EVALUATION REPORT Number: 403

Originally Issued: 09/05/2019 Revised: 08/15/2022 Valid Through: 09/30/2023

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KRION LUX EXTERIOR WALL PANELS

CSI Section:
07 42 43 Composite Wall Panels

1.0 RECOGNITION

Krion Lux Exterior Wall Panels described in this report have been evaluated as an exterior and interior wall covering for use in Type V construction. The panels have been evaluated for durability, structural properties, and interior finish properties. Krion Lux Exterior Wall Panels comply with the intent of the provisions of the following codes and regulations:

- 2018, 2015, 2012 and 2009 International Building Code® (IBC)
- 2018, 2015, 2012 and 2009 International Residential Code® (IRC)
- 2019 California Building Code (CBC) – Supplement attached
- 2019 California Residential Code (CRC) – Supplement attached
- 2017 Florida Building Code, Building (FBC) – Supplement attached
- 2017 Florida Building Code, Residential (FRC) – Supplement attached
- 2020 City of Los Angeles Building Code (LABC) – Supplement attached
- 2020 City of Los Angeles Residential Code (LARC) – Supplement attached

2.0 LIMITATIONS

Use of the Krion Lux Exterior Wall Panels recognized in this report is subject to the following limitations:

2.1 Krion Lux Exterior Wall Panels are limited to use in Type V construction under the IBC and buildings built under the IRC.

2.2 When used as an interior wall covering with spaces between adjacent panels, the Krion Lux Exterior Wall Panels shall be installed over a substrate having a Class A finish complying with 2018 IBC Section 803.1.2 (2015, 2012 and 2009 IBC Section 803.1.1).

2.3 Krion Lux Exterior Wall Panels shall be installed by qualified installers recognized by Porcelanosa USA.

2.4 The Krion Lux Exterior Wall Panels recognized in this report are produced in Daejeon, South Korea.

3.0 PRODUCT USE

3.1 General: Krion Lux Exterior Wall Panels are used with a manufacturer supplied substructure, adhesive, and fasteners as an alternative exterior wall cladding. The Krion Wall Panels are also used as a covering for interior walls.

3.2 Design: Attachment of the Krion Lux Exterior Wall Panels to the supporting wall or substrate shall be designed by a registered design professional and the design shall be submitted to the building official for approval when required by the statutes of the jurisdiction in which the project is to be constructed. The design shall include the aluminum substructure system, and connections. The Krion Lux Exterior Wall Panels shall span 27 inches (686 mm) maximum between fasteners and supports in accordance with Table 1 of this report. Table 1 provides the maximum allowable out-of-plane transverse load pressures, positive and negative, for the Krion Lux Exterior Wall Panels at this support spacing. The connection capacity and that of the supporting substrate shall equal or exceed the design uniform transverse loads and gravity loads for the cladding and substrate determined in accordance with IBC Chapter 16 or IRC Section R301.2.1, as applicable.

3.3 Installation: The Krion Lux Exterior Wall Panels shall be installed in accordance with the manufacturer's published installation instructions, the project-specific structural calculations and details, the applicable code, and this evaluation report by qualified and recognized installers. The manufacturer's installation instructions shall be considered as part of this report and shall be available at the jobsite during installation. If there is a conflict between this report and the manufacturer's published installation instructions, the more restrictive shall govern.

The Krion Lux Exterior Wall Panels shall be installed over supporting walls and substructures that have been designed and constructed to resist safely the superimposed loads in accordance with Chapter 16 of the IBC. The supporting substructure and panels shall be installed over an approved water-resistive barrier and a means shall be provided for draining water that enters the assembly to the exterior.

The substructure shall be securely connected to the supporting wall in accordance with design using corrosion-resistant fasteners. The aluminum hat channel shall be spaced at a maximum of 26 inches (660 mm) vertically and anchored to the building with a minimum of two No. 14 stainless steel

self-drilling screws at a maximum spacing of 27 inches (686 mm) horizontally. L- or T-Profiles shall be spaced at maximum 27 inches (686 mm) on center horizontally and shall be connected to the horizontal hat channel with L-brackets, using two No. 12 x 3/4-inch-long (19.1 mm) self-drilling stainless steel screws to connect the bracket to the hat channel, and two No. 12 x 3/4-inch-long (19.1 mm) self-drilling stainless steel screws to connect the T- or L-profile to the bracket. Alternatively, the substructure may be designed to support the panels by a registered design professional provided the maximum panels spans and fastener spacing does not exceed the dimensions described in Section 3.2 and Table 1 of this report.

