of 18 inches (457 mm) apart. All side and end laps shall be staggered from underlying plies.
			3. All laps shall be parallel or perpendicular to the slope of the roof such that the flow of water is not against the lap.
			4. Coiled rolls should be unrolled, placed upside down and allowed to "relax" prior to installation. Then re-roll to apply.
			5. Care should be taken to insure that the cap sheet lays flat in the asphalt. There shall be complete adhesion between the cap sheet and the mopping asphalt. Brooming of the plies may be necessary under certain conditions to insure that the cap sheet adheres solidly to the asphalt. Apply extra pressure to avoid creating open channels, where three or more membranes are lapped.
			6. A minimum 3/8 inch (10 mm) asphalt flow-out shall be obtained at all laps. Dry laps are not acceptable. Check all seams for full and uniform adhesion.
			7. All end laps shall be staggered a minimum of 18 inches (457 mm) so that no adjacent end laps coincide. If end laps fall in line or are not staggered the proper distance, a full width of Ruberoid Mop SBS membrane shall be installed over the end laps.

\*\* NOTE TO SPECIFIER \*\* Retain the next paragraph only if EnergyCap product is specified.

* + - 1. If damage by other trades or any inadvertent damage should occur to the EnergyCap product during installation, and for aesthetic purposes only, an additional fog coat of EnergyCote coating can be applied to the sheet at a rate of 1/2 to 1 gallon per 100 sq ft.

\*\* NOTE TO SPECIFIER \*\* HOT ASPHALT PLIES & CAP. Delete if not required.

* + 1. Ply / Cap Sheet:
			1. For slopes less than 1/2 inch per foot (42 mm per meter), Type III or IV asphalt may be used. Type IV shall be used on all slopes 1/2 inch per foot (42 mm per meter) and over. Asphalt shall be applied at its EVT temperature or 425 degree F (218 degree C), whichever is greater, in a uniform layer, without voids, at a rate of 25 lb/square (1.2 kg/sm) +/- 20 percent. The mopping stroke will be such that the side lap is covered with asphalt last. A rolling bank (puddle) of mopping asphalt shall be maintained across the full width of the roll.
			2. Cap sheet application: Install full width cap sheets, lapping minimum 3 (76 mm) on the sides and 6 inches (152 mm) on ends. Stagger adjacent end laps a minimum of 18 inches (457 mm) apart. All side and end laps shall be staggered from underlying plies.
			3. All laps shall be parallel or perpendicular to the slope of the roof such that the flow of water is not against the lap.
			4. Coiled rolls should be unrolled, placed upside down and allowed to "relax" prior to installation. Then re-roll to apply.
			5. Care should be taken to insure that the cap sheet lays flat in the asphalt. There shall be complete adhesion between the cap sheet and the mopping asphalt. Brooming of the plies may be necessary under certain conditions to insure that the cap sheet adheres solidly to the asphalt. Apply extra pressure to avoid creating open channels, where three or more membranes are lapped.
			6. A minimum 3/8 inch (10 mm) asphalt flow-out shall be obtained at all laps. Dry laps are not acceptable. Check all seams for full and uniform adhesion.
			7. All end laps shall be staggered a minimum of 18 inches (457 mm) so that no adjacent end laps coincide. If end laps fall in line or are not staggered the proper distance, a full width of Ruberoid Mop SBS membrane shall be installed over the end laps.

\*\* NOTE TO SPECIFIER \*\* Delete ply number not required.

\*\* NOTE TO SPECIFIER \*\* 1 Modified Ply. Delete if not required.

* + - 1. Cap sheet application: Install full width cap sheets, lapping minimum 3 inches (76 mm) on the sides and 6 inches (152 mm) on ends. Stagger adjacent end laps a minimum of 18 inches (457 mm) apart. All side and end laps shall be staggered from underlying plies.

\*\* NOTE TO SPECIFIER \*\* 2 Modified Plies. Delete if not required.

* + - 1. Interply and cap application: Over the base sheet or approved substrate, install 19-11/16 inches (500 mm) and 39-3/8 inches (1000 mm) width Ruberoid smooth starter plies, and follow with a 39 3/8 inches (1000 mm) width granule surfaced sheet, applied shingle style. Lap plies minimum 3 inches on side laps and 6 inches (152 mm) on end laps. Stagger adjacent end laps a minimum of 18 inches (457 mm).

\*\* NOTE TO SPECIFIER \*\* 3 Modified Plies. Delete if not required.

* + - 1. Interply and cap sheet application: Over the base sheet or approved substrate, install 13-1/8 inches (333 mm), 26-1/4 inches (667 mm) and 39-3/8 inches (1000 mm) width Ruberoid starter plies and follow with a second full 39-3/8 inches (1000 mm) width granule surfaced sheet applied shingle style. Lap plies minimum 3 inches on sides and 6 inches (152 mm) at ends. Stagger adjacent end laps a minimum of 18 inches (457 mm).

\*\* NOTE TO SPECIFIER \*\* Retain only if EnergyCap product is specified.

* + - 1. If damage by other trades or any inadvertent damage should occur to the EnergyCap product during installation, and for aesthetic purposes only, an additional fog coat of EnergyCote coating can be applied to the sheet at a rate of 1/2 to 1 gallon per 100 sq ft.

\*\* NOTE TO SPECIFIER \*\* COLD ADHESIVE PLIES & CAP. Delete if not required.

