FiberTite Roofing Systems

By Seaman Corporation

FTR AD08/17

General Guide Specification for Installation of Adhered FiberTite® Roofing Systems

FTR AD08/17 is provided as a general foundation for the design and installation of a quality, high performance adhered FiberTite Roofing Systems.

PART 1 – GENERAL

1. SUMMARY

A. Scope

1. Furnish and install an adhered FiberTite Roofing System as manufactured and supplied by:

   Seaman Corporation
   1000 Venture Blvd.
   Wooster, Ohio 44691
   Tel.: 1-800-927-8578
   Fax: 1-800-649-2737

B. Special 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 according to the guidelines set forth herein.
2. All applications and project specifications require review by FiberTite Technical Customer Services (FTCS) for acceptance prior to any commitment to provide a commercial warranty.
3. Seaman Corporation FiberTite Pre-installation Notice (FTR-PIN), must be completed, signed by an authorized roofing contractor, submitted to and approved by FTCS before any consideration for warranty and/or the release of any materials can be authorized.

C. Special Design Considerations

1. The building owner may be required to submit an engineering study, or Statement of Sound Roof Structure, to FTCS, indicating that the structure is able to accommodate additional live and/or dead loads including snow and water retention.
2. Moisture conditions in existing roof(s), new structural concrete or new lightweight insulating concrete which would impair or prohibit the desired performance of the new roof system.
3. Coal tar recover and/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.

D. Environmental Considerations

1. Severe environmental exposure [e.g. coastal or high wind area(s)].
2. Chemical discharge not listed on the Seaman Corporation/FiberTite chemical resistance publication.
3. Environmental conditions such as fog, dew, rain or snow and/or 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. All adhesives can be described as temperamental. The contractor must be aware of all potential environmental variables when installing adhered roofing systems.
6. Pay particular attention to and follow all adhesive storage and application precautions/guidelines.
7. Do not apply/use waterborne adhesives (FTR-490 or FTR 390) if the ambient air temperature is expected to drop below 32°F (0°C) within 72 hours of application.
8. The use of polystyrene insulation/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.

2. FIBERTITE ROOFING SYSTEMS (FTR) REFERENCES

A. FiberTite Construction Details

B. FiberTite Foreman's Manual

C. FTR GS08/17

D. FiberTite Technical Bulletins

3. QUALITY ASSURANCE

A. FiberTite Roofing Systems shall be installed only by a roofing contractor, authorized by Seaman Corporation to install FiberTite Roofing Systems prior to bid and/or contract award. Herein, the term Authorized FiberTite Roofing Contractor is synonymous with authorized, roofing contractor and/or contractor.

B. Roofing contractor's key personnel shall have received specialized training in the installation of FiberTite Roofing Systems by Seaman Corporation.

C. FiberTite Roofing Systems shall be installed in accordance with the most current guide specifications (FTR AD08/17) and details as amended and/or authorized by FTCS for specific project requirements.

D. There shall be no deviations from approved contract specifications or shop drawings without prior written approval by the owner/owner representative and FTCS.

E. Unauthorized deviations may subject the roof system to warranty ineligibility.

F. Any and all 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.

G. Upon completion and certification by the contractor that a quality installation has been completed in accordance with the approved contract specifications and all field welds have been probed and inspected, a quality assurance inspection of the roof system shall be performed by FTCS for acceptance and approval.

H. All field seams shall be visible and available to FTCS at the time of final inspection.

4. SUBMITTALS

A. The following information shall be submitted to FTCS for review before warranty consideration, material shipment or acceptance can be confirmed.

1. Complete copy of project architectural specifications or roofing contractor'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.

B. At the time of contract award, the roofing contractor shall submit to the owner/owner's representative the following:

1. Most recent published technical literature and guide specifications issued by FTCS.
2. Roofing Contractor's approved copy of submittal form FTR-PIN.
3. Dimensioned shop drawings, including roof plan detailing perimeter enhancement, flashing methods, terminations and acceptance by FTCS.
4. Written approval from FTCS confirming any accessories submitted, not manufactured or expressly approved in FiberTite literature are acceptable and compatible with the proposed FiberTite Roofing System.
5. Material Safety Data Sheets (MSDS) relating to all products, chemicals and solvents.
6. Certification that the system specified complies with all identifiable building code and insurance requirements.

5. DELIVERY & STORAGE

A. 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.

B. Select and operate material handling equipment in a safe manner, guarding against damage to existing construction or newly applied roofing and conforming to manufacturer's recommendations of handling and storage.

C. All rolls of membrane shall be stored, lying down, elevated above the roof deck and completely protected from moisture with tarpaulins. Manufacturer’s packaging is not considered adequate for outdoor storage.

D. Insulation and cover board materials shall be elevated on pallets and fully protected from moisture with tarpaulins. Manufacturer's packaging is not considered adequate protection from moisture.

E. All adhesives and sealants shall be safely stored between 50° F and 80°F prior to use.

F. Flammable materials shall be stored in a cool, dry area away from sparks and open flames. Follow all precautions as outlined in manufacturer's Material Safety Data Sheets.

G. Materials, having been determined by the owner/owner's representative to be damaged, shall be immediately removed from the construction site and replaced at no cost to the owner.

6. JOB CONDITIONS

A. Safety

1. Take all necessary precautions regarding worker health and safety when using solvents and adhesives
2. Worker safety is paramount when working on steep slopes.
3. FiberTite is slippery when wet, exhibits dew, frost, ice or any other form of moisture.
4. Comply with all OSHA requirements for roof construction and fall protection where required.
5. Store flammable liquid and materials away from open sparks, flames and extreme heat.
6. Take necessary precautions when using solvents and adhesives near fresh air intakes.
7. Daily site cleanup shall be performed to minimize debris and hazardous congestion.

B. Protection

1. Schedule installation sequence to limit access and utilization of the newly installed membrane for material storage, construction staging, mechanical and/or excessive foot traffic.
2. Provide proper protection on all newly completed roofing to avoid damage to the new roofing system.
3. Traffic should be minimized on a freshly laid roof.
4. Protect building walls, rooftop units, windows and other components during installation.

C. 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/or the quality of the finished installation. Contact FTCS for recommendations and acceptable tolerances.
2. Daily production schedules of new roofing shall be limited to only that which can be made 100% watertight at the end of the day, including all 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. All construction debris shall be removed from the construction site and legally dispose of offsite.

7. COORDINATION

A. Prior to installation of materials, a pre-roofing conference shall be held with the roofing contractor, and owner/owner's representative(s) to discuss the specified roofing system, coordinate its proper application and the expectations of all parties involved. The authorized roofing contractor and the owner/owner's representative shall notify all parties a minimum of fourteen days prior to the meeting.

B. 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.

C. FTCS shall be available to make recommendations necessary to ensure compliance with project specifications and specification alternatives due to unforeseen job conditions.

D. 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.

8. WARRANTY

A. Inspections

1. A FiberTite Technical Customer Service Representative shall inspect the completed FiberTite Roofing installation, and upon acceptance, Seaman Corporation shall issue the preauthorized warranty, subject to the terms and conditions of the sample warranty and contract documents.

