TECHNICAL WATERPROOFING SPECIFICATIONS AND APPLICATION GUIDELINES

NOTE TO DESIGNER

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- *The user may modify or add items as necessary or delete items which are not applicable. Words and sentences may contain choices to be made regarding inclusion or exclusion of a particular item or statement.*
- *This section may include performance based, proprietary based, and/or descriptive-type specifications. Edit to avoid conflicting requirements.*
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- *For assistance on specific applications, please contact Bitufa Technical Services Department at 58-108-2626*

SECTION 07 13 52
MODIFIED BITUMINOUS SHEET WATERPROOFING

Part 1 GENERAL

1.1 SECTION INCLUDES

A. Surface preparation
B. Application of 5mm Modified Bituminous Sheet Waterproofing Membrane System
C. Flexible Membrane Flashings

1.2 RELATED SECTIONS

A. Section 03 30 00 Cast-In-Place Concrete
B. Section 03 40 00 Precast Concrete
C. Section 07 21 00 Thermal Insulation
D. Section 07 60 00 Flashing and Sheet Metal
E. Section 07 92 00 Joint Sealants
F. Section 32 00 00 Exterior Improvements
G. Section 33 41 23 Geosynthetic Drainage Layers

1.3 REFERENCES

A. American Society of Civil Engineers (ASCE):
   1. ASCE 7; Minimum Design Loads for Buildings and Other Structures. Revision as adopted by local code and Authority Having Jurisdiction.
B. ASTM International (ASTM):
   1. ASTM D412: Standard Test Method for Vulcanized Rubber and Thermoplastic Elastomers Tension.
   2. ASTM D4263: Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method
   3. ASTM D5147: Standard Test Methods for Sampling and Testing Modified Bituminous Sheet Material
   4. ASTM D6164: Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements
   5. ASTM D6622: Standard Guide for Application of Fully Adhered Hot-Applied Reinforced Waterproofing Systems
   6. ASTM E96: Standard Test Methods for Water Vapor Transmission of Materials
   7. ASTM E154: Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.
C. International Code Council (ICC):
   1. International Building Code (IBC)
D. International Institute of Building Enclosure Consultants (IIBEC): Glossary of Roofing Terms.
E. National Roofing Contractors Association (NRCA): Low Slope Roofing and Waterproofing Manual, 2019 Edition.

1.4 SUBMITTALS

A. Submit product data, samples, shop drawings and installer certification under provisions of Division 1 General Requirements: Section 01 30 00.
B. Product Data: Submit product data sheets indicating membrane materials, base flashing, insulation, separator/ thermal insulation, accessories and manufacturer's installation instructions and details including:
   1. Product Data Sheets
   2. Safety Data Sheets
   3. Installation instructions and recommendations
   4. Required storage and handling recommendations.
   5. Sample of Manufacturer's Warranty
C. Detail Drawings:
   1. Provide construction detail drawings showing methods, components, flashing conditions, and location of work on the project.
D. Verification Samples: Submit a quantity of _____samples for each product specified. Submit minimum 4" x 6" (10.2 cm x 15.2 cm) SBS membrane samples for approval.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Sheet Membrane must be manufactured by a company with a minimum of twenty (20) years documented experience in the production of membrane waterproofing materials.
B. Applicator Qualifications:
   1. Company specializing in the installation of SBS modified bituminous torch applied products included in this section with minimum five (5) years documented experience.
   2. The applicator must be authorized by the manufacturer and eligible to provide the required Manufacturer's Warranty.
   3. Applicator must provide an adequate number of experienced workers, trained in jobsite safety practices and skilled in the use of torch welding equipment and the installation of materials and flashings used in the construction of the waterproofing assembly.
   4. Applicator shall always provide a project supervisor on the job while work is in progress.
C. Application of Waterproofing: Work of this section shall conform to contract documents and manufacturer specifications. No deviations shall be made from this specification without the approval of the designer of record. Deviations from published manufacturer requirements require review and approval of the designer of record and written approval from the manufacturer on manufacturer's letterhead, signed by an authorized technical manager of the company. Where discrepancies exist, the Installer shall promptly notify the design professional, project engineer or owner for resolution prior to commencing work.
D. Materials: Provide only top-quality materials from a manufacturer complying with specification requirements. All materials shall be provided by the primary system manufacturer or approved for use in conjunction with installation of the waterproofing assembly.
E. Manufacturer's Representative: Arrange to have a trained technical representative of the manufacturer onsite periodically to review installation procedures.