* + 1. Ply / Cap Sheet:
			1. For slopes less than 1/2 inch per foot (40 mm per meter), membrane should be applied shingle fashion, perpendicular to the slope of the roof deck. On all slopes 1/2 inch per foot (40 mm per meter) and over, membrane should be installed parallel to the slope of the roof. In no case should the flow of water be against the laps.
			2. The membrane material shall be unrolled, cut into 12 feet to 18 feet (3700 to 5500 m) lengths, placed upside down and allowed to "relax" prior to installation. Then re-roll to apply.
			3. Install full width sheets, lapping minimum 3 inches (76 mm) on the sides and 6 inches (152 mm) on ends. Stagger adjacent end laps a minimum of 18 inches (450 mm) apart. Where installed over base sheet, stagger sheet's side and end laps from underlying plies.
			4. Starting at the low point or the drains, apply the Matrix cold adhesive to the substrate in either method as follows:
				1. Pour the adhesive on the substrate and spread, using a serrated edged squeegee, applied at the rate of 1-1/2 gal per square (6 L/sm).
				2. Spray, using equipment that will apply the adhesive at a rate equal to 1-1/2 gal/square (6 L/sm).
			5. Apply the adhesive so that the substrate is coated in a pattern slightly larger than the first sheet being applied.
			6. End laps and selvage laps of the Ruberoid being lapped shall be coated with adhesive so that a visible bead of adhesive appears. Roll all laps with a steel roller to ensure proper adhesion. Alternately, the end laps and side laps may be hot-air welded. The hot-air welding method will provide a watertight lap immediately and may be preferable when inclement weather is threatening.
			7. Allow 5 to 15 minutes for solvents to evaporate from the adhesive (i.e. tack time or open time) before embedding any sheets into newly applied adhesive. Tack times may vary based on ambient conditions.
			8. Insure that the Ruberoid membrane lays flat in the cold adhesive. There shall be complete adhesion between the cap sheet and the cold adhesive. Brooming of the plies may be necessary under certain conditions to assure that the cap sheet adheres solidly to the cold adhesive. Apply extra pressure to avoid creating open channels where three or more membranes are lapped.
			9. A minimum 3/8 inch (10 mm) and maximum 1 inch (25 mm) cold adhesive flow-out shall be obtained at all seam areas when the side laps are not heat welded. Dry laps are not acceptable. Check all seams for full and uniform adhesion.
			10. All end laps shall be staggered a minimum of 18 inches (457 mm) so that no adjacent end laps coincide. If end laps fall in line or are not staggered the proper distance, a full width of Ruberoid SBS membrane shall be installed over the end laps.

\*\* NOTE TO SPECIFIER \*\* Delete number of ply not required.

* + - 1. One-ply application: Install full width ply sheets, lapping 2 inches (51 mm) on the sides and 4 inches (102 mm) on the ends. Stagger adjacent end laps a minimum of 18 inches (457 mm) apart. Where installed over base sheet, stagger ply sheet's side and end laps from underlying plies.
			2. Two-ply application: Install 19-11/16 inches (500 mm) and 39-3/8 inches (1000 mm) width starter plies, and follow with a second 39-3/8 inches (1000 mm) width sheet with a maximum of 17-11/16 inches (449 mm) exposure, applied shingle style. Lap felts 20-11/16 inches (526 mm) with an 18-11/16 inches (475 mm) exposure and 6 inches (152 mm) on end laps. Stagger adjacent end laps a minimum of 18 inches (457 mm).
			3. Three ply application: Install starter strips of 13-1/8 inches (333 mm), 26-1/4 inches (667 mm) and 39-3/8 inches (1000 mm) widths and follow with a second full 39-3/8 inches (1000 mm) width sheet with a maximum 11-1/8 inches (283 mm) exposure, applied shingle style. Lap felts 26-15/16 inches (684mm) with a 12-7/16 inches (316 mm) exposure and lap 6 inches (152 mm) at ends. Stagger adjacent end laps a minimum of 18 inches (457 mm).
			4. Four-ply application: Install starter strips of 9-7/8 inches (251 mm), 19-11/16 inches (500 mm), 29-1/2 inches (749 mm) and 39-3/8 inches (1000 mm) widths and follow with a second full 39-3/8 inches (1000 mm) width sheet with a maximum 7-7/8 inches (200 mm) exposure, applied shingle style. Lap felts 30-1/16 inches (764 mm) with a 9-5/16 inches (236 mm) exposure and lap 6 inches (152 mm) at ends. Stagger adjacent end laps a minimum of 18 inches (457 mm).

\*\* NOTE TO SPECIFIER \*\* Retain only if EnergyCap product is specified.

* + - 1. If damage by other trades or any inadvertent damage should occur to the EnergyCap product during installation, and for aesthetic purposes only, an additional fog coat of EnergyCote coating can be applied to the sheet at a rate of 1/2 to 1 gallon per 100 sq ft.

\*\* NOTE TO SPECIFIER \*\* TORCH PLIES & CAP. Delete if not required.