B. Available Warranties

1. Seaman Corporation offers the following FiberTite Roofing System warranties:
   a. Material Warranty provides the building owner protection against the cost of repairing defects in the membrane only. This warranty is offered at no cost to the owner.

b. Standard Warranty provides the building owner protection against the cost of repairing leaks as a direct result of either defects in the membrane or the workmanship involved in its installation for a period of 10 years. There is a nominal premium.

c. Extended Warranty provides the building owner protection against the cost of repairing leaks as a direct result of either defects in the membrane or the workmanship involved in its installation beyond 10 years. There is an additional premium.

C. Maintenance

1. Along with the issuance of the warranty, a set of instructions shall be included detailing preventative maintenance requirements on the part of the building owner and noting a list of harmful substances which may damage the FiberTite roofing membrane.

PART 2 – PRODUCTS

2.1 GENERAL

A. All products and components for the FiberTite Roofing System shall be supplied by Seaman Corporation.

B. Components other than those manufactured and/or supplied by Seaman Corporation shall be submitted for review, prior to ordering. Any product(s) not specifically authorized in writing for the project by Seaman Corporation, shall be considered unacceptable and their performance excluded from the warranty.

C. FiberTite Roofing Systems may be installed over or directly to preapproved insulation, cover board or composites thereof. Contact FTCS for additional information regarding compatible substrates.

2.2 MEMBRANE

A. FiberTite Membrane

FiberTite is a nominal 36-mil ketone ethylene ester (KEE) membrane, reinforced with a 5.0-oz yd² knitted polyester fabric as manufactured by Seaman Corporation, under the trade name FiberTite, conforming to the physical properties as outlined in the associated data sheet. FiberTite exceeds all requirements outlined in ASTM D 6754 Standard Specification for Ketone Ethylene Ester (KEE) Sheet Roofing.

B. FiberTite-XT Membrane

FiberTite-XT is a nominal 50-mil ketone ethylene ester (KEE) membrane, reinforced with a 6.5-oz yd² knitted polyester fabric as manufactured by Seaman Corporation, under the trade name FiberTite-XT, conforming to the physical properties as outlined in the associated data sheet. FiberTite-XT greatly exceeds all requirements outlined ASTM D 6754 Standard Specification for Ketone Ethylene Ester (KEE) Sheet Roofing.

C. FiberTite-SM Membrane

FiberTite-SM is a nominal 45-mil ketone ethylene ester (KEE) membrane, reinforced with a 5.0-oz yd² knitted polyester fabric as manufactured by Seaman Corporation, under the trade name FiberTite-SM, conforming to the physical properties as outlined in the associated data sheet. FiberTite-SM exceeds the physical property requirements and the surface compound meets the polymer content definitions as outlined in ASTM D 6754 Standard Specification for Ketone Ethylene Ester (KEE) Sheet Roofing.

D. FiberTite-XTreme Membrane

FiberTite-XTreme is a nominal 60-mil ketone ethylene ester (KEE), reinforced with a 12.5 oz yd² woven polyester mat, as manufactured by Seaman Corporation, under the trade name FiberTite-XTreme, conforming to the physical properties as outlined in the associated data sheet. FiberTite-XTreme greatly exceeds the physical property requirements and the surface compound meets the polymer content definitions as outlined in ASTM D 6754 Standard Specification for Ketone Ethylene Ester (KEE) Sheet Membranes.

E. FiberTite-FB Membrane

FiberTite, FiberTite-XT and FiberTite-SM are all available in fleece back versions for adhered roofing. FiberTite-FB membranes have a heat bonded 4 oz. polyester backing, as manufactured by Seaman Corporation, under the trade name FiberTite-FB, conforming to the physical properties as outlined in the associated data sheet(s). FiberTite-FB exceeds the physical property requirements and definitions as outlined in ASTM D7654 Standard Specification for Ketone Ethylene Ester (KEE) Sheet Roofing per the individual sub-assembly/base membrane listed above.

F. Flashing Membrane

Nominal 36-mil FiberTite, 45-mil FiberTite-SM, 50-mil FiberTite-XT, or 45-mil FiberTite Brite membrane shall be used for all respective roofing system flashing requirements to match the field membrane and warranty expectations selected for the roofing system.

G. Acceptable Substrate(s)

1. Authorized rigid insulation or cover board
2. Structural Concrete, insulated or non-insulated*
3. Insulated Steel Decking
4. Existing smooth surfaced and/or granulated bituminous roof or existing single ply roof membrane*
5. Existing aggregate surfaced bituminous roof with authorized insulation or cover board
6. Exterior grade plywood; insulated or non-insulated*
7. Cementitious fiber or Gypsum, insulated or non-insulated*
8. Cellular, lightweight insulating concrete*
9. Authorized base sheet with an adhered insulation/coverboard assembly

(*) A slip sheet or separation layer is recommended depending upon system type. The requirement for including and/or the selection of an appropriate slip sheet or base sheet will be determined by the system selected, surface texture of the substrate, environmental and/or fire classification requirements of the project roof assembly.

2.3 RELATED MATERIALS "BY SEAMAN CORPORATION"

The following product(s)/material(s) shall be supplied by Seaman Corporation.

A. FTR Adhesives

Adhesives, supplied by Seaman Corporation have been specially formulated for FiberTite Roofing Systems.

NOTE: Solvent borne adhesives are not compatible with polystyrene insulation. Application technique and coverage rates will vary according to substrate and environmental conditions.

1. **FTR-190e Bonding Adhesive**

   A VOC compliant solvent borne, contact (two-sided) bonding adhesive, designed for bonding non-fleece back FiberTite membranes to properly prepared and preauthorized horizontal and vertical substrates.

2. **FTR-290 Adhesive**

   A 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.

3. **FTR-390 Adhesive**

   A 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 preauthorized horizontal substrates.

4. **FTR-490 Adhesive**

   A polymeric water borne, VOC compliant adhesive, one side application (substrate only), designed for bonding FiberTite-FB (fleeceback) to properly prepared and preauthorized horizontal substrates.

5. **ICP CR-20 Adhesive**

   A dual component elastomeric polyurethane froth adhesive designed for bonding Fleece Back FiberTite membranes (spatter application) to properly prepared and preauthorized horizontal substrates.

6. **FTR #201 Mastic**

   A trowel grade elastomeric adhesive/sealant used to adhere FiberTite flashing membranes to preapproved vertical substrates.

B. FTR Fasteners

1. **FiberTite MAGNUM Series**

   To secure FiberTite Membranes to steel, wood and structural concrete decks. A #15-13, buttress threaded, #3 Phillips head fastener constructed of case hardened carbon steel with a reduced diameter drill point and corrosion resistant coating.

2. **FiberTite-HD**

   To secure insulation to steel, wood and structural concrete decks. A #14-13, heavy duty threaded steel #3 Phillips truss, self tapping corrosion resistant fastener.

3. **FiberTite Peel Rivets**

   To secure insulation, base sheet and/or membrane to steel, wood, cement fiber, Tectum fiberglass and lightweight plank decks. Threadless, high magnesium allow fastener.

4. **FiberTite Purlin Fasteners**

   To secure FiberTite membrane to the existing metal roofing system's structural members.

5. **FiberTite BS Fasteners**

   Coated fastener and stress plate to secure base sheets to gypsum and cellular lightweight insulating concrete decks.

C. FTR Stress Plates

1. FTR-Magnum Series Barbed Stress Plates – used to anchor FiberTite membranes:

   a. FTR Magnum Plus – 1.5" x 2.75" Barbed Rectangular Stress Plate with radial corners; manufactured from 18-gauge AZ-50 galvalume steel.

b. FTR Magnum R275 – 2.75" Barbed Round Stress Plate: manufactured from 20-gauge galvanized steel.

c. FTR Magnum 2S – 2.375" Barbed Round Stress Plate; manufactured from 20-gauge galvanized steel.

