POLYMER MODIFIED ASPHALT (PMA)

FLUID APPLIED WATERPROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Cold Fluid Applied Waterproofing and accessories.

1.2 RELATED SECTIONS

A. Section 03 30 00 - Concrete.

B. Section 07 90 00 - Sealants.

1.3 REFERENCES

A. Membrane, Cold Applied Liquid

1.4 SYSTEM DESCRIPTION

A. Polymer Modified Asphalt (PMA) is a fluid-applied, single component, heavy bodied, polymer modified asphalt emulsion, protective coating, designed for impervious waterproofing applications. The Polymer Modified Asphalt (PMA) membrane is ideal for various below grade and elevated waterproof applications. Polymer Modified Asphalt (PMA) cures to a rubber-like membrane that forms a smooth, tough, seamless, monolithic, durable coating that resists water penetration.

1.5 SUBMITTALS

A. Submit under provisions of Section 01 30 00 - Administrative Requirements.

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. Installer's approval by Manufacturer: Submit document stating manufacturer's acceptance of Installer as Certified Applicator for the specified materials.

D. Warranty: Submit a sample warranty identifying the terms and conditions stated in Warranty article.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum 5-year experience manufacturing similar products.

B. Applicator Qualifications: Experienced in applying the same materials and shall be specifically certified in writing by the system manufacturer.

C. Sample: Provide a sample for evaluation of surface preparation techniques and application workmanship.
   1. Finish areas designated by Architect.
   2. Do not proceed with remaining work until workmanship is approved by Architect.
   3. Rework mock-up area as required to produce acceptable work.

1.7 PRE-INSTALLATION MEETINGS

A. Pre-Installation Conference: Prior to beginning work, convene a conference to review conditions, installation procedures, schedules and coordination with other work.

B. Convene minimum two weeks prior to starting work of this section.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to project site in original, factory-sealed, unopened containers bearing manufacturer's name and label intact and legible with following information.
   1. Name of material.
   2. Manufacturer's stock number and date of manufacture.
   3. Material safety data sheet.

B. Recommended storage and application temperature between 40 degrees F (4 degrees C) and 110 degrees F (43 degrees C). Store materials in a dry location, out of direct sunlight and protected from weather and other damage in accordance with safety data sheet.

C. Handling: Handle materials to avoid damage.

1.9 PROJECT CONDITIONS

A. Existing Conditions:
   1. The builder must give assurance that concrete has been installed according to the International Building Code (IBC) standards and requirements as well as the PMA Application Instructions, PMA-120, before application of the PMA System. The Pli-Dek technicians/applicators, and/or Pli-Dek Systems, Inc. will not be responsible for any deficiencies in the existing concrete substrate.
   2. The applicator shall have access to electrical power, clean potable water and clean work area at the location where the waterproofing materials are to be applied.
   3. Other working trades need to be made aware to keep off those areas being covered by waterproofing materials during the application and curing process.
   4. All required inspections must be made prior to the installations of the Pli-Dek materials.

B. Environmental Conditions:
   1. The ambient air and surface temperature shall be 50 degrees F (10 degrees C) and 110 degrees F (43 degrees C and shall remain so for at least 24 hours.

C. Protection:
   1. Protect adjacent areas and materials shall be protected from damage, drops and spills. Protect plants, vegetation and animals which might be affected by waterproofing operations.
   2. The Pli-Dek materials shall be protected by permanent or temporary means from weather and other damage, prior to, during, and immediately after application. Care must be taken to prevent condensation and/or heat buildup when using a tarp or plastic as protection.
   3. Apply protection board as soon as possible after the installation of membrane.

