Fiberlite®
Seaman Corporation
INTELLIGENT
ROOFING SOLUTIONS

FTR GS10/09

General Guide Specification

Seaman Corporation • 1000 Venture Blvd. Wooster, OH 44691 • Phone: 330-262-1111 • Fax: 330-263-6950
Toll-free 800-927-8578 • Fax 800-649-2737 • www.fibertite.com • www.seamancorp.com

FTR GS10/09

General Guide Specification

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FTR GS10/09 General Guide Specification for Installation of FiberTite Roofing Systems

FTR GS10/09 is provided as a general foundation for the design and installation of a quality high performance FiberTite Roofing System. FTR GS10/09 is not a stand alone specification. Addendums are inclusive by reference and considered part of any specification intended to guide or govern the installation of any FiberTite Roofing System.

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope

Furnish and install a 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 and specific system addendums included by reference in Section 1.02.
2. All applications and projects 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 shall secure and 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 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 recovers 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 adhesive.
4. Compliance with EPA and OSHA requirements as published by Local, State and Federal authorities.

1.02 FIBERTITE ROOFING SYSTEMS (FTR) REFERENCES

A. FTR MA10/09 Addendum for Mechanically Attached Membranes

B. FTR AD10/09 Addendum for Adhered Membranes

C. FTR BA10/09 Addendum for Ballasted Membranes

1.03 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 training by Seaman Corporation.

C. FiberTite Roofing Systems shall be installed in accordance with the most current guide specifications (FTR GS10/09) 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. All field seams must be available for inspection.

1.04 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.

1.05 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. 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.

1.06 JOB CONDITIONS

A. Safety

1. Take all necessary precautions regarding worker health and safety when using solvents, adhesives and hot asphalt.
2. Store flammable liquid and materials away from open sparks, flames and extreme heat.
3. Take necessary precautions when using solvents and adhesives near fresh air intakes.
4. Comply with all OSHA requirements for construction.
5. 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 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 off site.

1.07 COORDINATION

A. Prior to installation of materials, a pre-roofing conference should 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 on site technical assistance.

1.08 WARRANTY

A. **Inspections**
A FiberTite Technical Customer Service Representative shall inspect the completed FiberTite Roof installation, and upon acceptance, Seaman Corporation shall issue the pre-authorized warranty, subject to the terms and conditions of the sample warranty and contract documents.

B. **Available Warranties**
Seaman Corporation offers the following FiberTite Roofing System warranties:

1. **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.
2. **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 it's installation for a period of ten (10) years. There is a nominal premium.
3. **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 it's installation beyond the ten years offered in 1.08 B2. There is an additional premium.

C. **Maintenance**
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

2.01 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 membranes may be installed over or adhered directly to pre-approved insulation, cover board, decking or composites thereof. Contact **FTCS** for additional information regarding compatible substrates.

D. All specifications for Simulated Metal Roofing Profile (**SMRP**) roofing systems require review and authorization by FiberTite Technical Services prior to bid.

2.02 MEMBRANE

A. FiberTite Membrane
FiberTite is a nominal 36-mil ketone ethylene ester (KEE) membrane, reinforced with a 5.0-oz yd^2 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 - 02 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 yd^2 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 - 02 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-oz yd^2 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 polymer content definitions as outlined in ASTM D 6754 - 02 Standard Specification for Ketone Ethylene Ester (KEE) Sheet Roofing.

D. FiberTite-FB Membrane
FiberTite-FB, FiberTite-SM FB and FiberTite-XT FB; are the traditional FiberTite membranes with a 4-oz yd^2 heat bonded polyester felt backing; conforming to their respective data sheets. FiberTite "FB" membranes meet the physical property requirements as outlined in ASTM D6754-02 Standard Specification for Ketone Ethylene Ester (KEE) Sheet Membranes

E. FiberTite-XTreme Membrane
FiberTite-XTreme is a nominal 90-mil ketone ethylene ester (KEE) membrane, reinforced with a 12.5-oz yd^2 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 polymer content definitions as outlined in ASTM D 6754 - 02 Standard Specification for Ketone Ethylene Ester (KEE) Sheet Membranes.

F. Flashing Membrane
Nominal 36-mil FiberTite, 45-mil FiberTite-SM or 50-mil FiberTite-XT membrane shall be used for all flashing requirements to match the field membrane and warranty expectations selected for the roofing system. *Note: FiberTite membranes incorporating the 6-oz polyester backing are not considered "flashing" membranes.*

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, 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, light weight insulating concrete.*
9. Authorized base sheet with an adhered insulation/cover board assembly.

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

2.03 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 insulations. GP - Dens-Prime and/or USG-Securock are the only approved cover-boards for use with FiberTite adhesives and subsequent adhered roofing systems.*

Application technique and coverage rates will vary according to substrate and environmental conditions. See Table 2 for average coverage rates on common substrates.

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 pre-authorized horizontal and vertical substrates.
2. **FTR-290 Adhesive**
   A VOC compliant solvent borne, adhesive, VOC compliant one sided application (substrate only), designed for bonding FiberTite-FB (fleece back) membranes to properly prepared and pre-approved 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 pre-authorized horizontal substrates.
4. **FTR-490 Adhesive**
   A polymeric water borne, VOC compliant bonding adhesive, one side application (substrate only), designed for bonding FiberTite-FB (fleece back) membranes to properly prepared and pre-authorized horizontal substrates.
   OR
   Under special circumstance, FTR-490 may be used as a one side application adhesive (substrate only) for bonding FiberTite-SM and FiberTite-XTreme membranes to properly prepared and pre-authorized horizontal substrates.

Table 1: FTR Adhesive rates for common substrates.