The wall panels shall be cut and trimmed in accordance with the design documents and this report. The framing supporting the panels shall be spaced according to design. The panels shall be adhered to the T- or L-profiles in accordance with the manufacturer's instructions using the adhesive described in Section 4.2.3 and attached using the fasteners described in Section 4.2.4 of this report. The adhesive shall be used at temperatures between 41°F and 95°F (5°C to 35°C) and on clean and dry surfaces. The shelf life of the adhesive is 12 months. The panels shall be prepared for the fasteners at a minimum fastener edge distance of 1.57 inches (40 mm).

Protection against condensation shall be provided in accordance with 2018 IBC Section 1402.2 (2015, 2012 and 2009 IBC Section 1403.2) or IRC Section R703.2, as applicable. Water resistive barriers and vapor retarders shall comply with Section 1404.3 of the 2018 IBC (Section 1405.3 of the 2015, 2012 and 2009 IBC) or Section R702.7 of the 2018, 2015 and 2012 IRC (Section R601.3 of the 2009 IRC), as applicable. A clear airspace of not less than 1 inch (25.4 mm) shall be maintained behind the wall panels.

4.0 PRODUCT DESCRIPTION

4.1 General: Krion Lux Exterior Wall Panels are an exterior cladding system with glued shiplap joints to provide a continuous panel surface. The panels are installed with an air space behind the panels to allow air to circulate. The cladding panels are mounted on a substructure of aluminum profiles installed over a water resistive barrier. The Krion Lux Exterior Wall Panels comply with Chapter 14 of the IBC and Chapter 7 of the IRC as an alternative exterior wall covering. The panels also comply with Chapter 8 of the IBC and Chapter 7 of the IRC as an interior wall covering. The Krion Lux Exterior Wall Panels are fastened to a substructure system described in Section 4.2.2 of this report. Figures 1 and 2 of this report illustrate system details.

4.2 Components:

4.2.1 Krion Lux Exterior Wall Panels: The Krion Lux panels are composed of a proprietary blend of natural minerals and acrylic resins developed by System Pool, S.A. The panels are nominally ½ inch (12.7 mm) thick, maximum 30 inches (760 mm) wide, and up to nominally 12 feet (3680 mm) long. The panels have a nominal weight of 4.29 psf (21.0 kg/m^2). Krion Lux panel have a flame spread index of not more than 25 and a smoke-developed index of not more than 450 when tested in accordance with ASTM E84, and comply as Class A interior finish in accordance with 2018 IBC Section 803.1.2 (2015, 2012 and 2009 IBC Section 803.1.1.

4.2.2 Substructure: The substructure system consists of 6005-T6 alloy aluminum extrusions complying with ASTM B317, which are fastened to the existing building to provide support for the wall panels. The substructure includes 0.106-inch-thick (2.7 mm) aluminum Omega-shaped hat channels, L-brackets and T-profile brackets. The hat channels may be of alternative thicknesses when shown by design to be structurally equivalent. The hat channels have a minimum width of 1.57 inches (40 mm) and a depth of 0.787 inches (20 mm). The T-profile bracket have a minimum width of 3.94 inches (100 mm) and depth of 2.36 inches (60 mm). The L-profile brackets have a minimum width of 1.57 inches (40 mm) and depth of 2.36 inches (60 mm). The T-profile brackets are fastened to the L-profile brackets using 0.217-inch by 0.867-inch-long (5.5 mm by 22 mm) self-drilling stainless steel screws included with the system. The substructure system, including brackets and channels, weighs a maximum of 1.25 lb/ft^2 (6.1 kg/m^2).

4.2.3 Construction Adhesive: The panels are adhered to the aluminum substructure using the P404 Adhesive/Sealant meeting ASTM C297 provided by the manufacturer as part of the Krion Wall Panel System and attached using fasteners described in Section 4.2.4. The adhesive shall be installed in accordance with the adhesive manufacturer's published installation instructions.

4.2.4 Wall Panel Fasteners: Wall panel fasteners are FV Inox Krion DIAM41 clips and screws supplied with the panels. The panel fastener locations are required to be predrilled for the counter-sunk fasteners in accordance with Porcelanosa specifications.

