SECTION 07 54 16.80

ADHERED SIMULATED METAL ROOFING SYSTEMS

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\*\* NOTE TO SPECIFIER \*\* FiberTite, Seaman Corporation; roofing systems.  
This section is based on the products of FiberTite, Seaman Corporation, which is located at:  
1000 Venture Boulevard  
Wooster, OH 44691-9360  
Toll Free Tel: 800-927-8578  
Tel: 330-262-1111  
Fax: 800-649-2737  
Email: [afrank@seamancorp.com](mailto:afrank@seamancorp.com?subject=RE:ARCAT%20Spec%20Question%20(07548fbt):%20%20)  
Web: <https://www.fibertite.com>   
 [ [Click Here](https://www.arcat.com/arcatcos/cos35/arc35405.html) ] for additional information.  
Since 1979, FiberTite, a roofing system for commercial facilities, has demonstrated unmatched resistance to puncture, tear, UV rays and chemicals. Product options are numerous, including: FiberTite Hybrid, combining single ply with modified bitumen technology for extreme performance and, FiberTite SMR, a simulated metal roof membrane system. Our membranes come in nominal 36-mil, 45-mil, 50-mil, and 60-mil thicknesses, and we provide a full line of adhesives, components and accessories for diverse installations.  
Herein the term FiberTite Technical Service is synonymous with FTS.

1. GENERAL
   1. SECTION INCLUDES
      1. Adhered Simulated Metal Roofing Systems. (FTR-SMR)
   2. 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 00 - Lightweight Concrete Roof Insulation.
    4. Section 05 31 00 - Steel Decking.
    5. Section 05 36 00 - Composite Metal Decking.
    6. Section 06 10 00 - Rough Carpentry.
    7. Section 07 27 00 - Air Barriers.
    8. Section 07 26 00 - Vapor Retarders .
    9. Section 07 72 00 - Roof Accessories.
    10. Section 07 50 00 - Membrane Roofing.
    11. Section 07 54 16.10 - Green Vegetated Roofing Systems.. (FTG-VRS)
    12. Section 07 54 16.20 - Induction Welded Roofing Systems. (FTR-IW)
    13. Section 07 54 16.30 - Multi-Ply Roofing Systems. (FTR-MP)
    14. Section 07 54 16.40 - Mechanically-Attached Roofing Over Metal Roofing. (FTR-MR)
    15. Section 07 54 16.50 - Mechanically-Attached Roofing Systems. (FTR-MA)
    16. Section 07 54 16.60 - Ballasted Roofing Systems. (FTR-BA)
    17. Section 07 54 16.70 - Adhered Roofing Systems. (FTR-AD)
    18. Section 07 62 00 - Sheet Metal Flashing and Trim.
    19. Section 07 70 00 - Roof and Wall Specialties and Accessories.
    20. Section 08 60 00 - Roof Windows and Skylights.
    21. Section 22 40 00 - Plumbing Fixtures.
  1. REFERENCES

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

* + 1. ASTM International (ASTM):
       1. ASTM D6754 - Standard Specification for Ketone Ethylene Ester Based Sheet Roofing.
       2. ASTM D312 - Standard Specification for Asphalt Used in Roofing.
       3. ASTM D4601 - Standard Specification for Asphalt-Coated Glass Fiber Base Sheet Used in Roofing.
       4. ASTM D4897 - Standard Specification for Asphalt-Coated Glass Fiber Venting Base Sheet Used in Roofing.
       5. ASTM D 7654 - Standard Specification for Asphalt Used in Roofing Measured by Dynamic Shear Rheometer.
       6. ASTM C 1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
       7. ASTM C473 - Standard Test Methods for Physical Testing of Gypsum Panel Products.
       8. ASTM D6163 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
       9. ASTM D6164 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.
    2. American Society of Civil Engineers (ASCE):
       1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
    3. FM Approvals (FM):
       1. FM Standard 4470 - Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for use in Class 1 and Noncombustible Roof Deck Construction.
       2. Loss Prevention Data Sheets 1-28, 1-29.
    4. FBC - Florida Building Code.
    5. Miami-Dade Building Code Compliance - N.O.A. (Notice of Acceptance).
    6. UL - Fire Resistance Directory.
       1. UL-790 - Standard Test Method for Fire Tests of Roof Coverings.
  1. SUBMITTALS
     1. Submit under provisions of Section 01 30 00 - Administrative Requirements (01 30 00) - Administrative Requirements.
     2. Product Data:
        1. Most recent published technical literature and guide specifications issued by FiberTite Technical Services (FTS).
        2. Authorized Applicator's approved copy of Project Registration.
        3. Preparation instructions and recommendations.
        4. Storage and handling requirements and recommendations.
        5. Typical installation methods.
        6. Dimensioned shop drawings, including roof plan detailing perimeter enhancement, flashing methods, terminations and acceptance by FTS.
        7. Written approval from FTS confirming any accessories submitted, not manufactured or expressly approved in FiberTite literature are acceptable and compatible with the proposed FiberTite Roofing System.
        8. Safety Data Sheets (SDS) relating to all products, chemicals and solvents.
        9. Certification that the system specified complies with identifiable building code and insurance requirements.
        10. FiberTite roofing systems (FTR) References:
            1. FTR GS 01/21 FiberTite General Guide Specification.
            2. FTR AD 01/21 Guide Specification for Adhered FiberTite Roofing Systems.
            3. FiberTite Construction Details.
            4. FiberTite Foreman's Manual.
            5. FiberTite Technical Bulletin.

\*\* NOTE TO SPECIFIER \*\* Delete if not applicable to product type.

* + 1. Verification Samples: Two representative units of each type, size, pattern and color.
    2. Shop Drawings: Include details of materials, construction and finish. Include relationship with adjacent construction.
    3. For Project Registration and Warranty Acceptance: FTS will review the following.
       1. Complete copy of project architectural specifications or Authorized Applicator's proposal outlining design parameters.
       2. Complete list of accessories or materials not manufactured or expressly authorized for use in FiberTite literature.
       3. Dimensioned outline of the roof indicating all FTR-Detail references.
       4. Dimensioned shop drawings illustrating non-FiberTite details. Details that do not conform with standard FiberTite details shall be returned with appropriate recommendations.
  1. QUALITY ASSURANCE
     1. FiberTite Roofing Systems shall be installed only by an Applicator, authorized by Seaman Corporation to install FiberTite Roofing Systems prior to bid or contract award. Herein, the term Authorized FiberTite Applicator is synonymous with Applicator.
     2. Authorized Applicator's key personnel shall have received specialized training by Seaman Corporation.
     3. FiberTite Roofing Systems shall be installed in accordance with the most current guide specifications and details as amended or authorized by FTS for specific project requirements.
     4. There shall be no deviations from approved contract specifications or shop drawings without prior written approval by the Owner/Owner representative and FTS.
     5. Unauthorized deviations may subject the roof system to warranty ineligibility.
     6. Any work found to be substandard or in violation of the contract documents or manufacturer's specifications shall be subject to rejection including complete removal and replacement with new materials at the expense of the Contractor.
     7. A quality assurance inspection of the roof system shall be performed by FTS for acceptance and approval. This inspection shall be performed upon completion and certification by the Applicator that the FiberTite Roofing System has reached 100 percent completion, a quality installation has been completed in accordance with the approved contract specifications, and all field welds have been probed and inspected.
     8. All field seams shall be visible and available to FTS at the time of final inspection.

\*\* NOTE TO SPECIFIER \*\* Include mock-up if the project size or quality warrant the expense. The following is one example of how a mock-up on 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: Construct a mock-up with actual materials in sufficient time for Architect's review and to not delay construction progress. Locate mock-up as acceptable to Architect and provide temporary foundations and support.
       1. Intent of mock-up is to demonstrate quality of workmanship and visual appearance.
       2. If mock-up is not acceptable, rebuild mock-up until satisfactory results are achieved.
       3. Retain mock-up during construction as a standard for comparison with completed work.
       4. Do not alter or remove mock-up until work is completed or removal is authorized.
  1. COORDINATION
     1. Prior to installation of materials, a pre-roofing conference shall be held with the Applicator, and Owner or Owner's Representatives to discuss the specified roofing system, coordinate its proper application and the expectations of all parties involved. The Authorized Applicator and the Owner or Owner's Representatives shall notify all parties a minimum of fourteen days prior to the meeting.
     2. Plan and coordinate the installation of the roofing system with other trades in such a manner to avoid membrane damage, keeping the complete installation weather tight and in accordance with all approved details and warranty requirements.
     3. FTS shall be available to make recommendations necessary to ensure compliance with project specifications and specification alternatives due to unforeseen job conditions.
     4. Field services are provided at the discretion of Seaman Corporation. A minimum two weeks' notice is required to evaluate and coordinate any request for onsite technical assistance.
  2. DELIVERY, STORAGE, AND HANDLING
     1. Deliver all materials to the job site in manufacturer's original, unopened containers, with legible labels and in sufficient quantity to allow for continuity of work.
     2. Store and handle in strict compliance with manufacturer's written instructions and recommendations.
        1. Store rolls of membrane lying down, elevated above the roof deck and completely protected from moisture with tarpaulins. Manufacturer's packaging is not considered adequate for outdoor storage.
        2. Elevate Insulation and cover board materials on pallets and fully protect from moisture with tarpaulins. Manufacturer's packaging is not considered adequate protection from moisture.
        3. Store: Adhesives and sealants between 50 and 80 degrees F (10 and 26.7 degrees C) prior to use.
        4. Store flammable materials in cool dry areas away from sparks and open flames.
        5. Follow all precautions as outlined in manufacturer's material safety data sheets.
     3. Protect from damage due to weather, excessive temperature, and construction operations.
     4. Materials, having been determined by the Owner or Owner's representative to be damaged, shall be immediately removed from the construction site and replaced at no cost to the Owner.
  3. JOB CONDITIONS
     1. Safety:
        1. Take necessary precautions regarding worker health and safety when using solvents, adhesives or hot asphalt.
        2. Worker safety is paramount.
        3. FiberTite is slippery when wet, exhibits dew, frost, ice or other form of moisture.
        4. Comply with OSHA requirements for roof construction and fall protection.
        5. Store flammable liquid and materials away from open sparks, flames and extreme heat.
        6. Take necessary precautions when using solvents and adhesives.
        7. Daily site cleanup to minimize debris and hazardous congestion.
     2. Protection:
        1. Schedule installation sequence to limit access and utilization of installed membrane for material storage, construction staging, mechanical and excessive foot traffic.
        2. Provide proper protection on newly completed roofing.
        3. Minimize traffic on freshly laid roofing.
        4. Protect walls, rooftop units, windows and other components during installation.
     3. Additional Precautions:
        1. Adverse weather conditions, e.g. extreme temperature, high winds, high humidity and moisture, could have a detrimental effect on adhesives, general production efforts and the quality of the finished installation.
        2. Daily production schedules shall be limited to what can be made 100 percent watertight at the end of each day, including flashing and night seals.
        3. All surfaces to receive the new roof system, including insulation and flashing, shall be free from all dirt, debris and be thoroughly dry.
        4. Comply with local EPA requirements as published by local, state and federal authorities.
        5. During the construction process temporary ballast, especially in the perimeter and corner areas may be required to provide protection against high winds.
  4. DESIGN CONDITIONS
     1. This specification is applicable to only those building roofs that have decking of sufficient structural integrity, capable of supporting a FiberTite Roofing System.
     2. Applications and project specifications require review by FiberTite Technical Services (FTS) for acceptance prior to commitment to provide a commercial warranty.
     3. Seaman Corporation Project Registration, must be completed, signed by an Authorized Applicator, submitted to and approved by FTS before any consideration for warranty or the release of any materials can be authorized.
     4. Special Design Considerations:
        1. The building Owner may be required to submit an engineering study, or Statement of Sound Roof Structure, to FTS, indicating that the structure is able to accommodate additional live and dead loads including snow and water retention.
        2. Moisture conditions in existing roofs, new structural concrete or new lightweight insulating concrete that would impair or prohibit the desired performance of the new roof system.
        3. Coal tar recover or direct contact with bituminous materials.
        4. Positive slope to promote adequate drainage to avoid the potential damage to the substrate or components.
        5. Roof areas subject to heavy or excessive mechanical traffic.