* + 1. Ply / Cap Sheet:
			1. The surface over which the membrane is to be installed shall be clean, smooth and dry. Do not apply membrane directly to a fresh asphalt glaze or flood coat, or over base plies with excessive asphalt mopping bleed out at laps.
			2. For slopes 3/4 inch per foot (62 mm per meter) and over, membrane shall be run parallel to the roof slope and back nailed in accordance with GAF steep slope application requirements. On slopes less than 3/4 inch per foot (62 mm per meter), install cap sheet perpendicular to the slope.
			3. Do not apply membrane by any method except welding with a propane torch or other equipment specifically designed for application of torchable modified bitumen.
			4. The coiled membrane shall be unrolled approximately 10 feet (3 m), and aligned. The propane torch flame is then applied uniformly across the exposed back surface of the membrane and lap areas until the compound reaches the proper application temperature and exhibits a slight sheen. A complete burn-off of release films where present on the underside of the rolls, membrane selvage edges or both surfaces is necessary. Avoid overheating which may result in damage to or improper adhesion of the membrane. (The flame should be moved from side to side in the shape of an "L", applying about 75 percent of the heat to the membrane and 25 percent to the substrate or underlying plies including the lap area of the previously installed courses.) The membrane is slowly unrolled as heat is applied to ensure proper adhesion. When complete, re-roll the opposite end of the membrane and install in the same manner.
			5. A minimum 3/8 inch (10 mm) bitumen flow-out shall be obtained at all seam areas. Dry laps are not acceptable. To ensure the proper flow of bitumen at the seam areas, a roller may be used. Roller application should follow behind the torch no more than 4 feet (1200 mm) nor less than 3 feet (910 mm) to be sure that the membrane will be at the proper temperature to produce proper flow. Hand rollers or "walking-in the seam" methods are also acceptable. Check all seams for full and uniform adhesion. Un-adhered seams shall be lifted with a heated trowel and resealed by lightly torching the seam area.

\*\* NOTE TO SPECIFIER \*\* Optional granules broadcasting. Delete if not required.

* + - 1. Matching granules may be broadcast into the modified bitumen bleed out at seams while hot to enhance the finished appearance of the membrane.
			2. All end laps shall be staggered a minimum of 18 inches (457 mm) so that no adjacent end laps coincide. If end laps fall in line or are not staggered the proper distance, a full width of membrane shall be installed over the end laps. End laps, flashing sheets and other seams formed over granule surfaces require pre-heating of the top surface of the underlying granule surface membrane to a point where the granules just begin to sink into, and the modified bitumen compound comes up through the granules to ensure proper seam construction and adhesion.
			3. All laps shall be parallel or perpendicular to the slope of the roof such that the flow of water is not against the lap.

\*\* NOTE TO SPECIFIER \*\* 1 Modified Ply. Delete if not required.

* + - 1. Cap sheet application: Install full width cap sheets, lapping 3 inches (76 mm) on the sides and 6 inches (152 mm) on ends. Stagger adjacent end laps a minimum of 18 inches (457 mm) apart. All side and end laps shall be staggered from underlying plies.

\*\* NOTE TO SPECIFIER \*\* 2 Modified Plies. Delete if not required.

* + - 1. Interply and cap application: Over the base sheet or approved substrate, install 19-11/16 inches (500 mm) and 39-3/8 inches (1000 mm) width Ruberoid smooth starter plies, and follow with a 39-3/8 inches (1000 mm) width granule surfaced sheet, applied shingle style. Lap plies 3 inches (76 mm) on side laps and 6 inches (152 mm) on end laps. Stagger adjacent end laps a minimum of 18 inches (457 mm).

\*\* NOTE TO SPECIFIER \*\* 3 Modified Plies. Delete if not required.

* + - 1. Interply and cap sheet application: Over the base sheet or approved substrate, install 13-1/8 inches (333 mm), 26-1/4 inches (667 mm) and 39-3/8 inches (1000 mm) width Ruberoid starter plies and follow with a second full 39-3/8 inches (1000 mm) width granule surfaced sheet applied shingle style. Lap plies 3 inches (76 mm) on sides and 6 inches (152 mm) at ends. Stagger adjacent end laps a minimum of 18 inches (457 mm).

\*\* NOTE TO SPECIFIER \*\* Retain only if EnergyCap product is specified.

* + - 1. If damage by other trades or any inadvertent damage should occur to the EnergyCap product during installation, and for aesthetic purposes only, an additional fog coat of EnergyCote coating can be applied to the sheet at a rate of 1/4 to 1 gallon per 100 sq ft.

\*\* NOTE TO SPECIFIER \*\* TORCH CAP ONLY. Delete if not required.

