SECTION 07 53 00

THERMOSET, EPDM, MEMBRANE ROOFING

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\*\* NOTE TO SPECIFIER \*\* Versico Roofing Systems; Thermoset Membrane Roofing.  
This section is based on the products of Versico Roofing Systems, which is located at:  
P.O. Box 1289.  
Carlisle, PA 17013.  
Toll Free Tel: (800)992-7663.  
Fax: (717) 960-4036.  
Email: <Emma.Nealy@Versico.com>   
Web: [www.versico.com](http://www.versico.com)   
Versico Roofing Systems, established in 1993, is one of the largest single-ply roofing system providers in the United States. Versico focuses its efforts on quality products and exceptional service and has been instrumental in the development of today�s leading technologies in the commercial roofing industry.   
Versico�s product offerings include VersiGard EPDM, VersiWeld� TPO, VersiFlex PVC, VersiFleece TPO and PVC, roof garden and paver systems and a complete line of insulation and accessory products. Each of these systems comes with warranty options ranging from five to thirty years. Whatever your needs, Versico provides a comprehensive offering of products and services, which is why Versico is your single source for single-ply roofing.

1. GENERAL
   1. SECTION INCLUDES

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

* + 1. Thermoset Membrane Roofing.
    2. Membrane Flashings.
    3. Metal Flashings.
    4. Roof Insulation.
  1. RELATED SECTIONS

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

* + 1. Section 03 30 00 - Cast-in-Place Concrete.
    2. Section 03 51 13 - Cementitious Wood Fiber Decks.
    3. Section 03 52 13 - Composite Concrete Roof Insulation.
    4. Section 05 36 00 - Composite Metal Decking.
    5. Section 06 10 00 - Rough Carpentry.
    6. Section 07 62 00 - Sheet Metal Flashing and Trim.
    7. Section 07 70 00 - Roof and Wall Specialties and Accessories.
    8. Section 08 60 00 - Roof Windows and Skylights.
    9. Section 22 30 00 - Plumbing Equipment.
  1. REFERENCES

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

* + 1. American Society of Civil Engineers (ASCE) - ASCE 7 - Minimum Design Loads for Buildings and Other Structures, Current Revision.
    2. ASTM International (ASTM):
       1. ASTM C 208 - Standard Specification for Cellulosic Fiber Insulating Board.
       2. ASTM C 578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
       3. ASTM C 1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
       4. ASTM D 41 - Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
       5. ASTM D 412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.
       6. ASTM D 624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
       7. ASTM D 816 - Standard Test Methods for Rubber Cements.
       8. ASTM D 4263 - Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
       9. ASTM D 4637 - Standard Specification for EPDM Sheet Used In Single-Ply Roof Membrane.
       10. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials.
    3. Factory Mutual (FM Global):
       1. Approval Guide.
          1. Factory Mutual Standard 4470 - Approval Standard for Class 1 Roof Covers.
          2. Loss Prevention Data Sheets 1-28, 1-29.
    4. International Code Council (ICC):
       1. International Building Code (IBC).
    5. National Roofing Contractors Association (NRCA) - Low Slope Roofing and Waterproofing Manual, Current Edition.
    6. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) - Architectural Sheet Metal Manual.
    7. Underwriters Laboratories (UL):
       1. TGFU R1306 - "Roofing Systems and Materials Guide".
       2. UL-790 - Standard Test Method for Fire Tests of Roof Coverings.

\*\* NOTE TO SPECIFIER \*\* Retain only design criteria required for the project and delete those not required or not applicable.

* 1. DESIGN CRITERIA
     1. Wind Uplift Performance:

\*\* NOTE TO SPECIFIER \*\* Select required wind uplift performance criteria. Performance may be specified by referencing wind uplift as calculated by ASCE-7 or as specified, by reference of an FM tested assembly, or both. Insert required values. Delete option not required.

* + - 1. Roof system is designed to withstand wind uplift forces as calculated using the current revision of ASCE-7.
      2. Roof system is designed to withstand wind uplift forces of \_\_\_\_\_ psf.
      3. Roof system is designed to achieve a FM 1 \_\_\_ wind uplift rating.

\*\* NOTE TO SPECIFIER \*\* Insert the appropriate DORA Assembly number as found in the current Directory of Roof Assemblies (DORA) by SPRI.

* + - 1. Roof system is designed to achieve a DORA Assembly number \_\_\_ .

\*\* NOTE TO SPECIFIER \*\* Versico offers a standard 55 mph wind speed warranty. Please contact Versico if a higher wind speed warranty is desired. Delete option not required.

* + - 1. Warranted Wind Speed: 55 MPH.
      2. Warranted Wind Speed: \_\_\_\_.
    1. Fire Resistance Performance:

\*\* NOTE TO SPECIFIER \*\* Select fire rating. Delete two of the next three paragraphs.

* + - 1. Roof system will achieve a UL Class A rating when tested in accordance with UL-790.
      2. Roof system will achieve a UL Class B rating when tested in accordance with UL-790.
      3. Roof system will achieve a UL Class C rating when tested in accordance with UL-790.

\*\* NOTE TO SPECIFIER \*\* Insert LTTR Value. Modify 'R value' to 'LTTR value' where Polyisocyanurate insulation is not used in the system.

* + 1. Thermal Performance: Roof system will achieve a minimum R value not less than \_\_\_\_.
    2. Drainage: Provide a roof system with positive drainage where all standing water dissipates within 48 hours after precipitation ends.
    3. Building Codes:
       1. Roof system will meet the requirements of all federal, state and local code bodies having jurisdiction.

\*\* NOTE TO SPECIFIER \*\* Delete the next paragraph if LEED Credit is not required on this project.

* 1. LEED CERTIFICATION:
     1. Coordinate with Section 01 11 13 - Work Covered by Contract Documents.
     2. Submittals Required:
        1. SSc7.2 Heat Island Effect - Roof (LEED Form).
        2. MRc4 Recycled Content (LEED Form).
        3. MRc5 Local and Regional Materials (LEED Form).
        4. EQc4.1 Low-Emitting Materials - Adhesives and Sealants (LEED Form).
  2. SUBMITTALS
     1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
     2. Product Data: Manufacturer's data sheets on each product to be used, including:
        1. Preparation instructions and recommendations.
        2. Storage and handling requirements and recommendations.
        3. Installation methods.
     3. Detail Drawings:
        1. Submit approved plan, section, elevation or isometric drawings which detail the appropriate methods for all flashing conditions found on the project.
        2. Coordinate approved drawings with locations found on the Contract Drawings.

\*\* NOTE TO SPECIFIER \*\* Delete selection samples if colors have already been selected.

* + 1. Selection Samples: For each finish product specified, two complete sets of chips representing manufacturer's full range of available colors, membranes, and thicknesses.
    2. Verification Samples: For each finish product specified, two samples, minimum size 4 inches (102 mm) square representing actual product, color, and patterns.
  1. QUALITY ASSURANCE
     1. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of fifteen (15) years experience.
     2. Installer Qualifications:
        1. All products listed in this section are to be installed by a single installer with a minimum of five (5) years demonstrated experience in installing products of the same type and scope as specified.

\*\* NOTE TO SPECIFIER \*\* retain one of the next two paragraphs only if manufacturer supplied guaranties are specified. Delete if not required.

* + - 1. Installer shall be capable of extending the Manufacturer's Labor and Materials guarantee.
      2. Installer shall be capable of extending the Manufacturer's No Dollar Limit guarantee.

\*\* NOTE TO SPECIFIER \*\* Include a mock-up if the project size and/or quality warrant taking such a precaution. The following is one example of how a mock-up on a large project might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.

* + 1. Mock-Up: Provide a mock-up for evaluation of surface preparation, installation techniques and workmanship.
       1. Finish areas designated by Architect.
       2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
       3. Refinish mock-up area as required to produce acceptable work.
  1. DELIVERY, STORAGE, AND HANDLING
     1. Store products in manufacturer's unopened packaging until ready for installation.
     2. Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.
     3. When loading materials onto the roof, comply with the requirements of Owner to prevent overloading and possible disturbance to the building structure.
     4. Contaminants such as grease, fats and oils shall not be allowed to come in direct contact with the roofing membrane.
  2. PROJECT CONDITIONS
     1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
     2. Refer to manufacturer's recommendations for general job site considerations.
     3. Safety Data Sheets (SDS) must be on location at all times during the transportation, storage and application of materials.
     4. Proceed with work so new roofing materials are not subject to construction traffic. When necessary, new roof sections shall be protected and inspected upon completion for possible damage.
     5. New roofing shall be complete and weathertight at the end of the work day.
  3. WARRANTY

\*\* NOTE TO SPECIFIER \*\* Select Warranty from the following six options.

* + 1. At project closeout, provide to Owner or Owners Representative an executed copy of the manufacturer's Total-System warranty, outlining its terms, conditions, and exclusions from coverage.

\*\* NOTE TO SPECIFIER \*\* Select warranty duration.   
5-year warranty is available for all roof systems listed in this section.

* + - 1. Duration: Five (5) years.

\*\* NOTE TO SPECIFIER \*\* 10-year warranty is available for all roof systems listed in this section.

* + - 1. Duration: Ten (10) years.

\*\* NOTE TO SPECIFIER \*\* 15-year warranty is only available for:  
- Adhered 45, 60 and 90 mil non-reinforced black EPDM  
- Ballasted 45 , 60 and 90 mil non-reinforced black EPDM  
- Adhered 45 , 60 and 75 mil reinforced black EPDM  
- Mechanically Fastened 60 and 75 mil reinforced black EPDM  
- Adhered 60 and 90 mil non-reinforced white EPDM  
- Roof Garden EPDM

* + - 1. Duration: Fifteen (15) years.