Membrane: Nom. 36-mil FiberTite; Nom. 45-mil FiberTite-SM; Nom. 50-mil FiberTite-XT or Nom. 90-mil FiberTite-XTreme

Adhesive: **FTR-190e Adhesive**

Surface/Substrate	*Application Rate*
Back side of Membrane	1.0 gal/100 ft.^{2}
FTR-Value "ISO" Insulation	1.2 gal/100 ft.^{2}
Gypsum Core Cover Boards	1.2 to 1.5 gal/100 ft.^{2}
Masonry	1.2 gal/100 ft.^{2}
Wood	1.0 gal/100 ft.^{2}

Membrane: 45-mil FiberTite-FB (fleece back) Membrane(s)

Adhesive: **FTR-290 Adhesive**

Surface/Substrate	*Application Rate*
FTR-Value "ISO" Insulation	1.2 gal/100 ft.^{2}
Cellular lt. wt.	1.2 gal/100 ft.^{2}
Gypsum Core Cover Boards	1.2 to 1.5 gal/100 ft.^{2}
Smooth Structural Concrete	1.2 gal/100 ft.^{2}

Membrane: 45-mil FiberTite-FB (fleece back) Membrane(s)

Adhesive: **FTR-390 Adhesive**

Surface/Substrate	*Application Rate*
FTR-Value "ISO" Insulation	1.5 gal/100 ft.^{2}
Cellular lt. wt.	1.5 gal/100 ft.^{2}
Gypsum Core Cover Boards	1.2 to 1.5 gal/100 ft.^{2}
Smooth Structural Concrete	1.2 to 1.5 gal/100 ft.^{2}
Asphalt Base Sheet	1.2 to 1.5 gal/100 ft.^{2}
Smooth BUR	1.2 to 1.5 gal/100 ft.^{2}
Granulated BUR	1.5 to 1.7 gal/100 ft.^{2}

Membrane: 45-mil FiberTite-FB (fleece back) Membrane(s)

Adhesive: **FTR-490 Adhesive**

Surface/Substrate	*Application Rate*
FTR-Value "ISO" Insulation	1.0 to 1.2 gal/100 ft.^{2}
Cellular lt. wt.	1.0 to 1.2 gal/100 ft.^{2}
Gypsum Core Cover Boards	1.2 to 1.5 gal/100 ft.^{2}
Smooth Structural Concrete	1.2 to 1.5 gal/100 ft.^{2}

B. FTR-101 Sealant
A one-component gun-grade polyurethane sealant to seal flashing termination.

C. FTR-SL1 Sealant
A one component pourable, self leveling, polyurethane sealant to fill "pitch pans".

D. Fiber Clad 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 0.020 mil polymeric coating.

E. FTR Pre-Molded Flashing(s)
Injection molded vent stack and inside/outside corner flashing using FiberTite KEE compound.

F. FTR Non-Reinforced Membrane
Field fabrication membrane, 0.060 mil non-reinforced KEE membrane.

G. FTR Tuff Track Walkway & Protection Pads
High grade walkway/protection material with "slip resistant" design.

H. FTR P3B Slip Sheet/Stone Mat
A 3 oz., UV stable non-woven polypropylene mat to be used for membrane divorcement (slip sheet) over reasonably smooth new or existing structural substrates and/or as stone or paver separator as additional membrane protection in ballast applications. Note that all field seams must be left open for warranty inspection.

I. FTR Recovery Board
A 3/8 inch thick recover board/underlayment consisting of an extruded polystyrene core with integral plastic facer on both sides cut-fold design.

J. FTR-Fasteners

1. **FiberTite MAGNUM Series**
   To secure FiberTite 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 NTB-1H**
   To secure insulation, base sheet and/or membrane to gypsum and cementitious fiber decks. Threaded, glass-filled nylon fastener, with locking wire barbs.
4. **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 aluminum alloy fastener.
5. **FiberTite BS Fasteners**
   Coated fastener and stress plate to secure base sheet to gypsum and cellular lightweight insulating concrete decks.
6. **FiberTite Purlin Fasteners**
   To secure FiberTite membrane to the existing metal roofing systems structural members.

K. FTR-MAGNUM Series Barbed Stress Plates
Used to anchor membrane, are 2 1/2 inch x 1 1/2 inch rectangular in dimension with 3/4 inch radial corners, manufactured from 18 gauge AZ-50 galvalume steel with a 1/4 inch diameter hole in its center. The plate has a raised reinforcement area and eight "barbs".
OR
Used to anchor membrane, are 2 3/8 inch round steel plate manufactured from 20 gauge galvalume steel with a 1/4 inch diameter hole in its center. The plate has a raised reinforcement area and "barbs".

L. FTR-Sand Dollar Insulation Stress Plates
Used to secure insulation and/or cover-board to steel, wood and structural concrete decking. Manufactured from high density polyethylene, 3 inches in diameter, designed with a self locking mechanism to secure the head of the FTR fasteners into the plate.

M. FTR-Termination Bar
Membrane flashing(s) restraint/termination seals, nominal 1/8 inch x 1 inch x 10 ft. 6060-T5 extruded aluminum bar with pre-punched slots, 8 inches on center.

N. FiberTite Metal Fascia System
Two piece "snap-on" pre-formed, architectural metal edge system.

O. FTR-Value Insulation
Polyisocyanurate and extruded polystyrene flat or tapered insulation.

P. FTR-601
Dual component, single bead (ribbon applied) urethane insulation adhesive. 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, base sheets, and smooth surfaced BUR.

Q. FTR-Cover Board
Gypsum or gypsum/cellulose core board manufactured for use with either mechanically attached roofing systems. Surface treated Gypsum (Dens-Prime)or Gypsum/Celluose core (Securock) board manufactured for use with adhered roofing system applications.

