



Specifications

SECTION 07 54 23

THERMOPLASTIC MEMBRANE ROOFING

FLEX FLEECEBACK ELVALOY® KEE MEMBRANE ADHERED OVER GYPSUM DECK

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Fleece backed Elvaloy® KEE adhered membrane over gypsum.

1.2 RELATED SECTIONS

- A. Section 06 10 00 - Rough Carpentry.
- B. Section 07 62 00 - Sheet Metal Flashing and Trim.

1.3 REFERENCES

- A. American Society of Civil Engineers (ASCE) 7 Minimum Design of Loads for Buildings and Other Structures.
- B. American Society for Testing and Materials (ASTM) C 208 - Standard Specification for Cellulosic Fiber Insulating Board.
- C. American Society for Testing and Materials (ASTM) C 1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
- D. American Society for Testing and Materials (ASTM) D 41 - Standard Specification for Asphalt Used in Roofing.
- E. American Society for Testing and Materials (ASTM) D 312 - Standard Specification for Asphalt Used in Roofing.
- F. American Society for Testing and Materials (ASTM) D 1079 - Standard Terminology Relating to Roofing, Waterproofing, and Bituminous Material.
- G. American Society for Testing and Materials (ASTM) D 4263 - Standard Test Method for Indicating Moisture in Concrete.
- H. American Society for Testing and Materials (ASTM) D 4434 - Standard Specification for Poly (vinyl chloride) Sheet Roofing.
- I. American Society for Testing and Materials (ASTM) D 6506 - Standard Specification for Asphalt Protection Board.
- J. American Society for Testing and Materials (ASTM) E 408 - Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques.
- K. American Society for Testing and Materials (ASTM) E 903 - Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres.
- L. American Society for Testing and Materials (ASTM) E 1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.
- M. Factory Mutual (FM Global) - Approval Guide.

- N. Factory Mutual Standard 4470 - Approval Standard for Class 1 Roof Covers.
- O. National Roofing Contractors Association (NRCA).
- P. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) Architectural Sheet.
- Q. Underwriters Laboratories (UL) - Roofing Systems and Materials Guide (TGFU R1306).

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings:
 - 1. Show outline and size of the roof, location and type of penetrations, perimeter and penetration flashing detail references to manufacturer's standard. Details which do not conform to roofing manufacturer's standards shall be identified with separate approval from roofing manufacturer. Details to be employed on the project shall be approved by roofing manufacturer.
- D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 - 1. Membrane manufacturer shall have a minimum of fifteen (15) years experience in the production of thermoplastic scrim-reinforced membrane and related accessories.
 - 2. Membrane manufacturer shall be listed in UL and have FM Approvals for membrane roofing systems for a minimum of 20 years.
 - 3. The roofing membrane manufacturer is defined as a company which makes the primary roofing membrane and flashing membrane in its own factories from rawer states of material. No "Private Label" material, in which one company's name goes on a product manufactured by others, is acceptable.
- B. Installer Qualifications:
 - 1. Installer shall have a minimum of five (5) years experience in the application of thermoplastic membrane and shall be certified by the manufacturer of the membrane system.
- C. Product Requirements:
 - 1. LEED (USGBC) Certification: The roof system shall comply with LEED requirements for the use of a high albedo roofing material with a Solar Reflectance Index (SRI) of no less than 78 when calculated in accordance with ASTM E 1980. Compliance based on a reflectance rating of at least 0.80 when tested according to ASTM E 903 and an emissivity rating of at least 0.9 when tested in accordance with ASTM E 408 for a minimum of at least 75 percent of the roof surface.
 - 2. Membrane Qualifications: Membrane shall be factory certified, first run material, seconds will not be permitted. Approvals:
 - a. State of Florida Building Code Product Approval.
 - b. Miami/Dade County Florida NOA.
 - c. UL Evaluation Report.
 - d. HUD.
 - e. Energy Star Partner.
 - f. Material and packaging to bear the FM label.
 - 3. The roofing systems shall meet the Factory Mutual 1-60 requirements.