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

* + 1. Exterior Fire Test Exposure: Roof system shall achieve a FM or UL Class rating for roof slopes indicated as follows:
       1. FM Approvals Class A Rating.
       2. Underwriters Laboratory Class A Rating.
    2. Design Requirements:
       1. Uniform Wind Uplift Load Capacity
          1. Installed roof system shall withstand negative (uplift) design wind loading pressures complying with the following criteria.

Design Code: ASCE 7, Method 2 for Components and Cladding.

Importance Category:

I.

II.

III.

IV.

Importance Factor of:

0.77

1.0

1.15

2.0

Wind Speed: \_\_\_ mph.

Ultimate Pullout Value: \_\_\_ pounds per each of the fastener.

Exposure Category:

B.

C.

D.

Design Roof Height: \_\_\_ feet.

Minimum Building Width: \_\_\_ feet.

Roof Pitch: \_\_\_ :12.

Roof Area Design Uplift Pressure:

Zone 1 - Field of roof \_\_\_ psf.

Zone 2 - Eaves, ridges, hips and rakes \_\_\_ psf.

Zone 3 - Corners \_\_\_ psf.

* + - 1. Snow Load: \_\_\_ psf.
      2. Live Load: 20 psf, or not to exceed original building design.
      3. Dead Load:
         1. Installation of new roofing materials shall not exceed the dead load capacity of the existing roof structure.
    1. Energy Star: Roof System shall comply with the initial and aged reflectivity required by the U.S. Federal Government's Energy Star program.
    2. LEED: Roof system shall meet the reflectivity and emissivity criteria to qualify for one point under the LEED credit category, SSc7.2, Heat Island Effect - Roof.

\*\* NOTE TO SPECIFIER \*\* Edit the following paragraphs as required and as appropriate to Code, and the Owner's, or Owner's Insurance Underwriter requirements. Delete paragraphs that are inapplicable.

* + 1. Roof system shall have been tested in compliance with the following codes and test requirements:
       1. Florida FBC (For use outside Miami-Dade and Broward Counties):
          1. Membrane Systems FL 4930.
       2. Miami-Dade County:
          1. Membrane Systems Over:

Concrete Decks N.O.A. 20041411.

Lightweight Concrete Decks N.O.A. 20041408.

Recover Decks N.O.A. 20041409.

Steel Decks N.O.A. 20041410.

Wood Decks N.O.A. 20041407.

Cementitious Wood Fiber Decks N.O.A 20041412.

* + - 1. Cool Roof Rating Council:
         1. CRRC Directory CRRC 0634.
      2. Underwriters Laboratories:
         1. Certification TGFU.R 10117.
      3. FM Approvals:
         1. RoofNav Website: RoofNav Assembly #: \_\_\_\_\_\_\_\_\_\_\_\_.
    1. Environmental Considerations:
       1. Severe environmental exposure e.g. coastal or high wind areas.
       2. Chemical discharge not listed on the Seaman Corporation/FiberTite chemical resistance publication.
       3. Environmental conditions such as fog, dew, rain or snow and freezing temperatures can have a detrimental effect on the application and performance of adhesives.
       4. Compliance with EPA and OSHA requirements as published by local, state and federal authorities.
       5. Adhesives can be described as temperamental. The Contractor must be aware of potential environmental variables when installing adhered roofing systems.
       6. Pay attention to and follow adhesive storage and application precautions and guidelines.
       7. Do not apply waterborne adhesives (FTR-490 or FTR-390) if the ambient air temperature is expected to drop below 32 degrees F (0 degrees C) within 72 hours of application.
       8. The use of polystyrene insulation and coverboard assemblies for adhered roofing systems incorporating solvent borne adhesives shall also include a minimum 10-mil polyethylene solvent barrier between the insulation and coverboard.
  1. WARRANTY

\*\* NOTE TO SPECIFIER \*\* Available Warranties:  
Material: Protection against repairing defects in membrane only. Offered at no cost to Owner.  
Standard: Protection against repairing leaks as a result of membrane defects or workmanship involved in its installation for a 10 year period. Nominal premium.  
Extended Warranty: Protection against repairing leaks as a result of membrane defects or workmanship involved in its installation beyond ten years. Additional premium.

* + 1. Upon Inspection and Acceptance by a FiberTite Technical Customer Service Representative: Seaman Corporation will issue the preauthorized warranty, subject to the terms and conditions of the sample warranty and contract documents.

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

* + - 1. Warranty Type:
         1. Material Warranty Only.
         2. Material and Labor Warranty
      2. Time Period:
         1. 5 year warranty.
         2. 10 year warranty.
         3. 15 year warranty.
         4. 20 year warranty.
      3. Maintenance Requirements: A set of instructions included detailing preventative maintenance requirements on the part of the building Owner and noting a list of harmful substances that may damage the FiberTite membrane.

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer: FiberTite, Seaman Corporation, which is located at: 1000 Venture Boulevard; Wooster, OH 44691-9360; Toll Free Tel: 800-927-8578; Tel: 330-262-1111; Fax: 800-649-2737; Email: [afrank@seamancorp.com](mailto:afrank@seamancorp.com?subject=RE:ARCAT%20Spec%20Question%20(07548fbt):%20%20); Web: <https://www.fibertite.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. GENERAL
     1. All products and components for the FiberTite Roofing System shall be supplied by Seaman Corporation.
     2. Components other than those manufactured and supplied by Seaman Corporation shall be submitted for review, prior to ordering. Any products not specifically authorized in writing for the project by Seaman Corporation, shall be considered unacceptable and their performance excluded from the warranty.
     3. FiberTite Roofing Systems may be installed over or directly to pre-approved insulation, cover board or composites thereof. Contact FTS for additional information regarding compatible substrates.
  2. MEMBRANE
     1. Standards Compliance: ASTM D6754 - 15 Standard Specification for Ketone Ethylene ester (KEE) Based Sheet Roofing.
     2. Physical Properties: See associated data sheets.
     3. Acceptable Substrates:
        1. Authorized rigid insulation or cover board.
        2. Insulated steel decking.
        3. Structural concrete, insulated or non-insulated.

\*\* NOTE TO SPECIFIER \*\* For the following substrates, a slip sheet or separation layer is recommended depending upon system type. The requirement for including the selection of an appropriate slip sheet or base sheet will be determined by the system selected, surface texture of the substrate, environmental and fire classification requirements of the project roof assembly.

* + - 1. Exterior grade plywood; insulated or non-insulated.
      2. Cementitious fiber or gypsum, insulated or non-insulated.
    1. Field Membrane:

\*\* NOTE TO SPECIFIER \*\* Delete membrane options not required. Use of FTR-190e and Alpha-Tite adhesive is only permitted on smooth-back (non-fleece-back) membranes. Use of FTR-290, FTR-390, FTR-490, and FiberTite CR-20 are only permitted on fleece-back membranes.

* + - 1. FiberTite 36-mil Membrane: Nominal 36 mil (0.91 mm) ketone ethylene ester (KEE) membrane reinforced with 5.0 oz per sq. yd (169.5 grams per sq m) knitted polyester fabric.
         1. FTR-190e: VOC compliant solvent borne, contact (two-sided) bonding adhesive, for bonding smooth-back FiberTite membranes to properly prepared and preauthorized horizontal and vertical substrates.
         2. Alpha-Tite: VOC compliant solvent borne, contact (two-sided) bonding adhesive for bonding smooth-back FiberTite membranes to properly prepared and preauthorized horizontal and vertical substrates.
      2. FiberTite 36-mil FB (Fleece-back) Membrane: Nominal 36 mil (0.91 mm) ketone ethylene ester (KEE) membrane reinforced with 5.0 oz per sq. yd (169.5 grams per sq m) knitted polyester fabric and heat bonded 4 oz (113.4 grams) polyester backing.

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

* + - * 1. FTR-290: VOC compliant solvent borne adhesive, one side application (substrate only), designed for bonding FiberTite-FB (fleece-back) membranes to properly prepared and preauthorized horizontal substrates.
        2. FTR-390: Rubberized asphalt water borne emulsion adhesive, VOC compliant, one side application (substrate only), designed for bonding FiberTite-FB (fleece-back) membranes to properly prepared and pre-authorized horizontal substrates.
        3. FTR-490: Polymeric water borne, VOC compliant adhesive, one side application (substrate only), designed for bonding FiberTite-FB (fleece-back) membranes to properly prepared and pre-authorized horizontal substrates.
        4. Polyset CR-20: Dual component elastomeric polyurethane froth adhesive designed for bonding FiberTite-FB (fleece-back) membranes (spatter application) to properly prepared and preauthorized horizontal.substrates.
        5. FTR-601 PG: Dual component, low pressure spray applied (spatter) urethane adhesive. Adhesive is a non-solvent, elastomeric, urethane adhesive, specifically designed for bonding FiberTite-FB (fleece-back) membranes to preauthorized horizontal substrates.
      1. FiberTite-SM 45-mil Membrane: Nominal 45 mil (1.14 mm) ketone ethylene ester (KEE) membrane reinforced with 5.0 oz per sq yd (169.5 grams per sq m) knitted polyester fabric.
         1. FTR-190e: VOC compliant solvent borne, contact (two-sided) bonding adhesive, for bonding smooth-back FiberTite membranes to properly prepared and preauthorized horizontal and vertical substrates.
         2. Alpha-Tite: VOC compliant solvent borne, contact (two-sided) bonding adhesive for bonding smooth-back FiberTite membranes to properly prepared and preauthorized horizontal and vertical substrates.
      2. FiberTite 45-mil FB (Fleece-back) Membrane: Nominal 45 mil (1.14 mm) ketone ethylene ester (KEE) membrane reinforced with 5.0 oz per sq yd (169.5 grams per sq m) knitted polyester fabric and heat bonded 4 oz (113.4 grams) polyester backing.

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* + - * 1. FTR-290: VOC compliant solvent borne adhesive, one side application (substrate only), designed for bonding FiberTite-FB (fleece-back) membranes to properly prepared and preauthorized horizontal substrates.
        2. FTR-390: Rubberized asphalt water borne emulsion adhesive, VOC compliant, one side application (substrate only), designed for bonding FiberTite-FB (fleece-back) membranes to properly prepared and pre-authorized horizontal substrates.
        3. FTR-490: Polymeric water borne, VOC compliant adhesive, one side application (substrate only), designed for bonding FiberTite-FB (fleece-back) membranes to properly prepared and pre-authorized horizontal substrates.
        4. Polyset CR-20: Dual component elastomeric polyurethane froth adhesive designed for bonding FiberTite-FB (fleece-back) membranes (spatter application) to properly prepared and preauthorized horizontal substrates.
        5. FTR-601 PG: Dual component, low pressure spray applied (spatter) urethane adhesive. Adhesive is a non-solvent, elastomeric, urethane adhesive, specifically designed for bonding FiberTite-FB (fleece-back) membranes to preauthorized horizontal substrates.
      1. FiberTite-XT 50-mil Membrane: Nominal 50 mil (1.27 mm) ketone ethylene ester (KEE) membrane reinforced with 6.5 oz per sq yd (220.4 grams per sq m) knitted polyester fabric.
         1. FTR-190e: VOC compliant solvent borne, contact (two-sided) bonding adhesive, for bonding smooth-back FiberTite membranes to properly prepared and preauthorized horizontal and vertical substrates.
         2. Alpha-Tite: VOC compliant solvent borne, contact (two-sided) bonding adhesive for bonding smooth-back FiberTite membranes to properly prepared and preauthorized horizontal and vertical substrates.
      2. FiberTite 50-mil FB (Fleece-back) Membrane: Nominal 50 mil (1.27 mm) ketone ethylene ester (KEE) membrane reinforced with 6.5 oz per sq yd (220.4 grams per sq m) knitted polyester fabric and heat bonded 4 oz (113.4 grams) polyester backing.