\*\* NOTE TO SPECIFIER \*\* 20-year warranty is only available for:  
- Adhered 60 and 90 mil non-reinforced black EPDM  
- Ballasted 45, 60 and 90 mil non-reinforced black EPDM  
- Adhered 60 and 75 mil reinforced black EPDM  
- Mechanically Fastened 60 and 75 mil reinforced black EPDM  
- Adhered 60 and 90 mil non-reinforced white EPDM  
- Roof Garden EPDM

* + - 1. Duration: Twenty (20) years.

\*\* NOTE TO SPECIFIER \*\* 25-year warranty is only available for:  
- Adhered 60 and 90 mil non-reinforced black EPDM  
- Ballasted 60 and 90 mil non-reinforced black EPDM  
- Adhered 75 mil reinforced black EPDM  
- Mechanically Fastened 75 mil reinforced black EPDM  
- Adhered 60 and 90 mil non-reinforced white EPDM

* + - 1. Duration: Twenty-Five (25) years.

\*\* NOTE TO SPECIFIER \*\* 30-year warranty is only available for:  
- Adhered 90 mil non-reinforced black EPDM  
- Ballasted 90 mil non-reinforced black EPDM  
- Adhered 75 mil reinforced black EPDM  
- Mechanically Fastened 75 mil reinforced black EPDM  
- Adhered 90 mil non-reinforced white EPDM

* + - 1. Duration: Thirty (30) years.

\*\* NOTE TO SPECIFIER \*\* Delete if not required. Puncture coverage is only available for:  
- Adhered 90 mil non-reinforced black EPDM  
- Adhered 45, 60 and 75 mil reinforced black EPDM  
- Mechanically Fastened 45, 60 and 75 mil reinforced black EPDM  
-Adhered 90 mil non-reinforced black EPDM

* + - 1. Puncture Coverage Rider: Coverage to be extended to include accidental punctures in accordance with terms stated in the Warranty document.

\*\* NOTE TO SPECIFIER \*\* Select hail coverage where specified. Delete one of the next two paragraphs or both if Hail coverage is not required.   
\*\* NOTE TO SPECIFIER \*\* 1 inch Hail coverage is only available for:  
- Adhered 60 and 90 mil non-reinforced black EPDM (Requires Dens-Deck, Securock, SecurShield HD, SecurShield HD Plus, SecurShield HD Composite or DuraFacer Composite)  
- Ballasted 45, 60 and 90 mil non-reinforced black EPDM  
- Adhered 60 and 75 mil reinforced black EPDM  
- Adhered 60 and 75 mil non-reinforced white EPDM

* + - 1. Hail Coverage Rider: Coverage to be extended to include damage caused by a maximum 1 inch (25 mm) diameter hail in accordance with terms stated in the Warranty document.

\*\* NOTE TO SPECIFIER \*\* 2 inch Hail coverage is only available for:  
- Adhered 90-mil non-reinforced black EPDM (Requires Dens-Deck, Securock, SecurShield HD, SecurShield HD Plus, SecurShield HD Composite or DuraFacer Composite)  
- Ballasted 60- or 90-mil non-reinforced black EPDM  
- Ballasted 60 or 90 mil non-reinforced black EPDM  
- Adhered 75-mil reinforced black EPDM  
- Adhered 60- or 90-mil non-reinforced white EPDM

* + - 1. Hail Coverage Rider: Coverage to be extended to include damage caused by a maximum 2 inch (51 mm) diameter hail in accordance with terms stated in the Warranty document.
      2. Coverage to be extended to include roof edge metal water tightness in accordance with terms stated in the Warranty document.

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer: Versico Roofing Systems, which is located at: P. O. Box 1289; Carlisle, PA 17013; Toll Free Tel: 800-992-7663; Fax: 717-960-4036; Email: <Emma.Nealy@Versico.com>; Web: <http://www.versico.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 - Product Requirements.
  1. SCOPE / APPLICATION
     1. Roof System: Provide a waterproof roof system, capable of withstanding uplift forces as specified in this section.

\*\* NOTE TO SPECIFIER \*\* Retain only attachment methods that apply to this project. Delete all others.

* + - 1. Membrane Attachment: Fully Adhered.
      2. Membrane Attachment: Mechanically Attached.
      3. Membrane Attachment: Ballasted.
    1. Base Flashing: Provide a waterproof, fully adhered base flashing system at all penetrations, plane transitions and terminations.

\*\* NOTE TO SPECIFIER \*\* Delete the next paragraph if roof insulation is not specified.

* + 1. Insulation: Provide a roof insulation system beneath the finish membrane.

\*\* NOTE TO SPECIFIER \*\* Delete the next paragraph if a roof garden assembly is not specified.

* + 1. Roof Garden Assembly:

\*\* NOTE TO SPECIFIER \*\* Select type of planting system required. Delete two of the following three subparagraphs.

* + - 1. Provide an Intensive planting system with a soil depth greater than 8 inches (204 mm) with a variety of plants such as sod grass, annual or perennial flowers, shrubs and small trees. Structure must be capable of withstanding the additional dead loads as calculated by the Project Engineer which typically exceed 48 lbs per square foot (234 kg per square meter).
      2. Provide an Extensive planting system with a soil depth of 4 to 8 inches (102 to 204 mm) where recommended plants include sedums, herbs, grasses and other vegetation which can grow in this depth of media. Structure must be capable of withstanding the additional dead loads as calculated by the Project Engineer which are typically between 24 to 48 lbs per square foot (117 to 234 kg per square meter).
         1. Versico Hydropack System may be used as an alternate.
      3. Provide an Ultra-Extensive planting system with a soil depth less than 4 inches (102 mm) ideally suited for areas that will receive little maintenance. Recommended plants include sedums, herbs and grasses. Structure must be capable of withstanding the additional dead loads as calculated by the Project Engineer which are typically less than 24 lbs per square foot (117 kg per square meter).
         1. Versico Hydropack System may be used as an alternate.

\*\* NOTE TO SPECIFIER \*\* Delete the next article if a base sheet is not required. Retain only base sheet type required and delete all others.

* 1. MEMBRANE BASE SHEET
     1. Versico FR Base Sheet 1S: A non-asphaltic, resin-bound, fiberglass-reinforced mat, coated on one side with a mineral-filled fire-resistant coating 48 inches (1219 mm wide and 250 feet (76.2 m) long. Designed for use as a suitable substrate for direct application of Mechanically Attached Roofing Systems over decks requiring a fastened base sheet.
     2. Versico Modified Base Sheet: A tough, glass fiber, reinforced, SBS-modified asphalt, base sheet (nominal 39 inch (991 mm) wide by 50 feet (15240 mm) long) that meets or exceeds the requirements for ASTM D 6163 Type I, Grade S for SBS-modified bituminous sheet materials using glass fiber reinforcement. Designed for use with the Hot Mopped VersiFleece Roofing System.
     3. Versico SureMB 70 SA Modified Base Sheet: 70-mil smooth surface, self-adhered base ply. Reinforced with a fiberglass mat that is saturated and coated with asphaltic bitumen and SBS elastomer and meets ASTM D6163 Type 1, Grade S. 70 SA is designed to be used as a base ply or interplay in Versico�s multiple-ply system and can be used as an air and vapor barrier or temporary (up to 60 days) roof. Available in 39-3/8" wide and 61� long (200 square feet) weighing 0.39 lbs per square foot.
     4. Versico SureMB 90 Modified Base Sheet: A smooth-surfaced, torch-grade SBS base ply, reinforced with a non-woven polyester mat that is saturated and coated with asphaltic bitumen and SBS elastomers.
     5. Versico SureMB 90TG Base: 94 mil (2.4 mm) smooth-surfaced, SBS, torch-applied membrane. Reinforced with a fiberglass mat that is saturated and coated with asphaltic bitumen and SBS elastomers which meets ASTM D6163 Type I, Grade S. SureMB 90TG is designed for use as a base-ply or inter-ply in Versico's multiple-ply system and can be used as an air barrier, vapor barrier or temporary (Up to 60 days) roof. Available in rolls 39-3/8 inch (1000 mm) wide and 49 feet 1 inch (14960 mm) long (164 square feet) and weighing 0.57 lbs per square foot (2.8 kg per square meter).
     6. Versico SureMB 120TG Base Sheet: A smooth-surfaced, torch-grade SBS base ply, reinforced with a non-woven polyester mat that is saturated and coated with asphaltic bitumen and SBS elastomers.
     7. VapAir Seal 725TR Air/Vapor Barrier: A 40-mil (1.0 mm) composite consisting of 35 mils of self-adhering rubberized asphalt laminated to a 5 mil (0.13 mm) woven polypropylene film.
     8. VapAir Seal MD Air/Vapor Barrier: reinforced composite aluminum foil with self-adhesive SBS backing and removable poly release film. Used for direct application over metal decks.

\*\* NOTE TO SPECIFIER \*\* Delete the next article if insulation is not required. Retain only insulation type(s) required and delete all others.

* 1. INSULATION
     1. Polyisocyanurate MP-H: Versicore MPH. Rigid board with glass fiber reinforced (GRF) facers on both sides, meeting or exceeding the requirements of ASTM C 1289, Type II, Class 1.

\*\* NOTE TO SPECIFIER \*\* Delete grade not required

* + - 1. Compressive Strength: Grade 2 (20 psi) (138 kPa).
      2. Compressive Strength: Grade 3 (25 psi) (173 kPa).
      3. Density: 2 lb per cubic foot (24 kg per cu m) minimum.
    1. SecurShield Polyiso: Rigid board with coated glass fiber (CGF) mat facers on both sides, meeting or exceeding the requirements of ASTM C 1289, Type II, Class 2.