2. **FTR 3-in Metal Round Insulation Stress Plates**- Finished with AZ-50 galvalume and have a flat/flush profile for use on rigid board surfaces.

D. Additional Components

1. **FTR-101 Sealant** - A single-component gun-grade polyether sealant to seal flashing termination.
2. **FTR-SLS Sealant** - A single-component self leveling polyether sealant for pitch pans.
3. **FiberClad Metal** - To fabricate metal flashing, 4' x 10' sheets of 24 gauge hot dipped G-90 steel, or 0.040" thick 3003H14 aluminum, laminated with a 0.02-mil polymeric coating.
4. **FTR-Premolded Flashing(s)** - Injection molded vent stack, split WrapidFlash® and inside/outside corner flashing using FiberTite vinyl compound.
5. **FTR Non-Reinforced Membrane** - Field fabrication membrane, 60-mil non-reinforced FiberTite vinyl membrane.
6. **FTR-Tuff Track Walkway & Protection Pads** - High grade walk way/protection material with slip resistant design.
7. **FTR-Termination Bar** - Membrane flashing(s) restraint/termination seals, nominal 0.125" x 1" x 10' 6060-T5 extruded aluminum bar with pre-punched slots, 8 inches on center.
8. **FiberTite Metal Fascia System** - Two piece snap-on preformed architectural Kynar metal edge systems.
9. **FTR-Value Insulation** - Polyisocyanurate and extruded polystyrene flat or tapered insulation.
10. **FTR-601** - Dual component, single bead (ribbon applied) urethane insulation adhesive in either cartridges or pump grade. Adhesive is a non-solvent, elastomeric, urethane adhesive, specifically designed for bonding single or multiple layers of roof insulation and insulation composites and/or cover boards to structural roof decks and base sheets.
11. **FiberTite VaporTite** - a self-adhered bitumen and SBS polymeric Class I Vapor Barrier.
12. **FiberTite Seam Cleaner** - FiberTite Seam Cleaner is to be used with clean white cotton cloths/rags to clean contamination from the seam areas of the membrane prior to welding.
13. **Simulated Metal Roofing Profile (Rib)** – The simulated metal roofing profile shall be a Co-Extruded Ornamental Profile with a KEE compatible heat-activated adhesive as provided by Seaman Corporation.
    a. Extruded profile shall be provided in 100 feet continuous lengths and match fleece back membrane color.
14. **FTR T-Joint Covers** – Pre-cut 4" x 4" 60 mil non-reinforced membrane to reinforce areas where three overlapping sheets of membrane intersect.
15. **FTR-Cover Board** - Gypsum or gypsum/cellulose core board.

2.4 RELATED MATERIALS

A. Wood Nailers

1. Wood Nailers are being tested to determine the effect of preservatives on metal components. Borate treated lumber seem to be the less corrosive and is strongly recommended. Installation of other types of treated lumber should be verified with a design professional.

2. Wood shall be No. 2 or better construction grade lumber.
3. Creosote or asphaltic type preservatives are not acceptable.
4. Minimum top nailer thickness shall be 1.5 inches nominal.

B. Vapor Retarder

1. The decision regarding the inclusion of a vapor retarder within the roof system shall fall within the responsibility of the design professional. Consult N.R.C.A. or other technical resource for appropriate guidelines.
2. Vapor retarder for use in a roof system shall comply with identifiable code and/or insurance requirements.
3. The vapor retarder manufacturer shall certify, in writing, that the specified vapor retarder meets identifiable code requirements and is approved for its intended use.

C. Insulation

NOTE: 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, coverboard, thermal barriers and or multilayered composites.

1. Insulation shall be installed, where specified and/or required to provide a suitable surface for the FiberTite Roofing System and/or meet desired thermal values.
2. Acceptable products must be pre-approved in writing by Seaman Corporation and comply with the minimal characteristics and classification listed for the products below:
   a. Approved Products
      i. FTR-Value Polyisocyanurate
         FM approved rigid insulation meeting Class A 1-90, for fire and wind.
         UL Classification : Class A.
         Density: 2.0 pcf. Minimum
         Meet requirements of ASTM C1289
      ii. FTR-Value XPS
         FM approved rigid insulation meeting Class A 1-90, for fire and wind.
         UL Classification : Class A.
         Density: 1.5 pcf. Minimum
         Meet requirements of ASTM D1621
      iii. Gypsum Core Cover Board
         FM approved meeting Class A 1-90, for fire and wind.
         UL Classification : Class A Assembly.
         Meet requirements of ASTM C 473
         Georgia-Pacific Gypsum LLC DensDeck® Prime
         National Gypsum DEXcell®
         United States Gypsum Company SECUROCK®

D. Adhesives for Insulation Attachment

1. General

a. Adhesive not specifically supplied by Seaman Corporation shall be listed and approved by Factory Mutual Research in conjunction with the specified insulation and specific substrate.

b. Adhesive shall meet minimum roofing system design requirements as evidenced by testing in conjunction with the proposed substrate and or composite; under FM-Global requirements or acceptable third party laboratory.

c. Adhesive manufacturer shall provide written specifications regarding the safe handling, storage, and surface preparation for a quality application of the product.

d. All adhesives shall be preauthorized by Seaman Corporation.

2. Polyurethane

a. Adhesive shall be either a dual or single component polyurethane adhesive, dispensed from a portable pressurized container or traditional foam equipment.

b. Preapproved Products

i. FTR-601

ii. ICP CR-20

3. Hot Asphalt

a. Asphalt shall be Type III or Type IV steep asphalt, according to ASTM D-312.

b. Asphalt shall be applied within 25°F 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°F for mopping and 450°F for mechanical spreaders. Asphalt applied within 25°F of the EVT, under normal environmental conditions; will provide a nominal 23-25 pounds of asphalt per 100 square feet.

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

d. 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.

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

E. Base Sheets

1. Preapproved base sheet shall be installed, where specified and/or required, to provide a suitable surface for installation over or adhering the insulation and/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 classification(s).
   a. FM approved, Class 1-90, wind uplift
   b. ASTM D 4601 Type II Asphalt Coated Glass-Fiber Base Sheet
   c. ASTM D 4897 Type II Asphalt Coated Glass-Fiber Venting Base Sheet
   d. Foil/Kraft Laminate w/min tensile of 54 lb/1" according to ASTM D 828
3. Preapproved Products
   a. GAF; GAFGLAS #80 Premium
   b. GAF; GAFGLAS Stratavent

PART 3 EXECUTION

3.1 GENERAL

A. The "Authorized" roofing contractor shall ensure strict compliance with FTR GS 02/13; General Guide Specifications for Installation of FiberTite Roofing Systems.

B. The roofing contractor shall provide a suitable substrate surface for the proper installation of the FiberTite Roofing System, roof insulation and specified components.

C. Application of Seaman Corporation/FiberTite materials constitutes an agreement that the roofing contractor has inspected and found the substrate suitable for the installation of the FiberTite Roofing System.

D. The roofing contractor shall coordinate the installation to ensure that the system remains watertight at the end of each working day.