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        3. FTR-490: Polymeric water borne, VOC compliant adhesive, one side application (substrate only), designed for bonding FiberTite-FB (fleece-back) membranes to properly prepared and pre-authorized horizontal substrates.
        4. Polyset CR-20: Dual component elastomeric polyurethane froth adhesive designed for bonding FiberTite-FB (fleece-back) membranes (spatter application) to properly prepared and preauthorized horizontal substrates.
        5. FTR-601 PG: Dual component, low pressure spray applied (spatter) urethane adhesive. Adhesive is a non-solvent, elastomeric, urethane adhesive, specifically designed for bonding FiberTite-FB (fleece-back) membranes to preauthorized horizontal substrates.
      1. FiberTite-SM 60-mil Membrane: Nominal 60 mil (1.5 mm) ketone ethylene ester (KEE) membrane reinforced with 5.0 oz per sq yd (220.4 grams per sq m) knitted polyester fabric.
         1. FTR-190e: VOC compliant solvent borne, contact (two-sided) bonding adhesive, for bonding smooth-back FiberTite membranes to properly prepared and preauthorized horizontal and vertical substrates.
         2. Alpha-Tite: VOC compliant solvent borne, contact (two-sided) bonding adhesive for bonding smooth-back FiberTite membranes to properly prepared and preauthorized horizontal and vertical substrates.
      2. FiberTite-SM 60-mil FB (Fleece-back) Membrane: Nominal 60 mil (1.5 mm) ketone ethylene ester (KEE) membrane reinforced with 5.0 oz per sq yd (220.4 grams per sq m) knitted polyester fabric and heat bonded 4 oz (113.4 grams) polyester backing.

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        4. Polyset CR-20: Dual component elastomeric polyurethane froth adhesive designed for bonding FiberTite-FB (fleece-back) membranes (spatter application) to properly prepared and preauthorized horizontal substrates.
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      1. FiberTite-XT 60-mil Membrane: Nominal 60 mil (1.5 mm) ketone ethylene ester (KEE) membrane reinforced with 6.5 oz per sq yd (220.4 grams per sq m) knitted polyester fabric.
         1. FTR-190e: VOC compliant solvent borne, contact (two-sided) bonding adhesive, for bonding smooth-back FiberTite membranes to properly prepared and preauthorized horizontal and vertical substrates.
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        3. FTR-490: Polymeric water borne, VOC compliant adhesive, one side application (substrate only), designed for bonding FiberTite-FB (fleece-back) membranes to properly prepared and pre-authorized horizontal substrates.
        4. Polyset CR-20: Dual component elastomeric polyurethane froth adhesive designed for bonding FiberTite-FB (fleece-back) membranes (spatter application) to properly prepared and preauthorized horizontal substrates.
        5. FTR-601 PG: Dual component, low pressure spray applied (spatter) urethane adhesive. Adhesive is a non-solvent, elastomeric, urethane adhesive, specifically designed for bonding FiberTite-FB (fleece-back) membranes to preauthorized horizontal substrates.
      1. FiberTite-XTreme 60-mil Membrane: Nominal 60 mil (1.5 mm) ketone ethylene ester (KEE), reinforced with 12.5 oz per sq yd (423.8 grams per sq m) woven polyester mat.
         1. FTR-190e: VOC compliant solvent borne, contact (two-sided) bonding adhesive, for bonding smooth-back FiberTite membranes to properly prepared and preauthorized horizontal and vertical substrates.
         2. Alpha-Tite: VOC compliant solvent borne, contact (two-sided) bonding adhesive for bonding smooth-back FiberTite membranes to properly prepared and preauthorized horizontal and vertical substrates.
      2. FiberTite-XTreme 60-mil FB (Fleece-back) Membrane: Nominal 60 mil (1.5 mm) ketone ethylene ester (KEE), reinforced with 12.5 oz per sq yd (423.8 grams per sq m) woven polyester mat and heat bonded 4 oz (113.4 grams) polyester backing.

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

* + - * 1. FTR-290: VOC compliant solvent borne adhesive, one side application (substrate only), designed for bonding FiberTite-FB (fleece-back) membranes to properly prepared and preauthorized horizontal substrates.
        2. FTR-390: Rubberized asphalt water borne emulsion adhesive, VOC compliant, one side application (substrate only), designed for bonding FiberTite-FB (fleece-back) membranes to properly prepared and pre-authorized horizontal substrates.
        3. FTR-490: Polymeric water borne, VOC compliant adhesive, one side application (substrate only), designed for bonding FiberTite-FB (fleece-back) membranes to properly prepared and pre-authorized horizontal substrates.
        4. Polyset CR-20: Dual component elastomeric polyurethane froth adhesive designed for bonding FiberTite-FB (fleece-back)membranes (spatter application) to properly prepared and preauthorized horizontal substrates.
        5. FTR-601 PG: Dual component, low pressure spray applied (spatter) urethane adhesive. Adhesive is a non-solvent, elastomeric, urethane adhesive, specifically designed for bonding FiberTite-FB (fleece-back) membranes to preauthorized horizontal substrates.
    1. Flashing Membrane:

\*\* NOTE TO SPECIFIER \*\* Delete roofing systems not required.

* + - 1. Requirements to match field membrane and warranty expectations selected for roofing system.
         1. Basis of Design: FiberTite Nominal 36 mil (0.91 mm).
         2. Basis of Design: FiberTite-SM Nominal 45 mil (1.14 mm).
         3. Basis of Design: FiberTite-XT Nominal 50 mil (1.27 mm).
  1. ANCILLARY MATERlALS

\*\* NOTE TO SPECIFIER \*\* Supply the following products and materials from the Seaman Corporation. All ancillary materials are required. No items are optional unless the final approved design dictates otherwise.

* + 1. Flashing Adhesives:

\*\* NOTE TO SPECIFIER \*\* Delete flashing adhesive options not required.

* + - 1. FTR-190e: VOC compliant solvent borne, contact (two-sided) bonding adhesive, for bonding smooth-back FiberTite membranes to properly prepared and preauthorized horizontal and vertical substrates.
      2. Alpha-Tite: VOC compliant solvent borne, contact (two-sided) bonding adhesive for bonding smooth-back FiberTite membranes to properly prepared and preauthorized horizontal and vertical substrates.
      3. FTR-201 Mastic: Trowel grade elastomeric adhesive and sealant used to adhere FiberTite flashing membranes to pre-approved vertical substrates.
    1. Fasteners:

\*\* NOTE TO SPECIFIER \*\* Delete fastener options not required.

* + - 1. Securing membranes to steel, wood and structural concrete decks.
         1. FiberTite MAGNUM Series: No. 15-13, buttress threaded, No. 3 Phillips head fastener constructed of case-hardened carbon steel with a reduced diameter drill point and corrosion resistant coating.
      2. Securing insulation to steel, wood and structural concrete decks.
         1. FiberTite-HD: No. 14-13, heavy duty threaded steel No. 3 Phillips truss, self-tapping corrosion resistant fastener.
      3. Secure insulation, base sheet or membrane to steel, wood, cement fiber, tectum fiberglass and lightweight plank decks.
         1. FiberTite Peel Rivets: Threadless, high magnesium alloy fastener.
    1. FTR Stress Plates: Used to anchor membranes.

\*\* NOTE TO SPECIFIER \*\* Delete stress plate options not required.

* + - 1. FTR Magnum Plus: 1.5 x 2.75 inch (38 x 70 mm) Barbed Rectangular Stress Plate with radial corners; 8-gauge AZ-50 galvalume steel.
      2. FTR Magnum R275: 2.75 inch (70 mm) Barbed Round Stress Plate; 20-gauge galvanized steel.
      3. FTR Magnum 2S: 2.375 inch (60 mm) Barbed Round Stress Plate; 20-gauge galvanized steel.
      4. FTR 3-inch (76 mm) Metal Round Insulation Stress Plates: Finish: AZ-50 galvalume. Flat and flush profile for use on rigid board surfaces.
    1. Additional Components:
       1. Flashing Terminations Sealant: FTR-101. Single-component gun-grade polyether.
       2. Pitch Pan Sealant: FTR-SLS. A single-component self-leveling polyether.
       3. Fabricated Metal Flashing: FiberClad Metal. 48 x 120-inch (1219 x 3048 mm) sheets.
          1. Steel: 24-gauge hot dipped G-90.
          2. Aluminum 300H14: 0.040 inch (1.02 mm) thick laminated with a 0.02 mil (0.0005 mm) polymeric coating.
       4. FTR Pre-molded Flashings: Injection molded vent stack, split Wrapid Flash and inside and outside corner flashing using FiberTite vinyl compound.
       5. FTR Non-Reinforced Membrane: Field fabrication membrane, 60 mil (1.5 mm) non-reinforced vinyl membrane.
       6. FTR SBS Adhesive: A cold process low-VOC, low odor and solvent free SBS modified adhesive for bonding FiberTite SBS Base Sheets to approved substrates.
       7. FTR SA Primer: A blend of synthetic polymers, solvents and resins, low VOC primer for VaporTite self-adhered vapor retarder.
       8. Forti-Lock: A rapid-curing, proprietary formulation of polymethyl-methacrylate (PMMA) liquid flashing resin. Forti-Lock is combined with Forti-Lock Primer and Forti-Lock Fleece reinforcing fabric to form a flexible and monolithic, reinforced membrane used in aberrant FiberTite flashing and detail applications.
       9. Forti-Lock Metal Primer: An acrylic primer used with various metal substrates to promote adhesion of Forti-Lock waterproofing and surfacing components
       10. Forti-Lock Fleece: a proprietary non-woven polyester reinforcement used in Forti-Lock liquid flashing applications.
       11. Walkway and Protection Pads: FTR-Tuff Track. High grade walkway and protection material with slip-resistant design.
       12. FTR-Termination Bar: Membrane flashings restraint and termination seals. 0.125 x 1 x 120 inch (3 x 25 x 3048 mm) 6060-T5 extruded aluminum bar with pre-punched slots, 8 inches (203 mm) on center.
       13. FiberTite Metal Fascia System: Two piece "snap-on" pre-formed, architectural Kynar metal edge systems.
       14. FTR-Value Insulation: Polyisocyanurate and extruded polystyrene flat or tapered insulation.
       15. FTR-601 and FTR-601 PG: Dual component, single bead (ribbon applied) urethane insulation adhesive. Non-solvent, elastomeric, urethane specifically designed for bonding single or multiple layers of roof insulation and insulation composites or cover boards to structural roof decks and base sheets.
       16. FiberTite Seam Cleaner: FiberTite Seam Cleaner is to be used with clean white cotton cloths and rags to clean contamination from the seam areas of the membrane prior to welding.
       17. Simulated Metal Roofing Profile (Rib):
           1. Ornamental co-extrusion with a heat-activated KEE adhesive strip provided by Seaman Corporation.
           2. Lengths: 100 feet (30.48 m) continuous lengths and match fleece back membrane color.
       18. FTR T Joint Covers: Pre-cut 4 x 4 inch (102 x 102 mm) 60 mil (1.5 mm) non-reinforced membrane to reinforce areas where three overlapping sheets of membrane intersect.
  1. VAPOR RETARDER

\*\* NOTE TO SPECIFIER \*\* Delete one of the two following paragraphs. All of the preapproved products are approved in FM assemblies for this system.

* + 1. Vapor Retarders: Not required.
    2. Vapor Retarders:
       1. Preapproved vapor retarders shall be installed, where specified or required, to meet project design requirements and provide a suitable surface for installation of the FiberTite Roofing System.
       2. Acceptable products must be preapproved or approved in writing by Seaman Corporation.