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

* + - 1. Compressive Strength: Grade 2 (20 psi) (138 kPa).
      2. Compressive Strength: Grade 3 (25 psi) (173 kPa).
      3. Density: 2 lb per cubic foot (24 kg per cu m) minimum.
    1. Composite Board: Composite insulation panel comprised of 1/2 inch (13 mm) high-density Polyiso cover board laminated during the manufacturing process to SecurShield rigid Polyiso roof insulation meeting ASTM C1289. Versico SecurShield HD Composite.
       1. Top Layer: ASTM C1289 Type II, Class 4, Grade 1.
       2. Compressive Strength: 80 psi min. (751 kPa)
       3. Board Thickness: 1/2 inch (13 mm)
       4. Bottom Layer: ASTM C1289 Type II, Class 2
       5. Compressive Strength: Grade 2 (20 psi) (138 kPa)
    2. Composite Board: Polyisocyanurate foam insulation with 1/2 inch (13 mm) wood fiber roof insulation laminated to one side and glass fiber reinforced (GRF) facers laminated to one side, meeting or exceeding the requirements of ASTM C 1289. Versico MPH-WF.
       1. Compressive Strength (Polyiso): 20 psi (138 kPa).
       2. Compressive Strength (Wood Fiber): 35 psi (241.5 kPa).
       3. Density (Polyiso): 2 lb per cubic foot (24 kg per cu m) minimum.
    3. Composite Board: Polyisocyanurate foam insulation with 7/16 inch (11 mm) Oriented Strand Board (OSB) laminated to one side and glass fiber reinforced (GRF) facers laminated to one side, meeting or exceeding the requirements of ASTM C 1289. Versico Durafacer Composite.
       1. Compressive Strength (Polyiso): 20 psi (138 kPa).
       2. Compressive Strength (Wood Fiber): 35 psi (241.5 kPa).
       3. Density (Polyiso): 2 lb per cubic foot (24 kg per cu m) minimum.
    4. Expanded Polystyrene (EPS): Rigid, closed cell foam insulation meeting ASTM C 578. Insulfoam, distributed by Versico.

\*\* NOTE TO SPECIFIER \*\* Select Compressive strength based on insulation type. Delete two of the next three paragraphs.

* + - 1. Density: 1 pound (0.45 kg) minimum.
      2. Density: 1.25 pounds (0.57 kg) minimum.
      3. Density: 1.5 pounds (0.68 kg) minimum.
    1. Extruded Polystyrene (XPS): Rigid, closed-cell structural thermal barrier meeting ASTM C 578. Foamular, distributed by Versico.
       1. Foamular 250: Compressive Strength of 25 psi (1.75 kg per sq. cm.) minimum.
       2. Foamular 400: Compressive Strength of 40 psi (2.8 kg per sq. cm.) minimum.
       3. Foamular 600: Compressive Strength of 60 psi (4.2 kg per sq. cm.) minimum.
       4. Foamular 1000: Compressive Strength of 100 psi (7.03 kg per sq. cm.) minimum.
    2. Extruded Polystyrene (XPS): Rigid, closed-cell recovery board meeting ASTM C 578. Foamular Durapink, distributed by Versico.
       1. Board Thickness: 1 inch (25 mm). Compressive Strength: 25 psi (1.75 kg per sq cm) minimum.
       2. Board Thickness: 3/4 inch (19 mm). Compressive Strength: 25 psi (1.75 kg per sq cm) minimum.
       3. Board Thickness: 1/2 inch (13 mm). Compressive Strength: 25 psi (1.75 kg per sq cm) minimum.
    3. Extruded Polystyrene (XPS): Rigid, closed-cell structured thermal barrier meeting ASTM C 578. Dow Styrofoam, distributed by Versico.

\*\* NOTE TO SPECIFIER \*\* Select insulation type based on project requirements. Delete three of the next four paragraphs.

* + - 1. Deckmate: Compressive Strength of 18 psi (1.27 kg per sq cm) minimum.
      2. Deckmate Plus: Compressive Strength of 25 psi (1.75 kg per sq cm) minimum.
      3. Roofmate: Compressive Strength of 40 psi (2.8 kg per sq. cm.) minimum.
      4. Plazamate: Compressive Strength of 60 psi (4.2 kg per sq. cm.) minimum.
    1. Water-resistant and silicone treated gypsum panel with embedded fiberglass facer on both sides, and pre-primed on one side. GP Gypsum Dens-Deck Prime, distributed by Versico.

\*\* NOTE TO SPECIFIER \*\* Select thickness. Delete three of the next four paragraphs.

* + - 1. Board Thickness: 1/4 inch (6 mm).
      2. Board Thickness: 3/8 inch (10 mm).
      3. Board Thickness: 1/2 inch (13 mm).
      4. Board Thickness: 5/8 inch (15 mm).
    1. Water-resistant and silicone treated gypsum panel with embedded fiberglass facer on both sides. GP Gypsum Dens-Deck, distributed by Versico.

\*\* NOTE TO SPECIFIER \*\* Select thickness. Delete three of the next four paragraphs.

* + - 1. Board Thickness: 1/4 inch (6 mm).
      2. Board Thickness: 3/8 inch (10 mm).
      3. Board Thickness: 1/2 inch (13 mm).
      4. Board Thickness: 5/8 inch (15 mm).
    1. Moisture-, mold- and impact-resistant, nonstructural fiber-reinforced gypsum panel made from 95% recycled materials. Securock, distributed by Versico.

\*\* NOTE TO SPECIFIER \*\* Select thickness. Delete three of the next four paragraphs.

* + - 1. Board Thickness: 1/4 inch (6 mm).
      2. Board Thickness: 3/8 inch (10 mm).
      3. Board Thickness: 1/2 inch (13 mm).
      4. Board Thickness: 5/8 inch (15 mm).
    1. SecurShield HD Polyiso Cover board: Rigid board with coated glass fiber mat facers (CGF) on both sides, meeting or exceeding the requirements of ASTM C 1289, Type II, Class 4, Grade 1.
       1. Compressive Strength: 80 psi min. (751 kPa).
       2. Board Thickness: 1/2 inch (13 mm).
    2. SecurShield HD Plus Polyiso Cover board: Rigid board with coated glass fiber mat facers (CGF) on both sides, meeting or exceeding the requirements of ASTM C 1289, Type II, Class 4, Grade 1. Designed for higher uplift with fewer fasteners per board.
       1. Compressive Strength: 80 psi min. (751 kPa).
       2. Board Thickness: 1/2 inch (13 mm).

\*\* NOTE TO SPECIFIER \*\* Delete the entire next article if insulation adhesive is not required.

* 1. INSULATION ADHESIVE
     1. Flexible DASH Adhesive: A spray or extruded applied, two-component polyurethane, low-rise expanding foam adhesive used for attaching approved insulations to compatible substrates (concrete, cellular lightweight insulating concrete, gypsum, cementitious wood fiber, wood or steel) or existing smooth or gravel surfaced BUR, modified bitumen or cap sheets.
     2. Flexible DASH Dual Cartridge Adhesive: A two-component, polyurethane construction grade, low rise expanding adhesive designed for bonding insulation to various substrates using a portable applicator.
     3. Flexible DASH Dual Tank Adhesive: A two-component, polyurethane construction grade, low-rise expanding adhesive designed for bonding insulation to various substrates using a portable applicator.
     4. Flexible DASH 5 gallon Jug Adhesive: A two-component, polyurethane construction grade, low-rise expanding adhesive designed for bonding insulation to various substrates using a portable applicator.
     5. OlyBond 500 BA - A two-component, polyurethane, low-rise expanding adhesive used to bond insulation to various substrates using a mechanical dispenser system.
     6. OlyBond Spot Shot - A two-component, polyurethane construction grade, low-rise expanding adhesive designed for bonding insulation to various substrates using a portable applicator.
     7. One-Step: A two-component, polyurethane construction grade, low-rise expanding adhesive designed for bonding insulation to various substrates using a portable applicator.
  2. ETHYLENE, PROPYLENE, DIENE TERPOLYMER (EPDM) MEMBRANE

\*\* NOTE TO SPECIFIER \*\* Delete membrane types not required. Modify the included text as instructed.

* + 1. VersiGard Non-Reinforced Membrane: Cured, non-reinforced EPDM membrane meeting the requirements of ASTM D 4637 Type I.

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

* + - 1. Attachment Method: Fully Adhered.
      2. Attachment Method: Mechanically fastened.
      3. Attachment Method: Ballasted.
      4. Color: Black.

\*\* NOTE TO SPECIFIER \*\* Select membrane thickness. Delete two of the next three paragraphs.

* + - 1. Membrane Thickness: 45 mil (1.1 mm) nominal.
      2. Membrane Thickness: 60 mil (1.5 mm) nominal.
      3. Membrane Thickness: 90 mil (2.3 mm) nominal.
      4. Sheet Dimensions:

\*\* NOTE TO SPECIFIER \*\* Select Sheet width. 45 and 60 mil available up to 50 feet, 90 mil available up to 10 feet wide. Delete six of the next seven paragraphs based on membrane thickness.

* + - 1. Width: 10 feet (3.05 m) maximum.
      2. Width: 16.5 feet (5.0 m) maximum.
      3. Width: 20 feet (6.1 m) maximum.
      4. Width: 25 feet (7.6 m) maximum.
      5. Width: 30 feet (9.14 m) maximum.
      6. Width: 40 feet (12.2 m) maximum.
      7. Width: 50 feet (15.25 m) maximum.
      8. Length: 50 feet (15.25 m) maximum.
      9. Length: 100 feet (30.5 m) maximum.
      10. Performance:
          1. Tensile Strength: 1550 psi (10.7 MPa) minimum.
          2. Tear Resistance: 200 lbf per in (35 kN per m) minimum.
          3. Elongation: 480 percent.
    1. VersiGard White Non-Reinforced Membrane: Cured, non-reinforced EPDM membrane meeting the requirements of ASTM D 4637 Type I.