D. Maintain work area in a neat and orderly condition, removing empty containers, rags, and rubbish daily from the site.

1.10 SEQUENCING

A. Application shall be coordinated with other construction trades.

B. Sufficient labor and equipment shall be employed to ensure a continuous operation.

1.11 WARRANTY

A. Warranty: Provide manufacturer's standard limited material warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Pli-Dek Services, Inc., which is located at: 41610 Date Street, Suite 104, Murrieta, CA 92562; Toll Free Tel: 800-364-0287 Tel: 951-834-9550; Fax: 951-834-9551; Email: request info (info@plidek.com); Web: www.plidek.com

B. Substitutions: Not permitted.

C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.2 WATERPROOFING MEMBRANE

A. Cold Fluid Applied waterproofing membrane shall be Polymer Modified Asphalt (PMA) having the following characteristics:

1. Elongation: 500% ASTM D-412
2. Maximum VOC: 10 g/l
3. Water vapor permeance: 0.28 perm (10 ng/Pa.m^{2}s), ASTM E96
4. Application Temperature: Minimum 40 degrees F

2.3 ACCESSORY PRODUCTS

A. Fabric Reinforcement Mesh: PD-2014 Reemay Fabric

B. PD Neoprene Flashing

C. Polyurethane Termination Sealant: moisture cure, polyurethane sealant; medium modulus polymer modified sealing compound having the following physical properties:

1. Compatible with sheet air barrier, roofing and waterproofing membranes and substrate
2. Complies with Fed. Spec. TT-S-00230C, Type II, Class A
3. Complies with ASTM C 920, Type S, Grade NS, Class 25
4. Remains flexible with aging

D. Protection Course: must be obtained from an acceptable manufacturer to ensure total system compatibility and integrity.

1. Acceptable Manufacturers:

a. APOC 5520 Protection Panels – 813.248.2101

b. PB4 Board – 800.241.4402

E. Termination Bars: continuous aluminum, stainless steel or galvanized metal, 1/8" x 1" in size and shall be pre-drilled for non-corrosive screw attachment on a maximum of 8" o.c.

F. Prefabricated Drain Boards: Contact Pli-Dek for job specific requirements.

PART 3 EXECUTION

3.1 EXAMINATION

A. Before commencing any work, the Pli-Dek applicator shall thoroughly examine all surfaces for any deficiencies. Where deficiencies exist, the Architect, Owner, or Contractor shall be notified in writing and corrections made.

B. PMA can be applied to damp or new green concrete. Ensure concrete is smooth and free from voids and honeycombing prior to application of waterproofing membrane.

C. Voids, cracks, holes and other damages to horizontal or vertical surfaces shall be repaired before application of the membrane.

D. Confirm the horizontal deck(s) are properly sloped to drain as required.

E. Footing/Foundation Walls, Junctures, Cracks in Slab and Protrusions:

1. Coat penetrations, such as brackets, clips, braces, etc. that are set into the concrete with a 45 mil coating of PMA waterproofing membrane to the height of the wearing course and around projections to ensure a complete seal prior to coating the entire area.
2. Penetrations subject to movement should be flashed with fabric reinforcement set into a minimum thickness of 45 mils of PMA waterproofing membrane to required height on the wall and at least 4“on the slab, embed fabric reinforcement into wet coating followed by a second coat.
3. To all cracks and cold joints less than 1/16“, apply a coat of PMA waterproofing membrane at a minimum thickness of 45 mils extending 3“on either side of joint, embed a 6“wide strip of joint treatment mesh and apply additional 45 mil coating of PMA waterproofing membrane.
4. To all cracks greater than 1/8“, fill void with non-shrink cementitious patching material and allow to cure dry. Prime area and install self-adhered flashing membrane, extend 3“on either side of crack. Overlap end joint of sheet a minimum 3“.
5. At monolithic wall/slab junctures, apply a coat of PMA waterproofing membrane at a minimum thickness of 45 mils extending 3“on either side of joint, embed a 6“wide strip of joint treatment mesh and apply additional 45 mil coating of PMA waterproofing membrane.
6. At non-monolithic wall/slab junctures, prime area, trowel-in fillet bead to inside corners and install PD-2014 Reemay Fabric to the required height on the wall and at least 4” on the slab. Lap over PMA waterproofing membrane a minimum of 2”.
7. At footing to foundation wall junctions apply a coat of PMA waterproofing membrane at a minimum thickness of 45 mils extending 3” on either side of joint, embed a 6” wide strip of PD-2014 Reemay Fabric joint treatment mesh and apply additional 45 mil coating of PMA waterproofing membrane.