\*\* NOTE TO SPECIFIER \*\* Delete preapproved product options not required or delete entire paragraph.

* + - 1. Preapproved Products:
         1. VaporTite.
         2. FiberTite SBS Base Sheets.
         3. Minimum 6-mil Polyethylene.
  1. INSULATION

\*\* NOTE TO SPECIFIER \*\* For the purpose of this guide specification, unless explicitly defined otherwise, the term insulation is used interchangeably to refer to rigid insulation materials, in single or multiple layers of tapered or flat, cover board, thermal barriers and or multilayered composites.

* + 1. Insulation shall be installed, where specified or required to provide a suitable surface for the FiberTite Roofing Systems and meet desired thermal values.
    2. Products must be pre-approved in writing by Seaman Corporation and comply with minimal characteristics and classification listed for the products below:

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

* + - 1. Polyisocyanurate Rigid Insulation (ASTM C1289):
         1. FTR-Value III Polyisocyanurate Rigid Insulation.
         2. FTR-Value H Polyisocyanurate Rigid Insulation.
         3. FTR-Value A Polyisocyanurate Rigid Insulation.

\*\* NOTE TO SPECIFIER \*\* Delete paragraph below if no XPS insulation.

* + - 1. XPS Rigid Insulation (ASTM D1621):
         1. FTR-Value XPS Rigid Insulation.

\*\* NOTE TO SPECIFIER \*\* Delete cover boards from below that are not required.

* + - 1. Gypsum Core Cover Board (ASTM C473):
         1. National Gypsum DEXcell.
         2. Georgia-Pacific Gypsum LLC DensDeck Prime.
         3. United States Gypsum Company SECUROCK.
    1. Adhesives for Insulation Attachment: Preauthorized by Seaman Corporation.
       1. Listed and approved by FM in conjunction with specified insulation and substrate.
       2. Meet minimum roofing system design requirements, evidenced by testing in conjunction with the proposed substrate and or composite.
          1. Testing to be performed under FM-Global requirements or acceptable third-party laboratory.
       3. Provide written specifications regarding the safe handling, storage and surface preparation for a quality application of the product.
       4. Insulation Adhesives:

\*\* NOTE TO SPECIFIER \*\* Edit paragraph below if to indicate which insulation adhesive is being used. Select none if insulation is being mechanically fastened or loose laid.

* + - * 1. None: Insulation was mechanically fastened or loose laid.
        2. Polyurethane Adhesive: Either a dual or single component polyurethane, dispensed from a portable pressurized container or traditional foam equipment.

Preapproved Products:

FTR-601.

FTR-601 PG.

Polyset CR20

* + - * 1. Hot Asphalt:

Asphalt shall be Type III or Type IV steep asphalt, according to ASTM D312.

Asphalt shall be applied within 25 degrees F (minus 3.9 degrees C) of the asphalt manufacturer's recommended Equiviscous Temperature (EVT). If the manufacturer does not supply the EVT Seaman Corporation recommends a temperature range of 425 degrees F (218 degrees C) for mopping and 450 degrees F (232 degrees C) for mechanical spreaders. Asphalt applied within 25 degrees F (minus 3.9 degrees C) of the EVT, under normal environmental conditions; will provide a nominal 23 to 25 lbs (10.4 to 11.3 kg) of asphalt per 100 sq ft (9.3 sq ft).

The roofing contractor is responsible for maintaining the temperature tolerances at the kettle as well as the rooftop at all times.

Cold weather application can cause significant drops in the temperature of the asphalt during transport to the roof and points of application. Insulated equipment is recommended during cold weather applications.

All projects utilizing hot asphalt for insulation securement require written authorization, prior to the bidding process, by Seaman Corporation.

* 1. RELATED MATERIALS
     1. Wood Nailers: No. 2 or better construction grade lumber.
        1. Installation of other types of treated lumber should be verified with a design professional.

\*\* NOTE TO SPECIFIER \*\* Delete wood treatment options not required.

* + - 1. Wood treatment: Borate
      2. Wood Treatment: \_\_\_\_\_\_\_.
      3. Wood Treatment: As designated on the Drawings.
      4. Wood Treatment: As determined by the Architect.
      5. Creosote or asphaltic type preservatives are not acceptable.
      6. Top Nailer Thickness; 1.5 inches (38 mm) minimum.
  1. BASE SHEET

\*\* NOTE TO SPECIFIER \*\* Delete one of the two following paragraphs.

* + 1. Base Sheets: Not required.
    2. Base Sheets:
       1. Preapproved base sheet shall be installed, where specified or required, to provide a suitable surface for installation over or adhering the insulation or FiberTite-FB Roofing System.
       2. Acceptable products must be preapproved or approved in writing by Seaman Corporation and comply with the following minimal characteristics and classifications.

\*\* NOTE TO SPECIFIER \*\* Delete the characteristics and classifications options not required.

* + - * 1. FM approved, Minimum Class 1-90, wind uplift.
        2. ASTM D4601 Type II Asphalt Coated Glass-Fiber Base Sheet.
        3. ASTM D4897 Type II Asphalt Coated Glass-Fiber Venting Base Sheet.
        4. ASTM D6163 Type I, Grade S, FiberTite SBS Membrane.
        5. ASTM D6164 Type I, Grade S, FiberTite SBS Membrane.

1. EXECUTION
   1. GENERAL
      1. Authorized Applicator: Ensure strict compliance with FTR GS 01/21; General Guide Specifications for Installation of FiberTite Roofing Systems.
         1. Provide suitable substrate surface for proper installation of roofing system, roof insulation and specified components.
         2. Coordinate installation ensuring system remains watertight at end of each working day.
      2. Application of Seaman Corporation/FiberTite materials constitutes an agreement that Authorized Applicator inspected and found the substrate suitable for installation of roofing system.
   2. SUBSTRATE PREPARATION
      1. Authorized Applicator: Verify the deck condition and existing roof construction is suitable for the specified installation.
      2. Seaman Corporation requires fastener withdrawal values (pull out tests) on roofing projects to verify suitability of decking to accept a mechanically fastened insulation and membrane roof system.
      3. Examine surfaces for inadequate anchorage, low areas that will not drain properly, foreign material, ice, wet insulation, unevenness or any other defect which would prevent the proper execution and quality application roofing system as specified.
      4. Prepared substrate shall be smooth, dry, and free of debris and any other irregularities which would interfere with proper installation.
      5. The application of adhesives directly to structural concrete, gypsum or Tectum may require sealing or priming with an appropriate elastomeric or asphalt primer prior to application.
      6. Adhesives will not bond to wet structural concrete.
      7. Do not proceed with any part of the application until all defects and preparation work have been corrected and complete.
   3. SUBSTRATE PREPARATION (NEW CONSTRUCTION)

\*\* NOTE TO SPECIFIER \*\* Edit the following paragraphs as required. Include the substrates to which the insulation will be applied and delete those not required. Contact the manufacturer for surfaces not listed.

* + 1. Steel Deck:
       1. Conform to FM guidelines for Class-1 insulated steel deck construction.
       2. Construction: 22 gauge cold rolled steel sheets with factory G-90 galvanized coating.
          1. Decking less than 22 gauge may be considered for application by Seaman Corporation.
          2. Fastener Withdrawal Tests: Perform on "Non-FM Approved" steel decking. Determine suitability and appropriate fastener patterns and densities for mechanical attachment.
       3. Panel Profiles, (Ribs): Formed to minimize deflection and provide suitable strength and integrity to support anticipated structural live and dead loads.
       4. Installed complying with specified design criteria and local building code requirements.
    2. Structural Concrete (Poured and Precast):

\*\* NOTE TO SPECIFIER \*\* All Structural Concrete deck assemblies are required to include an approved vapor barrier installed directly to the structural concrete deck.

* + - 1. Decking: Install in conformance with industry standards, practices and precast panel manufacturer's installation requirements.
      2. Decking: Install providing positive slope and subsequent positive drainage.
      3. Finished Decking: Properly cured and dry, prior to installation of approved insulation.
      4. Finished Surfaces: Free of moisture, dust, loose debris and any other irregularity that may hinder proper performance of roofing system.
         1. Finished surfaces receiving roof system to be smooth and level without significant surface depressions or irregularities. Camber differentials greater than 3/16 inch (4.7 mm) must be leveled using a cementitious grout.
    1. Wood:
       1. Wood decking shall conform to FM guidelines for Class-1 impregnated wood decking. FM Class 1 decking consists of a minimum 2 inch (51 mm) thick wood plank or minimum 3/4 inch (19 mm) plywood.
       2. Wood decking that is less than 3/4 inch (19 mm) will be considered for application by Seaman Corporation. Fastener withdrawal tests shall be performed on all non-FM Approved wood decking (wood plank less than 2 inch (51 mm) thick or plywood less than 3/4 inch (19 mm) thick) to determine suitability and appropriate fastener patterns for the components of the new FiberTite Adhered Roofing Systems.
       3. Wood decking shall be sound, well-seasoned or kiln-dried and of proper thickness to accommodate design loads (including wind up-lift) according to specified design criteria and local building code requirements.
       4. Wood decking should be installed to provide positive slope and subsequent positive drainage of the new FiberTite Adhered Roofing Systems.
    2. Cementitious Fiber:
       1. Molded Panels: Install in accordance with manufacturer's installation requirements.
       2. Decking: Install to provide positive slope and subsequent positive drainage.
       3. Vertical alignment between adjacent panels to provide a uniform substrate with differences no greater than 0.125 inch (3 mm) and leveled with cementitious grout.
       4. Fastener Withdrawal Tests: Perform on cement fiber decking. Determine suitability and appropriate fastener patterns for components.
    3. Gypsum Concrete:
       1. Gypsum Decks: Installed in accordance with standard industry practice, the manufacturer's installation requirements and local building code requirements.
       2. Decking installed to provide positive slope and subsequent positive drainage.
       3. Gypsum Fill: Reinforced with wire mesh at a proper depth within the fill.
       4. Finished Decking: Maintain a minimum thickness (not including the form board) of 2 inches (51 mm).
       5. Fastener Withdrawal Tests: Performed on gypsum decking to determine suitability and appropriate fastener patterns for the components of the roofing system.
  1. SUBSTRATE PREPARATION (REROOFING)
     1. General:
        1. Authorized Applicator shall inform the building Owner or Owner's representative of any issues regarding the condition and structural integrity of the existing decking.
        2. Building Owner or Owner's Representative: Make and be responsible for determination as to the proper method of treatment or replacement.
        3. Reroofing applications require fastener withdrawal tests to substantiate proposed attachment patterns for the new mechanically fastened insulation systems and membranes.
        4. Reroofing applications requiring modification to the deck and insulation system should be installed to provide positive slope and subsequent positive drainage of the roofing system.
        5. Terminations must be constructed to prevent water from penetrating behind or beneath the roofing system. This includes water from above, beside, below and beneath the new system.

\*\* NOTE TO SPECIFIER \*\* Edit the following paragraphs as required. Include the substrates to which the insulation will be applied and delete those not required. Contact the manufacturer for surfaces not listed.

* + 1. Removal of Existing Roof Systems:
       1. Remove existing roofing materials, insulation, flashing, metal and deteriorated wood blocking and legally dispose of off-site.
       2. Remove only enough roofing to accommodate the day's work and ensure the exposed area can be made 100 percent watertight at the end of the day or prior to inclement weather.
    2. Recover of Existing Roof Systems:
       1. Remove loose aggregate and debris by power broom and vacuum and legally dispose of offsite.
       2. Remove and replace wet or deteriorated insulation and wood blocking.
       3. Clean exposed metal surfaces such as pipes, pipe sleeves, drains, duct work, etc., by removing loose paint, rust and any asphalt or coal tar pitch of any kind. Remove and properly discard lead sleeves at soil stacks.
    3. Steel and Wood Decks:
       1. Remove rotted and deteriorated decking and replace with like kind.
       2. Areas of structurally acceptable steel decking exhibiting slight surface rust must be properly cleaned, primed and painted prior to installing the approved insulation.
       3. Inspect decking for proper attachment and excessive deflection that would compromise uplift performance.
       4. Attachment and Deflection Deficiencies: Repaired and brought into compliance with current local building code requirements.
    4. Structural Concrete:

\*\* NOTE TO SPECIFIER \*\* All Structural Concrete deck assemblies are required to include an approved vapor barrier installed directly to the structural concrete deck.