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

* + - 1. Attachment Method: Fully Adhered.
      2. Attachment Method: Mechanically Fastened.
      3. Attachment Method: Ballasted.
      4. Color: White on Black.

\*\* NOTE TO SPECIFIER \*\* Select membrane thickness. Delete one of the next two paragraphs.

* + - 1. Membrane Thickness: 60 mil (1.5 mm) nominal.
      2. Membrane Thickness: 90 mil (2.3 mm) nominal.

\*\* NOTE TO SPECIFIER \*\* Select Sheet width. Delete four of the next five paragraphs.

* + - 1. Width: 10 feet (3.05 m) maximum.
      2. Width: 16.5 feet (5.0 m) maximum.
      3. Width: 20 feet (6.1 m) maximum
      4. Width: 50 feet (15.25 m) maximum.
      5. Width: 100 feet (30.5 m) maximum.
      6. Performance:
         1. Tensile Strength: 1685 psi (11.6 MPa) minimum.
         2. Tear Resistance: 200 lbf per in (35 kN per m) minimum.
         3. Elongation: 480 percent.
    1. VersiGard Reinforced Membrane: Cured, polyester fabric reinforced EPDM membrane meeting the requirements of ASTM D 4637 Type II.

\*\* NOTE TO SPECIFIER \*\* Delete attachment type not required.

* + - 1. Attachment Method: Fully Adhered.
      2. Attachment Method: Mechanically fastened.
      3. Color: Black.

\*\* NOTE TO SPECIFIER \*\* Select membrane thickness. Delete one of the next two paragraphs.

* + - 1. Membrane Thickness: 45 mil (1.1 mm) nominal per 0.016 inch (0.4 mm) over scrim.
      2. Membrane Thickness: 60 mil (1.5 mm) nominal per 0.020 inch (0.5 mm) over scrim.

\*\* NOTE TO SPECIFIER \*\* Select Sheet widths. Delete two of the next three paragraphs.

* + - 1. Width: 4.5 feet (1.37 m) maximum.
      2. Width: 8 feet (2.43 m) maximum.
      3. Width: 10 feet (3.04 m) maximum.

\*\* NOTE TO SPECIFIER \*\* Select maximum sheet length. 200 foot length only available with 45 mil, 10 foot wide rolls. Delete one of the next two paragraphs.

* + - 1. Length: 100 feet (30.5 m) maximum.
      2. Length: 200 feet (30.5 m) maximum.
      3. Performance:
         1. Breaking Strength: 180 lbf (800 N) minimum.
         2. Tear Strength: 30 lbf (132 N) minimum.
         3. Elongation: 480 percent.
    1. VersiGard Reinforced Membrane: Cured, polyester fabric reinforced EPDM membrane meeting the requirements of ASTM D 4637 Type II.

\*\* NOTE TO SPECIFIER \*\* Delete attachment type not required.

* + - 1. Attachment Method: Fully Adhered.
      2. Attachment Method: Mechanically Fastened.
      3. Color: Black.
      4. Membrane Thickness: 75 mil (1.9 mm) nominal per 0.032 inch (0.8 mm) over scrim.
      5. Sheet Dimensions: 10 feet (3.1 m) by 100 feet (30.5 m).
      6. Performance:
         1. Breaking Strength: 230 lbf (1023 N) minimum.
         2. Tear Strength: 70 lbf (311 N) minimum.
         3. Elongation: 500 percent.
  1. FLASHING ACCESSORIES
     1. Versico Black or White QA Molded Pipe Seals: Factory applied QA tape on the deck flange, for use with VersiGard Black or White Roofing Systems.
     2. VersiGard Pourable Sealer Pocket: Pre-fabricated Pourable Sealer Pocket consisting of a 2 inch (51 mm) wide plastic support strip with pre-applied, adhesive backed uncured EPDM Flashing.
     3. VersiGard QA Inside/Outside Corner: A 7 inch by 9 inch (178 x 229 mm) precut 60-mil thick Uncured EPDM Flashing with a 30-mil (0.76 mm) pre-applied adhesive tape. Available in black and white.
     4. VersiGard 20 Inch Quick-Applied Cured Flashing: A 20 inch wide (508 mm) cured EPDM membrane with QA Seam TAPE the full width, factory applied, used to flash curbs/skylights, etc.
     5. VersiGard Quick-Applied Overlayment Strip: A nominal 40-mil (1.1 mm) black, semi-cured EPDM membrane laminated to a nominal 30-mil (0.76 mm) fully cured, pressure-sensitive adhesive for flashing gravel stops, metal edgings and Seam Fastening Plates.
     6. VersiGard QA Coverstrip: A nominal 40-mil (1.1 mm) black, semi-cured EPDM membrane laminated to a nominal 30-mil (0.76 mm) cured, pre-applied adhesive tape for flashing gravel stops, metal edgings and Seam Fastening Plates.
     7. VersiGard QA "T" Joint Covers: A factory cut 6 inch by 6 inch (152 mm x 152 mm) or 12 inch by 12 inch (304 mm x 304 mm) uncured 40-mil thick EPDM flashing laminated to a nominal 30-mil (0.76 mm) pre-applied adhesive tape, used to overlay field splice intersections and to cover field splices at angle changes.
     8. VersiGard Clean Cured Flashing: A cleaned, cured .060 inch (1.5 mm) thick non-reinforced (seamless) black EPDM membrane used to flash gravel stops, metal edgings, walls/curbs and Seam Fastening Plates used for additional membrane securement when the use of RTS is not feasible.
     9. White Cured Flashing: A cured .060 inch (1.5 mm) thick non-reinforced (seamless) white-on-black EPDM membrane used to flash gravel stops, metal edgings, walls/curbs and Seam Fastening Plates used for additional membrane securement when the use of RTS is not feasible.
     10. VersiGard Uncured EPDM Flashing: Formable 60-mil (1.5 mm) thick VersiGard uncured EPDM flashing.
     11. VersiGard QA Uncured EPDM Flashing: 60-mil (1.5 mm) thick uncured EPDM Flashing laminated to a 30-mil (0.76 mm) pre-applied adhesive tape used in conjunction with VersiGard Primer as an option to VersiGard Uncured EPDM Flashing.

\*\* NOTE TO SPECIFIER \*\* Retain only products required on this project and delete all others.