3.2 SURFACE PREPARATION

A. All surfaces must be sound, dry, clean and free of oil, grease, dirt, excess mortar, frost or other contaminants. Fill spalled areas in substrate to provide an even plane and remove scaling or latent concrete. Remove curing compounds or any foreign matter detrimental to the adhesion of the PMA waterproofing membrane or membrane flashings:

1. All vertical walls which require repair will be treated with polyurethane sealant or sack and patch with cement as required.
2. Insure all vertical surfaces are clean and contaminated free.
3. All rough or damaged structural concrete surfaces shall be properly cleaned and all loose materials removed.

B. New concrete should be cured for a minimum of 2 days and must be dry before waterproofing membranes are applied. Concrete in vented metal pan decks must be cured a minimum of 7 days.

C. Concrete shall have a wood float finish with a light broom. Decks with a steel float finish must be sandblasted or equivalent prior to the application of the waterproofing system.

D. Expansion joint assemblies should be in place prior to the application of the PMA waterproofing assembly.

E. Substrate preparation for Gypsum Sheathing and plywood:

1. Mechanically fasten sheathing with self-tapping, non-corroding screws and 3"diameter metal plates spaced a maximum of 24"in either direction and to only the top flanges of the metal deck or as per sheathing board manufacturers written instructions.
2. Lay sheathing with 1/8" butted joints. Joints occurring along the widths of the sheathing to be continuously supported on the joist or top flange of the metal deck.
3. Place polyurethane sealant in the joint between deck boards.
4. Check tightness of joints and flatness of wood decking prior to proceeding with application of membrane. Ensure sheathing is continuously supported on framing.
5. The joints between boards of plywood decks shall be treated with crack treatment membrane prior to the application PMA.
6. Before application of PMA waterproofing membrane, the substrate shall be clean and dry, free from surface water, ice, snow or frost, dust, dirt, oil, grease, of any other foreign matter detrimental to the adhesion of the waterproofing membrane.
7. The contractor shall review all surfaces to receive the membrane and report any discrepancies prior to installing the waterproofing system

3.3 INSTALLATION OF CRACK TREATMENT AND FLASHINGS

A. Joint Treatment for Precast Concrete Deck:

1. Reinforce joints along length of concrete deck units with a minimum 12"wide strip of fabric reinforcement embedded into an 18"wide by 45 mil thick coating of the PMA membrane.
2. At joints occurring along the width of the precast units reinforce with a minimum 12"wide strip of crack treatment membrane embedded into an 18"wide by 45 mil thick coating of the PMA membrane.

B. Deck to Vertical Junctures:

1. Place a ¾ x ¾"fillet of polyurethane sealant at the juncture of the wall/deck.
2. Apply a 45 mil thick coating of the PMA waterproofing membrane extending 4" onto horizontal and vertical faces.
3. Embed flashing sheet flat into wet membrane extending a minimum of 3"out onto the horizontal and vertical surfaces, avoid wrinkles or fish mouths.
4. When height of flashing sheet exceeds 12"mechanically attach the flashing sheet to vertical surface with metal termination bar. Lap flashing sheets a minimum of 3"on end laps and bond with 45 mils thick coating of PMA membrane.

C. Crack Treatment:

1. Seal cracks and joints up to 1/8"in width with a 12"wide by 45 mils thick coating of the PMA membrane and a 6"wide strip of fabric reinforcement centered over the joint.
2. Seal cracks and joints more than 1/8" in width detail crack apply approved polyurethane sealant followed by a 30 mil detailed coat of cold applied waterproofing membrane, embed a 4" wide strip of PD-2014 Reemay Fabric complete with specified system on top.

D. Membrane Flashing at Drains:

1. Metal Penetrations require wire brush cleaning, to bright metal condition, to remove all rust and contaminates. Wipe the brush surface to remove dust and contaminates. Wipe the metal surface with solvent; MEK/Acetone/Xylene/Xylol/Alcohol or Vinegar.
2. Plastic Penetrations require sanding to clean the surface condition, to remove all rust and contaminates. Wipe the sanded surface to remove dust and contaminates. Wipe the plastic surface with solvent; MEK/Acetone/Xylene/Xylol/Alcohol or Vinegar.
3. Coat areas around the drains with a 30 mil thick coating of PMA membrane.
4. Place PD- 2014 Reemay Fabric over the coated drain flange and extending a minimum 6" around the flange.