R. Simulated Metal Roofing Profile (Rib)
1. *Simulate Metal Roofing Profile* (SMRP) systems shall utilize nominal 60-mil FiberTite *fleece-back* adhered roofing membrane / systems.
2. The simulated metal roofing profile (rib) shall be a *KEE* compatible polymeric ornamental extrusion as provided by Seaman Corporation.
3. Extruded profile shall be provided in 100-ft continuous lengths and match fleece back membrane color

2.04 RELATED MATERIALS

A. Wood Nailers
Wood nailers are being tested by the construction industry 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.
1. Wood shall be No. 2 or better construction grade lumber. *Creosote or asphaltic type preservatives are not acceptable.*
2. Minimum top nailer thickness shall be 1 1/2 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, tapered or flat, cover board, 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 following minimal characteristics and classification(s).
3. Pre-Approved Products
   a. FTR-Value Polyisocyanurate
      i. FM approved rigid insulation meeting Class A 1-90, for fire and wind.
      ii. UL Classification: Class A
      iii. Density: 2.0 pcf. Minimum
      iv. Meet requirements of ASTM C1289
   b. FTR-Value EXPS
      i. FM approved rigid insulation meeting Class A 1-90, for fire and wind.
      ii. UL Classification: Class A Assembly
      iii. Density: 1.5 pcf. Minimum
      iv. Meet requirements of ASTM D1621
   c. Gypsum Core Cover Board
      i. FM approved meeting Class A 1-90, for fire and wind.
      ii. UL Classification: Class A Assembly
      iii. Meet requirements of ASTM C 473
         1. GP Gypsum; Dens-Deck - mechanically fastened systems only and/or use as a thermal barrier
         2. GP Gypsum Dens-Prime - adhered roofing systems
         3. USG- Securock - mechanically fastened or adhered roofing systems and/or thermal barrier
4. If requested, the manufacturer shall provide to the building owner, a written statement, with a copy to Seaman Corporation, that specifically expresses warranty conditions for the successful installation and performance of their insulation.

D. Adhesive(s) 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 pre-authorized by Seaman Corporation.

2. **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 sq. ft.
   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.

3. **Polyurethane**
   a. Adhesive shall be either a dual or single component polyurethane adhesive, dispensed from a portable pressurized container or traditional foam equipment.
   b. Pre-Approved Products
      i. FTR-601
      ii. Insta-Stik; Dow Chemical Company
      iii. OlyBond; Olympic Manufacturing Group
      iv. Tite-Set, PolyFoam Products, Inc.

E. Base Sheets

1. Pre-approved 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 pre-approved 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. Pre-approved Products
   a. GAF; GAFGLAS #80 Premium
   b. GAF; GAFGLAS Stratavent

PART 3 EXECUTION

3.01 GENERAL

A. The " Authorized" roofing contractor is responsible for ensuring appropriate system specific addendums included by reference are strictly applied to FTR GS10/09; General Guide Specifications for Installation of FiberTite Roofing Systems.

B. The roofing contractor is responsible for providing 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 is responsible for coordinating the installation to ensure that the system remains watertight at the end of each working day.

3.02 SUBSTRATE PREPARATION

A. The roofing contractor is responsible for verifying 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 re-roofing projects to verify the suitability of decking to accept a mechanically fastened insulation and/or membrane roofing 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. Do not proceed with any part of the application until all defects and preparation work have been corrected and completed.

F. The application of adhesives or hot asphalt directly to structural concrete, gypsum, tectum, lightweight insulating concrete, existing smooth and/or granular BUR materials may require sealing or priming with an accepted asphalt primer prior to application.

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

3.03 SUBSTRATE PREPARATION (New Construction)

A. Steel Deck

1. Steel decking should conform to Factory Mutual (FM) guidelines for Class-1 insulated steel deck construction.
2. Steel decking should be constructed of a 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 will 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 Pre-Cast)
1. Decking shall be installed in strict conformance with industry standards, practices and/or pre-cast 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 3/16 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. 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 3/4 inch plywood.
2. Wood decking that is less than 3/4 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 3/4 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.

D. 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 1/8 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.

E. Poured 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 top layer 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.

F. Lightweight "Cellular" Insulating Concrete

1. Lightweight "Cellular" insulating concrete, herein after referred to as "lightweight concrete", shall be installed by trained applicators, approved in writing by the Lightweight Manufacturer.
2. Lightweight concrete shall be installed in strict accordance with the manufacturer's installation requirements and standard industry practices.
3. The finished lightweight concrete 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 lightweight concrete 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 lightweight concrete manufacturer for methodology.
6. The lightweight concrete shall be installed to provide positive slope and subsequent positive drainage of the new FiberTite Roofing System.
7. Finished lightweight concrete 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 per manufacturer's recommendations to ensure uniform curing and surface hardness.
9. All lightweight insulating concrete roof decks shall be vented using one way breather vents; large opening vents (› 6-in diameter) shall be installed at a rate of one (1) vent per 1,500 sf (15 square) and small opening vents (‹ 6-in diameter) shall be installed at a rate of one (1) vent per 1,000 sf (10 square) of installed membrane.
10. Roof vents shall be approved by FiberTite Technical Customer Service; installed and flashed in strict accordance with FiberTite recommendations.
11. Mechanically attached FiberTite Roofing Systems, installed over lightweight concrete, shall be attached into a supporting structural decking. Lightweight concrete is not considered to be a structural component.
12. 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.

3.04 SUBSTRATE PREPARATION (Re-Roofing)

A. General

1. Roofing Contractor shall be responsible for informing 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. Re-roofing applications require fastener withdrawal tests to substantiate proposed attachment patterns for the new mechanically fastened insulation systems and/or membranes.
4. Re-roofing 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 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 first sign of 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 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 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 re-saturated 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, Gypsum and Cementitious Fiber

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 hot asphalt or an approved adhesive:
   a. Cracks and or camber differentials greater than 3/16 inch shall be repaired using an appropriate cementitious grout or fill, and feathered to promote a smooth transition.
   b. Joints between pre-stressed 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 or ballasted, camber differentials and/or surface irregularities of up to 1/2 inch shall be acceptable.

F. Lightweight "Insulating" Concrete

1. All wet lightweight shall be removed and replaced with appropriate and/or compatible material.
2. Surface to receive new FiberTite Roofing System shall be smooth and free of ridges, depressions and other irregularities.
3. Repair any depressions, irregularities and/or excessive deflection with compatible material.

3.05 WOOD NAILERS

A. Install treated lumber at the same heights as insulation layer or adjacent construction ± 1/4 inch. Continuous treated wood nailers are to be installed at all perimeters, around roof projections and penetrations as shown in approved details. In re-cover applications, the surface under the new wood nailers shall be FREE OF ALL GRAVEL and shall be as even as possible.