* + 1. Cap Sheet:
			1. The surface over which the membrane is to be installed shall be clean, smooth and dry. Do not apply membrane directly to a fresh asphalt glaze or flood coat, or over base plies with excessive asphalt mopping bleed out at laps.
			2. For slopes 3/4 inch per foot (62 mm per meter) and over, membrane shall be run parallel to the roof slope and back nailed in accordance with GAF steep slope application requirements. On slopes less than 3/4 inch per foot (62 mm per meter), install cap sheet perpendicular to the slope.
			3. Cap sheet application: Install full width cap sheets, lapping 3 inches (76 mm) on the sides and 6 inches (152 mm) on ends. Stagger adjacent end laps a minimum of 18 inches (457 mm) apart. All side and end laps shall be staggered from underlying plies.
			4. Never apply membrane by any method except welding with a propane torch or other equipment specifically designed for application of torchable modified bitumen.
			5. The coiled membrane shall be unrolled approximately 10 feet (3000 mm), and aligned. The propane torch flame is then applied uniformly across the exposed back surface of the membrane and lap areas until the compound reaches the proper application temperature and exhibits a slight sheen. A complete burn-off of all release films is necessary. Avoid overheating, which may result in damage to or improper adhesion of the membrane. (The flame should be moved from side to side in the shape of an "L", applying about 75 percent of the heat to the membrane and 25 percent to the substrate or underlying plies including the lap area of the previously installed courses.) The membrane is slowly unrolled as heat is applied to ensure proper adhesion. When complete, re-roll the opposite end of the membrane and install in the same manner.
			6. A minimum 3/8 inch (10 mm) asphalt flow-out shall be obtained at all seam areas. Dry laps are not acceptable. To ensure the proper flow of bitumen at the seam areas, a roller may be used. Roller application should follow behind the torch no more than 4 feet (1200 mm) nor less than 3 feet (910 mm) to be sure that the membrane will be at the proper temperature to produce proper flow. Hand rollers or "walking-in the seam" methods are also acceptable. Check all seams for full and uniform adhesion. Un-adhered seams shall be lifted with a heated trowel and resealed by lightly torching the seam area.

\*\* NOTE TO SPECIFIER \*\* Optional granules broadcasting. Delete if not required.

* + - 1. Matching granules may be broadcast into the modified bitumen bleed out at seams while hot to enhance the finished appearance of the membrane.
			2. All end laps shall be staggered a minimum of 18 inches (457 mm) so that no adjacent end laps coincide. If end laps fall in line or are not staggered the proper distance, a full width of membrane shall be installed over the end laps. End laps, flashing sheets and other seams formed over granule surfaces require pre-heating of the top surface of the underlying granule surface membrane to a point where the granules just begin to sink into, and the modified bitumen compound comes up through the granules to ensure proper seam construction and adhesion.
			3. All laps shall be parallel or perpendicular to the slope of the roof such that the flow of water is not against the lap.
			4. Install full width cap sheet, lapping 2 inches (51 mm) on the sides and 4 inches (102 mm) on ends. Stagger adjacent end laps a minimum of 18 inches (457 mm) apart. Where installed over base sheet, stagger ply sheet side and end laps from underlying plies.

\*\* NOTE TO SPECIFIER \*\* Retain only if EnergyCap product is specified.

* + - 1. If damage by other trades or any inadvertent damage should occur to the EnergyCap product during installation, and for aesthetic purposes only, an additional fog coat of EnergyCote coating can be applied to the sheet at a rate of 1/2 to 1 gallon per 100 sq ft.

\*\* NOTE TO SPECIFIER \*\* Fibered Aluminum Coating. Delete if not required.

* + 1. Coating:
			1. Matrix Fibered Aluminum Roof Coating may be used on slopes of 1/4 inch per foot (20 mm/m) or more (positive drainage, no ponding water), applied at the rate of approximately 1 1/2 to 2 gallons per 100 square feet (0.61 to 0.82 L/sm). The membrane shall be allowed to age at least 30 days and shall be free of dust and dirt prior to the application of Matrix Fibered Aluminum Coating.
			2. Reapplication of the coating shall be employed as part of a periodic maintenance program. The frequency will vary depending on climatic conditions.

\*\* NOTE TO SPECIFIER \*\* Non-Fibered Aluminum Coating. Delete if not required.

* + 1. Coating:
			1. Matrix Non-Fibered Aluminum Roof Coating may be used on slopes of 1/4 inch per foot (20 mm/m) or more (positive drainage, no ponding water), applied at the rate of approximately 1 1/2 to 2 gallons per 100 square feet (0.61 to 0.82 L/sm). The membrane shall be allowed to age at least 30 days and shall be free of dust and dirt prior to the application of Matrix Fibered Aluminum Coating.
			2. Reapplication of the coating shall be employed as part of a periodic maintenance program. The frequency will vary depending on climatic conditions.

\*\* NOTE TO SPECIFIER \*\* Fibered Asphalt Emulsion. Delete if not required.

* + 1. Coating:
			1. Matrix Fibered Asphalt Emulsion may be used on slopes of 1/4 inch per foot (20 mm/m) or more (positive drainage, no ponding water), applied at the rate of approximately 3 to 4 gallons per 100 square feet (1.22 to 1.63 L/sm). The membrane shall be allowed to age at least 30 days and shall be free of dust and dirt prior to the application of Matrix Fibered Aluminum Coating.
			2. Reapplication of the coating shall be employed as part of a periodic maintenance program. The frequency will vary depending on climatic conditions.

\*\* NOTE TO SPECIFIER \*\* Non-Fibered Asphalt Emulsion. Delete if not required.

* + 1. Coating:
			1. Matrix Non-Fibered Asphalt Emulsion may be used on slopes of 1/4 inch per foot (20 mm/m) or more (positive drainage, no ponding water), applied at the rate of approximately 3 to 4 gallons per 100 square feet (1.22 to 1.63 L/sm). The membrane shall be allowed to age at least 30 days and shall be free of dust and dirt prior to the application of Matrix Fibered Aluminum Coating.
			2. Reapplication of the coating shall be employed as part of a periodic maintenance program. The frequency will vary depending on climatic conditions.

\*\* NOTE TO SPECIFIER \*\* Matrix 322. Delete if not required.