1.6 PRECONSTRUCTION CONFERENCE

A. Preconstruction Conference: A preconstruction conference will be held in accordance with the contract documents at least one week prior to initiation of waterproofing work. Manufacturer representative, supervisor for waterproofing applicator, architect, owner representative, general contractor and other required parties should be present to discuss the execution of the work.

1.7 MOCK-UPS

A. Prior to installation of membrane, apply waterproofing membrane to 100 square feet (9.3 m^2) of deck or wall to demonstrate surface preparation, crack and joint treatment, corner treatment, thickness and to demonstrate tie-ins with adjoining construction and other termination conditions, as well as qualities of materials and execution of the work.
B. Coordination of inspections and testing shall be discussed with the owner's representative and the qualified inspection/testing agency. Do not cover any installed waterproofing membrane unless it has been inspected, tested, and approved by Owner's representative.

1.8 DELIVERY, STORAGE AND HANDLING

A. Deliver products in manufacturer's original containers and packaging, dry, undamaged, with seals and labels intact.
B. Store products in a weather-protected environment, clear of ground and moisture, secured against wind, moisture, and damage. Prevent condensation beneath product packaging, coverings and temporary plastic shipping wrappers or shrouds by removing, opening and / or covering materials with breathable tarpaulins.
C. Store membrane cartons on pallets.
D. Keep away from sparks and flames.
E. Follow manufacturer's recommendations for environmental conditions and product storage. Store adhesives at temperatures above 40ºF (4.4ºC). Materials shall be stored and maintained within the manufacturer's published temperature ranges.
F. Completely cover when stored outside. Protect from rain.
G. Protect materials during handling and application to prevent damage or contamination.
H. Avoid use of products which contain coal tars, solvents, pitches, polysulfide polymers, or PVC materials that may come in contact with the waterproofing membrane systems.

1.9 PROJECT CONDITIONS

A. Work should be performed only when existing and forecasted weather conditions are within the limits established by the membrane manufacturer.
B. Moisture: Do not proceed with installation where potential exists for condensation or uncontrolled moisture migration into the waterproofing system from construction-related moisture or installation over moisture bearing substrates or interiors without adequate ventilation and moisture control.
C. Warn personnel against breathing vapors and contact with skin and eyes; wear appropriate protective clothing and respiratory equipment.
D. Keep flammable products away from spark or flame. Post "No Smoking" signs. Do not allow use of spark-producing equipment during application and until all vapors have dissipated.
E. Maintain work area in a neat and workmanlike condition. Remove empty cartons and rubbish from the site daily.

1.10 WARRANTY

A. Contractor Warranty: Contractor shall warrant roofing assembly components, accessories, and associated work of this section against leaks or defective workmanship from date of substantial completion.
   1. Term of Warranty ____ years [two, five]
B. Manufacturer's Limited Material Warranty: Submit executed copy of waterproofing manufacturer's (Commercial Building Waterproofing Limited Material Warranty) warranty on materials from date of substantial completion.
   1. Term of Warranty ____ years [five, ten, fifteen]

Part 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Bitufa Ltd, Citadel Tower, Business Bay, Office No.407 Dubai PO Box 377310
   Email: dubaibitufa@gmail.com
   Website: www.bitufadubai.com
B. Substitutions: Not permitted.
C. Substitution Requests: Submit in accordance with Section 01 60 00.

2.2 MODIFIED BITUMINOUS SHEET MEMBRANE

A. SBS Modified Bitumen Membrane: Provide Flexobit Membrane constructed from a smooth surfaced 5-mm thick non-reinforced high-performance styrene-butadiene-styrene (SBS) polymer modified bitumen without fillers in the compound. The top side is surfaced with a sand finish and the underside is surfaced with a high-density polyethylene (HDPE) film that is designed to melt during the heat application of the product.
   1. Membrane Type:
      a. SBS
   2. Finish:
      a. Sand
   3. Bottom:
      a. HPDE burn off film
   4. Membrane Thickness, 5 mm (nominal)
   5. Weight: 1.07 lbs. / sq. ft.