4. The roofing systems shall meet the Factory Mutual 1-90 requirements.
5. The roofing systems shall meet the Factory Mutual 1-105 requirements.
6. The roofing systems shall meet the Underwriters Laboratories Class A requirements.

D. Pre-Installation Conference:

1. Prior to scheduled commencement of the roofing installation and associated work conduct a meeting at the project site with the Installer, Architect, Building Owner, Manufacturer's Representative and any other entities directly involved with the performance of the work.
2. The installer shall record conference discussions to include decisions, agreements, and open issues and furnish copies of recorded discussions to each attending party. The primary purpose of the meeting is to review foreseeable methods and procedures related to roofing work schedule and quality.

E. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.

1. Finish areas designated by Architect.
2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
3. Refinish mock-up area as required to produce acceptable work.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Protect stored materials from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer. Leave product wrapped and protected in original packaging with identification labels, until ready for use on the job.
- C. Store in a clean, dry, well ventilated area protected from weather and other trades. All rolls of membrane shall be stored, lying down, elevated above the roof deck and completely protected from moisture with tarpaulins.
- D. Insulation shall be stored on pallets, fully protected from moisture with tarpaulins. Adhesives shall be safely stored, at temperatures above 45 degrees F (7 degrees C). Flammable materials shall be stored in a cool dry area away from sparks and open flames.
- E. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. Weather:
 1. Proceed with the roof installation only when existing and forecasted weather conditions permit.
 2. Ambient Temperatures shall be above 45 degrees F (7 degrees C) when applying hot steep asphalt, water based adhesives or urethane adhesives.

1.8 WARRANTY

- A. Manufacturer warrants to the Building Owner, subject to the terms, limitations, and conditions for a period specified, in which the Materials and Workmanship Warranty is effective, the materials installed shall be free from defects in materials supplied and/or defective workmanship provided by the authorized applicator.
 1. The Manufacturer's Technical Service Representative shall inspect the completed roof system, and upon acceptance, the manufacturer shall issue the specified warranty commencing on the Date of Substantial Completion.
 2. The Roofing System shall receive the manufacturer's standard ten (10) year, fifteen (15) year, twenty (20) year, twenty-five (25) year, or thirty (30) year guarantee of water tightness.
- B. Sheet Metal Warranty: Materials supplied by the roofing manufacturer.
 1. Materials shall be free of defects in material and workmanship for five years after shipment. Defective

materials will be repaired or replaced at manufacturer's option. Manufacturer shall not be liable for direct or consequential damages arising from the installation of materials. No other express or implied warranties apply to the products.

2. Special Performance Warranty: The FlexCap Coping System in standard sizes, when used as a part of a Flex Roofing System Installation, and installed according to manufacturer instructions, shall not blow off, leak, or cause membrane failure, for an identical period as that warranty for the roof system itself, or we will repair or replace the Coping Cap material.
3. Decorative Finish Warranty: Pre-finished aluminum and 24 gauge (0.607 mm) galvanized steel, coated with Kynar 500 finish shall receive a limited 20 year warranty.
4. Spray-applied Kynar 500 finish shall receive a limited 5 year warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Flex Roofing Systems, which is located at: 2670 Leiscz's Bridge Road Suite 400 ; Leesport, PA 19533; Toll Free Tel: 800-969-0108 ; Tel: 610-916-9500; Email: [request info \(jdoyle@flexmembranes.com\)](mailto:requestinfo@flexmembranes.com); Web: www.flexroofingsystems.com
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.

2.2 SYSTEM

- A. Flex FB Elvaloy® KEE as manufactured by Flex Roofing Systems.
 1. Color: White.
 2. Color: Light Gray.
 3. Color: Tan.
 4. Roof System: Provide and install an Adhered, Fleece-Back, Thermoplastic, CRRC approved roofing membrane to a gypsum concrete deck.