* + 1. Coating:
			1. Matrix 322 may be used on slopes of 1/4 inch per foot (20 mm/m) or more (positive drainage, no ponding water), Spray or roll apply at the rate of approximately 1 gallon per 100 square feet (0.41 L/sm). 2 coats typically required and allow 24 hours between. Apply when temperatures are above 420F (5.50C) and below 1200F (480C).
			2. Reapplication of the coating shall be employed as part of a periodic maintenance program. The frequency will vary depending on climatic conditions.

\*\* NOTE TO SPECIFIER \*\* MB Plus. Delete if not required.

* + 1. Coating:
			1. TOPCOAT MB Plus may be used on slopes of 1/4 inch per foot (20 mm/m) or more (positive drainage, no ponding water). Spray or roll apply at the rate of approximately 1 to 3 gallons per 100 square feet (0.41 to 1.22 L/sm). Apply when temperatures are above 420F (5.50C) and below 1200F (480C).
			2. Reapplication of the coating shall be employed as part of a periodic maintenance program. The frequency will vary depending on climatic conditions.

\*\* NOTE TO SPECIFIER \*\* FireShield MB. Delete if not required.

* + 1. Coating:
			1. TOPCOAT FireShield MB may be used on slopes of 1/4 inch per foot (20 mm/m) or more (positive drainage, no ponding water). Spray, roll or brush apply at the rate of approximately 1 to 1.75 gallons per 100 square feet (0.41 to 0.71 L/sm). Allow 24 hours between coats and apply when temperatures are above 420F (5.50C) and below 1200F (480C).
			2. Reapplication of the coating shall be employed as part of a periodic maintenance program. The frequency will vary depending on climatic conditions.

\*\* NOTE TO SPECIFIER \*\* FireShield SB. Delete if not required.

* + 1. Coating:
			1. TOPCOAT FireShield SB may be used on slopes of 1/4 inch per foot (20 mm/m) or more (positive drainage, no ponding water). Spray, roll or brush apply at the rate of approximately 0.5 to 1.5 gallons per 100 square feet (0.20 to 0.61 L/sm). Allow 24 hours between coats and apply when temperatures are above 420F (5.50C) and below 1200F (480C).
			2. Reapplication of the coating shall be employed as part of a periodic maintenance program. The frequency will vary depending on climatic conditions.

\*\* NOTE TO SPECIFIER \*\* EnergyCote. Delete if not required.

* + 1. Coating:
			1. TOPCOAT Energycote may be used on slopes of 1/4 inch per foot (20 mm/m) or more (positive drainage, no ponding water), Spray, roll or brush apply at the rate of approximately 1 gallon per 100 square feet (0.41 L/sm). Allow 24 hours between coats and apply when temperatures are above 420F (5.50C) and below 1400F (600C).
			2. When using to cover bleed outs on EnergyCap products fog coat using a sprayer at 300 lin.ft per gallon at 4" wide.
			3. Reapplication of the coating shall be employed as part of a periodic maintenance program. The frequency will vary depending on climatic conditions.
	1. FLASHING APPLICATION

\*\* NOTE TO SPECIFIER \*\* Delete base flashing not required. Hot Asphalt (Option 1)

* + 1. Bituminous Base Flashings:
			1. Install GAF base flashing over all cant strips, horizontal to vertical transitions, roof edges and roof penetrations. Flashings are to be secured in accordance with current GAF application guidelines.
			2. Nailable curbs and walls shall be covered with a layer of approved GAFGLAS Base Sheet or backer ply fastened 8 inches (203 mm) o.c. in all directions with approved fasteners. All vertical laps shall be 4 inches (102 mm). Base sheet or backer ply shall extend out onto the field of the roof as shown in the applicable GAF construction detail.
			3. Prime all metal and masonry surfaces with asphalt primer, and allow adequate drying time prior to adhering flashing plies.
			4. Backer plies installed over masonry or other non-nailable substrates shall be cut into manageable lengths to ensure adequate adhesion to the cant strip and vertical surfaces without excessive voids. All vertical laps shall be 4 inches (102 mm). Backer plies shall extend onto the field of the roof as shown in the applicable GAF construction detail.
			5. The finished ply of base flashing shall be run vertically to provide a selvage edge that will aid in achieving proper adhesion at the 3 inches (76 mm) vertical laps. If the sheet is run horizontally, the vertical laps shall be a minimum of 6 inches (152 mm) and the selvage edge shall be removed form the sheet or fully covered by the counterflashing. The finished flashing ply shall extend out onto the field of the roof as shown in the applicable GAF construction detail, and shall be extended a minimum of 4 inches (102 mm) beyond the edge of the prior flashing plies. The flashing shall be soundly adhered to the parapet, cant area and roof surface to result in a minimum void, non-bridging construction.
			6. Base flashing heights shall be a minimum of 8 inches (203 mm) and a maximum of 24 inches (610 mm) above the roofline.
			7. Use only Type III or Type IV hot asphalt. Maintain asphalt at the Equiviscous Temperature (EVT) +/- 25 degree F (13.9 degree C) for all base and ply sheets used in flashing details. Apply flashing membranes at the EVT temperature or 425 degree F (218 degree C) whichever is greater. Firmly press sheets into the adhesive, and immediately nail the top of the flashing as specified it the appropriate flashing detail.
			8. Corner membrane flashings for outside corners and inside corners, or other membrane reinforcements are required to ensure that base flashing corners are sealed at cant areas. An alternate method of corner reinforcing is to install a smooth MB membrane reinforcement piece on the prepared corner substrate prior to final surfacing membrane. Refer to BUR Flashing Details section of the GAF Application and Specifications Manual.