2.3 MODIFIED BITUMINOUS FLASHING SHEET

A. SBS Modified Bitumen Polyester-Reinforced Membrane: Provide Flexowall Membrane constructed from a smooth surfaced 5-mm thick polyester-reinforced high-performance styrene-butadiene-styrene (SBS) polymer modified bitumen compound and a 180 g/m2 high quality thermally bonded polyester-glass reinforcement to ensure dimensional stability and excellent tear strength. The top side is surfaced with a sand finish and the underside is surfaced with a high-density polyethylene (HDPE) film that is designed to melt during the heat application of the product.
   1. Membrane Type:
      a. SBS
   2. Finish:
      a. Sand
   3. Bottom:
      a. HPDE burn off film

4. Membrane Thickness, 5 mm (nominal)
5. Weight: 1.07 lbs. / sq. ft.

2.4 SYSTEM ACCESSORIES

A. Primer: ASTM D 41 Asphalt Primer
B. Flexoflash: Constructed from the same smooth surfaced 5-mm thick non-reinforced high-performance styrene-butadiene-styrene (SBS) polymer modified bitumen without fillers in the compound. The target flashing is approximately 12" in diameter with a 1" diameter open center. Ideal for forming around penetrations. Can be custom made up to 39" (1 m) diameter.
C. Sealant: M-1 Marine is a is a moisture cure polyether adhesive/ sealant formulated for applications above the water line or after curing below the water line and in areas where solvent-based materials are not tolerated. The product is solvent free and contains no isocyanates. It will not shrink upon curing, will not discolor when exposed to ultraviolet light, and will not "out-gas" or bubble on damp surfaces as urethane sealants often do. The sealant has resilient elastomeric properties and excellent adhesion to most substrates. It can be used effectively in many difficult conditions, cures rapidly in wet or dry climates, and low temperatures compared to urethane-based materials. Meets requirements of California Regulations: CARB, SCAQMD, and BAAQMD, with VOC of less than 15 g / L Meets ASTM D-2369, EPA Method 24.
C. Drainage Fabric: A recycled polypropylene drainage core of fused, entangled filaments with a geotextile fabric bonded to each side.
D. Heavy Duty Drainage Fabric: A polymeric drainage mat with polypropylene geotextile laminated to both sides. Recommended for heavy traffic areas requiring higher compressive strength but where lower flow rates are acceptable.
E. Root Barriers: A flexible polypropylene sheathing specifically formulated for use in below grade and vegetated application to resist root growth and soil bacteria. This is a physical root barrier that does not contain chemicals or herbicides. It is applicable for all roof membrane types. Used in Deep (Intensive) and Medium Depth (Semi-Intensive) Roof Garden Systems. Available in widths of 12' and lengths of 100'.
F. Extruded Polystyrene (XPS) roof insulation; Rigid, closed cell, flat, or tapered extruded polystyrene foam insulation with integral formed skin or planed exterior faces, conforming to the requirements of ASTM C578, Type IV; nominal minimum compressive strength of 25 psi (1.8 kg/cm).
G. Cant Strip: Factory fabricated rigid perlite strip cut at angles to provide a true 45° Angle between horizontal and vertical surfaces, 2" (5 cm) x 2" (5 cm).

2.5 TERMINATIONS

A. Aluminum Termination Bar: Extruded aluminum bar with angled lip caulk receiver and lower leg bulb stiffener. Pre-punched holes at 6" (15.2 cm) o.c.
   1. Aluminum Termination Bar (1" x 10' lengths); (25mm x 3.05m)

Part 3 EXECUTION

3.0 EXAMINATION

A. Prior to roof installation, inspect substrates to ensure all penetrations, drainage outlets and flashings are in place and ready to receive waterproofing.
B. Substrates must be clean, dry, and properly secured. Existing substrates, flashings or materials scheduled for re-use must be carefully inspected and properly prepared to ensure they are suitable for incorporation into the new roof system, free of defects, contaminants, or moisture. Do not begin surface preparation or application until unacceptable conditions have been corrected.
C. Examine substrates for deterioration, defects and entrapped or excess moisture. Wet or deteriorated decking shall be replaced or repaired prior to start of work. Fastener pull tests should be conducted to confirm adequate condition and acceptable performance of decking.
D. Review work plan to avoid excess loading of roof areas during material transport, temporary storage, or during installation. Protect building components and fixtures from damage during work.

3.1 PREPARATION

A. The applicator shall be responsible for complying with all project-related safety and environmental requirements.
B. All surfaces shall be cleaned and primed where required prior to installation.