5.0 IDENTIFICATION

The Krion Lux Exterior Wall Panels shall be labeled with the manufacturer's name (PORCELANOSA USA) and address, product name, thickness, color, finish, batch number, and the name of the approved inspection agency. The label shall include the IAPMO Uniform ES Mark of Conformity and the Evaluation Report Number (ER-403).

Either Mark of Conformity may be used as follows:

or

IAPMO UES ER-403

6.0 SUBSTANTIATING DATA

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Polymer-based, Polymer-modified and High-pressure Laminate Exterior and Interior Wall Cladding (AC92), dated December 2013, editorially revised March 2016.

6.2 Report of surface burning characteristics testing in accordance with ASTM E84.

6.3 Test reports 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 Krion Lux Exterior Wall Panels to assess conformance to the codes and standards shown in Section 1.0 of this report and serves as documentation of the product certification. The panels are manufactured at the location noted in Section 2.4 of this report under a quality control program with periodic inspections under the supervision of IAPMO UES.

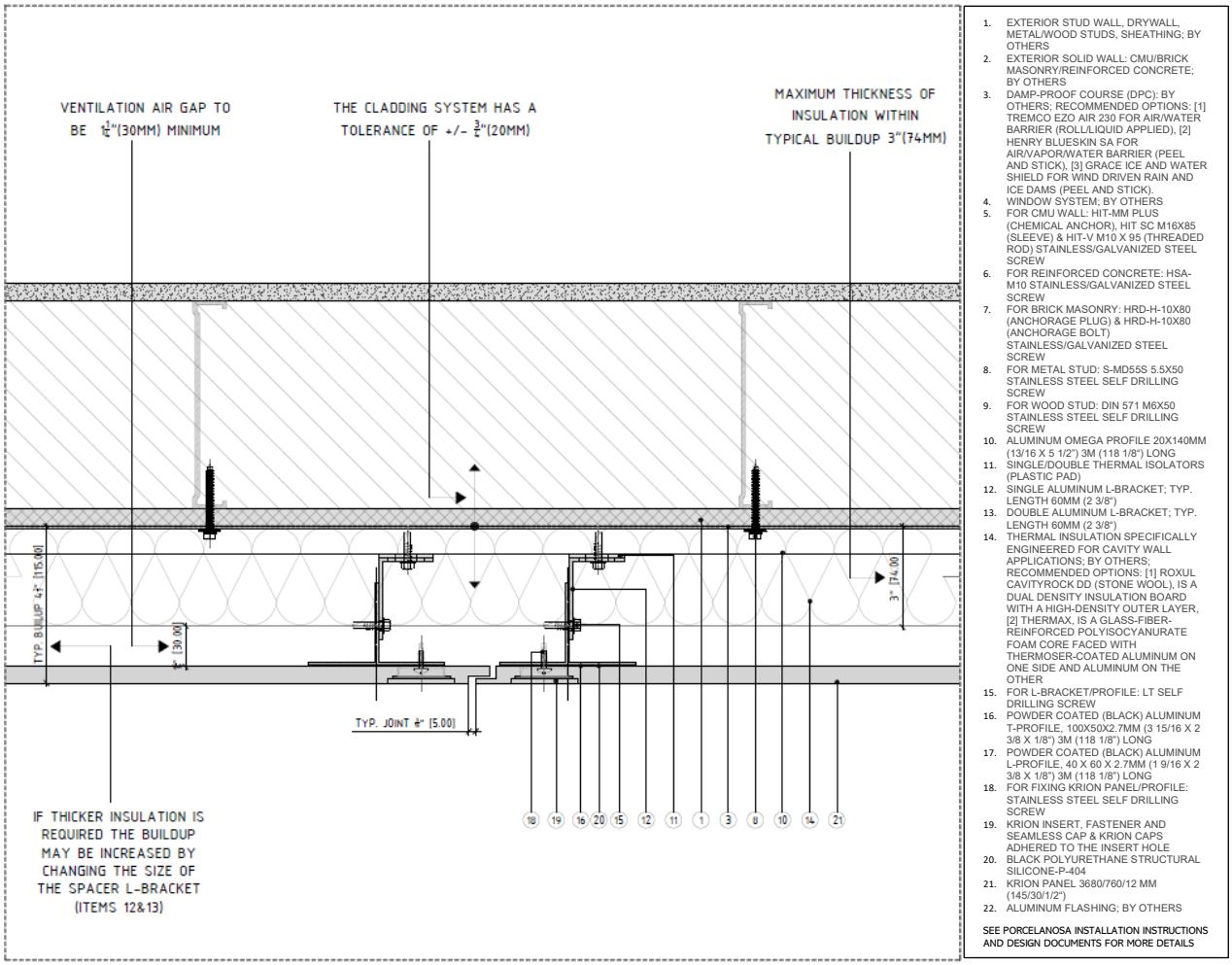
For additional information about this evaluation report please visit www.uniform-es.org or email us at info@uniform-es.org