* 1. CLEANERS, PRIMERS, ADHESIVES AND SEALANTS
     1. Weathered Membrane Cleaner: Clear, solvent-based cleaner used to loosen and remove contaminants from the surface of exposed EPDM membrane prior to the application of Seam Adhesive or EPDM Primer.
     2. Splice Adhesive: A high-strength, butyl-based contact cement which is used for splicing adjoining sections of EPDM membrane (cured or uncured).
        1. VersiGard Splice Adhesive: Black splice adhesive for use with VersiGard (black) Roofing Systems.
        2. VersiGard G100SA White Splice Cement: White splice adhesive used with White (white-on-black) Adhered Roofing Systems.
     3. Lap Sealant: A black, heavy-bodied material (trowel or gun-consistency) used to seal the exposed edges of a membrane splice. A pre-formed Lap Sealant tool is included in each carton of Lap Sealant.
        1. Versico Lap Sealant: Black sealant for use with VersiGard Roofing Systems.
        2. White Lap Sealant: White sealant for use with White Roofing Systems.
     4. Versico QA Seam Tape: 3 inch (76 mm) or 6 inch (152 mm) wide by 100 foot (30.5 M) long splice tape used for splicing adjoining sections of EPDM membrane. Complies with the South Coast Air Quality Management District Rule 1168.
     5. Peel & Stick White Seam Tape: A 3 inch (76 mm) wide by 100 foot (30.5 M) long, cream colored splice tape used with White Systems. Complies with the South Coast Air Quality Management District Rule 1168.
     6. Versico V-150 Primer: A solvent-based primer used to prepare the surface of EPDM membrane for application of Seam Tape or QA products.
     7. Low VOC EPDM Primer: a solvent based primer designed for one-step cleaning and priming of EPDM surfaces prior to installation of quick-applied products. This product complies with the less than 250 g per L VOC content requirements for the OTC Model Rule for Single-Ply Roofing Adhesives.
     8. G200SA Yellow Substrate Adhesive: A high-strength, yellow colored, synthetic rubber adhesive used for bonding VersiGard EPDM membranes to various surfaces.
     9. Solvent-Free EPDM Bonding Adhesive: a high-strength, polymer based adhesive that allows fast installation of EPDM membranes and cured flashings to various substrates.
     10. Low-VOC Bonding Adhesive: a solvent-based contact adhesive that allows bonding to EPDM to various porous and non-porous substrates. This product complies with the less than 250 g per L VOC content requirements for the OTC Model Rule for Single-Ply Roofing Adhesives. This product does not comply with the following California counties' VOC regulations: Alameda, Contra Costa, El Dorado, Los Angeles, Marin, Napa, Orange, Riverside, Sacramento, San Bernardino, San Diego, San Francisco, San Mateo, Santa Clara, Solano, Sonoma and Tehema.
     11. Low VOC Bonding Adhesive 1168: a solvent-based contact adhesive that allows bonding to EPDM to various porous and non-porous substrates. This product complies with the less than 250 g per L VOC content requirements for the OTC Model Rule for Single-Ply Roofing Adhesives. This product complies with the following California counties' VOC regulations: Alameda, Contra Costa, El Dorado, Los Angeles, Marin, Napa, Orange, Riverside, Sacramento, San Bernardino, San Diego, San Francisco, San Mateo, Santa Clara, Solano, Sonoma and Tehema
     12. Flexible DASH Adhesive: A spray or extruded applied, two-component, polyurethane, low-rise expanding foam adhesive used to securely bond Insulation to a variety of substrates.
     13. Flexible DASH DC (Dual Cartridge) Adhesive: A two-component, polyurethane construction grade, low-rise expanding adhesive used to securely bond Insulation to a variety of substrates. The adhesive is extrusion applied 4 inch (102 mm), 6 inch (152 mm), or 12 inch (305 mm) on center (depending on project conditions) using a portable applicator.
     14. Flexible DASH Dual Tank Adhesive: A spray applied, two-component, polyurethane construction grade, low-rise expanding adhesive used to securely bond Insulation to a variety of substrates.
     15. Flexible DASH 5-gallon Jug Adhesive: A spray applied, two-component, polyurethane construction grade, low-rise expanding adhesive used to securely bond Insulation to a variety of substrates.
     16. Aqua Base 120 Bonding Adhesive: a semi pressure-sensitive water based adhesive. Used as a two-sided contact adhesive with VersiWeld TPO, VersiFlex PVC, or VersiGard EPDM membranes.
     17. Water Cut-Off Mastic: A one-component, low viscosity, self wetting, Butyl blend mastic used as a compression sealing agent between EPDM membranes or uncured flashing and applicable substrates.
     18. VersiGard G -400 Pourable Sealer: A black, two-component, solvent-free, polyurethane based product used for tie-ins and as a sealant around hard-to-flash membrane penetrating objects such as clusters of pipes and for a daily seal when the completion of flashings and terminations cannot be completed by the end of each work day.
     19. Versico One-Part Pourable Sealer: A black, one-component, moisture curing, elastomeric polyether sealant used for attaching lightning rod bases and ground cable clips to the membrane surface and as a sealant around hard-to-flash penetrations such as clusters of pipes.
     20. Universal Single-Ply Sealant: A 100 percent solids, solvent free, one-part, polyether sealant that provides a weather tight sealant to a variety of building substrates; used as a termination bar sealant. Available in white only.
     21. CCW 702 Primer and 702LV Primer (Low VOC) - A single component, solvent based, high-tack primer used to provide maximum adhesion between Versico 725TR Air and Vapor Barrier and an approved substrate. Applied by spray or long nap roller with a coverage rating ranging from approximately 300 to 350 square feet (28 to 33 square meters) per gallon (3.8 L) on smooth finishes (i.e., concrete) to 75 square feet (7.0 square meters) per gallon (3.8 L) on porous surfaces (i.e., Dens-Deck Prime gypsum board). Available in 5-gallon containers. CCW 702LV Primer contains less than 250 g per L VOCs and meets South Coast Air Quality Management District (SCAQMD) and Leadership in Energy and Environmental Design (LEED) Requirements for Volatile Organic Compounds.
     22. CCW 702 WB - a high-tack, water-based contact adhesive for promoting adhesion of Versico air/vapor barrier membranes and an approved substrate (i.e., concrete, Dens-Deck Prime and Securock). Applied by roller, brush or spray with an application rate of approximately 200 sq. ft. (19 square meters) per gallon (3.8 L). Available in 5-gallon (19 L) containers. CCW 702 WB Primer contains 57 g per L VOCs and meets South Coast Air Quality Management District (SCAQMD) and Leadership in Energy and Environmental Design (LEED) Requirements for Volatile Organic Compounds.
     23. CAV-GRIP 3V Low-VOC Aerosol Contact Adhesive/Primer: a low-VOC, methylene chloride-free adhesive that can be used for a variety of applications including: Priming unexposed asphalt prior to applying Flexible DASH Adhesive, adhering VersiGard EPDM, horizontally, for the field of the roof and to vertical walls. Coverage rate is approximately 2,000-2,500 sq. ft. (186 to 232 square meters) per 40 lb (18 kg) cylinder and 4,000-5,000 sq. ft. (372 to 465 square meters) per 85 lb (39 kg) cylinder as a primer, in a single-sided application and 750 sq. ft. (70 square meters) per 40 lb (18 kg) cylinder and 1,500 sq. ft. (139 square meters) per 85 lb (39 kg) cylinder as an adhesive for vertical walls, in a double-sided application; 1,000 sq. ft. (93 square meters) per 40 lb (18 kg) cylinder and 2,000 sq. ft. (186 square meters) per 85 lb (39 kg) cylinder as an adhesive, horizontally, for the field of the roof, in a double-sided application

\*\* NOTE TO SPECIFIER \*\* Retain the next article only if insulation is asphalt adhered.

* 1. BITUMEN
     1. Hot Asphalt: Meets or exceeds requirements of ASTM D 312:

\*\* NOTE TO SPECIFIER \*\* Select required asphalt type. Delete two of the next three paragraphs.

* + - 1. Type: Type III.
      2. Type: IV.
      3. Type: SEBS.
    1. Cut-Back Asphalt Primer: ASTM D 41 primer for structural concrete decks, existing smooth BUR, mineral surfaced cap sheet, or modified bitumen membranes prior to mopping.
  1. FASTENING COMPONENTS

\*\* NOTE TO SPECIFIER \*\* Retain only fastening components required on this project and delete all others.

* + 1. RTS (Reinforced Termination Strip): A 6 or 9 inch (152 or 229 mm) wide, 100 foot (30480 mm) long, strip of VersiGard (Black) reinforced EPDM membrane.
       1. 6 inch (152 mm) wide standard RTS: used horizontally or vertically at the base of walls, curbs, etc., in conjunction with 2 inch (51 mm) diameter Fastening Plates below the EPDM deck membrane for additional membrane securement (Polymer Seam Plates are required for Mechanically Attached Roofing Systems over steel decks). 6 inch wide standard RTS is also utilized for perimeter membrane securement on VersiGard Mechanically Attached Roofing Systems.
       2. 9 inch (229 mm) wide standard RTS: utilized in conjunction with gravel stops and metal edgings to allow continuation of cured EPDM deck membrane as flashing. 9 inch (229 mm) wide RTS is utilized for perimeter membrane securement on VersiGard Mechanically Attached Roofing Systems.
    2. VersiGard QA RTS (Reinforced Termination Strip): 6 or 9 inch (152 or 229 mm) wide, nominal 45-mil (1.1 mm) thick clean, cured, reinforced EPDM black membrane with 3 inch wide pre-applied adhesive tape laminated along one edge for the 6 inch wide RTS and along both edges for the 9 inch (229 mm) wide RTS. 9 inch (229 mm) wide QA RTS is utilized for perimeter membrane securement on VersiGard Mechanically Attached Roofing Systems.
       1. 6 inch RTS: 6 inch (152 mm) wide, 100 foot long (30.5 M), strip of VersiGard (black) reinforced EPDM membrane for additional membrane securement on Adhered, Ballasted, and Mechanically Attached Roofing Systems.
       2. 9 inch RTS: 9 inch (229 mm) wide 100 foot long (30.5 M), strip of VersiGard (black) reinforced EPDM membrane utilized for perimeter membrane securement on VersiGard Mechanically Attached Roofing Systems.
    3. White Peel & Stick RTS: A 6 inch (152 mm) wide, nominal .045 inch (1.1 mm) thick reinforced TPO membrane with 3 inch (76 mm) wide pre-applied adhesive tape laminated along one edge. Used for perimeter membrane securement on White Adhered Roofing Systems.
    4. Polymer Seam Plate: 2 inch (51 mm) diameter plastic barbed fastening plate used for membrane and RTS securement for Mechanically Attached Roofing Systems over steel roof decks.
    5. Seam Fastening Plate: 2 inch (51 mm) diameter metal fastening plate used for membrane and RTS attachment on Mechanically Attached Roofing Systems over wood or structural concrete decks. Seam Fastening Plates are also used in conjunction with RTS or EPDM membrane for additional membrane securement on Adhered or Ballasted Roofing Systems. This plate may be used for insulation attachment on Mechanically Attached Roofing Systems.
    6. Insulation Fastening Plate: Nominal 3 inch (76 mm) diameter FM approved metal plate used for insulation attachment.
    7. Versico Fasteners:
       1. HPV Fastener: A threaded, black epoxy electro-deposition coated (E-Coat) fastener for use with steel, wood plank, minimum 15/32 inch (12mm) thick plywood or minimum 7/16 inch (11 mm) thick oriented strand board (Adhered Roofing Systems only).
       2. InsulTite Insulation Fasteners: A threaded, No. 12 fastener with No. 3 Phillips head fastener used with 3 inch (76 mm) diameter Insulation Plates. For insulation attachment into steel or wood decks.
       3. InsulTite ASAP Fasteners: Versico's No. 12 Standard Fastener and pre-assembled 3 inch (76 mm) diameter Plastic Insulation Plate used for insulation attachment on Adhered and Mechanically Attached Roofing Systems.
       4. CD-10 Concrete Fastener: A hammer-driven, non-threaded, black epoxy electro-deposition coated (E-Coat) fastener for use with structural concrete decks rated 3,000 psi or greater.
       5. MP 14-10 Concrete Fastener: A No. 14 threaded fastener used for minimum 3,000 psi concrete decks.
       6. Gyptec Fastener: A glass-filled nylon auger fastener designed for use with cementitious wood fiber and gypsum decks.
       7. Lite-Deck Fastener: An oversized diameter metal fastener and associated 3 inch diameter Lite-Deck metal plate for use on Adhered Roofing Systems to attach insulation to dense gypsum decks.
       8. HPVX Fasteners: A heavy-duty No. 15 threaded fastener with a Phillips head used for adhered assemblies where increased pullout resistance is necessary for steel and wood decks.
       9. HPV-XL Fasteners: An oversized diameter No. 21 steel threaded fastener used with HPV-XL Plates for membrane securement on Mechanically Attached Roofing Systems.
       10. Purlin Fastener: Hex-head, threaded, self-drilling, non-threaded, black epoxy electro-deposition coated (E-Coat) fastener used for membrane/RTS securement into structural purlins.
       11. Term Bar Nail-In: A 1 1/4 inch (32 mm) long expansion anchor with threaded drive pin used for fastening VersiGard Termination Bar or Seam Fastening Plates to concrete, brick or block walls.
       12. Dual Prong Fasteners: A factory pre-assembled, 1.8 inch (46 mm) long fastener consisting of a precision tube formed from galvanized (G-90) coated steel, a 2.7 inch (69 mm) disk formed from Galvalume (AX-55) coated steel and a locking staple of high tensile steel wire used to secure base sheets to fibrous cement, lightweight concrete and gypsum providing 70 pounds of pullout resistance is achieved.
       13. Versico Metal Cap Fasteners: 1 inch (25 mm) diameter Metal Caps are manufactured from corrosion resistant Galvalume and are used in conjunction with a standard ring shank nail to attach base sheets to wood plank, plywood or OSB decks; for use on projects limited in height (30 to 40 feet) (91 to 121 meter) depending on base sheet used.
  1. EDGINGS AND TERMINATIONS
     1. VersiTrim 200: A snap-on edge system consisting of a 24 gauge galvanized metal water dam. Finish as noted on the Finish Schedule of the Contract Drawings.
     2. VersiTrim Fascia: A metal anchor bar fascia system consisting of a formed quarter hard 0.050 inch (1.25 mm) aluminum retainer bar, corrosion resistant fasteners and a 0.040 inch (1 mm) aluminum or 24 gauge steel snap-on fascia cover.
     3. VersiTrim 2000: An anchor bar roof edge fascia system consisting of 0.100 inch (2.5 mm) thick extruded aluminum bar, corrosion resistant stainless steel fasteners and snap-on fascia cover.
     4. VersiTrim 3000: A metal anchor bar fascia system consisting of a 20 gauge steel retainer bar, corrosion resistant fasteners and an aluminum or 24 gauge steel snap-on fascia cover. It is for use in fully adhered and mechanically attached roofing systems, ANSI/SPRI ES-1 certified.
     5. SecurEdge 4000: A two-piece assembly that includes a continuous cleat and a decorative fascia cover. Available in pre-painted Kynar 500-coated 0.40 inch (10 mm) formed aluminum and 24-gauge Galvalume steel, this product features 22-gauge pre-punched cleats with fasteners spaced at 12 inches (305 mm) on center. ANSI/SPRI ES-1 certified.
     6. VersiTrim Drip Edge: A 22 gauge pre-punched 90-degree angle cleat and 12 foot (3658 mm) long fascia sections. Kynar 500 or aluminum finish as noted on the Finish Schedule of the Contract Drawings.
     7. VersiTrim Coping: An anchor cleat with pre-slotted holes, a concealed joint cover, and 10 or 12 foot (3048 or 3658 mm) sections of coping cap. Kynar 500 finish as noted on the Finish Schedule of the Contract Drawings.
     8. VersiGard Ballast Retaining Bar: A ballast retaining perimeter securement system comprised of a slotted extruded aluminum retention bar with integrated compression fastening strip.
     9. Termination Bar: 1 inch (13 mm) wide, .098 inch (2.5 mm) thick extruded aluminum bar pre-punched 6 inches (152 mm) on center with sealant ledge to support Lap Sealant.