C. The applicator shall prepare all waterproofing substrates to ensure conditions are satisfactory to proceed with the installation of specified waterproofing materials.
D. Avoid construction traffic or work by other trades over completed roof sections. Where unavoidable, install adequate and properly secured temporary protection with tarps, plywood and / or layers of protective sheathing or insulation to avoid contamination and physical damage.
E. Prior to starting work, ensure conditions are satisfactory to begin work and ensure conditions remain satisfactory during the installation of specified materials. Check that all horizontal surfaces to be waterproofed slope towards drainage or refer to foundation details for zero-slope applications.
F. Application should not be made in rainy weather conditions, or conditions that indicate future rainfall. The surface should be protected from moisture by taking necessary protection measures. Necessary measures and materials for this will be provided by the designer of record.
G. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions. Preparation of substrates includes, but is not limited to, substrate repairs, securement of substrates, eliminating all incompatible materials, and cleaning. In case of where the specified conditions are found to be unsatisfactory, the applicator shall not begin work until conditions are made satisfactory.
H. Form release agents shall be approved and tested prior to start of work in accordance with manufacturer's required minimum adhesion and compatibility.
I. Materials shall not be installed when conditions are unacceptable to achieve the specified results.
J. Materials and methods shall be adjusted as necessary to accommodate varying project conditions.
K. Confirm flashing details, terminations and penetrations have adequate height or clearance to receive waterproofing materials and comply with manufacturer requirements.

3.2 SUBSTRATE PREPARATION

A. Structural Concrete:
   1. Substrate shall be finished to a smooth uniform surface free of sharp edges, ridges, and irregular surfaces with minimum thickness of 4 (10.2 cm) inches.
   2. Sumps, provided for roof drains, shall be cast into the deck.
   3. Cracks greater than 1/8” (3.1 mm) in width must be repaired in accordance with the manufacturer’s recommendations.
   4. The roof deck shall be dry, free of frost or surface moisture and permitted to be cured 28 days before the start of the waterproofing application. If there is any doubt about the dryness of the concrete, evaluate surface moisture and deck dryness using ASTM D4263 test method.

3.3 PRIMING

A. Apply materials to vertical substrates that are sound, dry, frost free and that have been primed with primer listed in section 2.4 System Accessories

3.4 TORCH SAFETY

A. Torch Safety: This product is installed using torch welding techniques. When using a propane torch welding device Bitufa Ltd. recommends that every worker using a torch should be properly trained and certified in the use and safety of torch application.
B. LP Gas cylinders should be a type approved by the Department of Transportation for LP Gas usage, equipped with an approved vapor withdrawal valve and pressure gauge. The valve, hose, and regular should be UL listed and rated for the applicable working pressures.
C. Contractor/user should consult equipment manufacturer for specific recommendation on specifications and usage. Inspect all torching equipment, fittings, LP Gas cylinders, valve regulators, hoses, and all connections for damage and leaks prior to use. NEVER USE A FLAME TO CHECK FITTINGS AND/OR OTHER EQUIPMENT. Use soapy water only to check for leaks.

3.5 FOUNDATION FOOTINGS

A. Prime all concrete or masonry surfaces with asphalt primer and allow adequate drying time prior to flashing application.
B. Split / rough face concrete masonry block units are not suitable for direct flashing application.
C. Cut into manageable lengths to ensure adequate adhesion to the horizontal and vertical surfaces without excessive voids. All side laps shall be 4” (10.2 cm) and end laps shall be 6” (15.2 cm).
D. The reinforced membrane flashing shall be run vertically to provide a selvage edge that will aid in achieving proper adhesion at the 4” (10.2 cm) vertical laps. The reinforced membrane flashing must be soundly adhered to the wall area and extend out onto the deck a minimum of 6” (15.2 cm).

E. Using a propane torch flame, uniformly apply heat across the width of the exposed back surface of the membrane until the compound reaches the proper application temperature and exhibits a slight sheen. Be sure that there is complete burn-off of release films where present on the underside of the membrane or both surfaces as applicable. Avoid overheating which may result in damage to or improper adhesion of the membrane.
F. A minimum 1/4" (6.5 mm) bitumen flow-out must be obtained at all seam areas. Dry laps and voids are not acceptable. To ensure the proper 1/4" (6.5 mm) flow of bitumen at the seam areas, a weighted roller may be used. Roller application should follow behind the torch no more than 4 ft. (1.2 m) nor less than 3 ft. (0.91 m) to be sure that the membrane will be at the proper temperature to produce proper flow. Hand roller method is also acceptable. Check all seams for full and uniform adhesion. Un-adhered seams must be lifted with a heated trowel and resealed by lightly torching the seam area.
G. Complete membrane termination by terminating with an aluminum term bar secured to the wall.
H. On exterior conditions, a protection course board is applied before the backfill is installed.