3.2 SUBSTRATE PREPARATION

A. The roofing contractor shall verify that the deck condition and/or existing roof construction is suitable for the specified installation of the FiberTite Roofing System.

B. Seaman Corporation requires fastener withdrawal values (pull out tests) on all reroofing projects to verify the suitability of decking to accept a mechanically fastened insulation and/or membrane roof system.

C. 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 of the FiberTite Roofing System as specified.

D. Prepared substrate shall be smooth, dry, and free of debris and/or any other irregularities which would interfere with the proper installation of the FiberTite Roofing System.

E. The application of adhesives or hot asphalt directly to structural concrete, gypsum, Tectum, lightweight insulating concrete, existing smooth an /or granulated BUR materials may require sealing or priming with an appropriate elastomeric or asphalt primer prior to application.

F. Adhesives will not bond to wet, damp or inadequately cured lightweight insulating concrete or poured structural concrete.

G. Do not proceed with any part of the application until all defects and preparation work have been corrected and complete.

3.3 SUBSTRATE PREPARATION (NEW CONSTRUCTION)

A. Steel Deck

1. Steel decking shall conform to Factory Mutual (FM) guidelines for Class-1 insulated steel deck construction.
2. Steel decking shall be constructed of minimum 22-gauge cold rolled steel sheets with factory G-90 galvanized coating.
3. Panel profiles, (ribs) shall be formed to minimize deflection and provide suitable strength and integrity to support anticipated structural live and dead loads.
4. Steel decking shall be installed in compliance with specified design criteria and local building code requirements.
5. Steel decking that is less than 22-gauge may be considered for application by Seaman Corporation. Fastener withdrawal tests shall be performed on all "Non-FM Approved" steel decking, (decking less than 22-gauge) to determine suitability and appropriate fastener patterns and densities for mechanical attachment of the new components of the FiberTite Roofing System.

B. Structural Concrete (Poured and/or Precast)

1. Decking shall be installed in strict conformance with industry standards, practices and/or precast panel manufacturer's installation requirements.
2. Decking shall be installed to provide positive slope and subsequent positive drainage of the new FiberTite Roofing System.
3. Finished decking shall be properly cured and dry, prior to the installation of approved insulation.
4. Finished surface(s) to receive new roof system shall be smooth and level without significant surface depressions or irregularities. Camber differentials greater than 0.1875 of an inch must be leveled using a cementitious grout.
5. Finished surfaces shall be free of moisture, dust, loose debris and any other irregularity that may hinder the proper performance of the new FiberTite Roofing System.

C. Lightweight Structural Concrete

1. Care is to be taken when roofing over lightweight structural concrete due to the excessive moisture retention of the aggregate.
2. Seaman Corporation does not recommend bonding directly to lightweight structural concrete.
3. A venting vapor retarder is required when installing a FiberTite Roofing System over lightweight structural concrete.
4. The FiberTite Roofing Systems must use a mechanically fastened insulation / composite with an adhered membrane or a conventional mechanically fastened FiberTite Roofing System.

D. Wood

1. Wood decking shall conform to Factory Mutual (FM) guidelines for Class-1 impregnated wood decking. FM Class-1 decking consists of a minimum 2 inches thick wood plank or minimum ¾ inch plywood.
2. Wood decking that is less than 0.75 inch 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 inches thick or plywood less than 0.75 inch thick) to determine suitability and appropriate fastener patterns for the components of the new FiberTite Roofing System.
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/or local building code requirements.
4. Wood decking should be installed to provide positive slope and subsequent positive drainage of the new FiberTite Roofing System.

E. Cementitious Fiber

1. Molded panels shall be installed in strict accordance with the manufacturer's installation requirements.
2. Decking should be installed to provide positive slope and subsequent positive drainage of the new FiberTite Roofing System.
3. Vertical alignment between adjacent panels shall provide a uniform substrate. Alignment differences shall be no greater than 0.125 of an inch and shall be leveled with cementitious grout.
4. Fastener withdrawal tests shall be performed on all cement fiber decking to determine suitability for and appropriate fastener patterns for the components of the new FiberTite Roofing System.

F. Gypsum Concrete

1. Gypsum decks shall be installed in strict accordance with standard industry practice, the manufacturer's installation requirements and local building code requirements.

2. Decking should be installed to provide positive slope and subsequent positive drainage of the new FiberTite Roofing System.
3. The gypsum fill shall be reinforced with wire mesh at a proper depth within the fill.
4. Finished decking shall maintain a minimum thickness (not including the form board) of 2 inches.
5. Fastener withdrawal tests shall be performed on all gypsum decking to determine suitability and appropriate fastener patterns for the components of the new FiberTite Roofing System.

G. Lightweight Insulating Cellular Concrete

1. Lightweight Insulating Cellular Concrete, herein after referred to as LWIC, shall be installed by trained applicators, approved in writing by the LWIC Manufacturer.
2. LWIC shall be installed in strict accordance with the LWIC manufacturer's installation requirements and standard industry practices.
3. The finished LWIC installation shall exhibit an oven dry density of a nominal 50 pounds per cubic foot and a minimum compressive strength equal to or greater than 300 psi.
4. Newly installed LWIC shall be protected from the intrusion of free water/rain infiltration.
5. Intruded water must be removed prior to the installation of the new FiberTite Roofing System. Consult the appropriate LWIC manufacturer for methodology.
6. The LWIC shall be installed to provide positive slope and subsequent positive drainage of the new FiberTite Roofing System.
7. Finished LWIC shall be a minimum thickness of 2 inches, properly cured and dry with a moisture content less than 20% by weight and falling toward a target equilibrium of 7%, prior to the installation of the new FiberTite Roofing System.
8. Finished surface(s) shall be treated using a Poly-Vinyl Alcohol (PVA) or other sealer per LWIC manufacturer's recommendations to ensure uniform curing and surface hardness.
9. It shall be the Authorized Contractor’s responsibility to ensure that the LWIC is properly installed and complies with this specification. The application of FiberTite materials constitutes the contractors acceptance of the LWIC.
10. All LWIC decks shall be vented using one way breather vents; large opening vents (>6 inch diameter) shall be installed at a rate of one (1) vent per 1,500 sf (15 square) and small opening vents (<6 inch diameter) shall be installed at a rate of one (1) vent per 1,000 sf (10 square) of installed membrane.
11. Roof vents shall be approved by FiberTite Technical Customer Service, installed and flashed in strict accordance with FiberTite recommendations.
12. Mechanically attached FiberTite Roofing Systems, LWIC, shall be attached into the supporting structural decking. LWIC is not considered to be a structural component.
13. If a FiberTite Roofing System is to be installed using mechanical attachment of a base sheet, insulation or cover board, fastener withdrawal tests shall be performed to determine the suitability and appropriate fastener patterns.

3.4 SUBSTRATE PREPARATION (REROOFING)

A. General

1. Roofing Contractor shall inform the building owner/owner representative of any issues in regard to the condition and structural integrity of the existing decking.

2. The building owner/owner representative shall make and be responsible for the determination as to the proper method of treatment and/or replacement.
3. Reroofing applications require fastener withdrawal tests to substantiate proposed attachment patterns for the new mechanically fastened insulation systems and/or membranes.
4. Reroofing applications that require modification to the deck and/or insulation system should be installed to provide positive slope and subsequent positive drainage of the new FiberTite Roofing System.
5. All terminations of the FiberTite Roofing System must be constructed to prevent water from penetrating behind or beneath the new FiberTite Roofing System. This includes water from above, beside, below and beneath the new system.

