



OLDCASTLE ARCHITECTURAL INSULTECH™

CSI Sections: 04 22 00 Concrete Unit Masonry
04 22 00.13 Concrete Unit Veneer Masonry

1.0 RECOGNITION

Oldcastle Architectural Insultech™ insulated concrete masonry unit wall system recognized in this report has been evaluated for strength and fire performance. The following code editions and criteria are recognized:

- 2015 and 2012 International Building Code® (IBC)
- IAPMO Uniform ES EC021-2014
- 2016 California Building Code – Supplement (attached)
- 2017 and 2014 Florida Building Code, Building – Supplement (attached)

2.0 LIMITATIONS

2.1 The Insultech™ insulated concrete masonry unit and veneer wall 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 Construction plans, details and calculations for the Insultech™ insulated masonry wall system shall be approved by the building official. Calculations and details shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

2.3 In areas where the probability of termite infestation is very heavy, in accordance with Section 2603.8 of the 2015 IBC (Section 2603.9 of the 2012 IBC), Insultech™ insulated masonry and veneer wall units shall not be installed under interior or exterior foundation walls located below grade.

3.0 PRODUCT USE

3.1 General: Insultech™ insulated masonry and veneer wall units recognized in this report are used as structural masonry, insulation and veneer.

The Insultech™ wall system may be used in fire-resistance-rated construction under the IBC and IRC, and any construction type (IBC Types I through V), when installed in accordance with the applicable sections of this report.

3.2 Concrete Masonry Design Requirements: Structural design of walls shall be in accordance with Chapter 21 of the IBC considering the strength of the CMU only, with no strength from the veneer.

3.3 Veneer Design Requirements: The exterior veneer portion of the wall assembly shall be designed in compliance with Section 1405.6 of the IBC. The veneer shall not be considered to add to the strength of the CMU.

In Seismic Design Category C and higher, the sides and top of veneer shall be isolated from the structure so that vertical and lateral seismic forces resisted by the structure are not imparted to the veneer, in accordance with Section 12.2.2.10.1 of TMS 402. In Seismic Design Category E and F the requirements for Seismic Design Categories C and D apply and the weight of the anchored veneer for each story shall be supported independent of other stories, in accordance with Section 1405.6.2 of the IBC.

The maximum allowable out-of-plane load (wind load) for the veneer shall be 195 psf (9.34 kPa).

3.4 Flashing and Weep Holes: Flashing and weep holes shall be designed to resist water penetration into the building interior. Weep holes shall be at least 3/16-inch (4.8 mm) in diameter and spaced less than 33-inches (838 mm) on center, in accordance with Section 12.1.6.2 of TMS 402.

3.5 Types I, II, III, IV and V Construction: The Insultech™ insulated concrete masonry unit wall system may be used in Types I, II, III, IV and V construction. Wall openings, such as window headers, shall have protection of the foam plastic insulation as shown in Figures 3, 4, 5 and 6 of this report. The structural steel angle shall be a minimum of 1/4-inch (6.3 mm) thick. The horizontal leg of the steel angle shall cover the full thickness of the insulation and extend a minimum of 1-inch (25.4 mm) into the veneer joint. When 25 gage steel flashing is used at the vertical jamb there shall be a minimum of 1-1/2" (38 mm) thick minimum 4 pcf (64 kg/m³) density mineral wool insulation installed between the flashing and the foam plastic insulation.

3.6 Fire-Resistance-Rated-Assemblies: The Insultech™ insulated concrete masonry unit wall system has a fire-resistance rating of 4 hours, grouted or ungrouted.

3.7 Installation: Insultech™ insulated concrete masonry unit walls shall be installed in accordance with the manufacturer’s installation instructions, the applicable code, and this report. The Insultech™ wall system shall be laid in Type M or S mortar complying with ASTM C270. The Insultech foam gaskets, described in Section 4.1.5 of this report, prevent air leakage through the horizontal joints.