TABLE 1 –MAXIMUM PANEL SPANS AND ALLOWABLE TRANSVERSE LOAD (ASD)

MAXIMUM SPAN BETWEEN PANEL SUPPORTS AND FASTENERS [2] (inches)	ALLOWABLE POSITIVE LOAD [1] (psf)	ALLOWABLE NEGATIVE LOAD [1] (psf)
27	69	57

SI: 1 inch = 25.4 mm, 1 psf = 47.9 N/m^2

1. Maximum allowable positive and negative transverse load capacity at maximum panel spans, determined from ASTM E330 testing. Load tests were conducted on multi-span configurations.
2. Maximum spacing of supports and fasteners, and panel spans is 27 inches. Maximum tributary area for fasteners is 4.88 square feet of panel (example: a fastener is required at each point 27 inches horizontally by 26 inches vertically).

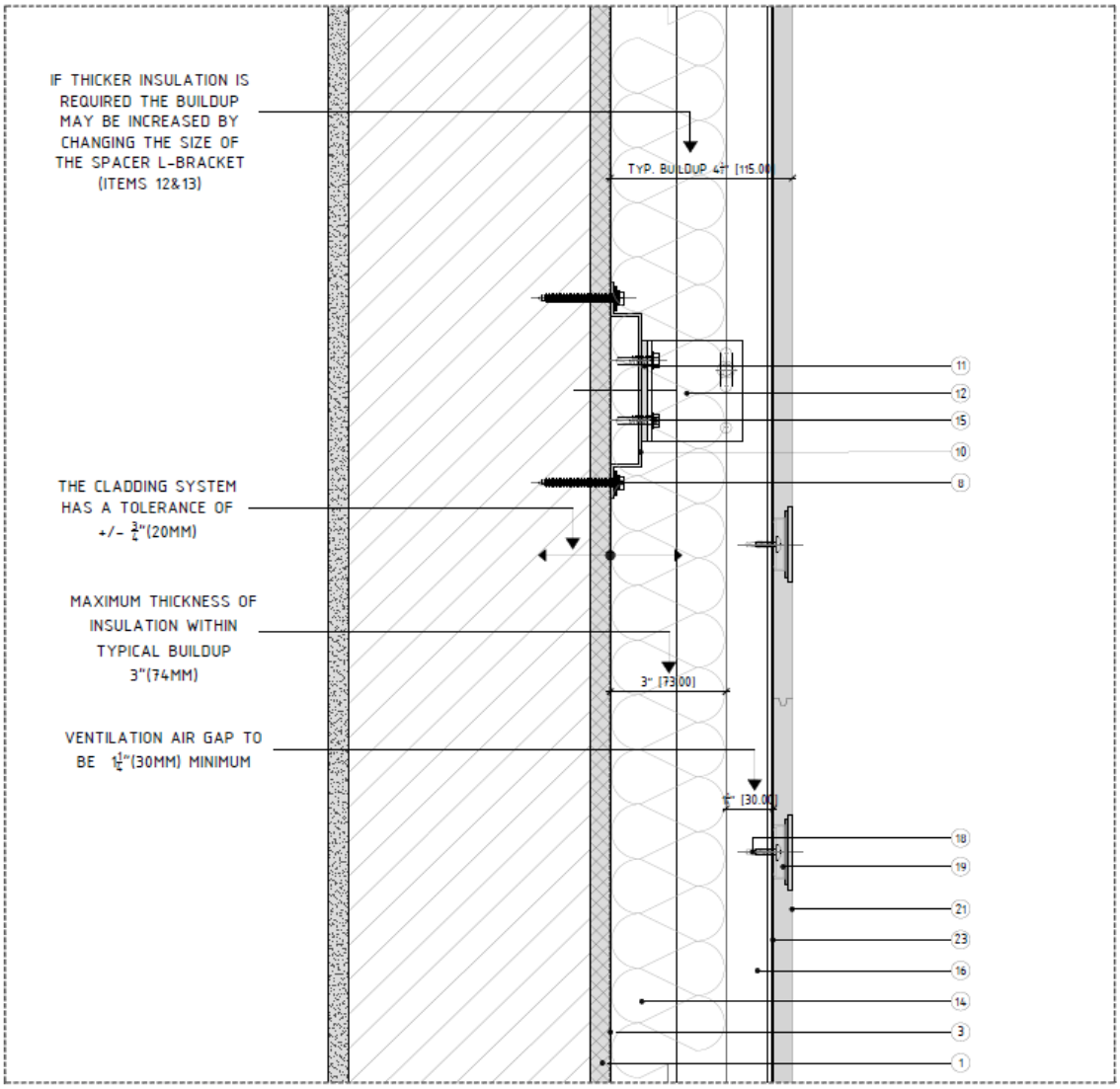


DETAIL A - TYPICAL HORIZONTAL DETAIL WITH STUD WALL

FIGURE 1

1. EXTERIOR STUD WALL, DRYWALL, METAL/WOOD STUDS, SHEATHING; BY OTHERS
2. EXTERIOR SOLID WALL: CMU/BRICK MASONRY/REINFORCED CONCRETE; BY OTHERS
3. DAMP-PROOF COURSE (DPC): BY OTHERS; RECOMMENDED OPTIONS: [1] TREMCO EZO AIR 230 FOR AIR/WATER BARRIER (ROLL/LIQUID APPLIED), [2] HENRY BLUESKIN SA FOR AIR/VAPOR/WATER BARRIER (PEEL AND STICK), [3] GRACE ICE AND WATER SHIELD FOR WIND DRIVEN RAIN AND ICE DAMS (PEEL AND STICK).
4. WINDOW SYSTEM; BY OTHERS
5. FOR CMU WALL: HIT-MM PLUS (CHEMICAL ANCHOR), HIT SC M16X85 (SLEEVE) & HIT-V M10 X 95 (THREADED ROD) STAINLESS/GALVANIZED STEEL SCREW
6. FOR REINFORCED CONCRETE: HSA-M10 STAINLESS/GALVANIZED STEEL SCREW