B. Removal of Existing Roof System(s)

1. Remove all existing roofing material(s), 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% watertight at the end of the day or prior to inclement weather.

C. Re-Cover of Existing Roof System(s)

1. Remove all loose aggregate and debris by power broom and/or vacuum and legally dispose of off site.
2. Remove and replace all wet or deteriorated insulation and wood blocking.
3. Clean all 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.
4. If the existing roof is coal tar pitch, has been repaired with coal tar pitch or has been resaturated with coal tar pitch, a minimum 10-mil polyethylene pitch vapor retarder shall be installed before recovering.

D. Steel and Wood Decks

1. All rotted and/or deteriorated decking shall be removed and replaced with like kind.
2. Areas of structurally acceptable steel decking exhibiting slight surface rust shall be properly cleaned, primed and painted prior to installing the approved insulation.
3. All decking shall be inspected for proper attachment and excessive deflection that would compromise the uplift performance of the new FiberTite Roofing System.
4. Attachment and deflection deficiencies shall be repaired and brought into compliance with current, local building code requirements.

E. Concrete

1. Deteriorated decking shall be repaired and/or replaced with appropriate materials according to standard industry regulations and practices.
2. Repair any depressions and/or areas where reinforcing has become exposed.
3. When new insulation system is to be installed using an approved adhesive:
   a. Cracks and or camber differentials greater than 0.1875 of an inch shall be repaired using an appropriate cementitious grout or fill, and feathered to promote a smooth transition.
   b. Joints between prestressed panel units and over bulb-tees shall be taped, stripped or grouted with an appropriate cementitious fill.

c. All surface irregularities shall be leveled to ensure complete contact with the decking for insulation bonded in hot asphalt or approved adhesives.

4. Where insulation is to be mechanically attached, camber differentials and/or surface irregularities of up to 0.5 inch shall be acceptable.

F. Lightweight Insulating Concrete

1. All wet LWIC shall be removed and replaced with appropriate and/or compatible material.
2. Repair any depressions, irregularities and/or excessive deflection with compatible material.

3.5 WOOD NAILERS

A. Install treated lumber at the same heights as insulation layer or adjacent construction ± 0.25 inch. Continuous treated wood nailers are to be installed at all perimeters, around roof projections and penetrations as shown in approved details.

B. Where wood nailers are installed directly on the substrate, the substrate shall be carefully examined to confirm that the entire area provides a suitable fastening surface. All defects shall be repaired by the appropriate trade prior to installation.

C. Nailers shall be at least 3.5 inches wide and 1.5 inches high and installed and anchored in such a manner to resist a force of 250 lbs. per linear foot of wood blocking in any direction.

D. Nailers along parapets, curbs and expansion joints are recommended for insulated decking. Consult FiberTite Construction Details or FiberTite Technical Customer Services for optional/alternate membrane termination/securement methods.

3.6 BASE SHEET

A. 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% 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, and properly shingled to shed water.

B. 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 on center through the minimum 3 inch side laps and staggered at a maximum 7 inch 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% in the perimeter and 160% in the corners of the roof area.
4. Fastening increases can be obtained by adding rows of fasteners and/or additional fasteners along each row.

C. Base Sheet Adhered with Hot Asphalt

1. Hot asphalt shall be applied only to properly prepared and preapproved substrates, free of any debris, dirt, grease, oil or moisture.
2. Base sheet shall be embedded into a fluid, continuous application of hot Type III steep asphalt at a minimum application rate of 25 lbs. per 100 square feet.
3. Base sheet shall be fully bonded to the substrate.

3.7 ROOF INSULATION

A. General

1. Insulation boards to be adhered in approved adhesives are to be a maximum 4' x 4'.
2. Insulation boards to be mechanically fastened may be 4' x 4' or 4' x 8'.
3. Gypsum coverboards to be adhered in approved adhesives may be 4' x 8'.
4. Roof insulation and coverboards shall be installed where by the long dimension of the board(s) run in parallel alignment and the short dimensions are staggered.
5. Insulation and coverboards shall be installed with minimum joint dimensions and shall be tightly butted where possible. Maximum joint widths shall be 0.375 of an inch. Damaged corners shall be cut out and replaced with an insulation piece a minimum of 12" x 12". Pieces that are cut from larger panels and are smaller than one square foot are not acceptable Roof insulation shall be installed where by the long dimension of the board(s) run in parallel alignment and the short dimensions are staggered.
6. Insulation shall be installed with minimum joint dimensions and shall be tightly butted where possible. Maximum joint widths shall be 0.375 of an inch. Damaged corners shall be cut out and replaced with an insulation piece a minimum of 12" x 12". 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. If an insulation layer is 1.5 inches or less, taper 12 inches from the drain bowl. If insulation thickness exceeds 1.5 inches, taper 18 inches from the drain bowl. All taper boards or pieces must be adhered or mechanically fastened with a minimum of two fasteners per board.
9. When a coverboard and/or multiple layers are installed each layer shall be offset from the previous layer a minimum of 12 inches on center.
10. At the end of each working day, provide a watertight cover on all unused insulation as to avoid moisture penetration.

B. Mechanically Attached Insulation

1. Insulation shall be applied to and installed over properly prepared and pre-approved substrates, free of any debris, dirt, grease, oil or moisture.
2. All fasteners and stress plates for the mechanical attachment of insulation and/or cover board materials shall be FTR Fasteners as provided by Seaman Corporation.
3. All fasteners and stress plates shall be Factory Mutual Research approved for mechanical attachment of insulation and comply with FM Standard 4470 for corrosion resistance.
4. 1-90 attachment for insulation/cover board in the field of the roof requires 1 fastener and stress plate per 2 square feet of insulation, when the top layer is < 2 inches thick and the membrane is adhered.
    a. Perimeter areas require a 50% increase in the fastener density.
    b. Corner areas require a 100% increase in the fastener density.

5. 1-90 attachment for insulation/cover board in the field of the roof requires 1 fastener and stress plate per 4 square feet of insulation, when the top layer is ≥ 2 inches thick and the membrane is adhered.
    a. Perimeter areas require a 50% increase in the fastener density.
    b. Corner areas require a 100% 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 membrane 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.

C. Adhered Insulation

General approvals for the attachment of the insulation layer(s) using adhesives in adhered roofing systems are restricted to non-steel deck projects. The insulation/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.

1. **Hot Asphalt**
    a. Hot asphalt shall be applied only to properly prepared and preapproved substrates, free of any debris, dirt, grease, oil or moisture.
    b. Insulation shall be set into a continuous flood coat of hot Type III or IV steep asphalt applied to compatible substrate or properly attached base sheet/vapor retarder at a minimum application rate of 25 lbs. per 100 square feet.
    c. Insulation shall be fully bonded to the substrate with a maximum board size of 4’ x 4’.
    d. Insulation shall be laid in such a manner to avoid squeezing hot asphalt between insulation joints. Exposed asphalt will require appropriate separation layer(s) prior to installing the new adhered FiberTite Roofing System.
    e. Adhered insulation applications may require mechanical enhancement of exterior perimeter and or corner areas as outlined in FM LPD 1-29.
2. **Polyurethane Adhesive**
    a. Adhesive shall be applied only to properly prepared and preapproved substrates, free of any debris, dirt, grease, oil or moisture.
    b. The minimum product temperature at time of application shall be 70°F.
    c. Adhesives shall not be applied when surface or ambient temperatures are below 40° or above 110° F.
    d. Insulation shall be fully bonded to the substrate with a maximum board size of 4’ x 4’.
    e. Insulation shall be set into a continuous 0.5 inch bead of adhesive at a minimum rate of one linear foot of adhesive for every one square foot of insulation board.
    f. Adhesive rates are to be increased in roof perimeter and corner zones according to specific project requirements and manufacturer's design recommendations.
    g. Place the boards onto the adhesive beads and walk on the boards, spreading the adhesive for maximum contact.
    h. A second walking will be required after 10 minutes to ensure maximum contact and bond strength.