4.0 PRODUCT DESCRIPTION

4.1 General: Insultech™ units consists of pre-assembled structural concrete masonry units with molded EPS insulation inserts and thin concrete masonry veneer. The

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 safety, as applicable, in accordance with IBC Section 104.11. This document shall only be reproduced in its entirety.





veneer is connected to the CMU by stainless steel anchors embedded into dove slots in the back of the veneer and the face of the CMU. Insultech™ wall system is available in both full height and half-height units. Figures 1 and 2 of this report provides a typical detail.

4.1.1 Insultech™ concrete masonry units shall comply with ASTM C90 for load-bearing concrete masonry units in accordance with Section 2103.1 of the IBC. The CMU shall be minimum nominal width of 8-inch with dove-tail slots on the exterior face to receive matching stainless-steel anchors and insulation inserts.

4.1.2 Insultech™ inserts consist of NEOPOR® by BASF molded expanded polystyrene (EPS) insulation. The EPS inserts are a maximum of 3.0 inch (76.2 mm) thick and shall comply with ASTM C578 as Type II with a minimum density of 1.35 pound per cubic foot (21.6 kg/m³). The EPS inserts have a flame-spread index not greater than 25 and a smoke-developed index not greater than 450 when tested in accordance with ASTM E84. The insulation inserts have molded faces that fit into matching dove-tail slots on the face of the CMU and back of the veneer.

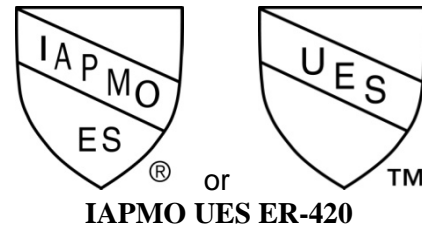
4.1.3 Insultech™ veneer consists of nominally 1⁵/₈ inch (41.3 mm) thick manufactured concrete masonry complying with ASTM C1634. The weight of the veneer is approximately 17 psf (0.81 kPa). The back of the veneer units has dove-tail slots to receive matching stainless-steel anchors and insulation inserts.

4.1.4 Stainless steel anchors are inserted into matching dove-tail slots in the CMU and veneer. The anchors shall be 0.03 inch (0.76 mm) thick, 7/8-inch (22.2 mm) wide Type 430 stainless steel complying with ASTM A240. Each full height and half-height concrete masonry unit (CMU) has two anchors connecting the veneer to the CMU.

4.1.5 Insultech™ Foam Gaskets are laid horizontally over Insultech™ inserts to maintain the insulation within the mortar joint thickness. The compressible PVC Gaskets are nominally 3-inches wide by 5/8-inch (76.2 x 15.9 mm) thick (uncompressed) and available in lengths of 4 feet (1 219 mm).

5.0 IDENTIFICATION

Insultech™ insulated masonry and veneer wall units described in Section 4.0 of this report are packaged with a label noting the manufacturer’s name (Oldcastle Architectural), address, product name (Insultech™), the approved inspection agency (Quality Control Consultants – QCC), and evaluation report number (ER-420). Either UES Mark of Conformity may be used as shown below:



6.0 SUBSTANTIATING DATA

Data in accordance with applicable sections of IAPMO Uniform ES EC 021-2014, Evaluation Criteria for Anchored Masonry Veneer System with Polystyrene Foam Plastic Backing; manufacturer’s descriptive literature and installation instructions; engineering study for compliance with the 2015 IBC. Test results are from laboratories in compliance with ISO/IEC 17025.

Report of air leakage testing in accordance with ASTM E283.

Insultech™ insulated masonry wall units are manufactured in Morris, Illinois, under a quality control program with inspections.

7.0 CONTACT INFORMATION

Oldcastle Architectural
900 Ashwood Parkway, Suite 600
Atlanta, GA 30338
www.echelonmasonry.com

8.0 STATEMENT OF RECOGNITION

This evaluation report describes the results of research carried out by IAPMO Uniform Evaluation Service on Oldcastle Architectural’s Insultech™ pre-assembled insulated masonry and veneer wall units for use as structural masonry, insulation and veneer to assess conformance to the codes and standards shown in Section 1.0 of this report and documents the product’s certification.