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 1/2 inches wide and 1 1/2 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.

3.06 BASE SHEET

A. General

1. Approved base sheet, when required or specified, shall be applied only to properly prepared and pre-approved 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.

3.07 ROOF INSULATION

A. General

1. Roof insulation shall be installed whereby the long dimension of the board(s) run in parallel alignment and the short dimensions are staggered.
2. Insulation shall be installed with minimum joint dimensions and shall be tightly butted where possible. Maximum joint widths shall be 3/8 inch. Damaged corners shall be cut out and replaced with an insulation piece a minimum of 12 inches x 12 inches. Pieces which are cut from larger panels and are smaller than one square foot are not acceptable.
3. Install no more than can be covered during the same working day.
4. Taper roof insulation to drain sumps using tapered edge strips. If an insulation layer is 1 1/2 inches or less, taper 12 inches from the drain bowl. If insulation thickness exceeds 1 1/2 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.
5. When a cover board and/or multiple layers are installed, each layer should be offset from the previous layer a minimum of 12 inches on center.
6. At the end of each working day, provide a watertight cover on all unused insulation as to avoid moisture penetration.

3.08 INSTALLATION OF FIBERTITE MEMBRANE(S)

A. Quality Control

1. It will be the responsibility of the roofing contractor to initiate and maintain a QC 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 QC program which will include but is not limited to the supervision, inspection and probing of all heat welding 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 of 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 or sections 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 System may utilize either conventional "roll goods" or pre-fabricated custom rolls or a combination of both. Custom rolls must be utilized for ballast and metal recover applications. *(Custom rolls of variable width and length are available upon request.)*
4. Restrictions regarding outside ambient air temperature are relative only to the exposure limits of the workers and/or adhesives.

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 when determining flashing lengths.
6. Humidity can effect 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. FiberTite Roofing Systems shall only be installed over properly prepared and sound substrates, free from excessive surface roughness, dirt, debris and moisture.

C. Mechanically Fastened FiberTite Roofing Systems

* Addendum FTR MA04/08 is included in this specification and considered a governing guide and supplement by reference for the installation of mechanically fastened nom. 36-mil FiberTite; nom. 45-mil FiberTite-SM; nom. 50-mil FiberTite-XT and nominal 90-mil FiberTite-XTreme membrane roofing systems.

D. Adhered FiberTite Roofing Systems

* Addendum FTR AD04/08 is included in this specification and considered a governing guide and supplement by reference for the installation of adhered nom. 36-mil FiberTite; nom. 45-mil FiberTite-SM; nom. 50-mil FiberTite-XT, nominal 90-mil FiberTite-XTreme and nom 45-mil FiberTite-FB membrane roofing systems.

E. Ballasted FiberTite Roofing Systems

* Addendum FTR BA04/08 is included in this specification and considered a governing guide and supplement by reference for the installation of ballasted nom. 36-mil FiberTite; nom. 45-mil FiberTite-SM; nom. 50-mil FiberTite-XT, nominal 90-mil FiberTite-XTreme membrane roofing systems and nom. 45-mil FiberTite-FB membrane roofing systems.

F. Hot Air 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. 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.*
   d. All welding shall be performed only by qualified personnel to ensure the quality and continuity of the weld.
   e. Contaminated areas within a seam will inhibit proper welding and will require a membrane patch.
2. **Hand Welding**
   a. The lap or seam area of the membrane should 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 used to apply pressure at a right angle to the tip of the hand welder. Properly welded seams shall utilize a 1½ inch wide nozzle, to create a homogeneous weld, a minimum of 1½ inches in width.
   d. Smaller nozzles may be used for corners, and other field detailing, maintaining a minimum 1 inch weld.

3. **Automatic 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 1½ inch wide nozzle, to create a homogeneous weld, a minimum of 1½ inches in width.

G. 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 pre-approved specifications and/or details requires written authorization from the **FTCS** prior to application to avoid any warranty disqualification.
5. It is the responsibility of the contractor, job foreman, and supervisor and/or quality control personnel to perform a final "self" inspection on all seams prior to requesting the inspection for warranty issuance by the **FTCS**.

3.09 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 flashing.

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 either FTR-190e Adhesive or FTR-201 mastic applied in sufficient quantity to ensure total adhesion. Specific projects may require the use of FTR-490 as a bonding adhesive for FiberTite-SM membrane. Contact **FTCS** prior to this application.

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 or FTR-490 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 fascia 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 1/2 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. ***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 FiberClad metal, installed in accordance with FiberTite details, ensuring proper attachment, maintaining a minimum of 2 inches 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-SL1 pourable sealant.
4. Pitch pans and the sealant will require periodic maintenance by the building owner's maintenance personnel.
5. The following products are acceptable alternatives to alternatives to conventional FiberClad metal pitch pans BUT SHALL NOT BE CONSIDERED AS PART OF THE FIBERTITE WARRANTY. Consult individual manufacturer's product guidelines and specifications.
    a. Lockin' Pocket - WTT Systems
    b. Chem Curb - Chem Central

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 "pre-formed" 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 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 walkway to the previously cleaned FiberTite roofing membrane. Avoid excessive heating of the walkway 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 (¼ inch x 2' x 4'), weld a 6 inch x 6 inch 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 two 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 and an approved construction adhesive or by welding intermittent strips of FiberTite membrane over the base plates and cables to the FiberTite roofing. 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% watertight installation.

3.17 WARRANTY INSPECTION

A. Upon completion of the project, the authorized roofing contractor shall complete and submit the FiberTite Project Completion Notice 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 GS10/09

FTR MA10/09

Addendum / Inclusive to FTR GS10/09

FTR MA10/09
Addendum for Mechanically Attached FiberTite Roofing Systems

FTR MA10/09 is a "system specific" addendum to FTR GS10/09 for the design and installation of a quality high performance Mechanically Attached FiberTite Roofing System. FTR MA10/09 is not a stand alone guide specification and must be applied in concert with FTR GS10/09.