3.6 MEMBRANE INSTALLATION – FOUNDATION (HORIZONTAL)

A. Application: Refer to Bitufa Waterproofing Specifications and Construction Details for Flexobit membranes for additional installation instructions. Minimum recommended application temperature for Flexobit is 25°F (-4°C). All surfaces should be clean, dry and frost free, free of dirt, dust, debris, oils, grease, paint, wet cement, soaps, coatings, salt et cetera, and free of loose materials or other conditions that may inhibit bonding or that may compromise the performance of the product.
B. Gaps, and other holes on the surface should be filled with lime-free structural repair mortar. Tie-rod holes/gaps should be filled with structural repair mortars 2" (5.1 cm) – 4" (10.2 cm) deep inside.
C. Optional: Before application of waterproofing (after the lean concrete pouring process) chamfering will be made at the bottom corner points of the foundation formwork and curtain formwork junction.
D. Set roll to ensure that the underside film is in direct contact with the concrete. Align roll and set into position with 4" side and 6" end laps.
E. Using a propane torch flame, uniformly apply heat across the exposed back surface of the lap area of the membrane until the compound reaches the proper application temperature and exhibits a slight sheen. Be sure that there is complete burn-off of release films where present on the underside of the membrane selvage edges or both surfaces as applicable. Avoid overheating which may result in damage to or improper adhesion of the membrane. Install in a manner that membrane is loose laid without attaching to the surface and the laps are fused together through the torch welding technique.
F. A minimum 1/4" (6.5 mm) bitumen flow-out must be obtained at all seam areas. Dry laps and voids are not acceptable. To ensure the proper 1/4" (6.5 mm) flow of bitumen at the seam areas, a weighted roller may be used. Roller application should follow behind the torch no more than 4 ft. (1.2 m) nor less than 3 ft. (0.91 m) to be sure that the membrane will be at the proper temperature to produce proper flow. Hand rollers or "walking-in the seam" methods are also acceptable. Check all seams for full and uniform adhesion. Un-adhered seams must be lifted with a heated trowel and resealed by lightly torching the seam area. No additional cover strip is necessary.
G. Stagger all adjacent end laps a minimum of 18" (45 cm).
H. Turn the Flexobit membrane up the walls, curbs, and penetrations a minimum of 2" (5.1 cm) and a maximum of 6" (15.2 cm).
I. The wall is intended to be sealed with Flexowall and joined to the Flexobit membrane in a reverse lap procedure. Wait to adhere the Flexobit membrane at the wall juncture until after installation of the Flexowall membrane has been adhered to the foundation. Refer to paragraph 3.9 – Blind Side / Pre-Installed Wall.
J. Note: If the Flexowall is adhered to the Flexobit membrane on the horizontal surface, an additional layer of Flexobit membrane shall be applied to the the Flexowall at the foundation to wall juncture, extending up vertically approximately 6" (15.2 cm).

3.7 PENETRATION FLASHINGS AND PILE HEADS

A. Prime all masonry surfaces with asphalt primer and allow adequate drying time prior to flashing application.
B. Non-reinforced membrane may be used for flashing pipe penetrations, pile heads in accordance with Flexobit Waterproofing details.
C. Cut into manageable lengths to ensure adequate adhesion. All vertical laps shall be 4" (10.2 cm).
D. Wrap penetration or pile head with Flexobit membrane using the torch welding techniques.
E. Using a propane torch flame, uniformly apply heat across the width of the exposed back surface of the membrane until the compound reaches the proper application temperature and exhibits a slight sheen. Be sure that there is complete burn-off of release films where present on the underside of the membrane

or both surfaces as applicable. Avoid overheating which may result in damage to or improper adhesion of the membrane.

F. A minimum 1/4" (6.5 mm) bitumen flow-out must be obtained at all seam areas. Dry laps and voids are not acceptable. To ensure the proper 1/4" (6.5 mm) flow of bitumen at the seam areas, a weighted roller may be used. Roller application should follow behind the torch no more than 4 ft. (1.2 m) nor less than 3 ft. (0.91 m) to be sure that the membrane will be at the proper temperature to produce proper flow. Hand roller method is also acceptable. Check all seams for full and uniform adhesion. Un-adhered seams must be lifted with a heated trowel and resealed by lightly torching the seam area.
G. Fill gaps or voids with non-shrink grout as needed.
H. Optional: Use a 2-Component Crystalline / Waterproofing material to surface the pile-head.
I. Use Flexobit membrane as compound filler to seal around rebar penetrations. Heat the compound and trowel into place.
J. Wrap penetration with a layer of Flexowall adhered over the Flexobit membrane.
K. As an alternative, the penetration can be sealed with a layer of Flexowall membrane and a target sheet of Flexoflash membrane.

