

HD-250 SYSTEM

FLUID APPLIED WATERPROOFING

250 MIL HYBRID WATERPROOFING FOR PLYWOOD SUBSTRATES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. 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. The Pli-Dek® HD-215 System is a hybrid waterproofing underlayment system when going over concrete plaza/podium decks, balconies, pool decks, and roof decks that are designed to receive pavers or ceramic tiles. This system provides superior performance with its unique dual waterproofing layers. Like the HD-250 System, the HD-215 System is a superior solution for waterproofing underlayments by eliminating inherent detailing issues associated with traditional fluid applied coatings, as well as both durable and flexible waterproofing protection.

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 HD-250 Application Instructions, HD-250-120, before application of the HD-250 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 \(info@plidek.com\)](mailto: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. Cementitious Waterproofing Membrane Shall be Pli-Dek System comprised of the following components:
 - 1. GU80-1 Gray Base Mix: A Portland cement and silicon dioxide composition that is to be mixed with GU80-1 Liquid Admixture.
 - 2. GU80-1 Liquid Admixture: Water based acrylic emulsion.
- B. Fluid Applied waterproofing membrane shall be one of the following:
 - 1. Pli-Dek Polymer Modified Asphalt (PMA) having the following characteristics:
 - a. Elongation: 1500% ASTM D-412
 - b. Maximum VOC: 10 g/l
 - c. Water Vapor Permeance: 0.28 perm (10 ng/Pa.m²s), ASTM E96
 - 2. Pli-Dek Hot Rubberized Asphalt (HR) having the following characteristics:
 - a. Solids Content: 100%
 - b. Low Temperature Flexibility and Adhesion: No cracking, delamination or loss of adhesion @ 13 degrees F in accordance with CGSB 37-GP-50-M89
 - c. Water Absorption: Gain of 0.09g in accordance with CGSB 37-GP-50-M89
 - d. Flash Point (Open Cup): 545 degrees F in accordance with ASTM D92
 - e. Water Vapor Permeance (3mm Film): 0.01 perms in accordance with ASTM E96 Procedure A and 0.02 perms in accordance with ASTM E96 Procedure E
 - 3. Pli-Dek Cold Rubber High Build (CR) having the following characteristics:
 - a. Hardness: 30 ± 5 Shore A ASTM D-2240
 - b. Tensile Strength: 500 ± 50 psi, 2.1 ± 0.3 Mpa ASTM D-412
 - c. Total Solids by Weight: 95 ± 1% ASTM D-236

d. Maximum VOC: <60 g/l ASTM D-2369-81

2.3 ACCESSORY PRODUCTS

- A. Galvanized Metal Lath: 2.5 lbs/sq yd G60, an expanded metal lath, that is hot dipped not electro-galvanized.
- B. PD Seam Paper
- C. Fabric Reinforcement Mesh: PD-2014 Reemay Fabric
- D. Polyscrim
- E. 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
- F. 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
- G. Pli-Dek Drain Board: Contact Pli-Dek for job specific requirements.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Before any waterproofing work is started, the Pli-Dek certified 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. Condition of Plywood Surfaces:
 - 1. Ensure that the substrate is of sound and dry exposure 1 sheathing.
 - 2. Refer to ICC-ES Legacy Report for framing requirements.
 - 3. All surfaces shall be sloped for positive drainage. A slope of 6.4 mm/.3m (1/4" slope per linear foot is highly recommended, not required.)
 - a. Pli-Dek requires a galvanized or stainless-steel deck drain as per Drain Detail, PD-24, on all plywood installations. Please contact Pli-Dek for help in acquiring these drains. Do not use plastic or shower drains, use of these types of drains will void warranty. If copper drains are used, please contact Pli-Dek for instructions on dissimilar metals.
 - 4. All plywood seams shall be staggered and a 3.2 mm (1/8") space between all sheets shall exist.
 - 5. Framing or blocking must support all plywood edges, except as per APA guidelines, blocking is not required when tongue and groove plywood is used. Joists to be spaced 16" on center. For alternate assemblies contact Pli-Dek Systems, Inc. for written approval.
 - 6. Maximum deflection of the deck shall not exceed L/360th of the span.