2.3 MEMBRANE

- A. Membrane: The roofing membrane shall meet or exceed the requirements of ASTM D4434 standard for polyvinyl chloride (PVC) membrane sheet roofing.
- B. Fleece Back Elvaloy Membrane:
 1. FB 45 Elvaloy® KEE Fleece Back.
 2. FB 50 Elvaloy® KEE Fleece Back.
 3. FB 60 Elvaloy® KEE Fleece Back.
 4. FB 80 Elvaloy® KEE Fleece Back.

2.4 INSULATION

- A. Extruded Polystyrene Boards: Federal specification HH-I-524C, Type IV minimum thickness 1 inch (25 mm), minimum density 1.6 lb/cf (26 kg/cu m).
- B. Flex ISO II: A closed cell polyisocyanurate foam core laminated to black (non-asphaltic), fiber-reinforced felt facers. Manufactured in accordance with ASTM C 1289, Type II, Class 1.
- C. Polyisocyanurate and Polyurethane Faced Roof Boards: Federal spec. HH-I-1972/ 1&2 Class 1-3, minimum thickness 1 inch (25 mm) nominal.

2.5 ACCESSORY MATERIALS

- A. Adhesives:
 1. Substrate Adhesive: as supplied by Flex Roofing System for adhering fleece back membrane to approved substrates.
 2. Flashing Adhesive: as supplied by Flex Roofing System for laminating flashing to vertical surfaces.
 3. Low VOC Bonding Adhesive: as supplied by Flex Roofing System for laminating flashing to vertical

- surfaces.
4. Flex SEBS200 Kettle Modified rubberized asphalt.
 5. Hot steep asphalt only - All manufacturers. Type III and IV for very steep inclines.
 6. Flex Insulation Adhesive: two part urethane foam adhesive for adhering insulation or cover boards to approved substrates.
 - a. Olybond 500, Olybond 500 Spot Shot or Olybond 500 Canister Spatter
 - b. Millennium PG-1 or One Step.
 - c. ICP CR-20 or Board Max
 7. Flex FB Foam Adhesive: two part urethane foam adhesive for adhering fleeceback membrane to approved substrates
 - a. Flex FB Low Rise Foam Adhesive
 - b. Olybond 500 Canister Spatter
 - c. ICP CR-20 Spatter
 - d. Millennium PG-1
- B. Fasteners:
1. Metal Decks: screw type fasteners treated for corrosion resistance with ultimate pull out value of minimum 420 lb (189 kg) in 22 (0.759 mm) gauge steel deck to be applied in conjunction with Factory Mutual approved pattern:
 - a. Flex Screws, Corrosion Resistant # 10 Coating
 - b. SFS Intec, Dekfast Fastening System, C-2 type, corrosion resistant only.
 - c. OMG Inc., Fasteners, screws long and short, Endurion coated only.
 2. Plywood Decks: screw type fasteners applied in a Factory Mutual approved pattern and method.
 - a. Flex Screws, Corrosion Resistant # 10 Coating
 - b. SFS Intec Inc., Dekfast Fastening System, C-2 type, corrosion resistant only.
 - c. OMG Inc. Fasteners, screws long and short, Endurion coated only.
 3. Solid Wood Decks: screw or nail type fasteners:
 - a. Flex Screws, Corrosion Resistant # 10 Coating
 - b. SFS Intec, Dekfast Fastening System, C-2 type, corrosion resistant only.
 - c. OMG Inc., Fasteners, screws long and short, Endurion coated only.
 4. Masonry Decks: solid limestone concrete block minimum pullout resistance shall be 525 lb (236 kg), expanded slag block minimum pullout resistance shall be 1100 lb (495 kg), poured concrete, minimum pullout resistance shall be 1000 lb (450 kg):
 - a. SFS Intec. Dekspike Concrete Roofing Anchor
 - b. OMG Inc., Fluted Nail or Olympic CD-10
 5. Through Lightweight Concrete or Gypsum Fill:
 - a. On steel deck see 3A above.
 - b. On foamboard: toggle bolts or,
 - c. OMG, Inc. GypTec or Lite Deck Fastener.
 - d. SFS Intec, Dek Lite Fastener
- C. Sealants:
1. Caulking: Silicon, polysulfide or polyurethane caulking, exterior grade for caulking, surface reglets and vent pipe details.
 2. Flex Single Ply Sealant
 3. Mameco, Vulkem 116, Polyurethane.
 4. Sonneborn, NP1.
 5. BOSTIK, Chem Caulk
 6. For filling pitch pans: Flex Pourable Sealer or as approved by Flex Technical Services Department.
 7. Geocel 3300 Polyurethane
- D. Flashing:
1. Reinforced Membrane: Flex MF/R, same material, color and thickness as roof membrane for all curbs, walls and penetrations.
 2. Non reinforced Membrane: Flex MF: multi angled intersections, sealant pockets and other conditions that would be impractical for reinforced membrane application.