\*\* NOTE TO SPECIFIER \*\* Select ballast where ballast applied system is specified. Retain only ballast type(s) required on this project and delete all others. Delete the entire article if not required.

* 1. BALLAST
     1. Rounded Water-Worn Gravel:

\*\* NOTE TO SPECIFIER \*\* Select ballast size. Delete one of the next two paragraphs.

* + - 1. Nominal 1 1/2 inch (38 mm) rounded water-worn gravel which conforms to gradation No. 4 when sized in accordance with ASTM D 448 method of sizing. Coverage rate shall be no less than 1000 pounds (454 kg) per 100 square feet (9.3 square meters) and gravel shall be evenly distributed to maintain an average of 10 pounds per square foot (49 kg per square meter).
      2. Nominal 2 1/2 inch (64 mm) rounded water-worn gravel which conforms to gradation No. 1 or No. 2 when sized in accordance with ASTM D 448 method of sizing. Coverage rate shall be no less than 1300 pounds (590 kg) per 100 square feet (9.3 square meters) and gravel shall be evenly distributed to maintain an average of 13 pounds per square foot (63 kg per square meter).
    1. Crushed Stone:
       1. Conform to the gradations noted for rounded water-worn gravel and shall be installed in conjunction with MP Safeguard Mat.
    2. Individual Concrete Pavers:

\*\* NOTE TO SPECIFIER \*\* Select ballast size. Delete one of the next two paragraphs.

* + - 1. Individual pavers weighing a minimum of 18 pounds (8.16 kg) per square foot may be substituted for nominal 1 1/2 inch (38 mm) stone.
      2. Individual pavers weighing a minimum of 22 pounds (10 kg) per square foot may be substituted for nominal 2 1/2 inch (64 mm) stone.
      3. Pavers shall be a maximum of two feet square. Unless otherwise required by Versico, pavers shall weigh no more than 80 pounds per unit to allow for easy removal and replacement.
      4. Individual pavers with a surface other than a steel trowel finish as approved by Versico, shall be installed over Versico MP Safeguard Mat and shall be accepted by Versico prior to installation.
      5. Pavers shall be loose laid and butted together with no gaps greater than 1/2 inch (13 mm).

\*\* NOTE TO SPECIFIER \*\* Elevating pavers on pedestals may increase life expectancy, reduce freeze/thaw effects and promote more positive drainage.

* + - 1. Install Pavers over 4 by 4 inch (102 x 102 mm) sections of Versico Walkway Rolls or approved pedestals.
    1. Lightweight Interlocking Pavers
       1. Upon approval by the membrane manufacturer, lightweight interlocking pavers, minimum 10 pounds (4.5 kg) per square foot may be substituted for nominal 1 1/2 or 2 1/2 inch (38 or 64 mm) stone and shall be installed over MP Safeguard Mat or the paver manufacturer's recommended matting.

\*\* NOTE TO SPECIFIER \*\* Delete the next article if roof garden is not specified. Retain only products required on this project.

* 1. ROOF GARDEN COMPONENTS
     1. Drainage Components:
        1. Versico's MiraDRAIN 9800 Drainage Board: High impact polystyrene core with "cups" and pierced holes allowing water retention and drainage. A non-woven polypropylene filter fabric is bonded to the retention side of the molded core to prevent passage of particles into the water reservoirs. Designed to retain water in Ultra-Extensive and Extensive Roof Gardens while allowing excess water to the drainage system. Installed over CCW 200V or 300HV protection fabric.
           1. Panel Thickness: 0.04 inches (1.02 mm)
           2. Water Flow Rate: 95 gpm per sqft in accordance with ASTM D 4491.
        2. CCW MiraDRAIN HC Drainage Board: High flow drainage composite consisting of a high impact polystyrene core with a non-woven polypropylene filter fabric on the top and bottom sides of the board to prevent passage of particles into the drainage core. Used in Intensive (deep) roof gardens as an alternative to drainage gravel and protection fabric beneath the growth medium.
           1. Panel Thickness: 1.0 inches (25 mm)
           2. Water Flow Rate: 140 gpm per sqft in accordance with ASTM D 4491.
        3. MiraDRAIN G4 Roof Garden Drainage Composite: Filter fabric, moisture retention mat, drainage mat and heavy-duty protection fabric combined into a single, component specifically designed for vegetated roofs.
           1. Panel Thickness: 1.21 inches (30.1 mm).
           2. Water Flow Rate: 75 gpm per sf in accordance with ASTM D 4491.
     2. Protective Mats:
        1. Protection Fabric: Versico CCW 200V - 12 oz per sq yd needle punched, non-biodegradable, non-woven polypropylene fabric stabilized to resist soil chemicals, mildew and insects used in conjunction with the Green Grid Trays only.
        2. Protection Fabric: Versico CCW 300HV - 16 oz per sq yd needle punched, non-biodegradable, non-woven polypropylene fabric stabilized to resist soil chemicals, mildew and insects.
        3. Root Barrier: 40 mil non-reinforced polypropylene geomembrane sheet specifically formulated for use in below grade applications to resist root growth and soil bacteria. Used in Intensive (deep) and Extensive (medium depth) Roof Garden Systems.
        4. Biobarrier: A water and air permeable non-woven root barrier designed to inhibit the growth of plants roots through low-level emission of synthesized plant hormones.
        5. Moisture Retention Mat: Nominal 24.3 oz per sq yd, 0.3 inch (7.6 mm) thick needle-punched, recycled synthetic fiber mat designed to retain moisture in Ultra-Extensive and Extensive Roof Gardens.
     3. Hardscape:

\*\* NOTE TO SPECIFIER \*\* Retain only components required on this project and Delete all others.