\*\* NOTE TO SPECIFIER \*\* Delete base flashing not required. Cold Adhesive (Option 2)

* + 1. Bituminous Base Flashings:
			1. Install GAF base flashing over all cant strips, horizontal to vertical transitions, roof edges and roof penetrations. Flashings are to be secured in accordance with current GAF application guidelines.
			2. Nailable curbs and walls shall be covered with a layer of approved GAFGLAS Base Sheet or backer ply fastened 8 inches (20.3 cm) o.c. in all directions with approved fasteners. All vertical laps shall be 4 inches (10.2 cm). Base sheet or backer ply shall extend out onto the field of the roof as shown in the applicable GAF construction detail.
			3. Prime all metal and masonry surfaces with asphalt primer, and allow adequate drying time prior to adhering flashing plies.
			4. Backer plies installed over masonry or other non-nailable substrates shall be cut into manageable lengths to ensure adequate adhesion to the cant strip and vertical surfaces without excessive voids. All vertical laps shall be 4 inches (10.2 cm). Backer plies shall extend onto the field of the roof as shown in the applicable GAF construction detail.
			5. The finished ply of base flashing shall be run vertically to provide a selvage edge that will aid in achieving proper adhesion at the 3 inches (7.6 cm) vertical laps. If the sheet is run horizontally, the vertical laps shall be a minimum of 6 inches (15.2 cm) and the selvage edge shall be removed form the sheet or fully covered by the counterflashing. The finished flashing ply shall extend out onto the field of the roof as shown in the applicable GAF construction detail, and shall be extended a minimum of 4 inches (10.2 cm) beyond the edge of the prior flashing plies. The flashing shall be soundly adhered to the parapet, cant area and roof surface to result in a minimum void, non-bridging construction.
			6. Base flashing heights shall be a minimum of 8 inches (20.3 cm) and a maximum of 24 inches (61.0 cm) above the roofline.
			7. Use only trowel-grade modified adhesive. Apply using a trowel or wide-edged putty knife with a uniform 1/8 inches thickness throughout. Firmly press sheets into the adhesive, and immediately nail the top of the flashing as specified it the appropriate flashing detail.
			8. Corner membrane flashings, such as bow ties for outside corners and footballs for inside corners or other membrane reinforcements are required to ensure that base flashing corners are sealed at cant areas. An alternate method of corner reinforcing is to install a smooth MB membrane reinforcement piece on the prepared corner substrate prior to final surfacing membrane. Refer to BUR Flashing Details section of the GAF Application and Specifications Manual.

\*\* NOTE TO SPECIFIER \*\* Delete base flashing not required. Torch (APP or SBS) (Option 3)

* + 1. Bituminous Base Flashings:
			1. Install GAF base flashing over all cant strips, horizontal to vertical transitions, roof edges and roof penetrations. Flashings are to be secured in accordance with current GAF application guidelines.
			2. Nailable curbs and walls shall be covered with a layer of approved GAFGLAS Base Sheet or backer ply fastened 8 inches (203 mm) o.c. in all directions with approved fasteners. All vertical laps shall be 4 inches (102 mm). Base sheet or backer ply shall extend out onto the field of the roof as shown in the applicable GAF construction detail.
			3. Prime all metal and masonry surfaces with asphalt primer, and allow adequate drying time prior to adhering flashing plies.
			4. Backer plies installed over masonry or other non-nailable substrates shall be cut into manageable lengths to ensure adequate adhesion to the cant strip and vertical surfaces without excessive voids. All vertical laps shall be 4 inches (102 mm). Backer plies shall extend onto the field of the roof as shown in the applicable GAF construction detail.
			5. The finished ply of base flashing shall be run vertically to provide a selvage edge that will aid in achieving proper adhesion at the 3 inches (76 mm) vertical laps. If the sheet is run horizontally, the vertical laps shall be a minimum of 6 inches (152 mm) and the selvage edge shall be removed form the sheet or fully covered by the counterflashing. The finished flashing ply shall extend out onto the field of the roof as shown in the applicable GAF construction detail, and shall be extended a minimum of 4 inches (102 mm) beyond the edge of the prior flashing plies. The flashing shall be soundly adhered to the parapet, cant area and roof surface to result in a minimum void, non-bridging construction.
			6. Base flashing heights shall be a minimum of 8 inches (203 mm) and a maximum of 24 inches (610 mm) above the roofline.
			7. Apply the propane torch flame uniformly across the back surface of the membrane and lap areas until the compound reaches the proper application temperature and exhibits a slight sheen. Be careful during application to ensure the complete burn-off of release films where present on the underside of the rolls, membrane selvage edges or both surfaces as applicable. Avoid overheating, as it may result in damage to or the membrane or improper adhesion. Move the flame from side to side in the shape of an L, applying approximately 75 percent of the heat to the membrane and 25 percent to the substrate or underlying plies including the lap area of the previously installed courses. The membrane is slowly unrolled as heat is applied to ensure proper adhesion. Immediately nail the top of the flashing as specified in flashing detail.
			8. Corner membrane flashings, for outside corners and inside corners, or other membrane reinforcements are required to ensure that base flashing corners are sealed at cant areas. An alternate method of corner reinforcing is to install a smooth MB membrane reinforcement piece on the prepared corner substrate prior to final surfacing membrane. Refer to the MB Flashing Details section of the GAF Application and Specifications Manual.
		2. PENETRATIONS
			1. Horizontal penetrations shall be flashed with M-Curbs filled with M-Thane sealant, then coated with Topcoat Flexseal.
			2. Vertical penetrations shall be flashed with Topcoat Topester Fabric embedded between two coats of Topcoat Flexseal.
		3. COATING
			1. TOPCOAT MB Plus Elastomeric Roof Coating may be used on slopes of 1/4 inch per foot or more (positive drainage, no ponding water), applied at the rate of approximately 3 gallons per 100 square feet. The membrane must be allowed to age at least 90 days and must be free of dust and dirt prior to the application of MB Plus Coating.
			2. All roof penetration areas, splits, drains, and scuppers must be treated with a 6" wide area of TOPCOAT Flashing Grade, one layer of 6" TOPESTER Fabric and a final layer of Flashing Grade to completely embed the fabric. Feather the Flashing Grade onto the existing cap sheet substrate.
			3. After at least 24 hours drying time, inspect preparatory/flashing work for problem areas (i.e., gaps, cracks, fishmouths, air pockets, etc) to ensure that work is complete and satisfactory. Repair any deficiencies using TOPCOAT Flashing Grade and TOPESTER Fabric, as required.
			4. Recommended method for application of TOPCOAT MB Plus is by airless sprayer. A roller can be used; however, more coats may be required to obtain specified mil thickness.
			5. Spray-apply base coat (gray) of Topcoat MB Plus at the rate of 1.25 gallons per 100 sq ft. Allow a minimum of 24 hours drying time prior to allowing foot traffic or inspection of the base coat for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions.
			6. Spray-apply finish coat (white) of Topcoat MB Plus at a rate of 1.75 gallons per 100 sq ft. It shall 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.
			7. After a minimum of 24 hours has elapsed, inspect the final roof surface for flaws, areas of insufficient coverage, insufficient thickness, etc.
			8. The specified dry membrane thickness is 18 mils in the field and 78 mils on the flashing details.
			9. At completion of all work, seams should not be visible on the roof. All unsatisfactory areas must be repaired.
		4. Sheet Metal:

\*\* NOTE TO SPECIFIER \*\* Delete if Edge to Edge warranty is required.

* + - 1. Metal shall not be used as a component of base flashing. GAF assumes no responsibility for damage to the roofing system caused by the movement of accessory metal.

\*\* NOTE TO SPECIFIER \*\* Delete next two paragraphs if Edge to Edge warranty is not required. Because of the high coefficient of expansion of sheet metals and the large temperature changes that can be experienced on a roof, sheet metal or exposed metal components shall be isolated from the waterproofing components of the roofing and flashing system as efficiently as possible to prevent the metal from splitting the membranes.

* + - 1. Metal shall not be used as a component of base flashing.
			2. All metal edge details scheduled to be included in the Edge to Edge Coverage of the Diamond Pledge Guarantee shall be submitted and approved in writing by the manufacturer prior to project commencement.
			3. When it is unavoidable to use metal in the roofing system (i.e., lead flange at drains, gravel stops), treated wood nailers and insulation stops, 1 inches (25 mm) wider than the metal flange, shall be provided for metal flange securement. Metal flanges shall always be set on top of the roof membrane with modified trowel grade cold adhesive applied material for SBS roof systems. The metal flange is then sealed using the applicable construction detail to meet applicable guarantee requirements. Metal accessories (gravel stops, counter flashing, etc.) shall be 16 oz. (0.56 mm) copper, 24 gauge (0.71 mm) galvanized or stainless steel, 2-1/2 to 4 lb (1.1 to 1.8 kg) lead, or 0.032 inches (0.81 mm) aluminum.
			4. Fabricate and install all sheet metal materials as shown in applicable construction details. Refer to SMACNA (Sheet Metal and Air Conditioning Contractors National Association, Inc.) for guidance on sheet metal treatments not addressed in this Manual.
			5. Clean metal and apply asphalt primer to all sheet metal surfaces that will come into contact with asphalt or other bituminous materials; allow the primer adequate time to dry.
			6. Use fastener types compatible with the sheet metal type.
				1. Copper or lead-coated copper: use copper or bronze fasteners.
				2. Lead and galvanized steel: use galvanized or cadmium-plated sheet fasteners.
				3. Aluminum: use aluminum fasteners.
				4. Stainless steel: use stainless steel fasteners.
			7. Metal counter-flashing shall have a minimum 4 inches (102 mm) face with a drip lip. The bottom edge of the counterflashing shall cover the roofing membrane and/or base flashing by a minimum of 4 inches (102 mm). Metal counter flashing used for masonry walls, wooden walls, or through wall metal flashings shall be a two piece design to allow for installation and later removal. Metal counter-flashings for stucco, EIFS, wood siding or similar materials shall be designed to receive and set as a base for those materials, such as "Z" type flashing, while providing for securement of separate metal counter-flashing to cover base flashings. Metal end joints shall be lapped 3 inches (76 mm) or more. Adequate fasteners shall be provided to secure against wind forces. Skirt fasteners shall be watertight.