* + - 1. Deteriorated Decking: Repaired or replaced with appropriate materials according to standard industry regulations and practices.
      2. Repair depressions and areas where reinforcing has become exposed.
      3. Installing Insulation System Using Approved Adhesive:
         1. Cracks and or Camber Differentials Greater Than 0.1875 inch (4.7 mm): Repaired using an appropriate cementitious grout or fill and feathered to promote a smooth transition.
         2. Joints Between Prestressed Panel Units and Over Bulb-Tees: Taped, stripped or grouted with an appropriate cementitious fill.
         3. Surface Irregularities: Leveled to ensure complete contact with the decking for insulation bonded in approved adhesives.
      4. Mechanically Attached Insulation: Camber differentials and surface irregularities may be up to 0.5 inch (13 mm).
  1. WOOD NAILERS
     1. Install treated lumber at same heights as insulation layer or adjacent construction plus or minus 0.25 inch (6 mm). Install continuous treated wood nailers at all perimeters, around roof projections and penetrations as shown in approved details.
     2. Wood Nailers Installed Directly on the Substrate: Carefully examine substrates to confirm the entire area provides a suitable fastening surface. Repair defects by appropriate trades prior to installation.
     3. Nailers (WxH): 3.5 x 1.5 inches (89 x 38 mm). Installed and anchored in such a manner to resist a force of 250 lbs per linear foot (2.919 kN per m) of wood blocking in any direction.
     4. Nailers along parapets, curbs and expansion joints are recommended for insulated decking. Consult FiberTite Construction Details or FiberTite Technical Customer Services for optional and alternate membrane termination and securement methods.

\*\* NOTE TO SPECIFIER \*\* Delete Base Sheet article if base sheet is not being used or edit paragraphs in article based on type of base sheet specified.

* 1. BASE SHEET
     1. General:
        1. Approved base sheet, when required or specified, shall be applied only to properly prepared and preapproved substrates.
        2. Install no more than can be covered or made 100 percent water tight during the same working day.
        3. Field pull-out tests must be performed for mechanically attached base sheets to determine fastener withdrawal performance.
        4. Base sheets shall be installed starting at the low point of the roof deck.
        5. Base sheet shall be side lapped, a minimum of 3 inches (76 mm), and properly shingled to shed water.
     2. Mechanically Attached Base Sheet:
        1. All base ply fasteners and stress plates for the mechanical attachment of base sheets shall be provided by Seaman Corporation.
        2. For 1-90 attachment, approved base sheet is secured to the deck in the field of the roof, with FiberTite Fasteners, spaced a maximum of 7 inches (178 mm) on center through the minimum 3 inch (76 mm) side laps and staggered at a maximum 7 inch (178 mm) on center in two rows within the field of the sheet.
        3. The number of fasteners securing the base sheet shall be increased over the field spacing by 70 percent in the perimeter and 160 percent in the corners of the roof area.
        4. Fastening increases can be obtained by adding rows of fasteners or additional fasteners along each row.

\*\* NOTE TO SPECIFIER \*\* Delete Article if vapor retarder is not being used or edit paragraphs in article based on type of vapor retarder specified.

* 1. VAPOR RETARDERS
     1. General:
        1. Approved vapor retarder, when required or specified, shall be applied only to properly prepared and preapproved substrates.
        2. Install no more than can be covered or made 100 percent water tight during the same working day.
        3. Vapor retarders shall be installed starting at the low point of the roof deck.
        4. Vapor retarder shall be side lapped, a minimum of 3 inches (75 mm), and properly shingled to shed water.
     2. VaporTite: Install one ply sheet over the entire prepared substrate. Shingle in direction of slope of roof to shed water on each area of roof.
     3. 6-mil Polyethylene: Loose lay polyethylene according to specifications and construction drawings. Lap polyethylene sheet minimum 3-in and tape laps.
     4. Hot Applied Vapor Retarder: Install one ply sheet in 25 lbs. per square (11.3kg) of ASTM D 312 Type III bitumen over the entire prepared substrate. Shingle in direction of slope of roof to shed water on each area of roof.
     5. Torch Applied Vapor Retarder: Install FiberTite SBS Torch Grade Base using a suitable heat source to adhere one ply to the entire surface. Shingle in direction of slope of roof to shed water on each area of roof.
     6. Cold Applied Vapor Retarder: Install one ply FiberTite SBS Base Sheet in FiberTite, cold applied, FTR SBS Adhesive over the entire prepared substrate. Shingle in direction of slope of roof to shed water on each area of roof.
     7. Two Ply Fiberglass Vapor Retarder: Install two fiberglass ply sheets in 25 lbs. per square (11.3kg) of ASTM D 312 Type III bitumen shingled uniformly to achieve two plies over the entire prepared substrate. Shingle in direction of slope of roof to shed water on each area of roof.
  2. ROOF INSULATION AND COVERBOARD INSTALLATION
     1. General:
        1. Insulation Boards: Adhered in approved adhesives. Maximum 4 x 4 ft (1219 x 1219 mm).
        2. Insulation Boards: Mechanically fastened. 4 x 4 ft (1219 x 1219 mm) or 4 x 8 ft (1219 x 2438 mm).
        3. Gypsum Coverboards: Adhered in approved adhesives. 4 x 4 ft (1219 x 1219 mm) or 4 x 8 ft (1219 x 2438 mm).
        4. Gypsum Coverboards: Mechanically fastened. 4 x 4 ft (1219 x 1219 mm) or 4 x 8 ft (1219 x 2438 mm).
        5. Roof Insulation and Coverboards: Installed where by the long dimension of the boards run in parallel alignment and the short dimensions are staggered.
        6. Install insulation with minimum joint dimensions and tightly butted where possible.
           1. Maximum Joint Widths: 3/8 inch (9.5 mm).
           2. Damaged Corners: Cut out and replaced with an insulation piece a minimum of 12 x 12 inches (305 x 305 mm). Pieces that are cut from larger panels and are smaller than one square foot are not acceptable.
        7. Install no more than can be covered during the same working day.
        8. Taper roof insulation to drain sumps using tapered edge strips.
           1. If insulation layer is 1.5 inches (38 mm) or less, taper 12 inches (305 mm) from drain bowl.
           2. If insulation thickness exceeds 1.5 inches (38 mm), taper 18 inches (457 mm) from drain bowl.
           3. Taper boards or pieces must be adhered or mechanically fastened with a minimum of two fasteners per board.
        9. When a cover board or multiple layers are installed each layer must be offset from the previous layer a minimum of 12 inches (305 mm) on center.
        10. At the end of each working day, provide a watertight cover on all unused insulation as to avoid moisture penetration.

\*\* NOTE TO SPECIFIER \*\* Edit the following paragraphs as required.

* + 1. Mechanically Attached Insulation:
       1. Apply insulation over properly prepared and pre-approved substrates, free of any debris, dirt, grease, oil or moisture.
       2. Fasteners and stress plates for the mechanical attachment of insulation and/or coverboard materials shall be FTR Fasteners as provided by Seaman Corporation.
       3. Fasteners and stress plates shall be FM approved for mechanical attachment of insulation and comply with FM Standard 4470 for corrosion resistance.
       4. Attachment 1-90 for insulation/coverboard in the field of the roof requires 1 fastener and stress plate per 2 sq ft (0.186 sq m) of insulation, when the top layer is less than 2 inches (51 mm) thick and the membrane is adhered.
          1. Perimeter areas require a 50 percent increase in the fastener density.
          2. Corner areas require a 100 percent increase in the fastener density.
       5. Attachment 1-90 for insulation and coverboard in the field of the roof requires 1 fastener and stress plate per 4 sq ft (0.372 sq m) of insulation, when the top layer is greater than or equal to 2 inches (51 mm) thick and the membrane is adhered.
          1. Perimeter areas require a 50 percent increase in the fastener density.
          2. Corner areas require a 100 percent increase in the fastener density.
       6. Roof insulation shall be fastened in accordance with the roof insulation manufacturer's recommendations and must be approved by the FTCS.
       7. Adhered roof systems incorporating mechanically attached insulations and coverboards may require mechanically fastened perimeter and corner membranes systems to comply with guidelines articulated in FM LPD 1-29.
       8. Fasteners shall be installed in accordance with manufacturer's recommendations, complying with minimum penetration requirements for specific deck types.
       9. Fasteners shall be installed using depth sensing tool attachments to ensure proper installation.
    2. Adhered Insulation:
       1. General approvals for attachment of insulation layers using adhesives in adhered roofing systems are restricted to non-steel deck projects. The insulation and coverboard manufacturer must recommend and approve the specific board and adhesive combination in writing prior to Seaman Corporation granting approval for this method of securement for steel deck applications.
       2. Polyurethane Adhesive:
          1. Applied only to properly prepared and preapproved substrates, free of any debris, dirt, grease, oil or moisture.
          2. Product Temperature at Application: 70 degrees F (21.1 degrees C) minimum.
          3. Not to be applied when surface or ambient temperatures are below 32 degrees F (0 degrees C) or above 110 degrees F (43.3 degrees C).
          4. Insulation: Fully bonded to substrate with a maximum board size of 4 x 4 ft (1219 x 1219 mm).
          5. Insulation to be set into a continuous 1/2 inch (13 mm) bead of adhesive at a minimum rate of 1 linear foot (305 mm) of adhesive for every 1 sq ft (0.093 sq m) of insulation board.
          6. Adhesive rates are to be increased in roof perimeter and corner zones according to specific project requirements and manufacturer's design recommendations.
          7. Place the boards onto the adhesive beads and walk on the boards, spreading the adhesive for maximum contact.
          8. A second walking will be required after 10 minutes to ensure maximum contact and bond strength.
  1. INSTALLATION OF MEMBRANES
     1. Quality Control:
        1. It is the responsibility of the Authorized Applicator to initiate and maintain a Quality Control program to govern all aspects of the installation.
        2. The project foreman and or supervisor will be responsible for the daily execution of the Quality Control program which will include but is not limited to the supervision, inspection and probing of all heat welded seams incorporated within roofing system.
        3. If inconsistencies in quality of the application of the composite, membrane or welds are found, work shall cease until corrective actions are taken to ensure the continuity the installation.
     2. General:
        1. Coordinate work ensuring that sequencing of installation promotes a 100 percent watertight installation at the end of each day.
        2. Roofing systems to be designed utilizing and determined to be in compliance with the procedures outlined within the current publication of ASCE 7. Alternative designs may be determined using the criteria within FM Approvals Loss Prevention Data.
        3. An Adhered FiberTite Roofing System may utilize 74-in or 100-in smooth-back roll goods.
        4. An Adhered FiberTite Roofing System may utilize 72-in fleece back roll goods.
        5. Restrictions regarding outside ambient air temperature are relative only to the exposure limits of the workers and adhesives when necessary.
        6. When using adhesives outside ambient air temperature shall be above 40 degrees F (4.4 degrees C). Curing or drying time of the adhesive will be affected by ambient temperatures and must be taken into consideration when determining flashing lengths.
        7. Humidity can affect the drying time of solvent borne adhesives or cause condensation to form on the newly applied adhesive.
        8. No moisture may be present on the adhesives prior to mating or application of membranes.
        9. Adhered membrane systems are to be broomed in place first and then completed by pressing the membrane into the adhesive with a weighted, foam covered lawn roller or 50 lb (22.7 kg) linoleum roller. Lawn rollers should be filled with between 6 and 8 gallons (22.7 and 30.3 L) of water.
        10. Roofing systems shall only be installed over properly prepared and sound substrates, free from excessive surface roughness, dirt, debris and moisture.