3.8 INSTALLATION OF FIBERTITE MEMBRANE(S)

A. Quality Control

1. It is the responsibility of the roofing contractor to initiate and maintain a Quality Control program to govern all aspects of the installation of the FiberTite Roofing System.
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 the FiberTite Roofing System.
3. If inconsistencies in the quality of the application of the composite, membrane and/or welds are found, all work shall cease until corrective actions are taken to ensure the continuity the installation.

B. General

1. Work shall be coordinated to ensure that sequencing of the installation promotes a 100% watertight installation at the end of each day.
2. All FiberTite Roofing Systems shall be designed utilizing and determined to be in compliance with the procedures outlined within the current publication of ASCE Standard 7. Alternative designs may be determined using the criteria within Factory Mutual Research Loss Prevention Data.
3. A FiberTite Roofing Systems may utilize either conventional roll goods or custom prewelded panel rolls or a combination of both.
4. Restrictions regarding outside ambient air temperature are relative only to the exposure limits of the workers and/or adhesives when necessary.
5. When using adhesives outside ambient air temperature shall be above 40°F. Curing or drying time of the adhesive will be affected by ambient temperatures and must be taken into consideration.
6. Humidity can affect the drying time of solvent borne adhesives and/or cause condensation to form on the newly applied adhesive.
7. No moisture may be present on the adhesive(s) prior to mating or application of FiberTite membranes.
8. All 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 linoleum roller. Lawn rollers should be filled with between 6 and 8 gallons (48 – 64 pounds) of water.
9. FiberTite Roofing Systems shall only be installed over properly prepared and sound substrates, free from excessive surface roughness, dirt, debris and moisture.

C. Adhered Membrane

1. The authorized roofing contractor 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 FiberTite membrane roofing systems.
2. **FiberTite Membrane (Without Fleece Backing) Adhered with FTR-190e Bonding Adhesive**

   **Nom. 36-mil FiberTite; nom 45-mil FiberTite-SM; nom 50-mil FiberTite-XT and nom 90-mil FiberTite-XTreme.*

   a. Position the FiberTite Membrane and fold the sheet to allow a workable exposure of the underside of the sheet.

   b. Apply a 100% continuous coat of bonding adhesive to the exposed bottom side of the membrane and a mirrored area of the substrate.

   c. The amount of membrane and substrate that can be coated with adhesive will be determined by application method, ambient temperature, humidity and available manpower.

d. Adhesive may be applied by spraying and back rolling or just rolling. Do not dump adhesive or pour from the cans.

e. Roller applied adhesive shall utilize a solvent resistant ⅜ inch nap roller, spreading the adhesive to ensure a smooth, even 100% coverage of the substrate and membrane.

f. Spray applied adhesive must be spread out by roller to ensure a smooth, even 100% coverage of the substrate and membrane with no voids, skips, globs, puddles or similar irregularities. *Note: a squeegee can be used to "flatten" or spread globs and puddles of adhesive.*

g. Adhesive coverage should average 100 square feet per gallon of applied adhesive with a 50 square feet per gallon net coverage (± 10%) for the membrane and substrate combined.

h. 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.

i. When sufficiently cured, carefully maneuver the glued portion of the membrane onto the glued substrate surface, avoiding any wrinkles or air pockets.

j. 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.

k. Repeat the process for the remaining unbonded portion of the membrane, lapping subsequent, adjacent rolls of membrane a minimum of 3 inches, ensuring proper shingling of the membrane to shed water along the laps.

l. No adhesive shall be applied to the lap seam areas of the membrane. Contaminated areas will inhibit proper welding of the seams requiring a membrane patch or strip.

m. Do not use bad or marginal adhesives. Contact FTCS if the quality of the adhesive is suspect.

3. FiberTite Membrane (without fleece backing) Adhered with FTR-490 Adhesive

** Nom 45-mil or greater FiberTite-SM and nom 90-mil FiberTite-XTreme only.*

a. Over the properly installed/prepared substrate surface, position the FiberTite Membrane and fold the sheet to allow a workable exposure of the underside of the sheet.

b. Apply a 100% continuous coat of bonding adhesive to the substrate.

c. The amount of substrate that can be coated with adhesive will be determined by application method, ambient temperature, humidity and available manpower.

d. Adhesive may be applied by spraying and back rolling or just rolling. Do not dump adhesive or pour from the cans.

e. Roller applied adhesive shall utilize a solvent resistant ⅜ inch nap roller, rolling the adhesive to ensure a smooth, even 100% coverage of the substrate.

f. Spray applied adhesive must be spread out by roller to ensure a smooth, even 100% coverage of the substrate and membrane with no voids, skips, globs, puddles or similar irregularities.

g. Adhesive coverage should average 120 square feet per gallon (± 10%) of applied adhesive net coverage.

h. Allow the adhesive to remain wet or slightly cured only to a point of being sticky but still wet. Do not allow adhesive to "dry out" completely on either surface.

i. When sufficiently cured, carefully maneuver the onto the glued substrate surface, avoiding any wrinkles or air pockets.

j. 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.

k. Repeat the process for the remaining unbonded portion of the membrane, lapping subsequent, adjacent rolls of membrane a minimum of 3 inches, ensuring proper shingling of the membrane to shed water along the laps.

l. No adhesive shall be applied to the lap seam areas of the membrane. Contaminated areas will inhibit proper welding of the seams requiring a membrane patch or strip.

m. Water borne adhesives (FTR-490) can be directly affected by moisture. Water based adhesives should not to be installed over/on substrates that are moist or wet or on systems or substrates that have residual moisture.

n. Do not use bad or marginal adhesives. Contact FTCS if the quality of the adhesive is suspect.

4. FiberTite Fleece Back Membrane Adhered with FTR-290 Adhesive

** Nom. 36-mil FiberTite; nom 45-mil FiberTite-SM; nom 50-mil FiberTite-XT with fleece backing.*

a. For *all* FB membranes unroll approximately 30 feet of the FiberTite-FB membrane and position the roll over the properly installed/prepared substrate. Pull the tail back over the roll to expose a workable area (approx. 30') of substrate.

b. Apply a 100% continuous coat of adhesive to the substrate.

c. 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.

d. To ensure proper application and curing of the adhesive, the outside air temperature shall be above 40°F and rising.

e. FTR-290 adhesive may be applied by spraying and back rolling or just rolling. Do not dump adhesive or pour from the cans.

f. Roller applied adhesive shall utilize a solvent resistant ⅜ inch nap roller.

g. Spray applied adhesive must also be rolled out by roller to ensure a smooth, even 100% coverage of the substrate with no voids, skips, globs, puddles or similar irregularities.

h. Allow the solvents in the adhesive to slightly dissipate/cure only to the point that the adhesive is sticky but still wet. Do not allow adhesive to dry.

i. Adhesives shall not be installed over moist or wet substrates.

j. 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.

k. Repeat the process for the remaining unbonded portion of the membrane, lapping subsequent, adjacent rolls of membrane a minimum of 3 inches, ensuring proper shingling of the membrane to shed water along the laps.

l. 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.

m. Do not use bad or marginal adhesives. Contact FTCS if the quality of the adhesive is suspect.