- E. Base Sheet:
1. Base sheets or ply sheets installed over substrate or insulation system as an integrated component of Flex built up roofing system.
 - a. Flex SBS 80 mil S/S Base Sheet.
 - b. Premium Flex Ply Roofing Felt.
- F. Wood Nailers:
1. Number 2 grade lumber minimum salt treated for rot and fire resistance.
 - a. Wolmanized.
 - b. Osmose treated.
 - c. Pressure treated.
- G. Separation Layers:
1. Flex Separator Sheet.
 2. Flex Foil Barrier Slip Sheet - for use over coal tar pitch roofs.
 3. Flex Green Guard 3/8 inch PB6W Fan Fold Roofing Recovery Board.
 4. Georgia Pacific Corporation: Dens Deck, Dens Deck Prime distributed by Flex Roofing System.
 5. USG Securock Roof Cover Board distributed by Flex Roofing System.
 6. Flex 1/2" HD Coverboard, High Strength Polyisocyanurate Foam with coated Glass Facers distributed by Flex Roofing System.
- H. Edge Termination:
1. Size and profile as indicated on drawings.
 2. Profiles and designs engineered for roof perimeter attachment. Components from the membrane manufacturer shall be approved for FM 1-90 rating and ANSI/SPRI/FM 4435/ ES-1-2011 Wind Design Standard for Edge Systems.
 3. Finish: Natural mill aluminum.
 4. Finish: Pre-Coated Kynar 500 - from the manufacturer's standard color chart.
 5. Finish: Post-Coated Kynar 500 - industry standard two coat colors.
 6. Non-Standard Kynar 500 -colors requiring multiple coatings or protective clear coats.
 7. Finish: Anodized Aluminum - Clear.
 8. Finish: Anodized Aluminum - Bronze.
 9. Finish: Anodized Aluminum - Black.
 10. Flex Clad Metal: for custom fabrication of a hot air weldable edge metal.
 11. Roof Edge: Low profile FM rated factory fabricated system:
 - a. Roof perimeter fascia shall be FlexLock Type FLT, as furnished by the membrane manufacturer as part of the complete roof system.
 - b. Exterior Fascia shall be 0.032 inch (0.8 mm) aluminum with matching joint covers.
 - c. Exterior Fascia shall be 0.040 inch (1.0 mm) aluminum with matching joint covers.
 - d. Exterior Fascia shall be 0.050 inch (1.3 mm) aluminum with matching joint covers.
 - e. Exterior Fascia shall be 24 gauge (0.607 mm) Kynar 500 coated galvanized steel with matching joint covers.
 - f. Term-bar retainer section shall be standard 20 gauge (0.912 mm) galvanized steel.
 - g. Finish: Refer to Exterior Finish Schedule.
 12. FlexLock FLE Roof Edge: decorative FM rated factory fabricated system
 - a. Roof perimeter fascia shall be FlexLock Type FLE as furnished by the membrane manufacturer as part of the complete roof system.
 - b. Exterior Fascia shall be 24 gauge (0.607 mm) Kynar 500 coated galvanized steel over continuous galvanized steel spring-action base plate.
 - c. Exterior Fascia shall be 0.063 inch (1.6 mm) aluminum over continuous galvanized steel spring-action base plate.
 - d. Exterior Fascia shall be 0.050 inch (1.3 mm) aluminum over continuous galvanized steel spring-action base plate.
 - e. The fascia and base plate shall be standard twelve-foot (3.65 m) lengths. Provide matching factory fabricated mitered corners and other accessories as may be required.
 13. FlexLock FLT Roof Edge: decorative FM rated factory fabricated system