\*\* NOTE TO SPECIFIER \*\* Edit the following paragraphs as required.

* + 1. Adhered Membrane:
       1. The Authorized Applicator shall assume full responsibility for any and all irregularities, defects or quality issues that arise due to failure to following published "installation guidelines" for the proper installation of adhered membrane roofing systems.

\*\* NOTE TO SPECIFIER \*\* Nom. 36-mil FiberTite; nom 45-mil FiberTite-SM; nom 50-mil FiberTite-XT, nom 60-mil FiberTite-SM, nom 60-mil FiberTite-XT, 60-mil FiberTite XTreme.

* + - 1. FiberTite Membrane (Smooth-back) Adhered with FTR-190e Bonding Adhesive:
         1. Position the FiberTite Membrane and fold the sheet to allow a workable exposure of the underside of the sheet.
         2. Apply a 100 percent continuous coat of bonding adhesive to the exposed bottom side of the membrane and a mirrored area of the substrate.
         3. The amount of membrane and substrate that can be coated with adhesive will be determined by application method, ambient temperature, humidity and available manpower.
         4. Adhesive may be applied by spraying and back rolling or just rolling. Do not dump adhesive or pour from the cans.
         5. Roller applied adhesive shall utilize a solvent resistant 3/8-inch (9.5 mm) inch nap roller, spreading the adhesive to ensure a smooth, even 100 percent coverage of the substrate and membrane.
         6. Spray applied adhesive must be spread out by roller to ensure a smooth, even 100 percent coverage of the substrate and membrane with no voids, skips, globs, puddles or similar irregularities.

\*\* NOTE TO SPECIFIER \*\* A squeegee can be used to "flatten" or spread globs and puddles of adhesive.

* + - * 1. Adhesive coverage should average 100 square feet per gallon of applied adhesive with a 50 sq ft per gallon (1.23 sq m per L) net coverage, plus or minus 10 percent, for the membrane and substrate combined.
        2. Allow the adhesive to dry or cure to a point of being tacky, but not stringy to the touch on both surfaces. Do not allow adhesive to completely dry out on either surface.
        3. When sufficiently cured, carefully maneuver the glued portion of the membrane onto the glued substrate surface, avoiding any wrinkles or air pockets.
        4. Broom the adhered portion of the membrane to ensure full contact and complete the bonding process by firmly pressing the bonded membrane into place with a weighted, foam-covered, lawn roller.
        5. Repeat the process for the remaining unbonded portion of the membrane, lapping subsequent, adjacent rolls of membrane a minimum of 3 inches (76 mm), ensuring proper shingling of the membrane to shed water along the laps.
        6. No adhesive shall be applied to the lap seam areas of the membrane. Areas contaminated with adhesive are difficult to clean, will impair proper welding of the seams and require a membrane patch or strip.
        7. Do not use bad or marginal adhesives. Contact FTCS if the quality of the adhesive is suspect.
      1. FiberTite Membrane (Smooth-back) Adhered with Alpha-Tite Bonding Adhesive:

\*\* NOTE TO SPECIFIER \*\* Nom. 36-mil FiberTite; nom 45-mil FiberTite-SM; nom 50-mil FiberTite-XT, nom 60-mil FiberTite-SM, nom 60-mil FiberTite-XT, 60-mil FiberTite XTreme.

* + - * 1. Position the FiberTite Membrane and fold the sheet back upon itself to allow a workable exposure of the underside of the sheet.
        2. Apply a 100 percent continuous coat of bonding adhesive to the exposed bottom side of the membrane and a mirrored area of the substrate.
        3. The amount of membrane and substrate that can be coated with adhesive will be determined by application method, ambient temperature, humidity and available manpower.
        4. Adhesive is applied by rolling, using a 3/8-in (9.5 mm) nap roller.
        5. Do not dump adhesive or pour from the cans.
        6. Apply the adhesive to ensure a smooth, even 100 percent coverage of the substrate and membrane.
        7. Roll the adhesive to ensure a smooth, even 100 percent coverage of the substrate and membrane with no voids, skips, globs, puddles or similar irregularities.

\*\* NOTE TO SPECIFIER \*\* A squeegee can be used to "flatten" or spread globs and puddles of adhesive.

* + - * 1. Adhesive coverage should average 100 square feet per gallon of applied adhesive with a 50 sq ft per gallon (1.23 sq m per L) net coverage, plus or minus 10 percent, for the membrane and substrate combined.
        2. Allow the adhesive to flash off completely and become tacky.
        3. Allow a 15-20 minute flash time (at 70 degrees F and 50% relative humidity). Using the finger-push method, check the adhesive by applying pressure with a finger, pushing across the adhesive. The adhesive is to be tacky, but not string or be liquid.
        4. When the adhesive is sufficiently cured, carefully maneuver the glued portion of the membrane onto the glued substrate surface, avoiding any wrinkles or air pockets.
        5. On vertical surfaces, broom the adhered portion of the membrane to ensure full contact and complete the bonding process by firmly pressing the bonded membrane into place using a clean paint roller.
        6. On horizontal surfaces, broom the adhered portion of the membrane to ensure full contact and complete the bonding process by firmly pressing the bonded membrane into place with a weighted, foam-covered, lawn roller or 50 lb. (22.7 kg.) linoleum roller.
        7. Repeat the process for the remaining unbonded portion of the membrane, lapping subsequent, adjacent rolls of membrane a minimum of 3 inches (76 mm), ensuring proper shingling of the membrane to shed water along the laps.
        8. No adhesive shall be applied to the lap seam areas of the membrane. Areas contaminated with adhesive are difficult to clean, will impair proper welding of the seams and require a membrane patch or strip.
        9. Do not use bad or marginal adhesives. Contact FiberTite Technical Services if the quality of the adhesive is suspect.

\*\* NOTE TO SPECIFIER \*\* Nom. 36-mil FiberTite; nom 45-mil FiberTite-SM; nom 50-mil FiberTite-XT, nom 60-mil FiberTite-SM, nom 60-mil FiberTite-XT, 60-mil FiberTite XTreme with fleece backing.

* + - 1. FiberTite Fleece Back Membrane Adhered with FTR-290 Adhesive.
         1. For all FB membranes, unroll approximately 30 feet (9.14 m) of the FiberTite-FB membrane and position the roll over the properly installed and prepared substrate. Pull the tail back over the roll to expose a workable area; approx. 30 ft (9.14 m) of substrate. Apply a 100 percent continuous and uniform coat of FTR-290 adhesive to the substrate ahead of the roll.
         2. Apply a 100 percent continuous coat of adhesive to the substrate.
         3. The amount substrate that can be coated with a workable amount of adhesive will be determined by application method, ambient temperature, humidity and available manpower.
         4. To ensure proper application and curing of the adhesive, the outside air temperature shall be above 40 degrees F (4.4 degrees C) and rising.
         5. FTR-290 adhesive may be applied by spraying and back rolling or just rolling. Do not dump adhesive or pour from the cans.
         6. Roller applied adhesive shall utilize a solvent resistant 3/8-inch (9.5 mm) nap roller.
         7. Spray applied adhesive must also be rolled out by roller to ensure a smooth, even 100 percent coverage of the substrate with no voids, skips, globs, puddles or similar irregularities.
         8. Allow the solvents in the adhesive to slightly dissipate and cure only to the point that the adhesive is sticky but still wet Do not allow adhesive to dry.
         9. Adhesives shall not be installed over moist or wet substrates.
         10. Broom the adhered portion of the membrane to ensure full contact and complete the bonding process by firmly pressing the bonded membrane into place with a weighted, foam-covered, lawn roller.
         11. Repeat the process for the remaining unbonded portion of the membrane, lapping subsequent, adjacent rolls of membrane a minimum of 3 inches (76 mm), ensuring proper shingling of the membrane to shed water along the laps.
         12. No adhesive shall be applied to the lap seam areas of the membrane. Areas contaminated with adhesive are difficult to clean, will impair proper welding of the seams and require a membrane patch or strip.
         13. Do not use bad or marginal adhesives. Contact FTCS if the quality of the adhesive is suspect.

\*\* NOTE TO SPECIFIER \*\* Nom. 36-mil FiberTite; nom 45-mil FiberTite-SM; nom 50-mil FiberTite-XT, nom 60-mil FiberTite-SM, nom 60-mil FiberTite-XT, 60-mil FiberTite XTreme with fleece backing.

* + - 1. FiberTite Fleece Back Membrane Adhered in FTR-390 Adhesive.
         1. For all FB membranes, unroll approximately 30 feet of the FiberTite-FB membrane and position the roll over the properly installed and prepared substrate. Pull the tail back over the roll to expose a workable area, approx. 30 ft (9.1 m) of substrate.
         2. Apply a 100 percent continuous coat of adhesive to the substrate.
         3. The amount of substrate that can be coated with a workable amount of adhesive will be determined by application method, ambient temperature, humidity and available manpower.
         4. To ensure proper application and curing of the adhesive, the outside air temperature shall be 50 degrees F (10 degrees C) and rising with no chance of dropping below freezing during the subsequent 48-hour time-period.
         5. FTR-390 adhesive may be applied by using a heavy, 3/8-inch (9.5 mm) inch nap roller or brush. Do not dump adhesive or pour from the cans.
         6. Roll or brush a smooth, even coat of adhesive over the substrate, ensuring 100 percent coverage of the substrate.
         7. Allow the adhesive to become sticky but still wet. Do not allow a film to develop on the adhesive or allow adhesive to dry out.
         8. Water borne adhesives (FTR-390) can be directly affected by moisture. Water based adhesives shall not to be installed over or on substrates that are moist or wet or on systems or substrates that have residual moisture.
         9. Broom the adhered portion of the membrane to ensure full contact and complete the bonding process by firmly pressing the bonded membrane into place with a weighted, foam-covered, lawn roller.
         10. Repeat the process for the remaining u-bonded portion of the membrane, lapping subsequent, adjacent rolls of membrane a minimum of 3 inches (76 mm), ensuring proper shingling of the membrane to shed water along the laps.
         11. No adhesive shall be applied to the lap seam areas of the membrane. Areas contaminated with adhesive are difficult to clean, will impair proper welding of the seams and require a membrane patch or strip.
         12. Do not use bad or marginal adhesives. Contact FTS if the quality of the adhesive is suspect.

\*\* NOTE TO SPECIFIER \*\* Nom. 36-mil FiberTite; nom 45-mil FiberTite-SM; nom 50-mil FiberTite-XT, nom 60-mil FiberTite-SM, nom 60-mil FiberTite-XT, 60-mil FiberTite XTreme with fleece backing.

* + - 1. FiberTite Fleece Back Membrane Adhered in FTR-490 Adhesive:
         1. For FB membranes unroll approximately 30 feet (9.14 m) of the FiberTite-FB membrane and position the roll over the properly installed and prepared substrate. Pull the tail back over the roll to expose a workable area; approx. 30 ft (9.14 m) of substrate.
         2. Apply a 100 percent continuous coat of adhesive to the substrate.
         3. The amount of substrate that can be coated with a workable amount of adhesive will be determined by application method, ambient temperature, humidity, and available manpower.
         4. To ensure proper application and curing of the adhesive, the outside air temperature shall be above 40 degrees F (4.4 degrees C) and rising.
         5. FTR-490 adhesive is to be applied by spraying and back rolling or just rolling. Do not "dump" adhesive or pour from the cans.
         6. Roller applied adhesive shall utilize a solvent resistant 3/8-inch (9.5 mm) nap roller.
         7. Adhesive must be rolled out to ensure a smooth, even 100 percent coverage of the substrate with no voids, skips, globs, puddles, or similar irregularities.
         8. Allow the adhesive to set up only to the point that the adhesive is slightly cured but still wet. Do not allow adhesive to skin or dry out.
         9. Water borne adhesives (FTR-490) can be directly affected by moisture. Water based adhesives shall not to be installed over or on substrates that are moist or wet or on systems or substrates that have residual moisture.
         10. Broom the adhered portion of the membrane to ensure full contact and complete the bonding process by firmly pressing the bonded membrane into place with a weighted, foam-covered, lawn roller.
         11. Repeat the process for the remaining un-bonded portion of the membrane, lapping subsequent, adjacent rolls of membrane a minimum of 3 inches (76 mm), ensuring proper shingling of the membrane to shed water along the laps.
         12. No adhesive shall be applied to the lap seam areas of the membrane. Areas contaminated with adhesive are difficult to clean, will impair proper welding of the seams and require a membrane patch.
         13. Do not use bad or marginal adhesives. Contact FTS if the quality of the adhesive is suspect.

