

HD-215 SYSTEM

FLUID APPLIED WATERPROOFING

215 Mil HYBRID WATERPROOFING FOR CONCRETE 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-215 Application Instructions, HD-215-120, before application of the HD-215 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. Fluid Applied waterproofing membrane shall be one of the following:
 - a. 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
 - b. 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
 - c. 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. Fabric Reinforcement Mesh: PD-2014 Reemay Fabric
- B. Polyscrim

- C. Polyurethane Termination Sealant: moisture cure, polyurethane sealant; medium modulus polymer modified sealing compound having the following physical properties:
 - a. Compatible with sheet air barrier, roofing and waterproofing membranes and substrate
 - b. Complies with Fed. Spec. TT-S-00230C, Type II, Class A
 - c. Complies with ASTM C 920, Type S, Grade NS, Class 25
 - d. 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. Pli-Dek Drain Board: 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. HD-215 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. For detailing instructions, refer to HD-215 complete Application Instructions, HD-215-120, or contact Pli-Dek Systems, Inc.

3.2 SURFACE PREPARATION

- A. Traditional Concrete Substrates:
 - 1. Concrete surfaces to receive waterproofing membrane are required to be a minimum of 2500 psi.
 - 2. The concrete surface must be cured for 28 days and dry to receive the Pli-Dek Waterproofing System. A mat test may be performed to insure the moisture content of the concrete surface. Steel pan decks will require additional cure time and mat testing to verify the moisture content of the concrete surface.
 - 3. The concrete surface requires a proper profile to receive the waterproofing membrane. A steel trowel followed by a Light Broom or equivalent finish is recommended. Surfaces which are steel troweled require scarification or bead blasting to provide the proper profile.
 - 4. Concrete surfaces shall be free of voids, exposed aggregate, honey combs, holidays, ridges or depressions, and projections which preclude a smooth sloped surface.
 - 5. All reinforcement including cut-off rebar shall be covered with a minimum of ¼” (20mm) of epoxy or approved repair mortar.
 - 6. Concrete to receive waterproofing shall be water cured and free of curing compound contaminates. No silicone curing compounds may be used.
 - 7. All penetrations shall be solidly grouted or epoxied in place to prevent movement in the penetration. No flexible or corrugated pipe shall be used for through slab penetration. All copper piping shall be sleeved through the concrete penetration. Penetrations require a minimum of 1½” of spacing between multiple penetrations.
 - 8. Any variation from the specifications mentioned in this section, requires written approval and system recommendations from Pli-Dek Systems, Inc.
- B. Concrete Masonry Units (CMU):

1. All CMU (Concrete Block) work requiring waterproofing requires a cementitious coating approved by Pli-Dek Systems, Inc. Contact Pli-Dek for additional information.
- C. Retrofit Tear-Off Application:
1. Asphalt, coal tar pitch or other existing membrane shall be removed. CONTACT Pli-Dek Systems, Inc. to review existing conditions for site specific requirements.
- D. Primer:
1. Prepare surface by grinding, or shot blasting. If grease or significant contaminants are present, contact Pli-Dek for additional instructions.
 2. Ensure preparation procedures comply with local government regulations.
 3. The concrete shall be porous, and have a minimum CSP-2 Rating, suitable to receive the coating.
 4. Moisture & Vapor Transmission Testing refer to Technical Bulletin TB-111.
 5. Apply a primer coat of one of the following (contact Pli-Dek for specific primer requirements based on job site conditions):
 - a. GU80 Primer that consists of 4 parts water and 1 part GU80-1 Liquid Admix at a rate of approximately 1250 square feet per gallon.
 6. Apply 1 coat of PD Vapor Prime at a rate of approximately 100-200 square feet per gallon. Immediately after applying the PD Vapor Prime, broadcast 16 grit silica sand onto the wet PD Vapor Prime until refusal.
- E. Crack Treatment:
1. Rout-out cracks with a crack chaser that is normally mounted on a small hand-held grinder. It may be necessary to open crack further with a dry-cut diamond blade mounted on a grinder, or a skill saw.
 2. Additional control joints should be cut where necessary as recommended by structural engineer. Cutting additional expansion joints to help control concrete movement shall be determined by others. Future cracking due to the lack of expansion joints shall be the responsibility of others.
 3. Fill cracks with the manufacturer recommended urethane caulking, filling to the surface of the concrete. The cracks should be v-grinded out prior to the urethane caulking application. Allow 4 - 6 hours for curing time. The urethane must be fully cured before applying the subsequent coating. Apply 6" strips of Fiberglass and PD Resin over the cured urethane.
 4. *The Pli-Dek installer and/or Pli-Dek Systems, Inc. will not be responsible for structural movement that may result in new cracks, and/or recurring of existing cracks in substrate. Consequently, no warranty on cracking (expressed or implied) can be provided.*
- F. Flashing:
1. The following items that involve flashing must be completed or adhered to:
 - a. Fascia metal is required except in those cases where an open ended structural slab makes up the outer edge.
 - b. Posts or any other object that shall protrude through the deck substrate shall be installed and flashed before HD-215 System applications.
 - c. Any scuppers or overflows must be installed before flashing.
 - d. If metal flashing is to be installed by others, the sole responsibility of the flashing installation and proper caulking shall be of the Owner, or General Contractor.
 - e. Flashing shall be minimum 26 gauge, galvanized, bonderized sheet metal. For Inclement Weather areas, bonderized flashing is not recommended (refer to Technical Bulletin TB-110 Inclement Weather). Insure ALL metal flashing is wiped clean with a solvent to insure oils are completely removed from the Surface. Dissimilar metals; such as Copper and galvanized, should NEVER come in direct contact with each other.
 - f. Proper flashing must be installed at all doors, walls, posts, penetrations, columns, etc. Flashing details will vary from job to job depending on framing and exterior wall systems. Please contact Pli-Dek Systems, Inc. for the appropriate flashing details. Pli-Dek provided architectural details are to be used as a guide.
 - g. 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 50mm (2").
 - h. All flashing splices must be overlapped a minimum of 100mm (4") and caulked between any two pieces of flashing with an MP-1 or Sika Urethane sealant or equivalent. All flashing overlaps shall be installed as to not "buck" water.
 - i. See HD-215 Details for further written instructions. Contact Pli-Dek Systems, Inc for written approval on flashing details that vary or are not included in Details.

3.3 MIXING INSTRUCTIONS

A. GU80-1 Custom Top Coat

1. Pour 4.75L (1.5 gallons) of GU80-1 Liquid Admixture into a clean 19L (5 gallon) plastic container.
2. Add one 21kg (46lbs.) bag of GU80-1 Top Coat powder. Mix thoroughly for 3 to 4 minutes, with 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. In order to avoid flash drying it may be necessary to chill the GU80-1 Liquid Admixture, before mixing. Proper ventilation masks should be worn at all time when working with all Pli-Dek Products. Pli-Dek products must be stored in the shade to prevent overheating and reduction of pot life.

3.4 APPLICATION

- A. **GU80-1 Custom Top Coat:**
1. After mixing the GU80-1 Custom Top Coat as described in above, **trowel a screed coat of GU80-1 Custom Top Coat** at a rate of 175 square feet per batch mix and lay out the .75 oz. fiberglass mat over the **GU80-1 Custom Top Coat**. Screed Coat shall be allowed to cure in accordance with manufacturer's instructions. For control joints or cracks, refer to the manufacturer's instructions, **allow to cure for a minimum of 6 hours**.
 2. Trowel a second coat of GU80-1 Custom Top Coat mix over the .75oz fiberglass at a rate of 175 square feet per batch mix. Allow to properly cure for 4 to 6 hours before proceeding.
- B. **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.
- C. **Cold Rubber High Build (CR):**
1. Sloping of the structural deck surface at 1/8" per foot, or per local Building Code requirements.
 2. Shrinkage cracks shall be treated with a pre-treat coat of Pli-Dek Waterproofing Membrane – Cold Rubber High Build (60 mil).
 3. 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.
 4. At all horizontal / vertical junctures and projections a sealant fillet (cant) of 3/4 "X 3/4" (polyurethane/ASTM C 920) shall be installed.
 5. Caulking must cure a minimum of 12 hours prior to the application of the membrane.
 6. 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.
 7. If more than 48 hours pass between coats, the surface **must be** primed with the Pli-Dek Cold Rubber Primer.
 8. Contact Pli-Dek for additional information when installing at a thickness above 90 mils in a single pass.
- D. **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. Shrinkage cracks shall be treated with a pre-treat coat of Pli-Dek Waterproofing Membrane – HR (60 mil). Moving construction or structural cracks greater than 1/8" (1.5mm) shall be routed out and sealant (polyurethane/ASTM C 920) installed prior to installing a pre-treat coat of Pli-Dek Waterproofing Membrane.
 4. 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.
 5. At expansion joints, contact Pli-Dek Systems, Inc. for specific job-site condition recommendations.
 6. All metal surfaces of pre-treat or sealant preparations shall be wiped clean with Xylene prior to the application of the field membrane.
 7. 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.
 8. Heat membrane until membrane can be drawn-free flowing at a temperature range between 350°F (176°C) and 400°F (204°C).

9. 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).
10. 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).
11. Contact Pli-Dek for additional information with regards to the use of a Separation Sheet.

E. 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 1½” 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.

F. 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