7. Minimum thickness of plywood shall be 16 mm (5/8"). 3/4" thick exposure 1 sheeting recommended.
8. All adjacent edges of the plywood sheets shall not be more than 0.78 mm (1/32") out of plane (i.e.: above or below each other).
9. Flashing shall be minimum 26 gauge galvanized bonderized sheet metal, (contact Pli-Dek for Alternatives).
10. Proper flashing must be installed at all doors, walls, fascia edges, posts, penetrations, columns, etc.
11. Flashing must be installed to accommodate all exterior wall coating applications from coming in contact with the deck surface. Exterior siding, stucco, etc. must be held off the deck a minimum of 2".

3.2 SURFACE PREPARATION

- A. All seams in plywood shall be gapped 3.2 mm (1/8"), and covered with a maximum of 50 mm (2") wide Pli-Dek approved flashing paper and tacked in place.
- B. Plywood shall be free of dust, moisture and/or other debris or residue that would affect adhesion.
- C. Delaminated plywood shall be replaced with sound plywood.
- D. Fascia boards shall be installed to be level with the plywood substrate.

3.3 MIXING INSTRUCTIONS

A. GU80-1 Gray Base

1. Pour 3.8L (1 gallon) of GU80-1 Liquid Admixture into a clean 19L (5 gallon) plastic container.
2. Add one 21kg (46lb.) bag of GU80-1 Base Coat (gray), and mix thoroughly for 3 to 4 minutes. Use a Wind-lock B-M1 mixing blade, or equivalent, powered by a 13mm (1/2") variable speed drill, capable of producing 1000 RPMs. TIP: In areas subject to extremely dry and/or hot climates, it may be necessary to add water (up to .47L [1 pint] per mix). To avoid flash drying, it may be necessary to chill the GU80-1 Liquid Admixture before mixing. A proper safety ventilation mask should be worn when working with all Pli-Dek products.

3.4 APPLICATION

A. Plywood Deck Preparation:

1. Lay out 2.5 lbs/sq yd G60 Hot Dipped Galvanized Metal Lath in a staggered pattern over the entire plywood surface overlapping the metal flashing, to the edge of the deck surface.
2. Overlap all edges of metal lath, a minimum of 13mm (3/4").
3. Offset metal lath edges a minimum of 150mm (6") from plywood seams. (See DECK PLAN in the Pli-Dek Detail Appendix.)
4. Secure metal lath to plywood with a minimum 22mm (7/8") crown by a minimum 16mm (5/8") long corrosion resistant staples spaced approximately 1 1/2" on center around the perimeter and on overlapped lath seams, and 75mm (3") in the field (approximately 12 staples per square foot).
5. Additional staples spaced every 1 1/2" on center are required where the metal lath overlaps the seam paper.

B. Base Coat:

1. After mixing the GU80 Gray Base as described above, trowel Base Coat emulsion into the galvanized expanded metal lath completely covering the metal lath. Allow it to dry completely, for approximately 2 to 6 hours, depending on weather conditions.

C. Polymer Modified Asphalt (PMA):

1. PD 2014 Reemay Fabric – shall be installed at all turn ups, penetrations and drains unless otherwise specified by Pli-Dek, Inc. Apply 30 mils WFT of PMA to areas which PD 2014 Reemay Fabric will be applied. Embed PD 2014 Reemay Fabric Install the specified system on top of the horizontal leg of the PD 2014 Reemay Fabric. Any areas that will be exposed to the elements are to be covered with 30 mils WFT of PMA-UV.
2. All pre-treat coats must cure a minimum of 12 hours prior to the application of the membrane.
3. All surfaces of pre-treat or sealant preparations shall be wiped clean with Xylene prior to the application of the field membrane.
4. Application of the first coat of PMA waterproofing membrane shall be installed by squeegee or roller at a rate of 30 mils wet film thickness (WFT).
5. Lay PD-2014 Reemay Fabric or Poly Scrim into the wet PMA shall have overlaps of 2" minimum and end laps of 4". Stagger all end overlaps. Allow the first coat of PMA and PD-2014 Reemay or Poly Scrim to set a minimum of 12 hours (depending on temperature, more time may be required) prior to the installation of additional coats of PMA.

6. Application of the second coat of Pli-Dek Waterproofing Membrane – PMA shall be installed by squeegee or roller application at a rate of 30 mils (50 square feet per gallon) for a total thickness of 60 mils minimum wet film thickness (WFT).
 7. Apply a coat of PMA-UV 6" minimum above the finish slab at a rate of 45 mils (30 to 45 square feet per gallon) wet film thickness (WFT).
- B. Cold Rubber High Build (CR):**
1. Sloping of the structural deck surface at 1/8" per foot, or per local Building Code requirements.
 2. Moving construction or structural cracks greater than 1/16" (1.5 mm) shall be routed out and sealant (polyurethane/ASTM C 920) installed prior to the installation of the Pli-Dek Waterproofing Membrane.
 3. At all horizontal / vertical junctures and projections a sealant fillet (cant) of 3/4 "X 3/4" (polyurethane/ASTMC 920) shall be installed.
 4. Caulking must cure a minimum of 12 hours prior to the application of the membrane.
 5. Pli-Dek Waterproofing Membrane – Cold Rubber High Build shall be installed by roller, trowel, or smooth squeegee application at a rate of 60 to 120 mils (25 square foot per gallon) wet film thickness (WFT). Allow membrane to cure a minim of 2-4 hours before proceeding to subsequent coats. Cure time will vary depending on temperature and humidity.
 6. If more than 48 hours pass between coats, the surface *must be* primed with the Pli-Dek Cold Rubber Primer.
 7. Contact Pli-Dek for additional information when installing at a thickness above 90 mils in a single pass.
- C. Hot Rubberized Asphalt (HR):**
1. Sloping of the structural deck surface at 1/4" per foot (6.4mm/.3m) or per local Building Code requirements.
 2. All surfaces to receive HR require primer to insure adhesion to the substrate. Asphalt Primer shall be installed at a rate of 200 square feet per gallon by roller or sprayer.
 3. At all horizontal / vertical junctures and projections a (cant) of 3"x 3" with HR at a rate of 90 mil and PD- 2014 Reemay Fabric or PD Neoprene Flashing embedded into the HR.
 4. At expansion joints, contact Pli-Dek Systems, Inc. for specific job-site condition recommendations.
 5. All metal surfaces of pre-treat or sealant preparations shall be wiped clean with Xylene prior to the application of the field membrane.
 6. The membrane shall be heated in double jacketed, oil bath or air jacketed melter with mechanical agitation, specifically designed for the preparation of a rubberized asphalt membrane.
 7. Heat membrane until membrane can be drawn-free flowing at a temperature range between 350°F (176°C) and 400°F (204°C).
 8. After applying Primer application of the first coat of Pli-Dek Waterproofing Membrane – HR shall be installed by squeegee application at a rate of 60 mils wet film thickness (WFT).
 9. Lay PD-2014 Reemay Fabric into the HR, it shall have overlaps of 2" minimum and end laps of 4". Stagger all end overlaps. Immediately install the second coat of HR over the PD-2014 Reemay fabric at a rate of 60 mils wet film thickness (WFT).
 10. Contact Pli-Dek for additional information with regards to the use of a Separation Sheet.
- D. PROTECTION COURSE**
1. Specified protection course is placed over properly cured Pli-Dek Fluid Applied Waterproofing Membrane (as specified).
 - a. Layout specified protection course over the cured Pli-Dek Fluid Applied Waterproofing Membrane with a minimum of 1 1/2" side overlaps and 3" end laps.
 - b. Cut and fit the specified protection course around penetrations with a maximum of 1" variance from the penetration.
- E. DRAIN BOARD**
1. PD Drain Board as specified may be placed over the specified protection board and/or properly cured Pli-Dek Fluid Applied Waterproofing Membrane.
 - a. Roll the specified PD Drain Board over the protection board (if specified) or over the cured Fluid Applied Waterproofing Membrane.
 - b. Butt the side and roll ends together and overlap the filter fabric on to the adjacent roll to provide a continuous mat for separation of soils or overburden.
 - c. Cut and fit the PD Drain Board around penetrations with a maximum of 1" variance from the penetration.
 - d. On horizontal application, it is recommended tape is applied to seams to prevent debris from getting into the drainage system.

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 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.

3.8 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.

3.9 PROTECTION

- A. Protect waterproofing membrane and drain board work from other trades during construction.
- B. Backfill with specified materials, protect membrane from damage.

3.10 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 architecture, engineering or workmanship of any project. Pli-Dek Systems, Inc. or the Pli-Dek Applicator does not warrant cracks in the Pli-Dek Finish material resulting from structural movement and/or recurring of existing cracks in the substrate. To ensure that you are using the latest, most complete information, contact Pli-Dek Systems, Inc., at:

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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