3.8 CURB FLASHINGS

A. Prime all masonry surfaces with asphalt primer and allow adequate drying time prior to flashing application.
B. Cut into manageable lengths to ensure adequate adhesion to the cant strip and vertical surfaces without excessive voids. All vertical laps shall be 4" (10.2 cm).
C. Use Flexobit membrane for curbs less than 6" (15.2 cm) in height. Use Flexowall reinforced membrane for heights exceeding 6" (15.2 cm).
D. Flashings shall be run vertically to provide a selvage edge that will aid in achieving proper adhesion at the 4" (10.2 cm) vertical laps. The reinforced membrane flashing must be soundly adhered to the curb, cant area (if applicable), and extend out onto the substrate a minimum of 6" (15.2 cm).
E. Using a propane torch flame, uniformly apply heat across the width of the exposed back surface of the membrane until the compound reaches the proper application temperature and exhibits a slight sheen. Be sure that there is complete burn-off of release films where present on the underside of the membrane or both surfaces as applicable. Avoid overheating which may result in damage to or improper adhesion of the membrane.
F. A minimum 1/4" (6.5 mm) bitumen flow-out must be obtained at all seam areas. Dry laps and voids are not acceptable. To ensure the proper 1/4" (6.5 mm) flow of bitumen at the seam areas, a weighted roller may be used. Roller application should follow behind the torch no more than 4 ft. (1.2 m) nor less than 3 ft. (0.91 m) to be sure that the membrane will be at the proper temperature to produce proper flow. Hand roller method is also acceptable. Check all seams for full and uniform adhesion. Un-adhered seams must be lifted with a heated trowel and resealed by lightly torching the seam area.
G. Use Flexobit membrane for inside and outside corners as required to ensure that base flashing corners are sealed at cant areas.
H. Use Flexobit membrane as compound filler to fill in any gaps or voids as needed. Heat the compound and trowel into place.

3.9 FOUNDATION WALL – BLIND SIDE / PRE-INSTALLED APPLICATION UNDER 32"

A. For heights less than 32" (81.3 cm) install Flexowall in the horizontal direction. For heights greater than 32" (81.3 cm) refer to paragraph 3.10 Blind Side / Pre-Installed Vertical Wall Application for Heights Greater than 32".
B. The Flexowall membrane is mechanically attached with 20" apart to the plywood formboard where the PE side of the membrane facing the foam work (sand surface facing the concrete) before the concrete foundation wall is poured. The concrete cures after pouring to form a bond with the membrane.
C. Attach Flexowall to plywood formboard at approximately 18" o.c. (45.7 cm).
D. Extend Flexowall out onto the foundation footing a minimum of 6" (15.2 cm).
E. Adhere the Flexowall to the primed foundation footing using torch welding methods.
F. Using a propane torch flame, uniformly apply heat across the exposed back surface of the membrane until the compound reaches the proper application temperature and exhibits a slight sheen. Be sure that there is complete burn-off of release films where present on the underside of the membrane as applicable. Avoid overheating which may result in damage to or improper adhesion of the membrane. Install in a manner that membrane is loose laid without attaching to the wall substrate and the laps are fused together through the torch welding technique.

G. Finish the previously installed Flexobit membrane by overlapping onto the Flexowall membrane and extending up the vertical approximately 6” (15.2 cm) and adhere to the Flexowall using torch welding techniques.
H. Using a propane torch flame, uniformly apply heat across the exposed back surface of the lap area of the membrane until the compound reaches the proper application temperature and exhibits a slight sheen. Be sure that there is complete burn-off of release films where present on the underside of the membrane selvage edges or both surfaces as applicable. Avoid overheating which may result in damage to or improper adhesion of the membrane. Install in a manner that membrane is loose laid without attaching to the wall substrate and the laps are fused together through the torch welding technique.
I. A minimum 1/4" (6.5 mm) bitumen flow-out must be obtained at all seam areas. Dry laps and voids are not acceptable. To ensure the proper 1/4” (6.5 mm) flow of bitumen at the seam areas, a weighted roller may be used. Roller application should follow behind the torch no more than 4 ft. (1.2 m) nor less than 3 ft. (0.91 m) to be sure that the membrane will be at the proper temperature to produce proper flow. Hand roller method is also acceptable. Check all seams for full and uniform adhesion. Un-adhered seams must be lifted with a heated trowel and resealed by lightly torching the seam area.
J. Install protection course as specified by project requirements.
K. Install ironworks as specified by project requirements.
L. After concrete has been poured, remove plywood. Ensure that the Flexowall is adhered to the concrete from the mechanical bond created with hydration and pressure.
M. Complete waterproofing the wall using Flexowall as directed in paragraph 3.11 below.
N. On exterior conditions, a protection course board is applied before the backfill is installed.