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

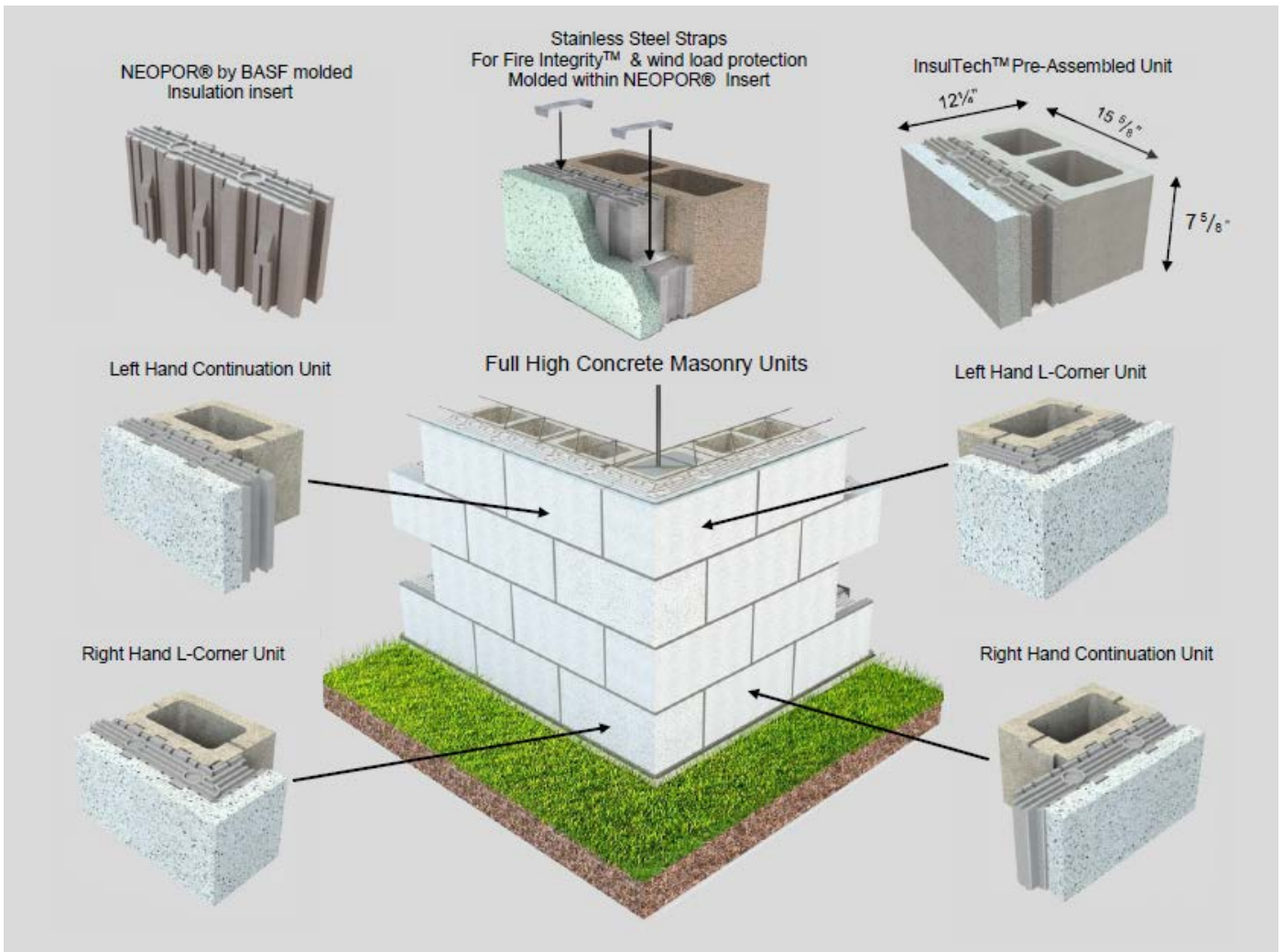


Figure 1. Typical Details

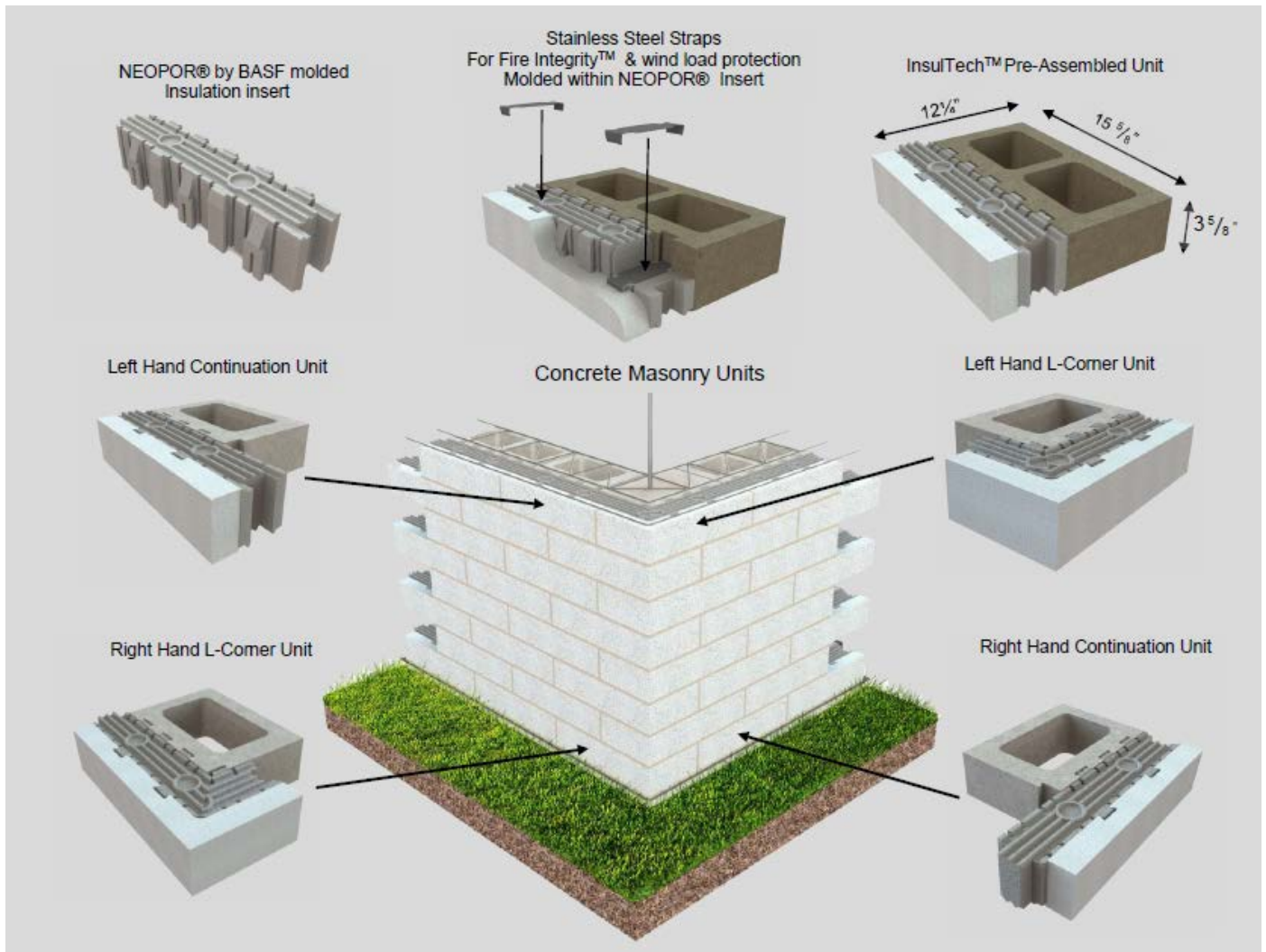


Figure 2. Typical Details

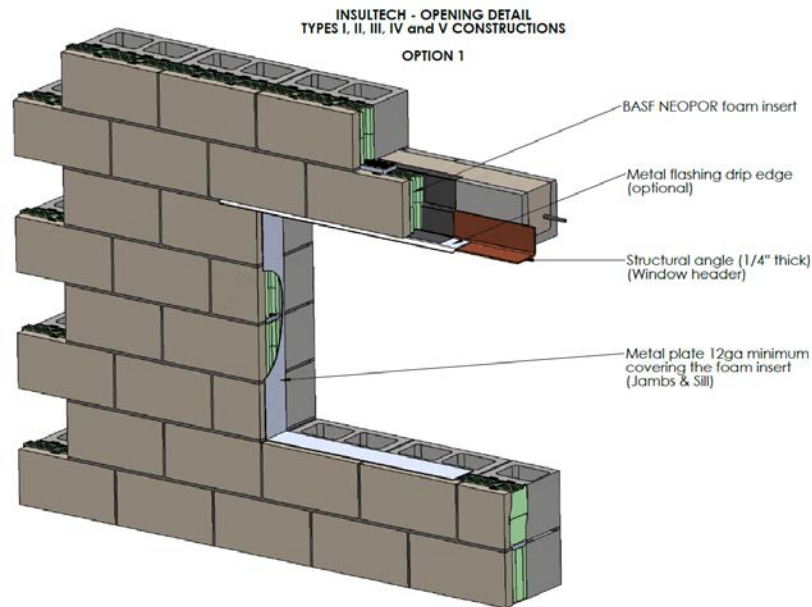


Figure 3. Window Detail

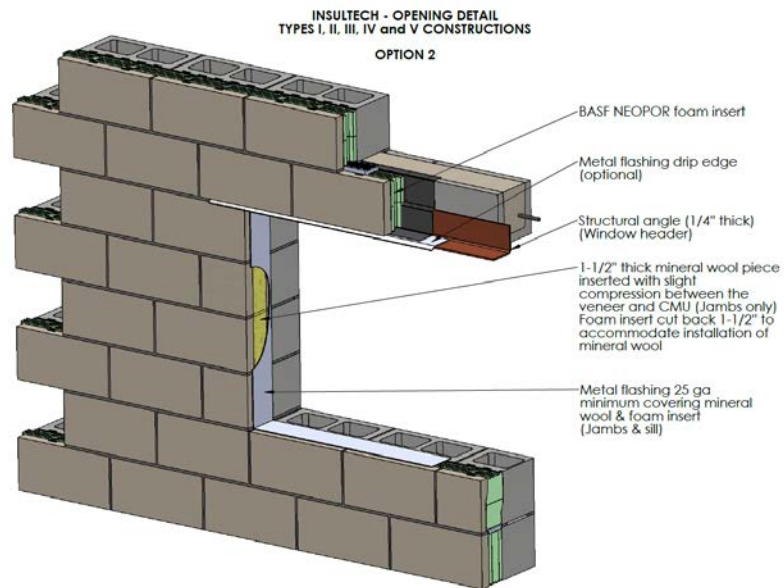


Figure 4. Window Detail

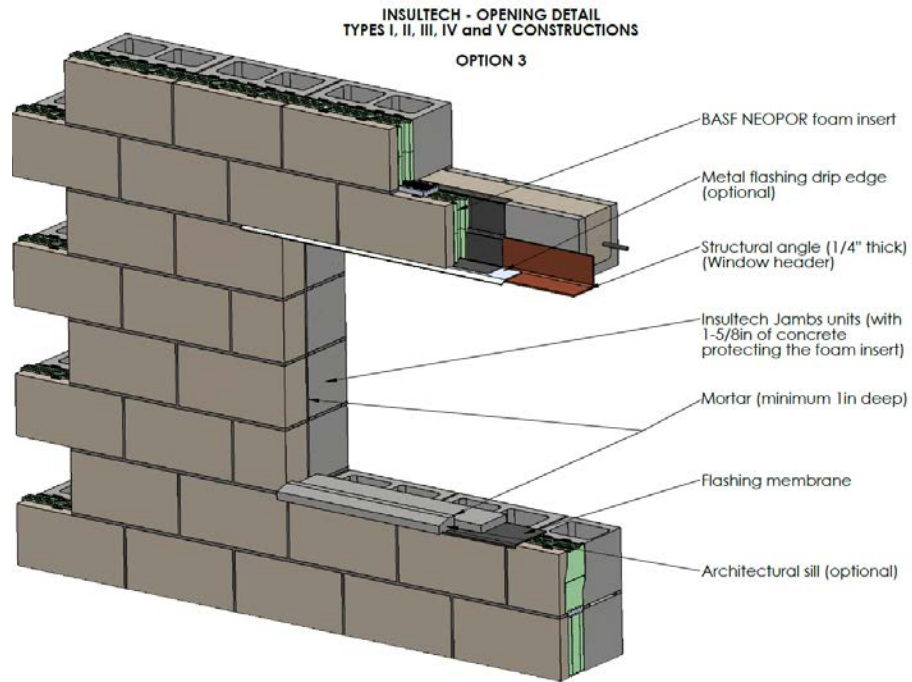