- a. Roof perimeter fascia shall be FlexLock Type FLT as furnished by the membrane manufacturer as part of the complete roof system.
 - b. Exterior Fascia shall be 24 gauge (0.607 mm) Kynar 500 coated galvanized steel over continuous galvanized steel spring-action base plate.
 - c. Exterior Fascia shall be 0.063 inch (1.6 mm) aluminum over continuous galvanized steel spring-action base plate.
 - d. Exterior Fascia shall be 0.050 inch (1.3 mm) aluminum over continuous galvanized steel spring-action base plate.
 - e. The fascia and base plate shall be standard twelve-foot (3.65 m) lengths. Provide matching factory fabricated mitered corners and other accessories as may be required.
14. FlexLock FLS Roof Edge: decorative FM rated factory fabricated system
- a. Roof perimeter fascia shall be FlexLock Type FLS as furnished by the membrane manufacturer as part of the complete roof system.
 - b. Exterior Fascia shall be 24 gauge (0.607 mm) Kynar 500 coated galvanized steel over continuous galvanized steel spring-action base plate.
 - c. Exterior Fascia shall be 0.063 inch (1.6 mm) aluminum over continuous galvanized steel spring-action base plate.
 - d. Exterior Fascia shall be 0.050 inch (1.3 mm) aluminum over continuous galvanized steel spring-action base plate.
 - e. The fascia and base plate shall be standard twelve-foot (3.65 m) lengths. Provide matching factory fabricated mitered corners and other accessories as may be required.
15. FlexCap Coping - Type FLC: specially designed for anchoring membranes at parapet walls
- a. Exterior Fascia shall be 24 gauge (0.607 mm) Kynar 500 coated galvanized steel formed as indicated with allowance for expansion and contraction.
 - b. Exterior Fascia shall be 0.063 inch (1.6 mm) aluminum formed as indicated with allowance for expansion and contraction.
 - c. Exterior Fascia shall be 0.050 inch (1.3 mm) aluminum formed as indicated with allowance for expansion and contraction.
 - d. Exterior Fascia shall be 0.040 inch (1.0 mm) aluminum formed as indicated with allowance for expansion and contraction.
 - e. The standard length is twelve-foot (3.65 m) with standard corners having 24 inches (610 mm) nominal length. The support shall be manufacturer's 20 gauge (0.912 mm) galvanized steel coping cleats. The face and back leg are 4 inches (102 mm) nominal length with tested approvals up to 6 inches (152 mm). Custom sizes are available upon request. Concealed 6 inches (152 mm) splice plate shall match color and finish.