5. FiberTite Fleece Back Membrane Adhered in FTR-390 Adhesive

** Nom. 36-mil FiberTite; nom 45-mil FiberTite-SM; nom 50-mil FiberTite-XT with fleece backing*

a. For *all* FB membranes, unroll approximately 30 feet of the FiberTite-FB membrane and position the roll over the properly installed/prepared substrate. Pull the tail back over the roll to expose a workable area (approx. 30') of substrate.

b. Apply a 100% continuous coat of adhesive to the substrate.

c. 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.

d. To ensure proper application and curing of the adhesive, the outside air temperature shall be 40°F and rising with no chance of dropping below freezing during the subsequent 72 hour time period..

e. FTR-390 adhesive may be applied by using a heavy, ⅜ inch nap roller or brush. Do not dump adhesive or pour from the cans.

f. Roll or brush a smooth, even coat of adhesive over the substrate, ensuring 100% coverage of the substrate.

g. 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.

h. Water borne adhesives (FTR-390) can be directly affected by moisture. Water based adhesives shall not to be installed over/on substrates that are moist or wet or on systems or substrates that have residual moisture.

i. 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.

j. Repeat the process for the remaining u-bonded portion of the membrane, lapping subsequent, adjacent rolls of membrane a minimum of 3 inches, ensuring proper shingling of the membrane to shed water along the laps.

k. 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.

l. Do not use bad or marginal adhesives. Contact FTCS if the quality of the adhesive is suspect.

6. FiberTite Fleece Back Membrane Adhered in FTR-490 Adhesive

* Nom. 36-mil FiberTite; nom 45-mil FiberTite-SM; nom 50-mil FiberTite-XT with fleece backing

a. For *"all"* FB membranes - Unroll approximately 30 feet of the FiberTite-FB membrane and position the roll over the properly installed/prepared substrate. Pull the tail back over the roll to expose a workable area (approx. 30') of substrate.

b. Apply a 100% continuous coat of adhesive to the substrate

c. 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.

d. To ensure proper application and curing of the adhesive, the outside air temperature shall be above 40°F and rising.

e. FTR-490 adhesive is to be applied by spraying and back rolling or just rolling. Do not dump adhesive or pour from the cans.

f. Roller applied adhesive shall utilize a solvent resistant ⅜ inch nap roller.

g. Adhesive must be rolled out to ensure a smooth, even 100% coverage of the substrate with no voids, skips, globs, puddles, or similar irregularities.

h. 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.

i. Water borne adhesives (FTR-490) can be directly affected by moisture. Water based adhesives shall not to be installed over/on substrates that are moist or wet or on systems or substrates that have residual moisture.

j. 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.

k. Repeat the process for the remaining un-bonded portion of the membrane, lapping subsequent, adjacent rolls of membrane a minimum of 3 inches, ensuring proper shingling of the membrane to shed water along the laps.

l. 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.

m. Do not use bad or marginal adhesives. Contact FTCS if the quality of the adhesive is suspect.

7. FiberTite Fleece Back Membrane Adhered in FT /CR-20 Adhesive

** Nom. 36-mil FiberTite; nom 45-mil FiberTite-SM; nom 50-mil FiberTite-XT with fleece backing*

a. For *all* FB membranes, un-roll and position two rolls of FiberTite-FB over the properly installed/prepared substrate.

b. Ensure rolls are straight and the minimum 3 inch overlap between rolls is maintained.

c. Peel (butterfly) the rolls back in the long direction, half way upon themselves to expose the substrate and the underlying polyester fleece backing.

d. 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.

e. Spatter pattern shall achieve a nominal 80% coverage of textured coating at approximately 0.25 inch nominal thickness. The balance of the substrate will get coated as the adhesive spreads during the brooming and rolling process.

f. Avoid spattering the back of the FB membrane.

g. Do not allow adhesive to contaminate membrane overlaps. Use a sheet of insulation board to mask the spray area along adjoining membrane areas.

h. Overspray may be cleaned immediately with acetone while the adhesive is still wet.

i. Fold/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.

j. 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.

k. Repeat the process for the remaining unbonded portion of the membrane, lapping subsequent, adjacent rolls of membrane a minimum 3 inches, ensuring proper shingling of the membrane the water along the laps.

l. 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 stip.

m. FiberTite CR-20 adhesive is designed for use only when the substrate and ambient temperatures are a minimum 40°F and rising and the chemical cylinders are at least 70°F.

n. Do not use bad or marginal adhesives. Contact FTCS if the quality of the adhesive is suspect.

8. FiberTite Fleece Back Membrane Adhered in Hot Asphalt

** Nom. 36-mil FiberTite; nom 45-mil FiberTite-SM; nom 50-mil FiberTite-XT with fleece backing.*

a. For *all* FB membranes, un-roll approximately 30 feet of the FiberTite-FB membrane and position the roll over the properly installed/prepared substrate. Pull the tail back over the roll to expose a workable area (approx. 30') of substrate.

b. Apply a 100% continuous coat of adhesive to the substrate.

c. Correct Equiviscous Temperature (EVT) must be maintained at point of application. Type III steep asphalt shall be applied within 25°F of the asphalt manufacturer's recommended EVT. If the manufacturer does not supply

the EVT, Seaman Corporation recommends a temperature of 425°F for mopping and 450°F for mechanical spreaders.

d. Asphalt is to be applied by either mopping or mechanical spreaders.

e. Adhesive must be spread to ensure a smooth, even 100% coverage of the substrate with no voids, skips, globs, puddles, or similar irregularities.

f. Do not allow asphalt to contaminate the lap seam areas of the membrane. Contaminated areas will inhibit proper welding of the seams.

g. Carefully maneuver the membrane into the adhesive on the substrate surface, avoiding any wrinkles or air pockets.

h. 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.

i. Repeat the process for the remaining un-bonded portion of the membrane, lapping subsequent, adjacent rolls of membrane a minimum of 3 inches, ensuring proper shingling of the membrane to shed water along the laps.

j. 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.

k. Do not use bad or marginal adhesives. Contact FTCS if the quality of the adhesive is suspect.

D. Peel Stops for Adhered Roofing Systems

1. Seaman Corporation's standard *Terms and Conditions* for commercial warranties list 60-mph 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 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 Stop(s) are only required by Seaman Corporation on adhered projects requiring peak gust wind speed warranties greater than the default 60-mph 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;
   a. Buildings with Design Velocity Pressure less than: -45 psf (FM 1-90).
      No peel stop.
   b. Buildings with Design Velocity Pressure greater than: -45 psf (FM 1-90) but less than or equal to -52.5 (FM 1-105).
      One peel stop at 3 feet from all exterior roof edges.

c. Buildings with Design Velocity Pressure greater than: -52.5 (FM 1-105) but less than or equal to -60 psf (FM 1-120).