Figure 5. Window Detail

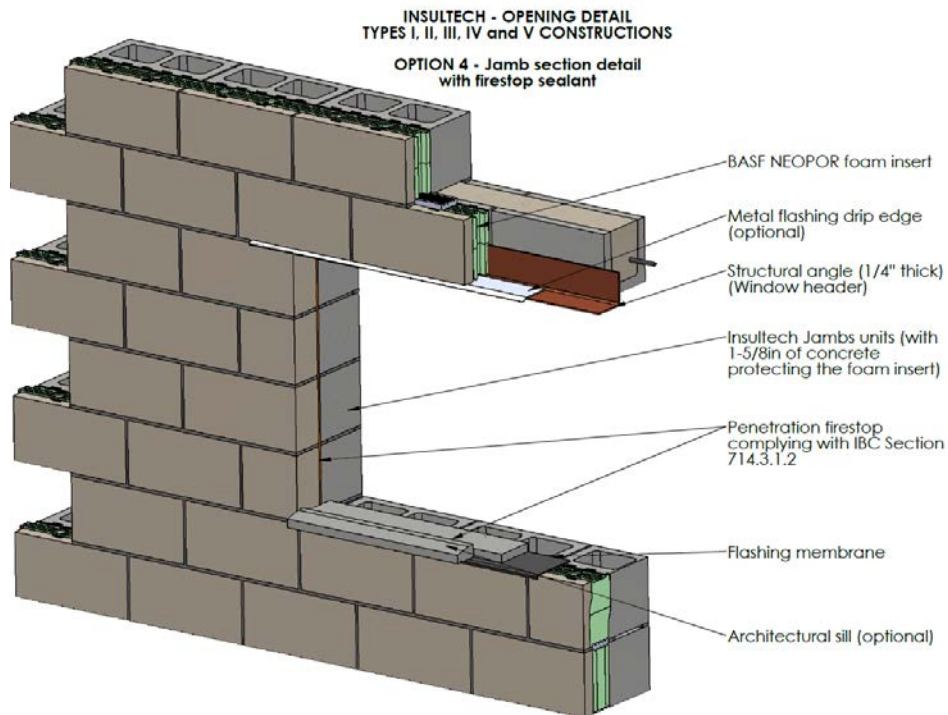


Figure 6. Window Detail



CALIFORNIA SUPPLEMENT

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

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1.0 RECOGNITION

Oldcastle Architectural Insultech™ insulated concrete masonry unit wall system evaluated in IAPMO UES ER-420 is a satisfactory alternative to the following codes and regulations:

- 2016 California Building Code (CBC)
- 2016 California Residential Code (CRC)

Installation shall be in accordance with ER-420.

In Seismic Design Category C and higher the sides and top of the anchored veneer shall be isolated from the structure so that vertical and lateral seismic forces resisted by the structure are not imparted to the veneer, in accordance with Section 1405.6.2 of the CBC. In Seismic Design Category E and F the requirements for Seismic Design Categories C and D apply and the weight of the anchored veneer for each story shall be supported independent of other stories, in accordance with Section 1405.6.2 of the CBC.