PART 1 - GENERAL

A. FTR GS10/09 General Guide Specification for Installation of FiberTite Roofing Systems are incorporated and considered inclusive herein and are to be followed without variation.

PART 2 - PRODUCTS

Refer to FTR GS10/09

PART 3 - EXECUTION

Refer to FTR GS10/09 in addition to the following Sections.

3.07 ROOF INSULATION

B. Preliminary Attachment of Insulation for Mechanically Attached Roofing Systems

1. Insulation shall be applied to or 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. General 1-90 attachment criteria require preliminary attachment for insulation and cover boards for mechanically attached membrane roofing systems. Insulation/cover board within the **FIELD** of the roof requires 6 fasteners and stress plates per 4' x 8' insulation board.
   a. **Perimeter** areas do not require an increase in the fastener density when the membrane is mechanically attached.
   b. **Corner** areas do not require an increase in the fastener density when the membrane is mechanically attached.
5. Fasteners shall be installed straight, tight and perpendicular to the decking complying with minimum penetration requirements of specific deck types. Do not over torque fasteners.
6. Fasteners shall be installed using depth sensing tool attachments to ensure proper installation.
7. Standing Seam Metal retrofit applications require that the base layer of insulation is loose laid between the raised metal roof profiles, matching their height to level the metal roof profile and support the top layer of insulation/cover board.
   a. Lay the "fill" insulation with the long dimension of the insulation in parallel alignment to and between the raised metal profiles.
   b. Install top layer of insulation or cover board perpendicular to the raised metal profiles.
8. Attach the top layer of insulation/cover board using 6 fasteners and "locking" stress plates per 4' x 8' insulation board.
9. It may be possible to utilize adhesives for the preliminary attachment of the insulation layer(s) on **non-steel** deck projects. The insulation/cover board manufacturer must recommend and approve the specific board and adhesive combination in writing prior to Seaman Corporation granting approval for this method of preliminary securement.

FTR MA10/09

3.08 INSTALLATION OF FIBERTITE MEMBRANE

C. Mechanically Fastened FiberTite Roofing Systems

1. **FiberTite* Membrane Mechanically Attached (Class 1 Decks)**
   * Nom. 36-mil FiberTite; nom 45-mil FiberTite-SM; nom 50-mil FiberTite-XT and nom 90-mil FiberTite-XTreme.
   a. Rolls of FiberTite Roofing **(FTR)** are to be positioned and installed straight and snug but not taut. Stretching of the membrane places undue stress on the mechanical fasteners.
   b. If using custom fabricated rolls, align the paneled rolls to stagger the factory seams to prevent adjacent welds from falling on top of one another. Adjoining rolls shall overlap five inches and be properly shingled with the flow of water where possible. It is not uncommon and is acceptable for the factory laps to "buck" water.
   c. The properly positioned membrane shall be attached using **FTR** Magnum Fasteners and Magnum Stress Plates installed through the membrane and insulation assembly and engage the structural decking.
   d. The Magnum stress plates shall be installed straight and parallel to existing structural purlin members. All stress plates must set completely on the membrane allowing a minimum of 1/2 inch from the edge and allow sufficient room to facilitate welding.
   e. Fastener row spacing and intervals shall be established to resist design pressures, determined in compliance with 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.
   f. Table MA04/08-1 lists "general" default attachment requirements for the field of the roof, as applied to structural roof decks generally referred to as Class 1; minimum 3/4 inch plywood, minimum 22 gauge steel or minimum 3,000 psi concrete.
   g. Perimeter zone and corner zone enhancement is required on all mechanically fastened roofing systems.
      Perimeters and corners are defined as follows:
      i. Perimeter: 10% of the width of the roof areas or 40% of the height of the roof area, whichever is less, to a minimum of 4 feet. Perimeter zones run parallel to all external roof edges including those with parapet walls.
      ii. Corner zones are the square intersection of perimeters.
      iii. Projects having variable roof levels shall treat the outer boundary of each level as a perimeter.
      Internal expansion joints, firewalls or adjoining building walls greater than 3 feet are not considered perimeter areas.
   h. Perimeters and corners may be enhanced by:
      i. Installing "half" rolls of membrane fastened as prescribed by project requirements.
      ii. Adding additional rows of fasteners through the top of the membrane system within the perimeter at prescribed interval areas and sealing with a 6 inch strip.

Individual project, insurance and building code requirements can vary substantially. FiberTite Technical Customer service offers design assistance and evaluation for determining acceptable fastener patterns.

TABLE MA10/09 - 1

Design Pressure 22 gauge steel or greater	**Row Intervals/Lap Structure**	**Lap Fastening**
≤ -30 psf / FM1-60		
80 ksi steel	51″ on center-open	24″ on center
33 ksi steel	51″ on center-open	18″ on center
80 ksi steel	69″ on center-open	12″ on center
33 or 80 ksi steel	95″ on center-open	6″ on center

TABLE MA10/09 - 1(cont'd)

Design Pressure 22 gauge steel or greater	Row Intervals/Lap Structure	Lap Fastening
≤ -45 psf / FM1-90		
80 ksi steel	51″ on center-open	18″ on center
33 ksi steel	51″ on center-open	12″ on center
80 ksi steel	69″ on center-open	12″ on center
33 ksi steel	69″ on center-open	6″ on center
33 or 80 ksi steel	95″ on center-open	6″ on center
≤ -60 psf / FM1-120		
80 ksi steel	51″ on center-open	12″ on center
33 ksi steel	51″ on center-open	6″ on center
80 ksi steel	69″ on center-open	6″ on center
33 or 80 ksi steel	104.5″ on center-closed	6″ on center
≤ -67.5 psf / FM1-135		
80 ksi steel	51″ on center-open	6″ on center
≤ -82.5 psf / FM1-165		
80 ksi steel	94″ on center-closed	6″ on center
≤ -112.5 psf / FM1-225		
80 ksi steel	47″ on center-closed	6″ on center

2. **FiberTite* Membrane Mechanically Attached (Standing Seam Metal Retrofit)**

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

a. Loose lay the rolls (custom no-tab panels) of FiberTite Roofing (FTR) over the mechanically attached cover board. Align the rolls so the factory welds lay parallel/side-laps perpendicular to the purlin system. The membrane should be positioned snug but not taut.