5. Apply a second coat of 45 mils thick elastomeric membrane over the flashing sheet.
6. Apply clamping ring exerting sufficient pressure to affect a seal between clamping ring and membrane. Temporarily block all drains during the application of ballast, or other materials that might block the drains. Remove blocking when work is not in progress and upon completion.

E. Membrane Flashing at Protrusions:
1. Wall Juncture – ¾" fillet of sealant at the juncture of the wall.
2.. Penetrations – ¾" fillet of sealant at the intersection of the concrete deck and leg of the penetration.
3. Drain Bowl – Apply sealant at the perimeter of all drain bowls to seal the bowl to the concrete deck surface.
4. Contact Pli-Dek for specific job-site condition recommendations.

F. Expansion Joints:
1. Contact Pli-Dek for specific job-site condition recommendations.

G. Plywood Seams and Metal Flashing:
1. At plywood seams, metal flashing transitions and dissimilar transitions (excluding expansion joints) apply a detail strip 4-6" wide at 45 mils. Embed 4-6" strips of PD-2014 Reemay Fabric into membrane. Once detailing has been completed allow to cure and apply specified system over the detail areas.

3.4 APPLICATION

A. Vertical/Horizontal Standard Application:
1. Single Coat Application: Apply a full and continuous coat of PMA waterproofing membrane with a trowel, long handled squeegee, roofing brush or spray. Apply membrane at a rate of 5 gal. U.S./100ft.^{2} to provide a minimum wet thickness of 60 mils ensuring no pinholes or blisters. Allow membrane to fully cure/dry prior to subsequent application coatings.
2. 90 mil Two Coat Application: Apply a full and continuous coat of PMA waterproofing membrane with a trowel, long handled squeegee, roofing brush or spray. Apply first coat of membrane to provide a minimum wet thickness of 45 mils ensuring no pinholes or blisters. Allow membrane to cure/dry prior to second coat application of membrane to provide a minimum wet thickness of 45 mils ensuring no pinholes of blisters.

B. High Build System:
1. Application of the first coat of Pli-Dek Waterproofing Membrane – PMA shall be installed by roller, trowel, or squeegee application at a rate of 60 mils (25 square feet per gallon) wet film thickness (WFT).
2. Application of the PD-2014 Reemay Fabric into the wet PMA shall have overlaps of 2" minimum and end laps of 4". Stagger all end overlaps. Allow the first coat and Reemay to set a minimum of 24 hours prior to the installation of additional coats of PMA.
3. Application of the second coat of Pli-Dek Waterproofing Membrane – PMA shall be installed by roller, trowel, or squeegee application at a rate of 60 mils (25 square feet per gallon) wet film thickness (WFT).

3.5 CURING AND PROTECTIONS

A. Allow membrane to dry thoroughly. Protect from rain until fully cured. Allow membrane to fully cure prior to installing drainage composite, covering material or backfilling. Patch or repair damaged areas using same material as original coating.

B. Protect cured membrane from damage caused by backfilling with drain boards prior to commencing backfill.

3.6 FLOOD TEST

A. Contractor shall flood test the system upon the completion of horizontal the 2 ply reinforced waterproofing membrane applications. (ASTM D 5957).

B. Provide temporary stops and plugs for the roof drains within the test area.

C. Flood test with minimum 2“of water for 24 hours.

D. Repair and retest the system for no less than 24 hours, report all deficiencies to the Consultant.

E. Remove temporary stops and plugs.

F. No other Work is to proceed without prior direction from the Consultant.

3.7 INSTALLATION OF PROTECTION COURSE (BASIS-OF-DESIGN)

A. Waterproofing accessories must be obtained from an acceptable manufacturer and installed according to their recommendations with approval of Pli-Dek, to ensure total system compatibility and integrity.

3.8 INSTALLATION OF DRAINAGE BOARD (VERTICAL)

A. Align and hang drainage up to foundation wall. Position the bottom edge of PD Drain Board to be in moderate contact with weeping tile system.