In areas where the probability of termite infestation is very heavy the clearance between the NEOPOR® by BASF inserts within the Insultech™ wall system installed above grade and exposed earth shall be at least 6-inches (152 mm), except where the structural members of walls, floors, ceilings and roofs are entirely of noncombustible materials or preservative-treated wood, in accordance with Section 2603.8 of the CBC.

For compliance with Section 1411 of the CBC the Insultech™ wall system veneer shall not be considered as part of the CMU backing in computing strength or deflection nor shall it be considered as part of the required thickness of the CMU backing.

The NEOPOR® by BASF inserts within the Insultech™ wall system have not been evaluated under CBC Chapter 7A or CRC Section R327, for use in the exterior design and construction of new buildings located in a Fire Hazard Zone within a State Responsibility Area or any Wildland-Urban Interface Fire Area.



FLORIDA SUPPLEMENT

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1.0 RECOGNITION

Oldcastle Architectural Insultech™ insulated concrete masonry unit wall system evaluated in IAPMO UES ER-420 is a satisfactory alternative to the following codes and regulations:

- 2017 and 2014 Florida Building Code, Building (FBC, Building)
- 2017 and 2014 Florida Building Code, Residential (FBC, Residential)

Installation shall be in accordance with ER-420. Load combinations shall be in accordance with Section 1605.2 or 1605.3 of the FBC, Building, as applicable.

For installations in accordance with 2017 FBC, Building, Sections 1403.8, 2114.2 and 2603.8 (Sections 1403.8, 2114.2 and 2603.9 of the 2014 FBC, Building) or FBC, Residential, Section R704, as applicable, when the Insultech™ wall system is supported by a shelf angle or lintel secure to the foundation sidewall there shall be at least 6-inches (152 mm) clear inspection space between veneer and the final earth grade or top of any soil, sod, mulch or other organic landscaping component deck, apron, porch, walk or any other work immediately adjacent to or adjoining the structure. For installations in accordance with FBC, Building, Section 2114.2 if the masonry veneer extends below grade, a termite protective treatment shall be applied to the cavity created between the veneer and the foundation in lieu of a physical barrier.

2.0 HIGH-VELOCITY HURRICANE ZONE:

Buildings and structures in High-Velocity Hurricane Zones (HVHZ) shall comply with Sections 2103 through 2105, 2107, 2108, 2114 and Sections 2119 through 2122 of the FBC, Building.

2.1 Allowable Stress Design: In accordance with Section 2107.6 of the 2017 FBC, Building (Section 2107.5 of the 2014 FBC, Building), the development length of reinforcing bars in tension and compression shall be determined by Equation 2-12 from TMS 402/ACI 530/ASCE 5, but need not be greater than $72 d_b$, with the following gamma, γ , factors:
 $\gamma = 1.0$ for No. 3 (M#10) through No. 5 (M#16) bars;
 $\gamma = 1.04$ for No. 6 (M#19) through No. 7 (M#22) bars; and
 $\gamma = 1.2$ for No. 8 (M#25) through No. 11 (M#36) bars.

In accordance with Section 2107.6 of the FBC, Building, when designing pilasters, where vertical reinforcement is provided to resist axial compressive stress, lateral ties shall meet all applicable requirements of Section 2107.5 of the FBC, Building.

2.2 Termite Inspection: Veneer shall be supported by a concrete bearing ledge or there shall be at least a 6-inch (152 mm) clear inspection space provided in compliance with Section 2114.2 of the FBC, Building.

2.3 Subject to Approval: Masonry units shall be subject to the approval of the building official and manufactured by plants having a certificate of competency issued by the authority having jurisdiction, in accordance with Section 2119.3 of the FBC, Building.

2.4 Construction Details: Construction details shall be in accordance with Section 2121 of the FBC, Building, except when the design and construction are in accordance with Section 2122 of the FBC, Building.

2.5 Reinforced Unit Masonry: Buildings and structures designed with the Insultech™ system shall be by a professional engineer or registered architect and in accordance with Section 2122 of the FBC, Building.

3.0 QUALITY ASSURANCE

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).

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

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