One peel stop at 3 inches from all edges and the second peel stop at 6 feet from all exterior roof edges.

d. Buildings with Design Velocity Pressure greater than: -60 (FM 1-120 but less than or equal to -67.5 psf (FM 1-135).

One peel stop at 3 feet, a second peel stop at 6 feet and the third peel stop at 9 feet from all exterior roof edges.

e. 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 FTCS.

E. Welding

1. General

a. All field seams exceeding 10 feet in length shall be welded with an approved automatic welder.

b. All field seams must be clean and dry prior to initiating any field welding.

c. Remove foreign materials from the seams (dirt, oils, etc.) with acetone or authorized alternative.

d. 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.

e. Contaminated areas within a membrane seam will inhibit proper welding and will require a membrane patch or strip.

f. All welding shall be performed only by qualified personnel to ensure the quality and continuity of the weld.

2. Hot Air Hand Welding

a. The lap or seam area of the membrane may be intermittently tack welded to hold the membrane in place.

b. 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.

c. The nozzle of the hand held hot air welder shall be inserted into the lap at a 45° angle to the lap. Once the polymer on the material begins to flow, a hand roller shall be use to apply pressure at a right angle to the tip of the hand welder. Properly welded seams shall utilize a 1.5 inch wide nozzle, to create a homogeneous weld, a minimum of 1.5 inches in width.

d. Smaller nozzles may be used for corners, and other field detailing, maintaining a minimum 1 inch weld.

3. Automatic Hot Air Machine Welding

a. Proper welding of the FiberTite Membrane can be achieved with a variety of automatic welding equipment. Contact FTCS for specific recommendations.

b. Follow all manufacturers' instructions for the safe operation of the automatic welder.

c. Follow local code requirements for electric supply, grounding and surge protection.

d. The use of a dedicated, portable generator is highly recommended to ensure a consistent electrical supply, without fluctuations that can interfere with weld consistency.

e. Properly welded seams shall utilize a 1.5 inch wide nozzle, to create a homogeneous weld, a minimum of 1.5 inches in width.

F. Inspection

1. The job foreman and/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 that all aspects of the 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 preapproved specifications and/or details requires written authorization from the FTCS prior to application to avoid any warranty disqualification.
5. It is the contractor, job foreman, and supervisor and/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 FTCS.

G. **T-Joint Cover Installation**

1. Installation of T-Joint Covers is mandatory on all FiberTite Membrane Systems greater than nominal 50 mil, vegetated roofs, ballast roofs or where T-Joints have not been properly sealed to exhibit a minimum 1.5" 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% welded.

3.9 FLASHING

A. Clean all vents, pipes, conduits, tubes, walls, and stacks to bare metal. All protrusions must be properly secured to the roof deck with approved fasteners. Remove and discard all lead, pipes and drain flashing. Flash all penetrations according to approved details.

B. Remove all loose and/or deteriorated cant strips and flashings.

C. Flash all curbs, parapets and interior walls in strict accordance with approved FiberTite details.

D. All flashing shall be adhered to properly prepared, approved substrate(s) with FTR-190e adhesive or FTR-201 mastic applied in sufficient quantity to ensure total adhesion.

E. 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.

F. Vertical flashing shall be terminated no less than 8 inches above the plane of the deck with approved termination bar and counter-flashing or metal cap flashing.

G. When using FTR-201 as the adhesive, vertical wall flashing termination shall not exceed 40 inches without supplemental mechanical attachment of the flashing between the deck and the termination point of the flashing.

H. Complete all inside and outside corner flashing details with FiberTite pre-formed corners or an approved field fabrication detail.

I. Probe all seams with a dull, pointed probe to ensure the weld has created a homogeneous bond.

J. 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).

3.10 METAL FLASHING

A. All perimeter edge details are to be fabricated from FiberClad Metal or utilize a prefabricated FiberTite Fascia System.

B. Ensure all fascias extend a minimum of 2 inches lower than the bottom of the wood nailers.

C. Fasten all metal flashing to wood nailers or approved substrate with approved fasteners 8 inches on center.

D. Break and install FiberClad metal in accordance with approved details, ensuring proper attachment, maintaining 0.5 inch expansion joints and the installation of a minimum 2 inch bond breaker tape prior to sealing the joint.

E. Solidly weld FiberClad expansion joints with a 6 inch strip of FiberTite membrane welded to the FiberClad, covering the bond breaker tape (cover plates are optional).

F. 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 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 of exposed 60-mil on all sides of the drain.

G. Pitch Pans

1. EVERY REASONABLE effort shall be made to eliminate the need for pitch pans including the removal of all existing pans. Contact FTCS for specific design alternatives and recommendations.
2. In the event of no alternative, fabricate pitch pans from Fiber Clad metal, installed in accordance with FiberTite details, ensuring proper attachment, maintaining a minimum of 2 inch clearance around the penetration.
3. Pitch Pans shall be filled with non-shrinking grout to within 1 inch 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.

3.11 EXPANSION JOINTS

A. 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.

B. 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.

3.12 SEALANTS

A. Apply authorized sealant(s) to all surface mounted reglets and per project requirements. Sealant(s) are to shed water. Follow all manufacturer's instructions and installation guides.

B. Use primer when recommended by the manufacturer.

C. Sealants will require periodic maintenance by the building owner's maintenance personnel.

3.13 TEMPORARY SEALS

A. At the end of each working day or at the sign of rain, install temporary, 100% watertight seal(s) where the completed new roofing adjoins the uncovered deck or existing roof surface.

B. The authorized roofing contractor shall create and maintain the temporary seal in such a manner to prevent water from traveling beneath the new and/or existing roof system.

C. The use of plastic roofing cement is permissible when sealing to an existing built up roof.

D. If water is allowed to enter beneath the newly completed roofing, the affected area(s) shall be removed and replaced at no additional expense to the building owner.

E. Prior to the commencement of work, cut out and remove all contaminated membrane, insulation, roof cement or sealant and properly dispose of off site.

3.14 WALKWAYS

A. FiberTite walkways and protection pads shall be installed at staging areas for roof top equipment maintenance or areas subject to regular foot traffic.

B. 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.

C. 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 2' x 4’), weld a 6” x 6” 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 around the 90° 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.

3.15 LIGHTNING PROTECTION

A. The installation of lightning protection must be coordinated with the authorized FiberTite roofing contractor, certified lightning contractor and the building owner.

B. 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.

C. Cables and air terminals may be attached to the membrane using base plates adhered in FTR101 Sealant. Cables are to be enhanced by welding intermittent strips of FiberTite membrane at 4’ intervals over the cables to the FiberTite roofing membrane at. Contact FTCS for specific adhesive recommendations.

D. 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.

3.16 COMPLETION

A. Remove any and all debris, excess materials and scrap of any kind from the roof and surrounding premises prior to demobilization.

B. Inspect all field welds, detailing and terminations to ensure a 100% the watertight installation.

3.17 WARRANTY INSPECTION

A. Upon completion of the project, the authorized roofing contractor shall complete and submit the FiberTite Notice of Completion to FTCS.

B. Upon receipt of the notice of completion, a FTCS representative will schedule an inspection with a representative of the authorized roofing contractor to thoroughly review the installation and verify compliance with Seaman Corporation specifications.

C. 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.

D. Upon completion of all punch list items and final acceptance of the installation, a warranty as authorized by the approved Seaman Corporation/FiberTite Pre-Installation Notice will be issued.

END OF SECTION FTR AD08/17