b. Align subsequent and adjoining custom rolls to stager the factory seams. Adjoining rolls shall overlap five inches.

c. The properly positioned membrane shall be attached using FTR Purlin Fasteners and Magnum Stress Plates installed through the membrane, insulation assembly and existing metal roof panels to engage the structural purlin.

d. The Magnum stress plates shall be installed straight and centered to existing structural purlins.

e. Fastener row spacing and intervals shall be established to resist design pressures, determined in compliance with 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.

f. Metal re-cover projects require enhanced perimeter and corner enhancement.

g. The width of the perimeter area shall be calculated to be either ten percent (10%) of the width of the roof section or forty percent (40%) of the building or section height above ground, whichever is less, to *a **minimum of 10 feet***.

h. Perimeter and corner enhancement shall be accomplished by installing additional rows of fasteners through the top of the membrane system within the perimeter and corner zones, into the structural purlins.

i. The following fastener attachment patterns are for general construction when purlins are spaced at a nominal 5-ft on center and accommodate compliance with 1-90 membrane attachment.

i. Field: The field area of the roof shall be defined as all areas not considered perimeter or corners.

• Install FTR Purlin Fasteners and Stress Plates through the top of the membrane system in a straight line with fastener row intervals no greater than 10 feet apart (every other purlin) with fasteners spaced no greater than 12 inches on center. Seal fastener rows by

heat welding a nominal 6-inch cover strip over the fasteners.

ii. Perimeter: The perimeter area of the roof shall be defined as the outer parallel boundary of the roof section, including the eve, peak and rake edge.

- Install FTR Purlin Fasteners and Stress Plates through the top of the membrane system in a straight line with fastener rows a maximum of 5 apart (every purlin) with fasteners spaced no greater than 12 inches on center. Seal fastener rows by heat welding a nominal 6-inch cover strip over the fasteners.

iii. Corner: The corner area shall be defined as the "square" area created when the perimeter area is overlapped at a directional change at the outer parallel boundary of the roof section or edge.

- Install FTR Purlin Fasteners and Stress Plates through the top of the membrane system in a straight line with fastener rows a maximum of 5 apart (every purlin) with fasteners spaced no greater than 6 inches on center. Seal fastener rows by heat welding a nominal 6-inch cover strip over the fasteners.

END OF ADDENDUM FTR MA10/09

FTR MA10/09

Addendum / Inclusive to FTR GS10/O9

FTR AD10/09
Addendum for Adhered FiberTite Roofing Systems

FTR AD10/09 is a "system specific" addendum to FTR GS10/09 for the design and installation of a quality high performance Adhered FiberTite Roofing System. FTR AD10/09 is not a stand alone guide specification and must be applied in concert with FTR GS10/09.

PART 1 - GENERAL

A. FTR GS10/09 General Guide Specification for Installation of FiberTite Roofing Systems are incorporated and considered inclusive herein and are to be followed without variation in addition to the following sections:

1.01 DESCRIPTION

D. Environmental Considerations

1. **All adhesives can be temperamental at best. The contractor must be aware of all potential environmental variables when installing adhered roofing systems.**
2. Pay particular attention to and follow all adhesive storage and application precautions /guidelines referenced within FTR GS10/09.
3. Do not apply/use waterborne adhesives (FTR-390 emulsion or FTR-490) if the ambient air temperature is expected to drop below 32°F. (0°C) within 48 hours of application.
4. Solvent borne adhesives are not compatible with polystyrene insulations. Cover-boards alone have not demonstrated adequate protection against deteriorative interactions between solvent borne adhesives and polystyrene insulations.
5. 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.

PART 2 - PRODUCTS

Refer to FTR GS10/09

PART 3 - EXECUTION

Refer to FTR GS10/09 in addition to the following sections.

3.06 BASE SHEETS

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 o.c. through the minimum 3 inch side laps and staggered at a maximum 7 inches o.c. 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 pre-approved 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 sq. ft.
3. Base sheet shall be fully bonded to the substrate.

3.07 ROOF INSULATION

B. Mechanically Attached Insulation for Adhered Roofing Systems

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 sq. ft. 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 sq. ft. 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 membranes systems to comply with guidelines articulated in FM LPD1-29.
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/cover board 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 pre-approved 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 sq. ft.
   c. Insulation shall be fully bonded to the substrate with a maximum board size of 4 feet x 4 feet.
   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 areas as outlined in FM LPD 1-29.

2. **Urethane or Polyurethane**
   a. Adhesive shall be applied only to properly prepared and pre-approved 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°F. or above 110°F.

d. Insulation shall be fully bonded to the substrate with a maximum board size of 4 feet x 4 feet.
e. Insulation shall be set into a continuous 1/2 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 ten (10) minutes to ensure maximum contact and bond strength.

3.08 INSTALLATION OF FIBERTITE MEMBRANE

D. Adhered FiberTite Roofing Systems

1. **Membrane Adhered Roofing Systems**
General: 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.

a. **FiberTite* Membrane 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.
i. Position the FiberTite Membrane and fold the sheet to allow a workable exposure of the underside of the sheet.
ii. Apply a 100% continuous coat of bonding adhesive to the exposed bottom side of the membrane and a mirrored area of the substrate.
iii. The amount of membrane and substrate that can be coated with adhesive will be determined by application method, ambient temperature, humidity and available manpower.
iv. Adhesive may be applied by spraying and "back" rolling or just rolling.
v. Roller applied adhesive shall utilize a solvent resistant 3/8 inch nap roller, spreading the adhesive to ensure a smooth, even 100% coverage of the substrate and membrane.
vi. 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.
vii. Adhesive coverage should average 100 sq. ft. per gallon of applied adhesive with a 50 sq. ft. per gallon net coverage (± 10%) for the membrane and substrate combined.
viii. Allow the adhesive to dry 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.
ix. When sufficiently dry, carefully maneuver the glued portion of the membrane onto the glued substrate surface, avoiding any wrinkles or air pockets.
x. 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.
xi. 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.
xii. 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.
xiii. Do not use bad or marginal adhesives. Contact **FTCS** if the quality of the adhesive is suspect.