I. Detailing Components:

- 1. Flex Preformed Inside and Outside corners.
- 2. Flex Preformed Pipe Boots.
- 3. Flex Split Pipe Boots.
- 4. Flex Retrofit Drains.
 - a. Flex PVC Coated Flange Model.
 - b. Flex Clamping Ring Model.
- 5. Flex Walkway Pad: Traffic Pads: 30 inches (762 mm) wide by 60 feet (18 m) long by 0.80 inch (2 mm) thick thermoplastic material provided by the membrane manufacturer.
- 6. Flex Insulvent with PVC Coated Flange.
- 7. Flex Snowguard PVC Coated.
- 8. Flex 2-3/8 inches (60 mm) XHD Barbed Plate.
- 9. Flex 2-3/4 inches (70 mm) SXHD Barbed Plate.
- 10. Flex Base Sheet Fastener.
- 11. Flex Termination Bar.
- 12. Flex Standard Screws.
- 13. Flex HD Standard Screws.
- 14. Flex XHD Standard Screws.
- 15. Flex SXHD Standard Screws.

2.6 VAPOR RETARDERS

- A. Polyethylene : 10 mil (0.25 mm) thick polyethylene vapor retarder.
- B. Flex SA Vapor Barrier: SBS Modified Bitumen vapor barrier 31 mil (0.8mm) thick styrene-butadiene-styrene (SBS) polymer modified bitumen in combination with a high tack self-adhesive specifically designed for use with steel decks. The topside is surfaced with high strength tri-laminate polyethylene film and the underside is surfaced with protective poly-olefin release film that is removed during application.
- C. Flex SBS 80 mil base sheet: 80 mil (2.0 mm) SBS polyester reinforced membrane with sanded upper and lower surface for mopping or cold applied adhesives to substrates or insulation boards.
- D. Flex NP 180 s/p base sheet: 90 mil (2.2 mm) SBS polyester reinforced membrane with sanded upper surface to receive mopping or cold applied adhesives for insulation or cover boards. Plus a thermofusable lower surface for torch applied installation to approved substrates.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare deck surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
 - 1. Deck shall be smooth surfaced. Clean and free of moisture or debris.
 - 2. Deck shall be primed 24 hours prior to roof system installation with an ASTM D41 compliant cut back asphalt primer.
 - 3. Decking shall be installed to provide positive slope and positive drainage.
 - 4. Deck surface shall be free of fins, ridges, depressions and other irregularities.
 - 5. Deck surfaces shall be smooth and free of splintered wood, ridges, depressions and other irregularities.
 - 6. Poured gypsum concrete decks shall be installed in strict conformance with industry standards, practices and installation requirements.
 - 7. The density of the cured gypsum concrete shall be no less than 30 lb per cubic foot (480 kg/cu m) and a compressive strength of 500 lb per square inch (3.45 MPa).
 - 8. Finished gypsum concrete deck shall be a minimum thickness of 2 inches (52 mm) not including the formboard.
 - 9. Finished Decking shall be properly cured, dry and ready to receive hot asphalt.

3.3 INSTALLATION

- A. Install roof system in accordance with manufacturer's instructions.
- B. Wood Nailers:
 - 1. Locate and install along gravel stops and drip edges and other areas as required by membrane manufacturer.
 - 2. Anchor nailer to structural deck with manufacturers approved fasteners, spaced appropriately for the specified installation; minimum withdrawal resistance 100 pounds (45 kg) per fastener.

(Optional) Install Vapor Retarder

- C. Insulation:
 - 1. Insulation shall be adhered to the deck with cold adhesives follow the adhesive manufactures installation

instructions.

2. Insulation board size as recommended by manufacturer for adhered application.
3. Do not install wet, damaged or warped insulation boards.
4. Install insulation boards with staggered board joints in one direction.
5. Insulation boards to be installed so that no gaps larger than 1/4 inch (6 mm) are found at the end joints and that the adjoining top surfaces are flat and smooth. All gaps in excess of 1/4 inch (6 mm) shall be filled with like insulation material.
6. If more than one layer of insulation board is to be installed the joints of the subsequent layers must be staggered. Stagger the joints in the additional layers a minimum of 6 inches (152 mm) from the underlying insulation boards to eliminate vertical gaps.
7. Do not install any more insulation than will be completely waterproofed each day.
8. Provide separation layer as required by manufacturer.