7. FOR BRICK MASONRY: HRD-H-10X80 (ANCHORAGE PLUG) & HRD-H-10X80 (ANCHORAGE BOLT) STAINLESS/GALVANIZED STEEL SCREW
8. FOR METAL STUD: S-MD55S 5.5X50 STAINLESS STEEL SELF DRILLING SCREW
9. FOR WOOD STUD: DIN 571 M6X50 STAINLESS STEEL SELF DRILLING SCREW
10. ALUMINUM OMEGA PROFILE 20X140MM (13/16 X 5 1/2") 3M (118 1/8") LONG
11. SINGLE/DOUBLE THERMAL ISOLATORS (PLASTIC PAD)
12. SINGLE ALUMINUN L-BRACKET; TYP. LENGTH 60MM (2 3/8")
13. DOUBLE ALUMINUM L-BRACKET; TYP. LENGTH 60MM (2 3/8")
14. THERMAL INSULATION SPECIFICALLY ENGINEERED FOR CAVITY WALL APPLICATIONS; BY OTHERS; RECOMMENDED OPTIONS: [1] ROXUL CAVITYROCK DD (STONE WOOL), IS A DUAL DENSITY INSULATION BOARD WITH A HIGH-DENSITY OUTER LAYER, [2] THERMAX, IS A GLASS-FIBER-REINFORCED POLYISOCYANURATE FOAM CORE FACED WITH THERMOSER-COATED ALUMINUM ON ONE SIDE AND ALUMINUM ON THE OTHER
15. FOR L-BRACKET/PROFILE: LT SELF DRILLING SCREW
16. POWDER COATED (BLACK) ALUMINUM T-PROFILE, 100X50X2.7MM (3 15/16 X 2 3/8 X 1/8") 3M (118 1/8") LONG
17. POWDER COATED (BLACK) ALUMINUM L-PROFILE, 40 X 60 X 2.7MM (1 9/16 X 2 3/8 X 1/8") 3M (118 1/8") LONG
18. FOR FIXING KRION PANEL/PROFILE: STAINLESS STEEL SELF DRILLING SCREW
19. KRION INSERT, FASTENER AND SEAMLESS CAP & KRION CAPS ADHERED TO THE INSERT HOLE
20. BLACK POLYURETHANE STRUCTURAL SILICONE-P-404
21. KRION PANEL 3680/760/12 MM (145/30/1/2")
22. ALUMINUM FLASHING; BY OTHERS