b. **FiberTite* Membrane Adhered with FTR-490 Adhesive**
* Nom 45-mil or greater FiberTite-SM and nom 90-mil FiberTite-XTreme only.
i. 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.
ii. Apply a 100% continuous coat of bonding adhesive to the exposed bottom side of the membrane and a mirrored area of the substrate.

iii. The amount of membrane and substrate that can be coated with adhesive will be determined by application method, ambient temperature, humidity and available manpower.
iv. Adhesive may be applied by spraying and "back" rolling or just rolling. (Do not "dump" adhesive or pour from the cans.)
v. Roller applied adhesive shall utilize a solvent resistant 3/8 inch nap roller, spreading the adhesive to ensure a smooth, even 100% coverage of the substrate and membrane.
vi. 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.
vii. Adhesive coverage should average 140 sq. ft. per gallon (± 10%) of applied adhesive (70 sq. ft. of net coverage).
viii. 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.
ix. When sufficiently cured, carefully maneuver the glued portion of the membrane onto the glued substrate surface, avoiding any wrinkles or air pockets.
x. 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.
xi. 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.
xii. 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
xiii. 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.
xiv. Do not use bad or marginal adhesives. Contact FTCS if the quality of the adhesive is suspect.

c. **FiberTite* "Fleece Back" Adhered Membrane Roofing System**

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

i. **FTR-290 Adhesive**

1. 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. (Do not utilize the "butterfly method".)
2. Apply a 100% 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°F 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 nap roller.
7. 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.
8. 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".
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 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.
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 FTCS if the quality of the adhesive is suspect.

ii. **FTR-390 Adhesive**

1. 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. (Do not utilize the "butterfly method".)
2. Apply a 100% 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°F 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 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 a 100% 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/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 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.
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.
12. Do not use bad or marginal adhesives. Contact FTCS if the quality of the adhesive is suspect.

iii. **FTR-490 Adhesive**

1. 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. (Do not utilize the "butterfly method".)
2. Apply a 100% 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°F 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 nap roller.
7. Adhesive must be rolled out to ensure a smooth, even 100% 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 "dry out".
9. 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.
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, 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 FTCS if the quality of the adhesive is suspect.

iv. **Hot Asphalt**

1. 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. (Do not utilize the "butterfly method".)
2. Apply a 100% 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°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.
4. Asphalt is to be applied by either mopping or mechanical spreaders.
5. Adhesive must be spread to ensure a smooth, even 100% 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, 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, will impair proper welding of the seams and require a membrane patch.
11. Do not use bad or marginal adhesives. Contact FTCS if the quality of the adhesive is suspect.

2. **Peel Stops for Adhered FiberTite Roofing Systems**

a. 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.
b. 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.
c. Peel stops must be mechanically attached into or through the structural decking with rows of Magnum stress plates and fasteners, (or authorized alternate) @ 12 inches on center. The peel stop is sealed by heat welding a nominal 6-inch strip of membrane over the fasteners.
d. Lightweight insulating concrete is generally not considered a structural component and peel stop fastening must penetrate through the lightweight into the structural component.
e. Peel Stop(s) are only required by Seaman Corporationon on adhered projects requiring "peak gust" wind speed warranties (100-mph max) greater than the default 60-mph articulated in the standard commercial warranty.
f. 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.
g. 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;
    i. Buildings with Design Velocity Pressure less than: -45 psf (FM 1-90).

1. No peel stop required.

ii. Buildings with Design Velocity Pressure greater than: -45 psf (FM 1-90) but less than or equal to -52.5 (FM 1-1050).
    1. One peel stop at eighteen (18) inches from all edges.

iii. Buildings with Design Velocity Pressure greater than: -52.5 (FM 1-105) but less than or equal to -60 psf (FM 1-120).
    1. One peel stop at eighteen (18) inches from all edges and
    2. The second peel stop at three (3) feet from all edges.

iv. Buildings with Design Velocity Pressure greater than: -60 (FM 1-120) but less than or equal to -67.5 psf (FM 1-135).
    1. One peel stop at eighteen (18) inches from all edges and
    2. The second peel stop at three (3) feet from all edges and
    3. The third peel stop at six (6) feet from all edges.

v. 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.

3.08.1 INSTALLATION OF SIMULATED METAL ROOFING PROFILE

A. Safety

1. FiberTite Membranes can be hazardous / slippery when wet or there is dew or frost present on the membrane
2. Steep roofing can be dangerous even in ideal weather conditions
3. Follow all OSHA regulations applicable to the roofing environment
4. Deploy fall protection equipment and measures as dictated by OSHA and local regulations

B. Preparation

1. The ornamental nature of the SMRP places a high value on the aesthetics of the finished roof system
2. The surface of the FiberTite fleece back membrane shall be clean and dry for proper installation of the SMRP
3. The SMRP shall be installed in equidistant and parallel lengths - alignment errors will be visible at ground level
4. Best spacing of the SMRP is determined by using incremental distances between fleece back membrane laps
5. Installation of SMRP at overlaps will be nominally spaced at 62-in intervals
6. Cut and/or pre-assemble SMRP to desired lengths
7. Segments of SMRP can be joined using a plastic dowel
8. Using washable chalk, snap / mark lines at predetermined / specified intervals between overlaps

Number of Interval Segments of SMRPs Between Overlaps	Nominal *"on center"* Distance Between SMRPs
1	34.50-in
2	23.00-in
3	17.25-in

C. Application

1. Unroll the FTR 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 of tension
3. Once aligned, hand weld the beginning *(2 to 4-in)* of the SMRP to the fleece back roofing membrane
4. Pull the SMRP taught, aligned to the chalk line to keep the profile straight for the welder
5. Using a hot air welding apparatus, weld the SMRPs continuous, straight and parallel
6. Do not burn or scar the fleece back membrane while welding the SMRP
7. Do not install SMRP on or over welded overlaps
8. Do not rush the welding process and take time necessary to ensure aesthetics are achieved
9. MSRP splice joints and exposed ends can be detailed by using / welding small strips / pieces of same colored membrane

FTR BA10/09

Addendum / Inclusive to FTR GS10/O9

END OF ADDENDUM FTR AD10/09

FTR BA10/09

FTR BA10/09
Addendum for Ballasted FiberTite Roofing Systems

FTR BA10/09 is a "system specific" addendum to FTR GS10/09 for the design and installation of a quality high performance Ballasted FiberTite Roofing System. FTR BA10/09 is not a stand alone guide specification and must be applied in concert with FTR GS10/09.