\*\* NOTE TO SPECIFIER \*\* Nom. 36-mil FiberTite; nom 45-mil FiberTite-SM; nom 50-mil FiberTite-XT, nom 60-mil FiberTite-SM, nom 60-mil FiberTite-XT, 60-mil FiberTite XTreme with fleece backing.

* + - 1. FiberTite Fleece Back Membrane Adhered in Polyset CR-20 Adhesive:
         1. For all FB membranes, unroll and position two rolls of FiberTite-FB over the properly installed and prepared substrate.
         2. Ensure rolls are straight and the minimum 3 inches (76 mm) overlap between rolls is maintained.
         3. Peel (butterfly) the rolls back in the long direction, half way upon themselves to expose the substrate and the underlying polyester fleece backing.
         4. Apply continuous spatter pattern of FiberTite CR-20 adhesive to the substrate between the rolls; dispensing the adhesive in a spattered pop-corn spray pattern.
         5. Spatter pattern shall achieve a nominal 80 percent coverage of textured coating at approximately 0.25 of an inche (6 mm) nominal thickness. The balance of the substrate will get coated as the adhesive spreads during the brooming and rolling process.
         6. Avoid spattering the back of the fleece-back membrane.
         7. Do not allow adhesive to contaminate membrane overlaps. Use a sheet of insulation board to mask the spray area if required along adjoining membrane areas.
         8. Overspray may be cleaned immediately with acetone while the adhesive is still wet.
         9. Fold and maneuver the FB membrane into the wet adhesive, (approximate open time for the adhesive is 5 to 10 minutes depending on environmental conditions) avoiding wrinkles or air pockets in the FB membrane.
         10. Broom the membrane into the wet adhesive and complete the bonding process by firmly pressing the bonded membrane into place with a weighted, foam covered lawn roller.
         11. Repeat the process for the remaining unbonded portion of the membrane, lapping subsequent, adjacent rolls of membrane a minimum 3 inches (76 mm), ensuring proper shingling of the membrane to shed water along the laps.
         12. No adhesive shall be applied to the lap seam areas of the membrane. Areas contaminated with adhesive are difficult to clean, may impair proper welding of the seams and may require a membrane patch or strip.
         13. ICP CR-20 adhesive is designed for use only when the substrate and ambient temperatures are a minimum 40 degrees F (4.4 degrees C) and rising and the chemical cylinders are at least 70 degrees F (21.1 degrees C).
         14. Do not use bad or marginal adhesives. Contact FTS if the quality of the adhesive is suspect.

\*\* NOTE TO SPECIFIER \*\* Nom. 36-mil FiberTite; nom 45-mil FiberTite-SM; nom 50-mil FiberTite-XT, nom 60-mil FiberTite-SM, nom 60-mil FiberTite-XT, and 60-mil FiberTite XTreme with fleece backing.

* + - 1. FiberTite Fleece Back Membrane Adhered in FiberTite FTR-601 PG Adhesive:
         1. For all FB membranes, unroll and position two rolls of FiberTite-FB over the properly installed and prepared substrate.
         2. Ensure rolls are straight and the minimum 3 inches (76 mm) overlap between rolls is maintained.
         3. Fold (butterfly) the rolls back in the long direction, halfway upon themselves to expose the substrate and the underlying polyester fleece backing.
         4. Apply continuous spatter pattern of FTR-601 PG adhesive to the substrate between the sheets of membrane; dispensing the adhesive in a spattered pop-corn spray pattern.
         5. Spatter pattern shall achieve a nominal 80 percent coverage of textured coating at approximately 0.25 of an inch (6 mm) nominal thickness. The balance of the substrate will get coated as the adhesive spreads during the brooming and rolling process.
         6. Avoid spattering the back of the fleece-back membrane.
         7. Do not allow adhesive to contaminate membrane overlaps. For example, use a sheet of insulation board to mask the spray area if required along adjoining membrane areas.
         8. Clean overspray immediately with acetone while the adhesive is still wet.
         9. Fold and maneuver the FB membrane into the wet adhesive, (approximate open time for the adhesive is 5 to 10 minutes depending on environmental conditions) avoiding wrinkles or air pockets in the FB membrane.
         10. Broom the membrane into the wet adhesive and complete the bonding process by firmly pressing the bonded membrane into place with a 50 lb (22.7 kg) linoleum roller of 50 lb (22.7 kg) weighted, foam covered lawn roller.
         11. Repeat the process for the remaining unbonded portion of the membrane, lapping subsequent, adjacent rolls of membrane a minimum 3 inches (76 mm), ensuring proper shingling of the membrane to shed water along the laps.
         12. No adhesive shall be applied to the lap seam areas of the membrane. Areas contaminated with adhesive require a membrane patch or strip.
         13. FTR-601 PG adhesive is designed for use only when the substrate and ambient temperatures are a minimum 32 degrees F (0 degrees C) and rising and the adhesive components are at least 70 degrees F (21.1 degrees C).
         14. Do not use bad or marginal adhesives. Contact FTS if quality of the adhesive is suspect.

\*\* NOTE TO SPECIFIER \*\* Nom. 36-mil FiberTite; nom 45-mil FiberTite-SM; nom 50-mil FiberTite-XT, nom 60-mil FiberTite-SM, nom 60-mil FiberTite-XT, and 60-mil FiberTite XTreme with fleece backing.

* + - 1. FiberTite Fleece Back Membrane Adhered in Hot Asphalt:
         1. For FB membranes, un-roll approximately 30 feet (9.1 m) of the FiberTite-FB membrane and position the roll over the properly installed and prepared substrate. Pull the tail back over the roll to expose a workable area, approx. 30 ft (9.1 m) of substrate.
         2. Apply a 100 percent continuous coat of adhesive to the substrate.
         3. Correct Equiviscous Temperature (EVT) must be maintained at point of application. Type III steep asphalt shall be applied within 25 degrees F (minus 3.9 degrees C) of the asphalt manufacturer's recommended EVT. If the manufacturer does not supply the EVT, Seaman Corporation recommends a temperature of 425 degrees F (218 degrees C) for mopping and 450 degrees F (232 degrees C) for mechanical spreaders.
         4. Asphalt is to be applied by either mopping or mechanical spreaders.
         5. Adhesive must be spread to ensure a smooth, even 100 percent coverage of the substrate with no voids, skips, globs, puddles, or similar irregularities.
         6. Do not allow asphalt to contaminate the lap seam areas of the membrane. Contaminated areas will inhibit proper welding of the seams.
         7. Carefully maneuver the membrane into the adhesive on the substrate surface, avoiding any wrinkles or air pockets.
         8. Broom the adhered portion of the membrane to ensure full contact and complete the bonding process by firmly pressing the bonded membrane into place with a weighted, foam-covered, lawn roller.
         9. Repeat the process for the remaining un-bonded portion of the membrane, lapping subsequent, adjacent rolls of membrane a minimum of 3 inches (76 mm), ensuring proper shingling of the membrane to shed water along the laps.
         10. No adhesive shall be applied to the lap seam areas of the membrane. Areas contaminated with adhesive are difficult to clean and will impair proper welding of the seams and require a membrane patch.
    1. Peel Stops for Adhered Roofing Systems:
       1. Seaman Corporation's standard Terms and Conditions for commercial warranties list 60 mph (96.6 kph) wind velocity as the first exclusion for wind events. Perimeter assurance or restraint must be provided for any modification to the standard commercial warranty.
       2. Assurance or restraint is accomplished using rows of fasteners, installed parallel to exterior roof edges at a prescribed interval and fastener spacing to create a peel stop during a significant wind event.
       3. Peel stops must be mechanically attached into or through the structural decking with rows of Magnum stress plates and fasteners, (or authorized alternate) at 12 inches (305 mm) on center. The peel stop is sealed by heat welding a nominal 6-inch strip of membrane over the fasteners.
       4. Lightweight insulating concrete is generally not considered a structural component and peel stop fastening must penetrate through the lightweight into the structural component.
       5. Peel Stops are only required by Seaman Corporation on adhered projects requiring peak gust wind speed warranties greater than the default 60 mph (96.6 kph) articulated in the standard commercial warranty.
       6. Although not required for standard commercial warranties, it is recommended that projects subject to the possibility of a significant wind event (hurricanes) should incorporate the use of peel stops in the roof system design.
       7. The following are "general" guidelines for the use and inclusion of peel stops in adhered FiberTite Roofing Systems. Peel stop intervals are based upon the field pressure and are as follows:
          1. Design Velocity Pressure less than Minus 45 psf (2.154 kN per sq m), FM 1-90: No peel-stop.
          2. Design Velocity Pressure greater than Minus 45 psf (2.154 kN per sq m), FM 1-90 but less than or equal to Minus 52.5 psf (2.514 kN per sq m), FM 1-105: One peel-stop at 18 inches (457 mm) from all edges.
          3. Design Velocity Pressure greater than Minus 52.5 psf (2.514 kN per sq m), FM 1-105 but less than or equal to Minus 60 psf (2.873 kN per sq m), FM 1-120: One peel-stop at 18 inches (457 mm) from edges and the second peel stop at 3 feet (914 mm) from edges.
          4. Design Velocity Pressure greater than minus 60 psf (2.873 kN per sq m), FM 1-120 but less than or equal to Minus 67.5 psf (3.232 kN per sq m), FM 1-135. One peel-stop at 18 inches (457 mm) from edges and the second peel stop at 3 feet (914) from edges and the third peel stop at 6 feet (1829 mm) from edges.
          5. Buildings with Non-Class 1 decking (i.e. lightweight, wood, gypsum, and cementitious wood fiber) do not default to the above requirements and require additional evaluation and engineering review by FTS.
    2. Welding:
       1. General:
          1. Field seams exceeding 10 ft (9.3 m) in length shall be welded with an approved automatic welder.
          2. Field seams must be clean and dry prior to initiating any field welding.
          3. Remove foreign materials from the seams (dirt, oils, etc.) with Acetone or authorized alternative.
          4. Use clean white cotton cloths and allow approximately five minutes for solvents to dissipate before initiating the automatic welder. Do not use denim or synthetic rags for cleaning.
          5. Welding shall be performed only by qualified personnel to ensure the quality and continuity of the weld.
          6. Contaminated areas within a seam will inhibit proper welding and will require a membrane patch or strip.
       2. Hot Air Hand Welding:
          1. The lap or seam area of the membrane may be intermittently tack welded to hold the membrane in place.
          2. The back, interior edge of the membrane shall be welded first, with a thin, continuous weld to concentrate heat along the exterior edge of the lap during the final welding pass.
          3. The nozzle of the hand-held hot air welder shall be inserted into the lap at a 45-degree angle to the lap. Once the polymer on the material begins to flow, a hand roller shall be used to apply pressure at a right angle to the tip of the hand welder. Properly welded seams shall utilize a 1.5 inch (38 mm) wide nozzle, to create a homogeneous weld, a minimum of 1.5 inch (38 mm) in width.
          4. Smaller nozzles may be used for corners, and other, field detailing, maintaining a minimum 1-inch (25 mm) weld.
       3. Automatic Hot Air Machine Welding:
          1. Proper welding of the FiberTite Membrane can be achieved with a variety of automatic welding equipment. Contact FTCS for specific recommendations.
          2. Follow manufacturers' instructions for safe operation of the automatic welder.
          3. Follow local code requirements for electric supply, grounding and surge protection.
          4. The use of a dedicated, portable generator is highly recommended to ensure a consistent electrical supply, without fluctuations that can interfere with weld consistency.
          5. Properly welded seams shall utilize a 1.5 inch (38 mm) wide nozzle, to create a homogeneous weld, a minimum of 1.5 inch (38 mm) in width.
    3. Installation of Simulated Metal Roofing Profile:
       1. Preparation:
          1. The surface of the FiberTite fleece back membrane shall be clean and dry for the proper installation of the SMRP.
          2. The SMRP shall be installed in equidistant and parallel lengths.
          3. Best spacing of the SMRP is determined by using incremental distances between fleece back membrane laps.
          4. Installation of SMRP at overlaps will be nominally spaced at 69-inch (1753 mm) intervals.
          5. Cut and preassemble SMRP to desired lengths.
          6. Segments of SMRP can be joined using a plastic dowel.
          7. Using washable chalk, snap-mark lines at predetermined specified intervals between the overlaps.
          8. Number of Interval Segments:

SMRP's Between Overlaps: 1.