3.10 FOUNDATION WALL – BLIND SIDE / PRE-INSTALLED VERTICAL APPLICATION FOR HEIGHTS GREATER THAN 32”

A. For heights greater than 32” (81.3 cm) install Flexowall in the vertical direction.
B. The waterproofing membrane is installed to the plywood formboard before the concrete foundation wall is poured. The concrete cures after pouring to form a bond with the membrane.
C. Attach Flexowall to plywood formboard at approximately 18” o.c. (45.7 cm).
D. Extend Flexowall out onto the foundation footing a minimum of 6” (15.2 cm).
E. Adhere the Flexowall to the primed foundation footing using torch welding methods.
F. Using a propane torch flame, uniformly apply heat across the exposed back surface of the membrane until the compound reaches the proper application temperature and exhibits a slight sheen. Be sure that there is complete burn-off of release films where present on the underside of the membrane as applicable. Avoid overheating which may result in damage to or improper adhesion of the membrane. Install in a manner that membrane is loose laid without attaching to the wall substrate and the laps are fused together through the torch welding technique.
G. Finish the previously installed Flexobit membrane by overlapping onto the Flexowall membrane and extending up the vertical approximately 6” (15.2 cm) and adhere to the Flexowall using torch welding techniques.
H. Using a propane torch flame, uniformly apply heat across the exposed back surface of the lap area of the membrane until the compound reaches the proper application temperature and exhibits a slight sheen. Be sure that there is complete burn-off of release films where present on the underside of the membrane selvage edges or both surfaces as applicable. Avoid overheating which may result in damage to or improper adhesion of the membrane. Install in a manner that membrane is loose laid without attaching to the wall substrate and the laps are fused together through the torch welding technique.
I. A minimum 1/4" (6.5 mm) bitumen flow-out must be obtained at all seam areas. Dry laps and voids are not acceptable. To ensure the proper 1/4” (6.5 mm) flow of bitumen at the seam areas, a weighted roller may be used. Roller application should follow behind the torch no more than 4 ft. (1.2 m) nor less than 3 ft. (0.91 m) to be sure that the membrane will be at the proper temperature to produce proper flow. Hand roller method is also acceptable. Check all seams for full and uniform adhesion. Un-adhered seams must be lifted with a heated trowel and resealed by lightly torching the seam area.
J. Install protection course as specified by project requirements.
K. Install ironworks as specified by project requirements.
L. After concrete has been poured, remove plywood. Ensure that the Flexowall is adhered to the concrete from the mechanical bond created with hydration and pressure.
M. Complete waterproofing the wall using Flexowall as directed in paragraph 3.11 below.
N. On exterior conditions, a protection course board is applied before the backfill is installed.

3.11 WALLS – VERTICAL APPLICATION

A. Prime all concrete or masonry surfaces with asphalt primer and allow adequate drying time prior to flashing application.
B. Split / rough face concrete masonry block units are not suitable for direct flashing application.
C. Surfaces with existing asphalt, coal tar, mastics, sprayed polyurethane foam or similar incompatible materials shall be removed, thoroughly cleaned prior to the application of the Flexowall membrane.
D. For occupied structures and projects where odor or fume control concerns exist, care should be taken during project planning to assess potential entry points into the structure.
E. Cut into manageable lengths to ensure adequate adhesion to the cant strip and vertical surfaces without excessive voids. All vertical laps shall be 4” (10.2 cm).
F. The reinforced membrane flashing shall be run vertically to provide a selvage edge that will aid in achieving proper adhesion at the 4” (10.2 cm) vertical laps. The reinforced membrane flashing must be soundly adhered to the wall area and extend out onto the deck a minimum of 6” (15.2 cm).
G. Using a propane torch flame, uniformly apply heat across the width of the exposed back surface of the membrane until the compound reaches the proper application temperature and exhibits a slight sheen. Be sure that there is complete burn-off of release films where present on the underside of the membrane or both surfaces as applicable. Avoid overheating which may result in damage to or improper adhesion of the membrane.
H. A minimum 1/4" (6.5 mm) bitumen flow-out must be obtained at all seam areas. Dry laps and voids are not acceptable. To ensure the proper 1/4” (6.5 mm) flow of bitumen at the seam areas, a weighted roller may be used. Roller application should follow behind the torch no more than 4 ft. (1.2 m) nor less than 3 ft. (0.91 m) to be sure that the membrane will be at the proper temperature to produce proper flow. Hand roller method is also acceptable. Check all seams for full and uniform adhesion. Un-adhered seams must be lifted with a heated trowel and resealed by lightly torching the seam area.
I. Complete membrane termination by terminating with an aluminum term bar secured to the wall.
J. On exterior conditions, a protection course board is applied before the backfill is installed.