PART 1 - GENERAL

A. FTR GS10/09 General Guide Specification for Installation of FiberTite Roofing Systems are incorporated and considered inclusive herein and are to be followed without variation in addition to the following Sections:

1.01 DESCRIPTION

C. Special Design Considerations

1. Ballast applications require the contractor to provide and maintain temporary ballast as necessary (row or spot ballast), keeping all field seams completely uncovered, including the stone mat, until completion of the final quality assurance inspection. Ballast shall provide sufficient protection against high winds.
2. Ballast should not be installed, without consulting a design professional, on areas with 2:12 slope or more.

1.02 REFERENCES

C. FTR GS10/09 General Guide Specification for Installation of FiberTite Roofing Systems

1.05 JOB CONDITIONS

A. Additional Precautions

1. During the construction process temporary ballast, especially in the perimeter and corner areas may be required to provide protection against high winds.
2. Adverse weather conditions e.g. extreme temperature, high winds, high humidity and moisture, could have a detrimental effect on adhesives, general production or the quality of the finished installation. Contact **FTCS** for recommendations and acceptable tolerances.

PART 2 - PRODUCTS

Refer to FTR GS10/09 in addition to the following Sections.

Ballast

1. Nominal 2 ½ inch smooth river bottom stone consisting of a ballast gradation size #2, as specified in ASTM D 448.
2. Freeze/thaw resistant concrete roof pavers, specifically designed and manufactured for use in ballasted membrane systems.
    a. Heavyweight/non-interlocking pavers weighing 22 pounds per sq. ft. or more which are unrestrained by adjacent units.
    b. Lightweight/Interlocking pavers weighing less than 22 pounds per sq. ft. which incorporate physical dependency with adjacent pavers.
3. Concrete pavers shall be installed according to the manufacturer's most recent published specification.
4. All concrete paver products and proposed wind design/resistance must be pre-approved in writing by Seaman Corporation.

FTR BA10/09

PART 3 - EXECUTION

Refer to FTR GS10/09 in addition to the following Sections.

3.07 ROOF INSULATION

D. Loose Laid Insulation

1. Insulation shall be applied to or installed over properly prepared and pre-approved substrates, free of any debris, dirt, grease, oil or moisture.
2. Ballast applications require that the base layer of insulation, in multiple layer applications, be loose laid, staggering all joints and all insulation joints in subsequent layers shall also be staggered (above and below) within the multiple layers.

3.08 INSTALLATION OF FIBERTITE MEMBRANE

E. Mechanically Fastened FiberTite Roofing Systems

* All FiberTite Membranes are eligible for ballast upon review and acceptance for **FTCS**.

1. Ballast shall be loose laid and sufficient to provide 100% coverage of the FiberTite membrane.
2. A minimum 2 inch high gravel stop or approved ballast restraint shall be installed at exterior perimeter edges.
3. Perimeter shall be defined as a rectangular area along and parallel to the exterior edge of the roof. The width of the rectangle shall be determined as 10% of the building width or 40% of the building height, which ever is less to a ***minimum of 10 feet***.
4. Corner shall be defined as a square external corner section of the roof. The width of the square shall be determined as 10% of the building width or 40% of the building height, which ever is less to a ***minimum of 10 feet***.
5. When applicable, a special mechanical termination shall be constructed between areas of loose laid, mechanically attached and/or fully adhered roof sections.
6. The building's degree of exposure to the effects of wind will vary according to specific design wind speed, building height, parapets, permeability and geographic location.
7. For velocity pressures greater than 40 psf, coastal applications or buildings with significant openings, please consult **FTCS**.
    a. Unroll and position the FiberTite **Custom Panel** onto the properly prepared substrate, insulation or cover board.
    b. Install the panel in a flat, relaxed position avoiding excess wrinkles and stretching.
    c. Adjoining rolls shall overlap a minimum of five inches, properly shingled with the flow of water wherever possible.
    d. Stagger the factory seams to prevent adjacent factory welds from falling on top of one another.
    e. The field membrane shall be properly affixed to wood blocking or restrained in an approved manner at all roof perimeters, walls, expansion joints, curbs and penetrations having any one dimension greater than 24 inches in length. (See Current FiberTite Construction Details.)
8. The following table is a list of minimum guidelines for ballasted FiberTite Roof Systems. Final design/approval shall rest with the local building official or within the local building code having jurisdiction over the project.

FTR BA10/09

Design Pressure	Roof Area /Zone	Stone Ballast (2.5″ #2)	Paver (non-interlocking)	Paver (interlocking)
≤ -20 psf	Field	10 psf	22 psf	10 psf
	Perimeter	12 psf	22 psf	10 psf
	Corner	15 psf	22 psf	10 psf
≤ -30 psf	Field	12 psf	22 psf	10 psf
	Perimeter	15 psf	22 psf	10 psf
	Corner	18 psf	22 psf	10 psf
≤ -40 psf	Field	15 psf	22 psf	Special Design Only
	Perimeter	MA or FA Only	MA or FA Only	MA or FA Only
	Corner	MA or FA Only	MA or FA Only	MA or FA Only

END OF ADDENDUM FTR FTR BA10/09

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INTELLIGENT
ROOFING SOLUTIONS

Seaman Corporation • 1000 Venture Blvd. Wooster, OH 44691 • Phone: 330-262-1111 • Fax: 330-263-6950
Toll-free 800-927-8578 • Fax 800-649-2737 • www.fibertite.com • www.seamancorp.com