* + - 1. Individual Concrete Plaza Pavers - 24 by 24 by 2 inches thick (610 x 610 x 51 mm) precast concrete pavers weighing a minimum of 18 psf with a minimum compressive strength of 6500 psi.
      2. Paver Pedestals: Rubber paver pedestals to elevate the surface of the pavers above the roof membrane and promote positive drainage and protection from freeze/thaw.
      3. Stone Ballast: Nominal 1 1/2 inch (39 mm) diameter rounded water worn gravel which conforms with ASTM D 448, gradation size No. 4, applied at a minimum of 10 lbs per sq ft.
      4. Other: All Roof Garden products not specified in this section such as concrete curbs, landscape lumber or other desired landscape products used to transition between Ultra-Extensive, Extensive and Intensive Roof Garden areas to act as a "growth media stop" must be approved specifically by the Architect prior to installation.
    1. Greenscape:
       1. Growing Medium: A mixture of mineral and organic soil components as selected by the landscape architect/designer or other appropriate landscape professional for the intended vegetation and climate.
       2. Vegetation: Sedum, grasses, herbs, flowers, shrubs, small trees and other greenscape items as selected by the landscape architect/designer or other appropriate landscape professional and intended for the garden type (Intensive, Extensive or Ultra-Extensive), climate and soil selected.
       3. Sedum Tile: Fully pre-vegetated coconut fiber mat designed to provide immediate full vegetative coverage.
       4. Sedum Clippings and Gel: Un-rooted sedum cuttings dispersed on the surface of growth media in conjunction with a water retention gel to aid in the plant rooting process.
       5. Plugs: Plants pre-grown into soil "plugs" to be inserted into the surface of the growth media. Typically delivered in 10 by 20 inch trays containing 24 to 72 individual plants.

1. EXECUTION
   1. EXAMINATION
      1. Do not begin installation until substrates have been properly prepared.
      2. The surface on which the insulation or roofing membrane is to be applied shall be clean, smooth, dry, and free of projections or contaminants that would prevent proper application of or be incompatible with the new installation, such as fins, sharp edges, foreign materials, oil and grease.
      3. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
   2. PREPARATION
      1. Clean surfaces thoroughly prior to installation.
      2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
      3. Do not commence work until all other work trades have completed jobs that require them to traverse the deck on foot or with equipment.
      4. A vapor retarder / temporary roof (Versico 725 TR Air and Vapor Barrier/Temporary Roof) may be applied to protect the inside of the structure prior to the roof system installation.

\*\* NOTE TO SPECIFIER \*\* Retain only deck types found on this project. Delete roof deck(s) not required.

* 1. SUBSTRATE PREPARATION
     1. Structural Concrete Deck:
        1. Minimum deck thickness for structural concrete is 4 inches (102 mm).
        2. Allow roof deck to cure prior to application of the roofing system. Where curing is in question, evaluate surface moisture and deck's dryness with the ASTM D-4263 or hot bitumen test procedures.
        3. Repair cracks greater than 1/8 inch (3 mm) in width in accordance with the deck manufacturer's recommendations.
        4. Sumps for the roof drains shall be provided in the casting of the deck.
        5. Where insulation 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 per sq m). Allow the primer to dry prior to the application of the roofing system.
     2. Steel Deck:
        1. Metal decks shall be a minimum uncoated thickness of 22 gauge and have a G-90 galvanized finish on all panels.
        2. Decks shall comply with the gauge and span requirements in the current Factory Mutual Approval Guide and be installed in accordance with Loss Prevention Data Sheet 1-28 or specific FM approval.
        3. Remove any surface corrosion and repair severely corroded areas. Properly fasten loose or inadequately secured decking.
     3. Wood Deck (Plank / Heavy Timber):
        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. Cover knotholes or cracks in excess of 1/4 inch (6 mm) with securely nailed sheet metal.
     4. Wood Deck (Plywood Deck):
        1. Plywood sheathing shall be CDX grade, minimum 4 ply, and not less than 15/32 inch (12 mm) thick.
        2. Install deck over joists spaced 24 inches (610 mm) on center or less. Install deck with all sides bearing on and are secured to joist and cross blocking.
     5. 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. Anchor all panels against uplift and lateral movement.
        3. Install deck level. Any deflection, irregularities, or otherwise damaged panels shall be corrected or replaced.
     6. Lightweight Insulating Concrete Deck:
        1. Lightweight insulating concrete decks are required to have a minimum thickness of 2 inches (51 mm), a minimum compressive strength of 200 psi (1.38 MPa) and a minimum density of 22 lbs per cu ft (352 kg per sq m) for Adhered Roofing Systems.
        2. Moisture content of existing Lightweight concrete shall be under 20 percent when insulation is to be fastened directly to it.

\*\* NOTE TO SPECIFIER \*\* Insert project specific information regarding insulation types and attachment. Add or remove layers as necessary, or delete the entire article if not required.

* 1. INSULATION - SYSTEM DESIGN
     1. Base Layer:
        1. Type: \_\_\_\_\_\_\_\_.
        2. Thickness (in/mm): \_\_\_\_\_\_.
        3. Attachment Method: \_\_\_\_\_.
     2. Top Layer:
        1. Type: \_\_\_\_\_\_\_\_.
        2. Thickness (in/mm): \_\_\_\_\_\_.
        3. Attachment Method: \_\_\_\_\_.
     3. Tapered System:
        1. Type: \_\_\_\_\_\_\_\_.
        2. Field Slope: \_\_\_\_ inch per ft (\_\_\_\_ mm per m).
        3. Sump Slope: \_\_\_\_ inch per ft (\_\_\_\_ mm per m).
        4. Cricket Slope: \_\_\_\_ inch per ft (\_\_\_\_ mm per m).
        5. Attachment Method: \_\_\_\_\_.
  2. INSULATION PLACEMENT
     1. Install insulation or membrane underlayment over the substrate with boards butted tightly together with no joints or gaps greater than 1/4 inch (6 mm). Stagger joints both horizontally and vertically if multiple layers are provided.

\*\* NOTE TO SPECIFIER \*\* Delete the next paragraph if a Ballast Applied system is specified.

* + 1. Secure insulation to the substrate with the required mechanical fasteners or insulation adhesive in accordance with the manufacturer's current application guidelines.
    2. Do not install wet, damaged or warped insulation boards.
    3. Stagger joints in one direction unless joints are to be taped. Install insulation boards snug. Gaps between board joints shall not exceed 1/4 inch (6 mm). Fill all gaps in excess of 1/4 inch (6 mm) with same insulation material.
    4. Wood nailers shall be at least 3-1/2 inches (89 mm) wide or 1 inch (25 mm) wider than adjacent metal flange. Thickness shall equal that of insulation but not less than 1 inch (25 mm) thickness.
    5. 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.
    6. Do not install any more insulation than will be completely waterproofed each day.
  1. INSULATION ATTACHMENT

\*\* NOTE TO SPECIFIER \*\* Delete the next paragraph if a Ballast Applied system is specified.

* + 1. Securely attach insulation to the roof deck for Adhered or Mechanically Attached Roofing Systems. Attachment shall have been successfully tested to meet or exceed the calculated uplift pressure required by the International Building Code (ASCE-7) or ANSI/SPRI WD-1.

\*\* NOTE TO SPECIFIER \*\* Delete the next paragraph if a Ballast Applied or Mechanically Attached system is specified. FM Loss Prevention Data Sheet 1-29 no longer uses 50 and 75 percent increased fastener density in perimeter and corner areas for Adhered assemblies above FM 1-75.

* + 1. Enhance the perimeter and corner areas in accordance with FM Loss Prevention Data Sheet 1-29.

\*\* NOTE TO SPECIFIER \*\* Delete the next paragraph if asphalt applied insulation is not specified

* + 1. Install insulation layers, maximum 4 by 4 ft (1220 by 1220 mm) board size, in a full and uniform mopping of hot asphalt applied at the rate of 25 lb per square (1.2 kg per sq m). Stagger the joints of additional layers in relation to the insulation joints in the layers below by a minimum of 6 inches (152 mm).

\*\* NOTE TO SPECIFIER \*\* Delete the next paragraph if adhesive applied insulation is not specified

* + 1. Install insulation layers applied with adhesive, coverage rate as necessary to achieve the specified attachment and uplift rating. Press each board firmly into place after adhesive develops strings when touched, typically 1-1/2 to 2 minutes after adhesive was applied, and roll with a weighted roller. Add temporary weight and use relief cuts to ensure boards are well adhered. Stagger the joints of additional layers by a minimum of 6 inches (152 mm).

\*\* NOTE TO SPECIFIER \*\* Delete the next paragraph if a Ballast Applied system is not specified.

* + 1. Loose lay insulation for ballast attachment. Where necessary, minimal fastening may be performed to inhibit movement. Fastening plates will require an overlayment of small sections of Reinforced VersiGard EPDM membrane in conjunction with Lap Sealant to cover the fastener head and insulation fastening plate.

\*\* NOTE TO SPECIFIER \*\* Retain the next article ONLY if membrane is FULLY ADHERED

* 1. MEMBRANE PLACEMENT AND ATTACHMENT (Fully Adhered)
     1. Unroll and position membrane without stretching. Allow the membrane to relax for approximately 1/2 hour before bonding. Fold the sheet back onto itself so half the underside of the membrane is exposed.
     2. Apply the Bonding Adhesive in accordance with the manufacturer's published instructions, to both the underside of the membrane and the substrate. Allow the adhesive to dry until it is tacky but will not string or stick to a dry finger touch.
     3. Roll the coated membrane into the coated substrate while avoiding wrinkles. Brush down the bonded half of the membrane sheet with a soft bristle push broom to achieve maximum contact.
     4. Fold back the unbonded half of the membrane sheet and repeat the bonding procedure.
     5. Install adjoining membrane sheets in the same manner, overlapping edges appropriately to provide for the minimum splice width. It is recommended that all splices be shingled to avoid bucking of water.
     6. When positioning membrane sheets, exercise care to locate all field splices away from low spots and out of drain sumps. All field splices should be shingled to prevent bucking of water.