3.12 EXPANSION JOINTS

A. Expansion Joints:
   1. The expansion joint details may be field fabricated to meet expansion joint needs.
   2. Field construction of expansion joints consists of a reinforced membrane retainer sheet, expansion joint filler, foam backer rod, and a reinforced membrane cover strip.
   3. Prime all concrete or masonry wall surface at expansion joint with asphalt primer and allow adequate drying time prior to expansion flashing application.
   4. Install Flexowall membrane on wall as indicated above, with membrane termination at both sides of the expansion joint.
   5. Fill wall expansion joint space/cavity with XPS or mineral wool (Rockwool) insulation.
   6. Install the Flexowall membrane using torch welding techniques over the expansion joint cavity using as a retainer sheet extending from one side of the expansion joint to the other while forming a “U” shaped cavity within the expansion joint space.
   7. The cavity of the expansion joint is filled with expansion joint filler (specified by others). The expansion joint bellows must be a minimum of one and one-half times larger than the width of the expansion joint opening to allow for sufficient expansion / contraction.
   8. Install an additional layer of Flexowall membrane over the expansion joint filler and then adhered using torch welding techniques to the underlying Flexowall membrane retainer sheet.

3.13 ELEVATOR PIT

A. Prime all concrete or masonry surfaces with asphalt primer and allow adequate drying time prior to flashing application.
B. Split / rough face concrete masonry block units are not suitable for direct flashing application.
C. Surfaces with existing asphalt, coal tar, mastics, sprayed polyurethane foam or similar incompatible materials shall be removed, thoroughly cleaned prior to the application of the Flexowall membrane.
D. For occupied structures and projects where odor or fume control concerns exist, care should be taken during project planning to assess potential entry points into the structure.
E. Cut into manageable lengths to ensure adequate adhesion to the cant strip and vertical surfaces without excessive voids. All vertical laps shall be 4” (10.2 cm).
F. The Flexowall membrane shall be run vertically to provide a selvage edge that will aid in achieving proper adhesion at the 4” (10.2 cm) vertical laps. The reinforced membrane flashing must be soundly adhered to the wall area and extend out onto the deck a minimum of 6” (15.2 cm).
G. Using a propane torch flame, uniformly apply heat across the width of the exposed back surface of the membrane until the compound reaches the proper application temperature and exhibits a slight sheen. Be sure that there is complete burn-off of release films where present on the underside of the membrane

or both surfaces as applicable. Avoid overheating which may result in damage to or improper adhesion of the membrane.

H. A minimum 1/4" (6.5 mm) bitumen flow-out must be obtained at all seam areas. Dry laps and voids are not acceptable. To ensure the proper 1/4" (6.5 mm) flow of bitumen at the seam areas, a weighted roller may be used. Roller application should follow behind the torch no more than 4 ft. (1.2 m) nor less than 3 ft. (0.91 m) to be sure that the membrane will be at the proper temperature to produce proper flow. Hand roller method is also acceptable. Check all seams for full and uniform adhesion. Un-adhered seams must be lifted with a heated trowel and resealed by lightly torching the seam area.

I. Extend the Flexowall out on the sealed concrete slab and adhere to the Flexobit membrane forming a 6" (15.2 cm) end lap.

J. Complete the horizontal portion of the elevator pit using Flexobit membrane using torch welding techniques.

3.14 INSTALLATION OF OVERBURDEN

A. Coordinate installation of overburden in accordance with Section 32 00 00 Exterior Improvements and with the guidelines of the architectural landscape and contractors involved in this scope of work. Installation of overburden items may include but are not limited to rigid insulation, drainage mats, filter fabric, concrete pavers, engineered soils, growing media.

3.15 PROTECTION

A. In conditions where the ambient temperature is above 90°F (32.2°C), provide protection to the membrane from foot traffic and construction damage. Use a geotextile mat, loose laid with a 4" (10 cm) side lap and 6" (15 cm) end lap. If necessary, the joints will be attached to each other by heat treatment.

B. Protect completed membrane assembly form UV exposure in accordance with manufacturer's requirements. Prior to overburden installation, protect installed membrane through appropriate means from physical damage.

END OF SECTION