B. Secure PD Drain Board to foundation wall with nails and washers spaced 16“o.c. horizontally. Install minimum of 2 rows staggered and spaced 6“apart and min 6“from top edge.

C. Align and install termination strip along top edge with nails spaced 12“o.c. and seal with termination sealant.

D. Align and install moulding strip over completed top edge detail.

E. Overlap end laps; pull back loose fabric to expose drain core and position core of second panel over the overlap flange of first panel.

F. Bend PD Drain Board to create inside corners and cut board to create outside corners, provide 3“ of extra fabric to wrap corner.

G. Stagger or offset joints of PD Drain Board sheets.

H. Place all subsequent sheets in an overlapping single fashion.

I. Backfill bottom edge in conjunction with weeping tile system.

3.9 INSTALLATION OF DRAINAGE BOARD (HORIZONTAL)

A. Install Specified PD Drain Board over insulation as indicated on the drawings:
   1. Clean horizontal surfaces of loose debris and unroll PD Drain Board fabric side up in the direction of maximum slope.
   2. Attach PD Drain Board with double sided tape or adhesive that is compatible with waterproofing.
   3. At overlaps, place adjacent panels so that cores abut.
   4. Secure the fabric overlap at 5’ intervals with glue or tape. All core joints must be covered by fabric overlay.
   5. Place end panels so that cores abut, then glue or tape overlap.

3.10 INSTALLATION OF GRAVEL BALLAST OR CONCRETE PAVERS

A. Installation of gravel ballast or concrete pavers to be completed after placement of curbs details as indicated on drawings.

B. Spread gravel ballast uniformly over the installed filter fabric according to insulation manufacturer's recommendations.

C. Place concrete pavers, where indicated, on pedestals, accurately aligned, and leveled with upper surface of pavers in plane with adjacent units. Cut pavers to fit irregularly shaped areas and around protrusions. Install according to manufacturer's instructions.

3.11 ELECTRIC FIELD VECTOR MAPPING (EFVM) (Alternate to Flood Test)

A. EFVM to be completed in conjunction with the completion of waterproofing and prior to placement of root barrier or any other overburden.

B. International Leak Detection, or pre-approved test provider will need to be contacted several weeks in advance to coordinate schedule.

C. In the event of a breach of the membrane, repair and retest the system for no less than 24 hours.

D. Report results of testing to the Consultant and Pli-Dek Technical Representative. Remove temporary stops and plugs.

E. No other work is to proceed without prior direction from the Consultant.

3.12 CLEAN UP

A. Promptly as the work proceeds and on completion clean up and remove from site all rubbish and surplus materials resulting from the foregoing work.

3.13 PROTECTION

A. Protect waterproofing membrane and drain board work from other trades during construction.

B. Backfill with specified materials, protect membrane from damage.

3.14 SLIP AND FALL PRECAUTION:

A. OSHA, American Disabilities Act (ADA), and The Federal Housing Act (FHA) have now set enforceable standards for slip-resistance on pedestrian surfaces. Pli-Dek Systems, Inc. recommends the use of angular slip-resistant aggregate in all coatings or flooring systems that may be exposed to wet, oily/greasy, or otherwise potentially slippery conditions. It is the end users' responsibility to provide a flooring system that meets current safety standards. Pli-Dek Systems, Inc. or its sales agents will not be responsible for injury incurred in a slip and fall accident. Please consult local building codes for the current coefficient of friction requirement.

END OF SECTION

Disclaimer

Information contained in this specification conforms to standard detail and product recommendations for the installation of the Pli-Dek products as of the date of publication of this document and is presented in good faith. Pli-Dek Systems, Inc. assumes no liability, expressed or implied, as to the

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* The Trained Applicator has certain employees of the company that have been instructed in the proper application of Pli-Dek products and have received copies of the Pli-Dek Application Instructions and Specifications. The Trained Contractor Program is not an apprenticeship. Each trained contractor is an independent company and bears responsibility for its own workmanship. Pli-Dek Systems Inc. assumes no liability for the workmanship of a trained contractor