\*\* NOTE TO SPECIFIER \*\* Termination bars are not suitable in all base flashing and wall flashing conditions. Termination bars may only be used in conjunction with an appropriate counter-flashing extending a minimum of 4 inches (10.2 cm) below the termination bar.

* + - 1. Metal termination bars shall be a minimum of 1/10 inches (3 mm) thick by 1 inch (25 mm) wide with preformed sealant edge lap. Bar shall have 1/4 inches (6 mm) by 3/8 inches (10 mm) slotted holes on 4 inches (102 mm) centers to facilitate mechanical anchorage.
			2. Metal flanges for gravel stops, eave strips, and pitch pockets to be used in conjunction with roofing shall be primed (both sides), set in modified trowel grade cold adhesive applied material for SBS roof systems. Flanges shall be a minimum of 3-1/2 inches (89 mm) wide for gravel stops or eave strips and 4 inches (102 mm) wide for projections and extensions through the roof. The gravel stop lip shall be at least 3/4 inches (19 mm) high. Eave strip lips shall be at least 3/8 inches (10 mm) high. Provisions shall be made for securing the skirt to the face of the wall. This may be wood nailer strips for masonry and metal construction. In all cases, gravel stop and eave strip nailer shall be fastened to the deck or deck system with adequate resistance against wind forces.
			3. Stacks shall have metal sleeve flashing a minimum of 8 inches (203 mm) high. Pitch pockets for brackets, supports, pad-eyes, etc., shall have a 4 inches (102 mm) minimum height metal sleeve.

\*\* NOTE TO SPECIFIER \*\* Delete if reroofing not required.

* + - 1. On reroofing projects, provisions shall be made for reinstallation of existing sheet metal duct work, equipment, coping metal and counter-flashing removed in conjunction with the new work. Also, provide for cleaning and repairing of existing defective sheet metal, and replacement of missing and irreparable sheet metal to match existing types. Light gauge sheet metal flashings which are incorporated into the Ruberoid roof system are not suitable for re-use and shall be replaced with new material.
			2. Conduits and piping such as electrical and gas lines shall be set on wood blocking or some other form of support. Wood blocking/supports shall be set on doubler pads (an additional layer of the roof membrane).

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. WALKWAYS

\*\* NOTE TO SPECIFIER \*\* This type of walkway is not for sidewalk or patio-type use.

* + 1. Walkways for normal rooftop traffic may be constructed from two plies of modified bituminous membranes.
		2. Construct walkways prior to the application of field surfacing by solidly adhering a first ply of smooth surfaced membrane to the field of the roof and then adhering a granule surfaced of membrane to the surface of the first ply.
		3. Walkway sections shall be no longer than 10 feet (3000 mm), with a 6 inches (152 mm) minimum gap between each section to allow for drainage.

\*\* NOTE TO SPECIFIER \*\* Retain Only if Plaza-Deck is specified.

* 1. TRAFFIC SURFACE
		1. After the installation of the roof membrane and base flashing assembly, but prior to installation of any overburden, a flood test shall be performed.
		2. Loose lay drainage board or protection mat appropriate to the type of traffic surface specified. Drainage boards must be installed so they do not hinder the flow of water. Filter Fabric must be continuous to avoid clogging of the drainage board by dust, dirt, debris or contaminants.
		3. Protection Pads (where required) must extend at least 2" past the pedestal, stringer or other support specified. In lieu of protection pads, extruded polystyrene insulation may be installed, provided the compressive strength can adequately accommodate the overburden.
		4. Follow paver manufacturers installation guidelines specific to the type of paver required.
		5. Consult GAFMC Contractor Services for more information on specific requirements.
	2. ROOF PROTECTION
		1. Protect all partially and fully completed roofing work from other trades until completion.
		2. Whenever possible, stage materials in such a manner that foot traffic is minimized over completed roof areas.
		3. When it is not possible to stage materials away from locations where partial or complete installation has taken place, temporary walkways and platforms shall be installed in order to protect all completed roof areas from traffic and point loading during the application process.
		4. Temporary tie-ins shall be installed at the end of each workday and removed prior to commencement of work the following day.
	3. CLEAN-UP
		1. All work areas are to be kept clean, clear and free of debris at all times.
		2. Do not allow trash, waste or debris to collect on the roof. These items shall be removed from the roof on a daily basis.
		3. All tools and unused materials shall be collected at the end of each workday and stored properly off of the finished roof surface and protected from exposure to the elements.
		4. Dispose of or recycle all trash and excess material in a manner conforming to current EPA regulations and local laws.
		5. Properly clean the finished roof surface after completion, and make sure the drains and gutters are not clogged.
		6. Clean and restore all damaged surfaces to their original condition.

\*\* NOTE TO SPECIFIER \*\* Delete if Well Roof warranty not required.

* 1. MAINTENANCE
		1. Inspections to the roof shall be performed annually by a GAF Master Select contractor.
		2. An annual roofing system maintenance program shall be performed by a Master Select contractor in accordance with GAFMC's 10 Point Maintenance Program provided with your Diamond Pledge guarantee.
		3. Submit copies of the roof inspection form, accompanying photographs (a minimum of 6 photos showing the condition of the roof and critical details), and a record of all roofing system maintenance to the GAF Contractor Services Department within sixty (60) days of the anniversary date of the completion of the roofing system. Annual roof inspections shall be started within the first two (2) years of the guarantee term.

END OF SECTION