\*\* NOTE TO SPECIFIER \*\* Retain the next article if ONLY if membrane is MECHANICALLY ATTACHED.

* 1. MEMBRANE PLACEMENT AND ATTACHMENT (Mechanically Attached)
     1. Unroll and position membrane without stretching. Allow the membrane to relax for approximately 1/2 hour prior to attachment. Provide and secure both perimeter and field membrane sheets in accordance with the manufacturer's most current specifications and details.
     2. Secure the membrane along the pre-printed blue line approximately 3 inches (76 mm) from the edge of the membrane sheet with the required VersiGard Fastener and 2 inch (51 mm) Polymer Seam Plate spaced a maximum of 12 inches (305 mm) on center. The minimum distance between the edge of the fastening plate and the edge of the membrane shall be 2 inches (51 mm).
     3. Position adjoining field membrane sheets to allow a minimum overlap of 6 inches at locations where Fastening Plates are located (along the length of the membrane); at the same time overlap end roll sections (width of the membrane) a minimum of 3 inches.
     4. When positioning membrane sheets, exercise care to locate all field splices away from low spots and out of drain sumps. All field splices should be shingled to prevent bucking of water.

\*\* NOTE TO SPECIFIER \*\* Retain the next article if ONLY if membrane is BALLAST APPLIED.

* 1. MEMBRANE PLACEMENT AND ATTACHMENT (Ballast Applied)
     1. Unroll and position membrane without stretching. Allow the membrane to relax for approximately 1/2 hour prior to splicing.
     2. Install adjoining membrane sheets in the same manner, overlapping edges appropriately to provide for the minimum splice width. It is recommended that all splices be shingled to avoid bucking of water.
     3. When positioning membrane sheets, exercise care to locate all field splices away from low spots and out of drain sumps. All field splices should be shingled to prevent bucking of water.

\*\* NOTE TO SPECIFIER \*\* Delete the next paragraph if Adhesive spliced seams are not specified

* 1. MEMBRANE SPLICING (Adhesive Splice)
     1. Fold the top sheet back and clean the dry splice area (minimum 3 inches wide) of both membrane sheets by wiping with a clean rag.
     2. Apply Primer to the mating surfaces with a scrub pad, at a rate of approximately 450 square feet per gallon for a 3 inch (76 mm) wide seam, and allow to dry.
     3. Apply Seam Adhesive in accordance with the manufacturer's current application guidelines, and roll the top sheet onto the mating surface.
     4. Roll the splice with a 2 inch (51 mm) wide steel roller and wait at least 2 hours before applying Lap Sealant to the splice edge following the manufacturer's requirements.
     5. Field splices shall be overlaid with uncured flashing.

\*\* NOTE TO SPECIFIER \*\* Delete the next paragraph if taped seams are not specified

* 1. MEMBRANE SPLICING (Tape Splice)
     1. Overlap adjacent sheets and mark a line 1/2 inch (13 mm) out from the top sheet.
     2. Fold the top sheet back and clean the dry splice area a minimum of 3 inches (76 mm) on both membrane sheets.
     3. Apply Primer to the mating surfaces with a scrub pad, at a rate of approximately 450 square feet per gallon for a 3 inch (76 mm) wide seam, and allow to dry.
     4. Apply 3 inch (76 mm) wide Seam Tape to bottom sheet with the edge of the release film along the marked line. Press tape onto the sheet using hand pressure. Overlap tape roll ends a minimum of 1 inch (25 mm).
     5. Remove the release film and press the top sheet onto the tape using hand pressure.
     6. Roll the seam toward the splice edge with a 2 inch (51 mm) wide steel roller.
     7. Install QA "T" Joint Cover, a 6 inch wide (152 mm) section of VersiGard QA Flashing or VersiGard Non-QA Flashing over all field splice intersections. When using Non-QA Flashing, seal edges of flashing with Lap Sealant.
     8. The use of Lap Sealant with tape splices is optional except at tape overlaps and cut edges of reinforced membrane where Lap Sealant is required.
  2. FLASHING
     1. Wall and curb flashing shall be cured EPDM membrane. Continue the deck membrane as wall flashing where practicable.
     2. Follow manufacturer's typical flashing procedures for all wall, curb, and penetration flashing including metal edging/coping and roof drain applications.

\*\* NOTE TO SPECIFIER \*\* Delete the next article if a ballast applied system is not specified.

* 1. BALLASTING
     1. Install ballast in accordance with the manufacturer's installation instructions.
     2. Install ballast evenly without bare spots to provide complete coverage over the membrane.
     3. When specified, overlap HP Protective Mat a minimum of 6 inches prior to ballast or paver installation.
     4. Comply with published ANSI (American National Standards Institute) ANSI/SPRI RP-4 guidelines (dated November 19, 2002) concerning applicable coverage rates.
  2. WALKWAYS
     1. Install walkways at all traffic concentration points (such as roof hatches, access doors, rooftop ladders, etc.) and all locations as identified on the Contract Drawings.
     2. Adhere walkway pads to the EPDM membrane in accordance with the manufacturer's current application guidelines.

\*\* NOTE TO SPECIFIER \*\* Delete the entire next article if Roof Gardens are not specified. Retain only the products required for the roof project specified in this section.

* 1. ROOF GARDEN COMPONENT APPLICATION
     1. General:
        1. Inspection:
           1. Membranes shall be adhered to minimum 1/2 inch (13 mm) Versico DensDeck Prime, 1/2 inch (13 mm) Versico SecurRock, or to structurally sloped concrete deck.
           2. A water test is required to ensure the waterproof integrity of the membrane system. Inspect for leaks and repair membrane if defects are found. Retest after repairs have been made.
           3. Sweep the surface of the membrane to remove all debris and loose or foreign material.
     2. Installation:
        1. Shallow Assembly - up to 4 inches (102 mm) in depth.
           1. Versico Roofing Membrane.
           2. CCW MiraDrain G4 Drainage Composite.
           3. Versico Engineered Growth Media.
           4. Vegetated Sedum Tiles, Sedum Plugs, or Sedum Cuttings with Versico Moisture Retention Gel.
        2. Medium Assembly - 4 inches to 8 inches (102 to 203 mm) in depth.
           1. Versico Roofing Membrane.
           2. CCW 300HV
           3. 40 mil non-reinforced Geomembrane or Biobarrier.
           4. CCW MiraDrain G4 Drainage Composite.
           5. Versico Engineered Growth Media.
           6. Vegetated Sedum Tiles, Sedum Plugs, or Sedum Cuttings with Versico Moisture Retention Gel.
        3. Deep Assembly - greater than 8 inches (203 mm) in depth.
           1. Versico Roofing Membrane.
           2. Insulfoam, Foamular or DOW Polystyrene Insulation (25 to 60 psi).
           3. CCW 300HV.
           4. 40 mil non-reinforced Geomembrane or Biobarrier.
           5. CCW MiraDrain G4 Drainage Composite.
           6. Versico Engineered Growth Media.
           7. Vegetated Sedum Tiles, Sedum Plugs, or Sedum Cuttings with Versico Moisture Retention Gel.
     3. G4 Application: Unroll and install to provide a minimum 2 inch (51 mm) side overlap. Butt the end laps next to each other.
     4. Protection Fabric: Unroll directly over the membrane and provide a minimum 2 inch (51 mm) side and end overlap.
     5. Insulation: Loose apply insulation directly over the membrane with all joints tightly butted. Extend insulation up walls and curbs to the height of the growth media layer.
     6. Root Barrier:
        1. On Extensive garden systems, position root barrier loose-laid over the protection fabric. Overlap adjacent sheets a minimum of 2 inches (51 mm) and seam in accordance with manufacturer's current recommendations for the field conditions and membrane specified.
        2. On Intensive roof garden assemblies loose-laid root barrier over the extruded polystyrene insulation layer and seam in accordance with manufacturer's current recommendations for the field conditions and membrane specified.
        3. Extend root barrier up walls, curbs, etc. to the height of the top of the growth media layer.

\*\* NOTE TO SPECIFIER \*\* On Intensive (deep) garden applications, MiraDRAIN HC Drainage Board may be used as a substitute to the drainage gravel and CCW 300HV Protection Fabric used beneath the growth media and above the root barrier. Delete if not required.

* + 1. Growth Media/Planting:
       1. Spread engineered soil mixes to the specified depth, plus 15 percent. Dispense to locations in a manner that will not overload the structure.
       2. Thoroughly soak soil with water using a sprinkler or hand sprayer.
       3. Plant vegetation in accordance with the landscape architect/designer plans and instructions for the intended soil and climate.
  1. DAILY SEALS
     1. On phased roofing, when the completion of flashings and terminations is not achieved by the end of the work day, a daily seal shall be performed to temporarily close the membrane to prevent water infiltration.
     2. Use Pourable Sealer or other acceptable membrane seal in accordance with the manufacturer's requirements.
  2. CLEAN UP
     1. Perform daily clean-up to collect all wrappings, empty containers, paper, and other debris from the project site. Upon completion, all debris shall be disposed of in a legally acceptable manner.
     2. Prior to the manufacturer's inspection for warranty, the applicator shall perform a pre-inspection to review all work and to verify all flashing has been completed as well as the application of all caulking.
  3. PROTECTION
     1. Provide protection, such as 3/4 inch (19 mm) thick plywood, for all roof areas exposed to traffic during construction. Plywood must be smooth and free of fasteners and splinters.
     2. Protect installed products until completion of project.
     3. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION