EVALUATION REPORT Number: 586

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DESERT CRETE SYSTEM WALKING DECK AND ROOF COVERING SYSTEM

CSI Section:
07 18 13 Pedestrian Traffic Coatings

1.0 RECOGNITION

Hill Brothers Chemical Company's Desert Crete System Walking Deck and Roof Covering System recognized in this report has been evaluated for durability, weather resistance, wind uplift resistance and fire classification. The physical and fire performance properties of the Desert Crete System Walking Deck and Roof Covering System were evaluated for compliance with the following codes:

- 2024, 2021, and 2018, International Building Code® (IBC)
- 2024, 2021, and 2018, International Residential Code® (IRC)
- 2024, International Wildland-Urban Interface Code (IWUIC)
- 2025 California Building Code (CBC) - attached supplement
- 2025 California Residential Code (CRC) - attached supplement
- 2025, California Wildland-Urban Interface Code (CWUIC) - attached supplement

2.0 LIMITATIONS

Use of the Hill Brothers Chemical Company's Desert Crete System Walking Deck and Roof Covering System recognized in this report is subject to the following limitations:

2.1 The Desert Crete System Walking Deck and Roof Covering System shall be manufactured, identified, and installed in accordance with this report and the applicable code. In the event of a conflict, this report governs.

2.2 The Desert Crete System Walking Deck and Roof Covering System shall be installed on slopes not less than one-unit vertical in 48-units horizontal (2-percent slope).

2.3 The supporting structure shall be designed to support the loads and is beyond the scope of this report.

2.4 Hill Brothers Chemical Company's Desert Crete System Walking Deck and Roof Covering System is manufactured in City of Industry, California.

3.0 PRODUCT USE

3.1 General: Hill Brothers Chemical Company's Desert Crete System Walking Deck and Roof Covering System recognized in this report is a cementitious walking deck used directly over plywood substrate.

3.2 Roofing Classification: The system has a Class A fire classification, when tested in accordance with ASTM E108, and installed in accordance with Section 4.2 of this report.

3.3 Wind Resistance: The maximum allowable design wind uplift pressure for the Desert Crete System Walking Deck and Roof Covering System installed over plywood substrate is 47.7 psf (2.284 kPa). Allowable loads shall be limited by the capacity of the deck construction. The decking shall be designed to withstand wind pressures determined in accordance with Section 1609.6 of the 2024 IBC and Section 1609.5 of the 2021 and 2018 IBC.

3.4 Fire-resistance: Hill Brothers Desert Crete System Walking Deck and Roof Covering System was tested in accordance with a modified ASTM E-119 for a one-hour fire-resistance rating. The test modification allows the ASTM E119 test to be conducted with zero load on the decking and does not require a hose stream test following exposure. The modified ASTM E119 test performed on a 7-feet by 7-feet (2,134 mm x 2,134 mm) preassembled section of walking deck placed in a small-scale furnace.
The unrestrained, unloaded walking deck assembly as described as follows achieved a one-hour rating.

ASTM E119 specimen was composed of the following components, beginning with the unexposed side as No.1 and progressing to the exposed side No.10:

1. Desert brand concrete/masonry Sealer
2. Desert Crete Texture
3. Second Desert Crete base application
4. Fiberglass and Bonder 480
5. First Desert Crete base application
6. 2.5 lb. per square yard galvanized metal lath and staples
7. 26-gauge galvanized metal flashing
8. 5/8-inch Exterior grade plywood
9. 2 x 8 inch (51 x 203 mm) nominal wood joists
10. 5/8-inch (15.9 mm) Type X Gypsum

3.5 ASTM E84: In accordance with SFM 12-7A-5 the ASTM E84 test was continued for an additional 20 minutes, yielding a total test time of 30 minutes. The modified test complies as a Class A material with a Flame Spread Index of less than 25 and a Smoke Developed Index of less than 200. The requirements of SFM 12-7A-5 were satisfied as follows: During the 30-minute test period, there was no evidence of progressive combustion. Nor did the flame front progress more than 10 ½ feet beyond the centerline of the burner during the 30-minute test.

The product described in this Uniform Evaluation Service (UES) Report has been evaluated as an alternative material, design or method of construction in order to satisfy and comply with the intent of the provision of the code, as noted in this report, and for at least equivalence to that prescribed in the code in quality, strength, effectiveness, fire resistance, durability and safely, as applicable, in accordance with Section 104.2.3 of the 2024 IBC and Section 104.11 of previous editions. This document shall only be reproduced in its entirety.

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3.6 2024 International Wildland-Urban Interface Code (IWUIC): In areas subject to the 2024 IWUIC the Hill Brothers Chemical Company's Desert Crete System Walking Deck and Roof Covering System complies with the following:
3.6.1 Ignition Resistant per Section 503.2 of the IWUIC.
3.6.2 Class A rated in accordance with ASTM E108.

4.0 PRODUCT DESCRIPTION

4.1 Desert Crete System Walking Deck and Roof Covering System: The Desert Crete System Walking Deck and Roof Covering System is a cementitious multi-layer protective coating system for use over plywood substrate. The system consists of a cementitious base coating and polymers, embedded within lath, fiberglass or polyester matting, a textured coating and an acrylic color coat.

4.1.1 Components:

- **Desert Crete Base Coat** - A dry blend of cement and finely graded sand and fillers, supplied in 50-lbs (22.7kg) bags. Shelf life is one year when the product is stored in unopened bags at temperatures between 40°F (4.4°C) and 90°F (32.2°C). The Desert Crete Base/Level Max 20/30 is mixed with Desert Crete Liquid Polymer.

- **Desert Crete Polybase** – A dry blend of cement, finely graded sands and a dry polymer admixture, supplied in 50-pound (36.3 kg) bags. Shelf life is one year when the product is stored in unopened bags at temperatures between 40°F (4.4°C) and 90°F (32.2°C). The Desert Crete Walking Deck and Roof Covering System Polybase is mixed with potable water.

- **Desert Crete Liquid Polymer**: The polymer is an acrylic liquid admixture to be used with Desert Crete Base and Desert Crete Texture coating and is supplied in 5- or 55-gallon (18.9 or 208 L) containers. Shelf life is one year when the polymer is stored in unopened containers at temperatures between 40°F (4.4°C) and 90°F (32.2°C).

- **Metal Lath** - Minimum 2.5 pound-per-square-yard (1.36 kg/m^2) hot-dipped galvanized expanded metal lath complying with ASTM C847.

- **Matting** - Fiberglass fiber matting weighing 6.75 oz./yd^2 (0.23 kg/m^2) or polyester reinforcing roofing fabric weighing 3 oz./yd^2 (102 g/m^2).

- **Bond Coat** - Bonder 480 consists of a liquid polymer packaged in 5-gallon or 55-gallon (18.9 or 208 L) containers. When stored in unopened containers at temperatures between 40°F and 90°F (4.4°C and 32.2°C), Bonder 480 has a shelf life of one-year.

- **Texture Coat - Desert Crete Texture:** A mixture of white cement and finely graded sand packaged in 50-pound (22.7 kg) bags which is mixed with Desert Crete Liquid polymer. Bags of Desert Crete Texture have a shelf life of one-year when stored in unopened containers and dry conditions at temperatures between 40°F and 90°F (4.4°C and 32.2°C).

- **Texture Coat - Desert Crete PDF:** A mixture of white cement, finely graded sand and dry polymer admixture packaged in 50-pound (22.7 kg) bags which are mixed with potable water. Bags of Desert Crete PDF have a shelf life of one-year when stored in unopened containers and dry conditions at temperatures between 40°F and 90°F (4.4°C and 32.2°C).

- **Desert Brand Sealer Coat** – Desert Brand Sealer (CMFPS, Master Seal WB or Master Seal) consist of liquid acrylic sealers packaged in 5-gallon or 1-gallon (18.9 or 3.78 L) containers. When stored in unopened containers at temperatures between 40°F and 90°F (4.4°C and 32.2°C), Desert Brand Sealers have a shelf life of three-years.

4.1.2 Installation of Desert Crete System Walking Deck and Roof Covering System: Installation of the Desert Crete System Walking Deck and Roof Covering System shall be installed in accordance with the manufacturer's published installation instructions, the applicable code, and this report. Coatings can be applied within a temperature range of 50°F to 90°F (10°C to 32.2°C). Coatings shall not be applied when subject to wet weather. Substrates and all coating surfaces shall be structurally sound, clean, dry, and sloped to meet the minimum requirements of the applicable code. Total thickness of base coats and textured coats shall be a minimum of ¼-inch (6.4 mm).

4.1.3 Substrates: Wood based substrates shall be minimum nominal $^5/_8$-inch (15.9 mm) thick, and be exterior grade or Exposure 1 plywood complying with U.S. DOC PS-1 or PS-2, in accordance with the applicable code. Edges shall be blocked. Penetrations and terminations of the sheathing shall be protected with metal flashing. Metal flashing shall be corrosion-resistant metal, minimum No. 26 [0.019 inch (0.483 mm)] in accordance with Section 1503.2 of the IBC or Section R903.2 of the IRC, and shall extend a minimum of 2.inches (51 mm) onto the sheathing.

4.1.4 Lath: Metal lath with minimum 1-inch (25.4 mm) overlap at seams shall be fastened to the plywood substrate with uniformly distributed corrosion-resistant staples, minimum No. 16 gage with $^7/_8$-inch or 1-inch (22 or 25.4 mm) crowns and $^5/_8$-inch (15.9 mm) long legs, with not less than 24 fasteners per square foot (0.0929 m^2). At laps, staple spacing shall be a maximum of 1-inch (25.4 mm). The metal lath shall lap metal flashing a minimum of 2-inches (50.8 mm), and the lath shall end ¼-inch to ½-inch (6.4 to 12.7 mm) from the vertical leg of the flashing.

4.1.5 Desert Crete Base - First Coat: The first application of Desert Crete Base is mixed per instructions above in Section 4.1.1 of this report and troweled over the metal lath. The first layer of Base Coat shall fully cover the metal lath. Coverage rate is approximately 50 square feet (5.9 m^2) per 50-pound (22.7 kg) bag of Desert Crete Base. The first coat shall air cure for approximately 3 hours, depending upon conditions, before the Bond Coat is applied as described in Section 4.1.6 of this report.

4.1.6 Bond Coat Bonder 480: Fiberglass fiber matting or polyester reinforcing roofing fabric, as described in Section 4.1.1 of this report, shall be installed over the first coat of Desert Crete Base with minimum 1-inch (25.4 mm) overlap at seams and 2-inch (51 mm) overlap at flashing. Matting shall be trimmed to fit around roof deck penetrations. Bond Coat Bonder 480 shall be applied over the matting. Coverage rate is approximately 50 square feet (5.9 m^2) per 1-gallon (3.78 L) of liquid Bond Coat Bonder 480. The bond coat shall be completely cured before the second coat of Desert Crete Base is applied, as described in Section 4.1.7 of this report.

4.1.7 Desert Crete Base - Second Coat: The second coat of Desert Crete Base is mixed and applied over the dried matting and first coat per instructions. The second layer of Desert Crete Base is identical to the first coat except applied with a coverage rate of approximately 80 square feet (7.4 m^2) per 50-pound (22.7 kg) bag.

4.1.8 Texture Coat: The Desert Crete Texture coat or Desert Crete PDF coat is sprayed or troweled over the second Base Coat. Desert Crete Texture coat is mixed at the rate of one 50-pound (22.6 kg) bag with 1¼-gallons (4.73 L) of Desert Crete Liquid Polymer and applied with a coverage rate of 200-square-feet (18.5 m^2) per bag when spray applied. Desert Crete PDF coat is mixed at the rate of one 50-pound (22.7 kg) bag with 1-gallons (3.78 L) of potable water and applied with a coverage rate of 200-square-feet (18.6 m^2) per bag when spray applied. The sprayed texture coating shall be 'knocked down' with a steel trowel within 5 to 10 minutes of application, depending upon the air temperature. The textured coat shall be completely dry before application of the sealer coat.

4.1.9 Sealer Coat: Desert Brand Sealer (CMFPS, Master Seal WB, or Master Seal) is roller applied in two coats. Coverage rate of CMFPS is 450 square feet (41.8 m^2) per 1-gallon (3.78 L). Coverage rate of Master Seal WB is 300 square feet (27.87 m^2) per 1-gallon (3.78 L). Sealer Coat shall not be applied when subject to wet weather. CMFPS or Master Seal WB shall have a minimum time between coats of 1½ hours. Master Seal shall have a minimum time between coats of 24 hours. The between coat time is dependent on current jobsite air temperature conditions.

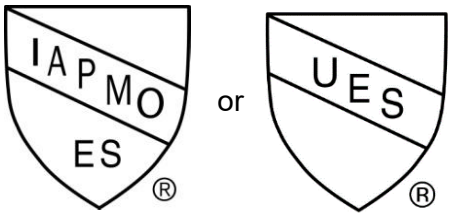
4.2 Fire Classification: Hill Brothers Chemical Company's Desert Crete System Walking Deck and Roof Covering System, when installed in accordance with this report at a slope of one-unit vertical in 48-units horizontal (2-percent slope) over $^5/_8$-inch (15.9 mm) thick exterior grade plywood substrates complying with DOC PS-1 with all edges blocked, has a Class A fire classification when tested in accordance with ASTM E108.

4.3 Repairs: Damaged areas shall be cleared of all existing material and replaced in the manner described in Section 4.1 of this report, as applicable. In the event of damaged substrates, the fire classification and strength properties shall be investigated, and the results submitted to the building official for review and approval.

5.0 IDENTIFICATION

Each of the coating components described in Section 4.0 of this report bears a label noting the manufacturer's name (Hill Brothers Chemical Company) product name, shelf life, a batch number keyed to the date of manufacture, and evaluation report number (IAPMO UES ER-586).

Either UES Mark of Conformity may also be used as shown below:



IAPMO UES ER-586

6.0 SUBSTANTIATING DATA

6.1 Data in accordance with ICC-ES AC39, dated June 2017 (editorially revised May 2024).
6.2 Report of Fire Tests of Roof Coverings in accordance with ASTM E108.

6.3 Report of wind-uplift testing in accordance with FM I-52, for the Desert Crete System Walking Deck and Roof Covering System installed over plywood.

6.4 Report of testing to California SFM Standard 12-7A-4 Decking, Exterior Exposure Part A & B, and 12-7A-5, Ignition-resistance, along with ASTM E-84 extended 20 minutes for a total test time of 30 minutes.

6.4 Manufacturer's descriptive literature and installation instructions. Test results are from laboratories in compliance with ISO/IEC 17025.

7.0 STATEMENT OF RECOGNITION

This evaluation report describes the results of research completed by IAPMO Uniform Evaluation Service on Hill Brothers Chemical Company's Desert Crete System Walking Deck and Roof Covering System to assess conformance to the codes and standards shown in Section 1.0 of this report and documents the product's certification. Desert Crete System Walking Deck and Roof Covering System components are produced at locations noted in Section 2.4 of this report under a quality control program with periodic inspection under the supervision of IAPMO UES.

CALIFORNIA SUPPLEMENT

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DESERT CRETE WALKING DECK AND ROOF COVERING SYSTEM

CSI Section:
07 18 13 Pedestrian Traffic Coatings

1.0 RECOGNITION

Hill Brothers Chemical Company's Desert Crete System Walking Deck and Roof Covering System described in IAPMO UES ER-586, and this supplemental report has been evaluated for durability, weather resistance, wind uplift resistance and fire classification. Hill Brothers Chemical Company's Desert Crete System Walking Deck and Roof Covering System is subject to the requirements of IAPMO UES ER-586 and this supplemental report. Hill Brothers Chemical Company's Desert Crete System Walking Deck and Roof Covering System was evaluated for compliance with the following codes and regulations:

- 2025 California Building Code (CBC)
- 2025 California Residential Code (CRC)
- 2025 California Wildland-Urban Interface Code (CWUIC)

2.0 LIMITATIONS

Use of the Hill Brothers Chemical Company's Desert Crete System Walking Deck and Roof Covering System recognized in this report is subject to the following limitations:

2.1 The Hill Brothers Chemical Company's Desert Crete System Walking Deck and Roof Covering System shall comply with the provisions in IAPMO UES ER-586 applicable to the 2024 IBC for use under the 2025 CBC and the 2024 IRC for use under the 2025 CRC.

2.2 The Hill Brothers Chemical Company's Desert Crete System Walking Deck and Roof Covering System evaluated in ER-586 complies as a:

2.2.1 Class A roof covering in accordance with Section 1505.1.1 of the CBC and Section R902.1.1 of the CRC, as applicable.

2.2.2 Class B roof covering in accordance with Section 1505.1.2 of the CBC and Section R902.1.2 of the CRC, as applicable.

2.2.3 Class C roof covering in accordance with Section 1505.1.3 of the CBC and Section R902.1.3 of the CRC, as applicable.

2.3 This supplement expires concurrently with IAPMO UES ER-586.

3.0 EXTERIOR WILDFIRE EXPOSURE USES

3.1 General - The Desert Crete System Walking Deck and Roof Covering System has been evaluated for use in buildings located in a Fire Hazard Severity Zone within State Responsibility Areas or any Wildland-Urban Interface Fire Area in accordance with Chapter 5 of the CWUIC The Desert Crete System Walking Deck and Roof Covering System has been tested and meets the requirements of SFM Standard 12-7A-4 and SFM Standard 12-7A-5.

3.2 Hill Brothers Chemical Company's Desert Crete System Walking Deck and Roof Covering System satisfies the specific requirements under CWUIC Chapter 5 as noted in Sections 3.2.1 through 3.2.2 of this report:

3.2.1 Roofing - New installations of Desert Crete System Walking Deck and Roof Covering System as roofing shall be installed as noted to meet the requirements for Class A and shall comply with CWUIC Sections 504.2 and 504.11.6.

3.2.2 Ignition - Resistant Construction – Desert Crete System Walking Deck and Roof Covering System meets the requirements SFM tests noted in Section 3.1 of this supplement, CWUIC Section 503.2.4, and should be installed to meet specific requirements of CWUIC Chapter 5.

3.2.3 Decking - Desert Crete System Walking Deck and Roof Covering System meets the requirements of CWUIC Section 504.7.3.2 No.3 and should be installed according to CWUIC Section 504.7.3.