Nominal "On Center" Distance Between SMRP's: 34.50 inch (876 mm).

SMRP's Between Overlaps: 2.

Nominal "On Center" Distance Between SMRP's: 23.00 inch (584 mm).

SMRP's Between Overlaps: 3.

Nominal "On Center" Distance Between SMRP's: 17.25 inch (438 mm).

* + - 1. Application:
         1. Unroll the FiberTite Rib Profile and place next to the chalk line or membrane overlap edge.
         2. Position SMRP so the bottom of the SMRP is lying flat and free to tension.
         3. Once Aligned, adhere the beginning 2 to 4 inches (51 to 102 mm) of the SMRP to the fleece back roofing membrane.
         4. Pull the SMRP taught, aligned to the chalk like to keep the profile straight for the welder.
         5. Using a hot air apparatus, adhere the SMRP's continuous, straight and parallel.
         6. Do not overheat the fleece back membrane while adhering the heat activated adhesive strip on the SMRP.
         7. Do not install the SMRP on or over welded overlaps.
         8. Do not rush the heat activation process and take time necessary to ensure aesthetics are achieved.
         9. SMRP splice joints and exposed ends can be detailed by using and welding small strips and pieces of the same colored membrane.
    1. Inspection:
       1. The job foreman or supervisor shall initiate daily inspections of all completed work which shall include, but is not limited to, the probing of all field welding with a dull pointed instrument to assure the quality of the application and ensure that any equipment or operator deficiencies are immediately resolved.
       2. Ensure all aspects of installation (sheet layout, attachment, welding, flashing details, etc.) are in strict accordance with the most current FiberTite Roofing Systems Specifications and Details.
       3. Excessive patching of field seams because of inexperienced or poor workmanship will not be accepted at time of Final Inspection for Warranty Acceptance.
       4. Any deviation from pre-approved specifications or details requires written authorization from the FTS prior to application to avoid any warranty disqualification.
       5. It is the Contractor, job foreman, and supervisor, or quality control personnel's responsibility to perform a final self-inspection on all seams prior to requesting the inspection for warranty issuance by the FTS.
    2. T-Joint Cover Installation:
       1. Installation of T-Joint Covers is mandatory on FiberTite Membrane Systems nominal 50 mil (1.3 mm) or greater, vegetated roofs, ballast roofs or where T-Joints have not been properly sealed to exhibit a minimum 1.5 inch (38 mm) defined crease along the T-Joint.
       2. Install T-Joint Covers, centered and aligned so edges are parallel to roof system seams.
       3. The T-Joint Cover shall be 100 percent welded.
  1. FLASHING
     1. Clean vents, pipes, conduits, tubes, walls, and stacks to bare metal. Protrusions must be properly secured to roof deck with approved fasteners. Remove and discard lead, pipes and drain flashing. Flash penetrations according to approved details.
     2. Remove loose or deteriorated cant strips and flashings.
     3. Flash curbs, parapets and interior walls in strict accordance with approved FiberTite details.
     4. All flashing shall be adhered to properly prepared, approved substrates with FTR-190e adhesive or FTR-201 mastic applied in sufficient quantity to ensure total adhesion.
     5. The base flange of all membrane flashing shall extend out on to the plane of the deck, beyond the wood nailers to a maximum width of 8 inches (203 mm).
     6. Vertical flashing shall be terminated no less than 8 inches (203 mm) above the plane of the deck with approved termination bar and counter-flashing or metal cap flashing.
     7. When using FTR-201 as the adhesive, vertical wall flashing termination shall not exceed 40 inches (1016 mm) without supplemental mechanical attachment of the flashing between the deck and the termination point of the flashing.
     8. Complete all inside and outside corner flashing details with FiberTite preformed corners or an approved field fabrication detail.
     9. Probe all seams with a dull, pointed probe to ensure the weld has created a homogeneous bond.
     10. Install penetration accessories in strict accordance with approved details. Ensure penetration accessories have not impeded in any way the working specification. Refer to the related trade for the technical specification.
  2. METAL FLASHING
     1. All perimeter edge details are to be fabricated from FiberClad Metal or utilize a prefabricated FiberTite Fascia System.
     2. Ensure all fascia extend a minimum of 2 inches (51 mm) lower than the bottom of the wood nailers.
     3. Fasten all metal flashing to wood nailers or approved substrate with approved fasteners 8 inches on center.
     4. Break and install FiberClad metal in accordance with approved details, ensuring proper attachment, maintaining 1/2-inch (13 mm) expansion joints and the installation of a minimum 2-inch bond breaker tape prior to sealing the joint.
     5. Solidly weld FiberClad expansion joints with a 6-inch (152 mm) strip of FiberTite membrane welded to the Fiber Clad, covering the bond breaker tape (cover plates are optional).
     6. Roof Drains:
        1. Flash all roof drains in accordance with FiberTite roof drain details.
        2. Replace all worn or broken parts that may cut the FiberTite membrane or prevent a watertight seal. This includes the clamping ring and strainer basket.
        3. Replace all drain bolts or clamps used to hold the drain compression ring to the drain bowl.
        4. FiberTite non-reinforced 60 mil (1.52 mm) membrane shall be used for flashing the drain assembly. Drain assemblies and basins or sumps must be free of any asphalt or coal tar pitch residue prior to installation.
        5. The drain target sheet should be sized and installed to provide for a minimum of 12 inches (203 mm) of exposed 60 mil (1.52 mm) on all sides of the drain.
     7. Forti-Lock Liquid Flashing
        1. For aberrant penetrations and pitch pan avoidance, follow FiberTite Forti-Lock guidelines and details for substrate preparation and installation of Forti-Lock liquid flashing on pre-authorized aberrant penetrations.
           1. Forti-Lock Metal Primer: is required for all metal tie-ins and applications with high mechanical stresses, on detail work with small contact areas, metal components with large linear thermal expansion or edge metal terminations.
     8. Pitch Pans:
        1. Every reasonable effort shall be made to eliminate the need for pitch pans including the removal of existing pans. Contact FTCS for specific design alternatives and recommendations.
        2. In the event of no alternative, fabricate pitch pans from FiberClad metal, installed in accordance with FiberTite details, ensuring proper attachment, maintaining a minimum of 2-inch (51 mm) clearance around the penetration.
        3. Pitch Pans shall be filled with non-shrinking grout to within 1 inch (25 mm) of the top of the pan. Allow the grout to dry and fill remainder of the pan with FTR-SLS pourable sealant.
        4. Pitch Pans and the sealant will require periodic maintenance by the building Owner's maintenance personnel.
  3. EXPANSION JOINTS
     1. Flash all expansion joints in accordance with authorized details. Fasten all expansion joint material according to FiberTite specifications. Ensure the expansion material has sufficient material to expand to the widest point in expansion without causing undue stress on the expansion joint material.
     2. If the expansion joint is a preformed system, the manufacturer, description and a drawing illustrating the method of installation must be included when the (FTR-PIN) is submitted.
  4. SEALANTS
     1. Apply authorized sealants to all surface mounted reglets and per project requirements. Sealants are to shed water. Follow all manufacturer's instructions and installation guides.
     2. Use primer when recommended by the manufacturer.
     3. Sealants will require periodic maintenance by the building Owner's maintenance personnel.
  5. TEMPORARY SEALS
     1. At the end of each working day or at the sign of rain, install temporary, 100 percent watertight seals where the completed new roofing adjoins the uncovered deck or existing roof surface.
     2. The Authorized Applicator shall create and maintain the temporary seal in such a manner to prevent water from traveling beneath the new or existing roof system.
     3. The use of plastic roofing cement is permissible when sealing to an existing built up roof.
     4. If water is allowed to enter beneath the newly completed roofing, the affected areas shall be removed and replaced at no additional expense to the building Owner.
     5. Prior to the commencement of work, cut out and remove all contaminated membrane, insulation, roof cement or sealant and properly dispose of offsite.
  6. WALKWAYS
     1. FiberTite walkways and protection pads shall be installed at staging areas for rooftop equipment maintenance or areas subject to regular foot traffic.
     2. Walkway Installation:
        1. Roofing membrane to receive walkway material shall be clean and dry.
        2. Cut and position the FiberTite walkway material as directed by the specifications or agreement.
        3. Hot air weld the entire perimeter of the walk way to the previously cleaned FiberTite roofing membrane. Avoid excessive heating of the walk way material to prevent scorching the underlying roofing membrane.
     3. Protection Pad Installation:
        1. Roofing membrane to receive protection pad material shall be clean and dry.
        2. Prior to installing the FiberTite protection pads, 0.25 x 24 x 48 inch (6 x 610 x 1219 mm), weld a 6 x 6 inch (152 x 152 mm) strip of FiberTite membrane to each of the four corners of the back side of the pad. Position the strips in such a way that they overhang the edge of the pad a minimum of 2 inches (51 mm) around the 90 degree corner.
        3. Position the FiberTite protection pads as directed by the specifications or agreement and weld the visible portion of the previously applied stripping to the FiberTite roofing membrane.
  7. LIGHTNING PROTECTION
     1. The installation of lightning protection must be coordinated with the Authorized Applicator, certified lightning contractor and the building Owner.
     2. The lightning protection must be installed in such a manner that base plates, air terminals and cables do not penetrate the roofing membrane without the use of pre-approved flashing details.
     3. Cables and air terminals may be attached to the membrane using base plates and an approved construction adhesive. Contact FTS for specific adhesive recommendations.
     4. Recommendations regarding the selection of adhesives or alternative affixing of lightning protection systems to the FiberTite membrane does not in any way imply a warranty covering their performance or ability of the adhesives to remain affixed to the FiberTite membrane.
  8. COMPLETION
     1. Remove all debris, excess materials and scrap of any kind from the roof and surrounding premises prior to demobilization.
     2. Inspect all field welds, detailing and terminations to ensure a 100 percent the watertight installation.
  9. FINAL WARRANTY FOR INSPECTION
     1. Upon completion of the project, the Authorized Applicator shall register the completion of the project and with FiberTite Technical Services.
     2. Upon receipt of the notice of completion, an FTS representative will schedule an inspection with a representative of the Authorized Applicator to thoroughly review the installation and verify compliance with Seaman Corporation specifications.
     3. Any corrections or modifications necessary for compliance with the specifications and acceptance for warranty (punch list) will be noted on the Final Inspection for Warranty Form.
     4. Upon completion of all punch list items and final acceptance of the installation, a warranty as authorized by the approved Seaman Corporation/FiberTite Project Registration will be issued.

END OF SECTION