SEE PORCELANOSA INSTALLATION INSTRUCTIONS AND DESIGN DOCUMENTS FOR MORE DETAILS



DETAIL B - TYPICAL VERTICAL DETAIL WITH STUD WALL

FIGURE 2

CALIFORNIA SUPPLEMENT

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1.0 RECOGNITION

Krion Lux Exterior Wall Panels described in ER-403 and this supplement have been evaluated for use as exterior and interior wall coverings and for use in Type V construction. The panels have been evaluated for durability, structural properties, and interior finish properties, subject to the requirements in ER-403 and this supplement. The Krion Lux Exterior Wall Panels were evaluated for compliance with the following codes and regulations:

- 2019 California Building Code (CBC)
- 2019 California Residential Code (CRC)

2.0 LIMITATIONS

Use of the Krion Lux Exterior Wall Panels recognized in this supplement are subject to the following limitations:

2.1 The Krion Lux Exterior Wall Panels comply with Section 707A.3, Item 1 of the CBC, and may be "used in the exterior design and construction of new buildings located within a Wildland-Urban Interface Fire Area" [Section 701A.1 of the CBC] when the additional provisions of Section 707A of the CBC are satisfied.

2.2 The Krion Lux Exterior Wall Panels comply with Section R337.7.3, Item 1 of the CRC, and may be "used in the exterior design and construction of new buildings located within a Wildland-Urban Interface Fire Area" [Section R337.1.1 of the CRC] when the additional provisions of Section 337.7 of the CRC are satisfied.

2.3 Protection against condensation shall be provided in accordance with Section R703.1.1 of the CRC.

2.4 This supplement expires concurrently with ER-403.

FLORIDA SUPPLEMENT

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- 2017 Florida Building Code, Building (FBC, Building)
- 2017 Florida Building Code, Residential (FBC, Residential)

2.0 LIMITATIONS

2.1 The Krion Lux Exterior Wall Panels described in IAPMO UES ER-403 shall be designed and installed in accordance with 2017 FBC, Building, and 2017 FBC, Residential and in accordance with the 2018, 2015 and 2012 International Building Code and the 2018, 2015 and 2012 International Residential Code as noted in ER-403.

2.2 Load combinations shall be in accordance with Sections 1605.2 or 1605.3 of the FBC, Building, as applicable.

2.3 "In order to provide for inspection for termite infestation, clearance between exterior wall coverings and final earth grade on the exterior of a building shall not be less than 6 inches (152 mm)," in accordance with Section 1403.8 of the FBC, Building.

2.4 Evaluation of the Krion Lux Exterior Wall Panels for compliance with the high-velocity hurricane zone provisions in Section 1409 of the FBC, Building, and Chapter 44 of the FBC, Residential, is outside the scope of this report.

2.5 Verification shall be provided that a quality assurance agency audits the manufacturers quality assurance program and audits the production quality of products, in accordance with Section (5)(d) of Florida Rule 61G20-3.008. The quality assurance agency shall be approved by the Commission (or the building official when the report holder does not possess an approval by the Commission).

2.6 This supplement expires concurrently with ER-403.

CITY OF LOS ANGELES SUPPLEMENT

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- 2020 City of Los Angeles Building Code (LABC)
- 2020 City of Los Angeles Residential Code (LARC)

2.0 LIMITATIONS

Use of the Krion Lux Exterior Wall Panels recognized in this supplement is subject to the following limitations:

2.1 The design and installation of the Krion Lux Exterior Wall Panels shall be in accordance with ER-403, the manufacturer's published installation instructions and LABC or LARC, as applicable. Where conflicts occur, the more restrictive shall govern.

2.2 The design and installation of the Krion Lux Exterior Wall Panels shall be in accordance with Chapters 16 and 17 of the LABC, as applicable.

2.3 The Krion Lux Exterior Wall Panels comply with Section 707A.3, Item 1 of the LABC, and may be "used in the exterior design and construction of new buildings located within a Wildland-Urban Interface Fire Area" [Section 701A.1 of the LABC] when the additional provisions of Section 707A of the LABC are satisfied.

2.4 The Krion Lux Exterior Wall Panels comply with Section R337.7.3, Item 1 of the LARC, and may be "used in the exterior design and construction of new buildings located within a Wildland-Urban Interface Fire Area" [Section R337.1.1 of the LARC] when the additional provisions of Section 337.7 of the LARC are satisfied.

2.5 This supplement expires concurrently with ER-403.