D. Recover Board:

1. Recover Board should be applied with cold adhesives follow the adhesive manufactures installation instructions.
2. Recover boards to be installed so that no gaps larger than 1/4 inch (6 mm) are found at the end joints and that the adjoining top surfaces are flat and smooth.
3. Stagger the joints in the recover board a minimum of 6 inches (152 mm) from the underlying insulation boards to eliminate vertical gaps.
4. Do not install any more recover board than will be completely waterproofed each day.

E. Base Sheet:

1. If applying base sheet with a cold adhesive follow the adhesive manufacturer's installation instructions.
2. Do not install any more base sheet or ply sheet than will be completely waterproofed each day.
3. Mechanically attach base sheet directly to the deck with Flex Locking Impact Nail fastener and plate.
4. Fasteners to be installed in a Factory Mutual approved pattern in accordance with the Project wind pressure design requirements.
5. Do not install any more base sheet or ply sheet than will be completely waterproofed each day.

F. Membrane Installation:

1. Fully adhere membrane to acceptable substrate with hot steep asphalt or Flex Cold Adhesive applied at the rate specified by the manufacturer.
2. Position sheets as indicated on approved shop drawings. Measure and chalk lines on the substrate to establish proper alignment of the sheet.
3. Place the roll on the line and unroll the Flex FB its entire length and allow the membrane to relax. The relaxation time required is dependent on the ambient air temperature.
4. Fold one end of the Flex FB sheet on top of itself until both ends meet. Apply the bonding material (Flex Cold Adhesive or hot steep asphalt) to the prepared roof surface. The sheet can then be pulled and laid into the bonding material using care not to create any wrinkles.
5. Carefully push and broom into place from fold line to overlap, avoiding wrinkles and air pockets. Roll with a heavy roller (minimum 200 lb (90 kg)) to insure proper adhesion.
6. Repeat procedure for other half of sheet.
7. Lap seams shall be done by lapping the 3 inches (76 mm) selvedge edge over the non selvedge edge of the previous roll. Do not allow adhesives or other contaminants into the lapped seam. The selvedge edge seam will be completed by the hot air welding method. Seams are to be completed each day during construction.
8. Roll ends are butted together and capped with a 6 inches (152 mm) wide Flex Trim Strip. The trim strip is centered over the end joint and hot air welded into place.
9. All seams shall be checked with a needle probe and any voids repaired with the heat gun the same day they are made.
10. Seams greater than 10 feet (3 m) in length shall be welded with the automatic type welding unit. Hand held welders shall be used only for the remaining seams and detail welding.

G. Flashing:

1. Flash penetrations, walls, curbs, expansion joints, drains as shown on details and approved shop drawings

- with Flex flashing membrane.
- 2. Use prefabricated sealant pockets and pre-molded vent / pipe flashing.
- 3. Mechanically fasten flashing at terminations according to approved details. Fastening flashing membrane through counter-flashing metal is not acceptable.
- 4. Flashing membranes shall be adhered to the approved substrate with Flex Flashing Adhesive. Flashing Membrane is to be installed flat and wrinkle free. Flashings shall be rubbed or rolled onto the substrate for proper adhesion.

3.4 INSPECTION

- A. Seam Inspection:
 - 1. All seams are to be completed by the hot air welding method each day as the installation progresses.
 - 2. The roofing contractor is to designate a responsible person experienced in hot air welding techniques to inspect the completed installation each day as the installation progresses. The inspection is to include hand probing of all welded seams.
 - 3. Any defects found during these inspections should be immediately corrected.
- B. Manufacturer's Field Services:
 - 1. Provide manufacturer's field service consisting of product use recommendations and periodic site visits for inspection of system installation in accordance with manufacturer's instructions.
 - 2. Site Visits: Final inspection and acceptance of the installation by the manufacturer's technical representative is required before a warranty can be issued.

3.5 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION