CODE EVALUATION REPORT

CERUS-1012

PUBLISHED: July 2022
EXPIRATION: July 2023

PRODUCT(s): **Allura® Fiber Cement Siding**

REPORT HOLDER: Plycem USA LLC

CONTACT DETAILS: 396 W. Greens Road, Suite 300
Houston, TX
77067 USA

CSI DIVISIONS: **07 00 00 – Thermal and Moisture Protection**

CSI SECTION: 07 46 46 – Fiber-Cement Siding

APPLICABLE CODES: 2018, 2015 International Building Code (IBC)
2018, 2015 International Residential Code (IRC)

2016, 2019 California Green Building Standards Code (CALGreen), Title 24 Part 11
2020, 2015 ICC 700 *National Green Building Standard*™ (ICC 700)

EVALUATED: Physical Properties.
Surface-Burning Characteristics
Wind Resistance
Fire-Resistance Ratings
Non-Combustibility

1.0 APPROVED FOR FOLLOWING:

APPROVED TYPES OF CONSTRUCTION:	Types I-V/AB
APPROVED USE:	Exterior Cladding and Interior Wall and Ceiling Finish (Dry Room).
APPROVED INSTALLATIONS:	• Exterior cladding on bearing and non-load bearing exterior walls. • Interior walls and ceilings.

2.0 DESCRIPTION:

2.1 General:

Allura® products are ASTM C1186 Type A Grade II compliant fiber-cement complying with the 2018 IBC Sections 1403.10 and 1404.16, and 2015 IBC Sections 1404.10 and 1405.16 respectively; and 2018 / 2015 IRC Section R703.10 for use as exterior siding and soffit. Allura® products are available in various shapes and sizes as outlined in Table 1 of this report. Allura® siding and soffits are available in a wide variety of color and texture options applied over the fiber-cement product.

When used in exterior cladding applications, Allura® fiber-cement is intended for installation over structural sheathing or non-structural sheathing complying with the applicable code. Installation shall include a water-resistive barrier complying with Section 1402 of the 2018 IBC / 1403 of the 2015 IBC or R703 of the 2018 / 2015 IRC as appropriate.

Allura® fiber-cement products have a flame spread index of 0 and a smoke developed index of ≤ 5 when evaluated in accordance with ASTM E84.

Allura® fiber-cement is classified as non-combustible and complies for use in Types I-V construction, including use in fire-resistance rated applications. See sections 4.6 and 4.7 of this report respectively for details.

Allura® fiber-cement products are available in Allura® Lap Siding, Allura® Panel, Allura® Select Shake and Allura® Soffit designations in size options as outlined in Table 1 of this report.

Table 1. Allura® Fiber-Cement Products

TYPE	MODEL	WIDTH		LENGTH		THICKNESS	
		inches	mm	inches	mm	inches	mm
LAP	Traditional Cedar	5¼,6¼,7¼,8¼,9¼,12	133, 159, 184, 210, 235, 305	144	3658	5/16	8
	Smooth	5¼,6¼,7¼,8¼,9¼,12	133, 159, 184, 210, 235, 305				
PANEL	Stucco	48	1219	96 108 120	2438 2743 3048	5/16	8
	Cedar 8'' Groove	48	1219				
	Traditional Cedar	48	1219				
	Smooth	48	1219				
SHAKE SELECT	Random Square Straight Edge	12, 16	305, 406	48	1219	5/16	8
	Random Square Staggered Edge	16	406	48	1219	5/16	8
	Half Rounds	16	406	48	1219	5/16	8
	Octagon	16	406	48	1219	5/16	8
SOFFIT	Cedar*	12, 16, 24	305, 406, 610	144	3658	¼	6
	Smooth*	12, 16, 24	305, 406, 610	144	3658	¼	6
	Porch Panel	48	1219	96	2438	¼ 5/16	6 8

*Noted products are available in vented and non-vented options.

Allura® fiber-cement products comply with 2019 CALGreen Section A4.405.1.4 as prefinished building materials. Allura® fiber-cement products comply with 2016 CALGreen Section A4.406 as materials with enhanced durability and reduced maintenance.

Allura® products comply with 2020 / 2015 ICC 700 Sections 601.7, and 11.601.7 as site-applied prefinished building materials.

3.0 DESIGN:

Allura® fiber-cement are exterior cladding products for installation over code complying wall framing, sheathing and approved water resistive barrier. Use of Allura® does not require design by a registered professional, but installations shall be in applications where wind-resistance requirements determined in accordance with the applicable code are within the limits as outlined in Section 8.1 of this report for installations described.

4.0 INSTALLATIONS:

4.1 General:

Installation of Allura® fiber-cement products must comply with the manufacturer's published installation instructions, this report, and the applicable code(s). Where differences are found between documents, this report and the applicable building code shall be followed.

Installation of Allura® fiber-cement products is be over code complying exterior walls including the code sheating and water-resistive barrier in accordance with 2018 Sections 1404.1 through 1404.4 including 1404.16. Where installation is in areas governed by the 2015 IBC, installation is to be in accordance with Sections 1405.1 through 1405.4 including 1405.16. Where used in jurisdications following the 2018 / 2015 IRC, installation is to be in accordance with Sections R703.1 and R703.3.

Allura® fiber-cement Lap Siding and Panel siding products can be installed over sheathing of structural or non-structural designation, where the wall is constructed in accordance with the applicable code. Allura® fiber-cement Select Shake products require installation over a minimum 7/16-inch (11 mm) thickness 9\wood structural panels. Fasteners for attachment of Allura® fiber-cement must be corrosion-resistance, hot-dipped galvanized or stainless steel. Clearance between Allura® fiber-cement siding and earth on the exterior of a building shall be ≥ 6 inches (152 mm). Clearance between Allura® fiber-cement siding and horizontal concrete slabs or similar surfaces exposed to weather shall be ≥ 2 inches (51 mm).

Where field cuts are required, all field-cut edges are to be painted. No paint is to be applied to the backside of Allura® fiber-cement exterior cladding.

Installation of Allura® fiber-cement assemblies shall confirm to Tables 2-4 and Figures 1-8 of this report for the respecitve product type.

4.1.1 Special Inspection:

Installation of Allura® fiber-cement products do not require special inspection.

4.2 Allura® Lap Siding

Allura® Lap Siding can be installed as a face fasten or as a blind nail system. Installation is restricted to horizontal orientation.

Installation starts at the bottom of wall where the bottom edge of the first course of lap siding is installed ¼-inch (6 mm) below a 1-1/2-inch (38 mm) width starter strip. A fastener in accordance with Table 2 of this report is installed at 1-inch (25 mm) from the top edge for blind fastening or ¾-inch (19 mm) up from the bottom edge for face fastening and at a minimum 3/8-inch (10 mm) from edges in accordance with Figure 1 or Figure 2 of this report as appropriate with fastening at every stud location. Each subsequent row of lap siding has a 1-1/4-inch (32 mm) overlap installed as shown in Figures 1 and 2. Maintain a minimum 1/8-inch clearance when siding meets a vertical termination, such as windows, doors, trim, corners, penetrations, etc. Caulk all vertical terminations or transitions unless siding terminates into a pocket or "J" channel receiver. Maintain a 1/4-inch clearance when Allura® Lap Siding meets horizontal flashing, such as window and door heads, band boards, water tables etc. Caulking is not to be applied between the siding and the horizontal flashing.

See Section 9.1 Figures 1 and 2 for details of Allura® Lap Siding installation.

4.3 Allura® Panel Siding

Allura® Panels are installed in as exposed fastener (face fastened)systems.. Installation can be in vertical or horizontal panel orientation where panels horizontal and vertical joints are treated as outlined below.

All edges of Allura® Panels shall be backed by framing or solid blocking for attachment. Fasteners are to be installed a minimum 2-inches (51 mm) from panel corners in each direction with a minimum 3/8-inch (9 mm) edge distance. Vertical edges shall be lightly butted and centered on framing members and either sealed with caulking, covered with a batten, or protected with an H-section joint cover. Horizontal joints are to include "Z" flashing, between panels leaving a ¼-inch (6 mm) gap. Maintain a minimum 1/8-inch clearance when siding meets a vertical termination, such as windows, doors, trim, corners, penetrations, etc. Caulk all vertical terminations or transitions unless siding terminates into a pocket or "J" channel receiver. Maintain a 1/4-inch clearance when Allura® Panel meets horizontal flashing, such as window and door heads, band boards, water tables etc. Caulking is not to be applied between the siding and the horizontal flashing.

See Section 9.2 Figures 3-5 for details of Allura® Panel installation.

4.4 Allura® Select Shake Siding

Allura® Select Shakes are installed as a hidden fastener (blind nailed) system.

For Allura® Select Shakes, a starter strip and starter course are required at the bottom of wall prior to the installation of Allura® Select Shakes in accordance with the manufacturer's installation instructions. Installation is to start from the left side of wall progressing right. Allura® Select Shake products are trimmed to allow the entire panel to butt against the trim. The first fastener is installed 1-inch (25 mm) above the top of the keyways at no closer than 3/8-inches from the edge of panel. A fastener is installed at 1-inch (25 mm) above every second (every other) keyway. At the final keyway of the panel at the right edge a fastener is required. Subsequent rows are to be installed to provide overlap by matching up identifying V-notches to meet the recommended Allura® Shake sequence detailed in the manufacturer's installation instructions and Figure 8 of this report. Maintain a minimum 1/8-inch clearance when siding meets a vertical termination, such as windows, doors, trim, corners, penetrations, etc. Caulk all vertical terminations or transitions unless siding terminates into a pocket or "J" channel receiver. Maintain a 1/4-inch clearance when Allura® Select Shakes meet horizontal flashing, such as window and door heads, band boards, water tables etc. Caulking is not to be applied between the siding and the horizontal flashing.

See Section 9.3 Figures 6-8 for details of Allura® Select Shake installation.

4.5 Allura® Soffit

Allura® Soffits are anchored to framing members at maximum 24-inch (610 mm) on center spacing, with the long direction of the Allura® Soffit panel oriented perpendicular to the framing. Allura® Soffit ventilated applications require ventilation holes to be oriented towards the fascia (away from exterior wall). After installation, ventilated Allura® Soffit provides net free air of 6.9 inches^2 / ft (146 cm^2 / m).

All edges of Allura® Soffits must be backed by framing or solid blocking for attachment. Fasteners are to be installed a minimum 2-inches (51 mm) from corners in each direction, with a minimum edge distance of 3/8-inches (9 mm). Butt joints are to be in contact and located over framing members. No caulking or flashing is applied.

See Section 9.4 Figure 9 for details of Allura® Soffit installation.

4.6 Fire-Resistance Rated Construction

Allura® exterior claddings are approved for use where a limited (restricted) load-bearing fire-resistance rated construction is required for up to 1 hour, with the fire-resistance rating applied for interior or exterior of wall fire exposure. The wall construction shall be as described below:

Interior Finish	**Type:**	1 layer of Type X gypsum board compliant with ASTM C1396, listed by approved agency.	
	Minimum Thickness:	5/8 in. (16 mm).	
	Installation:	Gypsum to be installed with minimum #6 1-5/8 inches (41 mm) length Type S drywall screws spaced at maximum 8 inches (203 mm) around the perimeter and 12 inches (305 mm) in the field. Gypsum joints are to be taped and mudded in accordance with ASTM C474 and ASTM C475, and screw heads are to be covered with joint compound.	
Wall Framing[1]	**Type:**	Dimensional Lumber	
	Minimum Size:	2 x 4 (38 mm x 89 mm).	
	Installation:	16 inches (406 mm) on center spacing. Wall studs are limited to a maximum load of 35% of determined adjusted compression design value parallel to grain determined based on Load and Resistance Factor Design (LRFD) per the National Design Specification (NDS). Wall studs are to be connected to the Top and Sill plates described in accordance with the applicable code.	
Top Plates	Minimum double 2 x 4 (38 mm x 89) dimensional lumber header, with joints of lumber offset. Lumber to be fastened in accordance with the applicable code.		
Sill Plates	Minimum single 2 x 4 (38 mm x 89) dimensional lumber header, with joints of lumber offset. Lumber to be fastened in accordance with the applicable code.		
Insulation	**Type:**	Mineral Wool Batt	Fiberglass Batt
	Type:	16-inch (405 mm) width	16-inch (405 mm) width R13
	Installation	Friction fit between studs ensuring no through gaps at joint and stud locations.	Friction fit between studs ensuring no through gaps at joint and stud locations.
Exterior Sheathing	**Type:**	1 layer of Type X gypsum board compliant with ASTM C1396 or exterior gypsum compliant to ASTM C1777, listed by approved agency.	
	Minimum Thickness:	5/8 in. (16 mm).	
	Installation:	Gypsum to be installed with minimum #6 1-5/8 inches (41 mm) length Type S drywall screws spaced at maximum 8 inches (203 mm) around the perimeter and 12 inches (305 mm) in the field. Joint treatment is not optional but not required.	
Exterior Cladding	**Type:**	Allura® fiber-cement Lap Siding or Panel Products	
	Minimum Thickness:	5/16 inches (8 mm).	
	Installation:	Lap Siding: 1-1/4 inches (32 mm) overlap installed with minimum 1-3/4-inch (44 mm) roofing nail installed blind or face nail at each stud location. Panel Siding: Panels: 1-3/4-inch (44 mm) roofing nail installed face nail at 8 inches (204 mm) on center around the perimeter, and 12 inches (305 mm) in the field.	

Note 1: Where used in load-bearing fire-resistance rated applications, maximum applied load is restricted to 35% LRFD adjusted design load determined in accordance with the NDS.

4.7 Types I-IV Construction

Allura® exterior claddings are classified as noncombustible and can be used as exterior cladding in Types I-IV construction when installed in accordance with this report with the following limitations:

4.7.1: Any Combustible Water Resistive Barriers: Allura® fiber-cement exterior cladding is approved for use as exterior cladding in Types I-IV construction when installed with a combustible water-resistive barrier where the building is limited to ≤ 40 ft (12.2 m) measured from grade.

Where Allura® fiber-cement products are used on exterior walls of Types I-IV construction > 40 ft (12.2 m) height above grade with combustible water-resistive barriers, the intended exterior wall assembly shall be listed by an approved agency as complying with the requirements of NFPA 285. The listed assembly must outline approval for use of non-combustible fiber-cement products complying as Grade II Type A per ASTM C1186 of minimum 5/16-inch (8 mm) thickness. Allura™ installation shall be in accordance with the approved agency's listing installation requirements for siding type and Tables 2 to 4 of this report.

4.7.2: Restricted Combustible Water Resistive Barriers: Allura® fiber-cement exterior cladding is approved for use as exterior cladding in Types I-IV construction when installed with a combustible water resistive barrier in buildings > 40 ft (12.2 m) height where the water resistive barrier is the only combustible component meeting the following criteria:

1. The water-resistive barrier has a flame spread of ≤ 25 and smoke developed index of ≤ 450 when evaluated in accordance with ASTM E84 or UL 723, and
2. The water-resistive barrier meets the following criteria when evaluated to ASTM E1354 at the intended installed thickness tested in the horizontal orientation with an applied heat flux of 50 kW/m2:
    a. Peak heat release rate of ≤ 150 kW/m2
    b. Total heat release of ≤ 20 MJ/m2
    c. Effective heat of combustion of ≤ 17 MJ/kg

5.0 LIMITATIONS

- Allura® fiber-cement products are to be installed in accordance with the manufacturer's installation instructions, the applicable code and this report. Where differences exist between documents, the applicable code and this report shall be followed.
- Where Allura® fiber-cement are used in fire-resistance rated construction, installation is to be in accordance with Sections 4.7 of this report, with load restricted to 35% of LRFD adjusted design load determined per the NDS.
- Where Allura® fiber-cement products are used in Types I-IV construction, installation is to be in accordance with Sections 4.5 of this report.
- Allura® fiber-cement products require installation with corrosion-resistant fasteners described in Table 2 Section 8.1 of this report, except use of electro-galvanized corrosion treatment type is not recommended.
- Allura® fiber-cement products are evaluated for use as exterior cladding and interior finish (dry room) applications. Use of Allura™ fiber-cement products in alternate applications is outside the scope of this report.
- Allura® fiber-cement products are manufactured in White City, OR and Roaring River, NC with follow-up inspections by QAI Laboratories.

6.0 SUPPORTING INFORMATION:

The following data has been submitted for evaluation of Allura® fiber-cement products:

- Data outlining compliance for surface burning characteristics evaluated to ASTM E84.
- Data outlining compliance with ASTM C1186 as Grade II Type A fiber-cement material.
- Data evaluating Allura™ assemblies for transverse load resistance in accordance with ASTM E330.
- Data evaluating wind speed resistance in accordance with ASCE 7-10 and 7-16.
- Data evaluating fire-resistance in accordance with ASTM E119.
- Data evaluating non-combustibility in accordance with ASTM E136.

7.0 MARKING:

An example of Alllura™ fiber-cement panels finished product label is outlined in Figure 1 below.

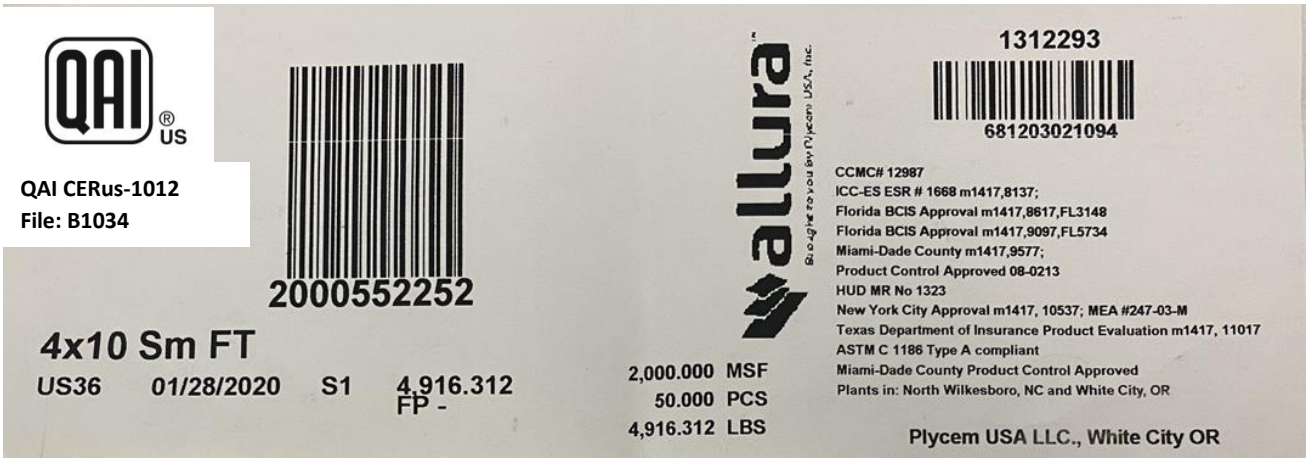

Figure 1. Allura® Finished Product Label Including CER_{US}-1012 and QAI Certification Mark

8.0 RESULTS / RATINGS:

8.1 Allowable Load Capacities

Table 2. Allura® Lap Siding Installations and Design Pressures

FASTENING METHOD	MAXIMUM WIDTH		MINIMUM FRAMING	MINIMUM FASTENING DETAILS	DESIGN PRESSURE[4]	
	Inches	mm			psf	kPa
Face	12	305	SPF (Specific Gravity (SG) 0.42 or higher) at 16'' (406 mm) with 7/16'' (11 mm) structural sheathing[1].	6d common nails 2'' (51 mm) length at every 8'' (203 mm) maximum spacing into sheathing and studs[2] per Figure X.	36.1	1.7
Face	9 ¼	235	SPF (SG 0.42 or higher) at 16'' (406 mm) with 7/16'' (11 mm) structural sheathing[1].	6d common nails 2'' (51 mm) length at every 8'' (203 mm) maximum spacing into sheathing and studs[2] per Figure X.	48.7	2.3
Face	9 ¼	235	SPF (SG 0.42 or higher) at 24'' (610 mm) with 7/16'' (11 mm) structural sheathing[1].	6d common nails 2'' (51 mm) length at 12'' (305 mm) maximum spacing[2].	24.4	1.2
Face	9 ¼	235	SPF (SG 0.42 or higher) at 16'' (406 mm) with any sheathing type[2].	Two 6d common nails at each stud location of length to penetrate minimum 1-11/16'' (43 mm) into stud.	24.5	1.2
Blind	9 ¼	235	SPF (SG 0.42 or higher) at 24'' (610 mm) with 7/16'' (11 mm) structural sheathing[1].	Ring-shank roofing nail 1-3/4'' (45 mm) length at 8'' (203 mm) maximum spacing[2].	32.3	1.5
Blind	9 ¼	235	1x4 pressure treated furring strips at 12'' (305 mm) spacing, anchored back into structural sheathing[1,3].	Roofing Nail 1-1/4'' (32 mm) length at 12'' (305 mm) into furring strips.	20.3	1.0
Blind	9 ¼	235	1x4 pressure treated furring strips at 8'' (203 mm) spacing, anchored back into structural sheathing[1,3].	Roofing Nail 1-1/4'' (32 mm) length at 8'' (203 mm) into furring strips.	39.0	1.9
Face	8 ¼	210	SPF (SG 0.42 or higher) at 16'' (406 mm) with any sheathing[2].	Two 6d common at each stud location of length to penetrate minimum 1-11/16'' (43 mm) into stud.	25.8	1.2
Blind	8 ¼	210	SPF (SG 0.42 or higher) at 16'' (406 mm) with any sheathing[2].	Roofing Nail each stud location of length to penetrate 1-7/16'' (37 mm) into stud.	23.3	1.1
Blind	8 ¼	210	SPF (SG 0.42 or higher) at 24'' (610 mm) with 7/16'' (11 mm) structural sheathing[1].	Roofing Nail 1-3/4'' (45 mm) length at 12'' (305 mm) into sheathing[2].	27.0	1.3
Blind	8 ¼	210	SPF (SG 0.42 or higher) at 24'' (610 mm) with 7/16'' (11 mm) structural sheathing[1].	Roofing Nail 1-3/4'' (45 mm) length at 8'' (203 mm) into sheathing[2].	40.3	1.9
Blind	8 ¼	210	SPF (SG 0.42 or higher) at 24'' (610 mm) with 7/16'' (11 mm) structural sheathing[1].	Ring-Shank Roofing Nail 1-3/4'' (45 mm) length at 8'' (203 mm) into sheathing[2].	40.3	1.9
Blind	8 ¼	210	Min. 20-gauge steel studs at 16'' (406 mm) with any sheathing[2].	No. 8 self-tapping wafer-head screws at each stud location of length to penetrate at least ¼'' (6 mm) into stud flange.	22.3	1.1
Face	7 ¼	184	SPF (SG 0.42 or higher) at 16'' (406 mm) with any sheathing[2].	Two 6d common at each stud location of length to penetrate 1-11/16'' (43 mm) into stud.	33.2	1.6
Blind	7 ¼	184	SPF (SG 0.42 or higher) at 16'' (406 mm) with any sheathing[2].	Roofing Nail at each stud location of length to penetrate 1-7/16'' (37 mm) into stud.	31.4	1.5
Face	7 ¼	184	SPF (SG 0.42 or higher) at 16'' (406 mm) with 7/16'' (11 mm) structural sheathing[1].	Two 6d common nails 2'' (51 mm) length at every 8'' (203 mm) maximum spacing into sheathing and studs[2].	65.7	3.1
Face	6 ¼	159	SPF (SG 0.42 or higher) at 16'' (406 mm) with any sheathing[2].	Two 6d common at each stud location of length to penetrate 1-11/16'' (43 mm) into stud.	34.8	1.7
Blind	6 ¼	159	SPF (SG 0.42 or higher) at 16'' (406 mm) with any sheathing[2].	Roofing Nail each stud location of length to penetrate 1-7/16'' (37 mm) into stud.	36.4	1.7
Face	5 ¼	133	SPF (SG 0.42 or higher) at 16'' (406 mm) with any sheathing[2].	Two 6d common at each stud location of length to penetrate 1-11/16'' (43 mm) into stud.	43.7	2.1
Blind	5 ¼	133	SPF (SG 0.42 or higher) at 16'' (406 mm) with any sheathing[2].	Roofing Nail each stud location of length to penetrate 1-7/16'' (37 mm) into stud.	38.2	1.8

1. Structural sheathing shall be minimum Exterior grade wood per 2018 / 2015 IBC Section 2303.1.5 and 2018 / 2015 IRC Section R602.1.8.
2. Any sheathing can be of structural or non-structural type installed in accordance with the applicable code.
3. Connection of the furring strips to sheathing and framing is outside the scope of this report and shall be sufficient to resist design pressures noted.
4. Design pressure values determined through testing to ASTM E330 with a Safety Factor of 3 applied to the ultimate load.

Table 3. Allura® Panel Siding Installations and Design Pressures[1]

FASTENING METHOD	MAXIMUM WIDTH		MINIMUM FRAMING	MINIMUM FASTENING DETAILS	DESIGN PRESSURE[4]	
	Inches	mm			psf	kPa
Face	48	1219	SPF (SG 0.42 or higher) at 16'' (406 mm) with any sheathing type[2].	6d common nails at each stud location 6'' (152 mm) spacing around perimeter, 12'' (305 mm) spacing in the field of length to penetrate structural framing minimum 1-11/16'' (43 mm).	21.1	1.0
Face	48	1219	SPF (SG 0.42 or higher) at 16'' (406 mm) with any sheathing type[2].	6d common nails at each stud location 6'' (152 mm) spacing around perimeter, 12'' (305 mm) spacing in the field of length to penetrate structural framing minimum 1-11/16'' (43 mm).	42.2	2.0
Face	48	1219	SPF (SG 0.42 or higher) at 24'' (610 mm) with 7/16'' (11 mm) structural sheathing[3]	6d common nails at each stud location 6'' (152 mm) spacing around perimeter, 12'' (610) spacing in the field of 2'' (51 mm) length[2].	18.6	0.9
Face	48	1219	Min. 20-gauge steel studs at 16'' (406 mm) with any sheathing[2].	No. 8 self-tapping wafer-head screws at each stud location 6'' (152 mm) spacing around perimeter, 12'' (305 mm) spacing in the field of length with minimum penetration of ¼'' (6 mm) into stud flange.	42.4	2.0
Face	48	1219	Min. 20-gauge steel studs at 24'' (610 mm) with any sheathing[2].	No. 8 self-tapping wafer-head screws at each stud location 6'' (152 mm) spacing around perimeter, 12'' (305 mm) spacing in the field of length with minimum penetration of ¼'' (6 mm) into stud flange.	24.1	1.2
Face	48	1219	SPF (SG 0.42 or higher) at 16'' (406 mm) with 7/16'' (11 mm) structural sheathing[3].	SFS Intec TW-S 4.8 x 38 x 1-1/2 inch length screw installed in following Manufacturer's Commercial Pattern "A" into structural sheathing.	31.1	1.5
Face	48	1219	SPF (SG 0.42 or higher) at 16'' (406 mm) with 7/16'' (11 mm) structural sheathing[3].	SFS Intec TW-S 4.8 x 38 x 1-1/2-inch length screw installed in following Manufacturer's Commercial Pattern "B" into structural sheathing.	21.6	1.0

1. Racking shear resistance of the below noted assemblies is outside the scope of this report.
2. Any sheathing can be of structural or non-structural type installed in accordance with the applicable code.
3. Structural sheathing shall be minimum Exterior grade wood per 2018 / 2015 IBC Section 2303.1.5 and 2018 / 2015 IRC Section R602.1.8.
4. Design pressure values determined through testing to ASTM E330 with a Safety Factor of 3 applied to the ultimate load.

Table 4. Allura® Shake Siding Installations and Design Pressures

FASTENING METHOD	PRODUCT	MINIMUM FRAMING	MINIMUM FASTENING DETAILS	DESIGN PRESSURE[3]	
				psf	kPa
Blind	All Select Shakes	SPF (SG 0.42 or higher)at 16'' (405 mm) with minimum 7/16 inch (11 mm) structural sheathing[1].	6d common nails 1-1/2'' (38 mm) with fasteners at every other (every second) keyway after first installation into sheathing.	34.3	1.6
Blind	All Select Shakes	SPF (SG 0.42 or higher)at 16'' (405 mm) with minimum 7/16 inch (11 mm) structural sheathing[1].	Ring-shank roofing nails 1-1/2'' (38 mm) with fasteners at every other (every second) keyway after first installation into sheathing.	22.7	1.1
Blind	All Select Shakes	SPF (SG 0.42 or higher)16'' (405 mm) with any sheathing[2].	6d common nails at each stud location of length to penetrate minimum 1-11/16'' (43 mm) into stud.	21.3	1.0
Blind	All Select Shakes	Min. 20-gauge steel studs at 16'' (406 mm) with minimum 7/16 inch (11 mm) structural sheathing[1].	No. 8 self-tapping wafer-head screws at each stud location.	33.3	1.6

1. Structural sheathing shall be minimum Exterior grade wood per 2018 / 2015 IBC Section 2303.1.5 and 2018 / 2015 IRC Section R602.1.8.
2. Any sheathing can be of structural or non-structural type installed in accordance with the applicable code.
3. Design pressure values determined through testing to ASTM E330 with a Safety Factor of 3 applied to the ultimate load.

9.0 INSTALLATION DETAILS

9.1 ALLURA® LAP SIDING INSTALLATION

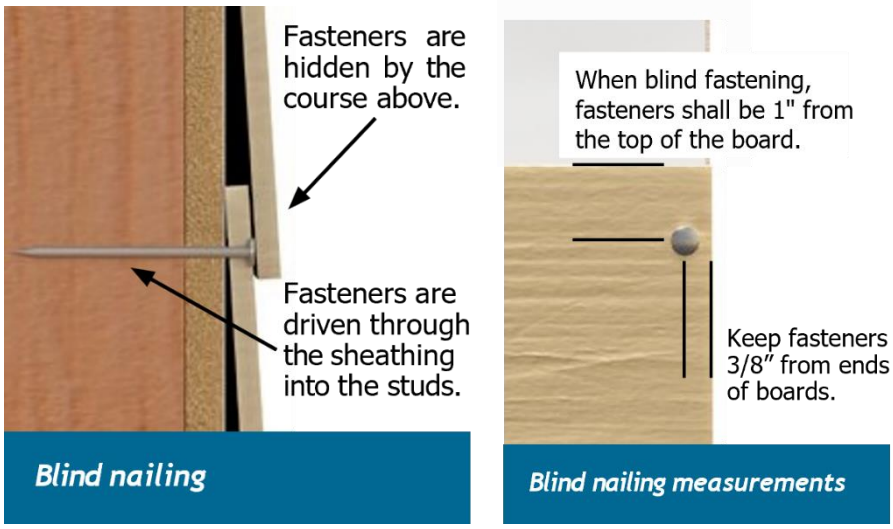

Figure 1. Allura® Lap Siding Blind Nail Fastening Details

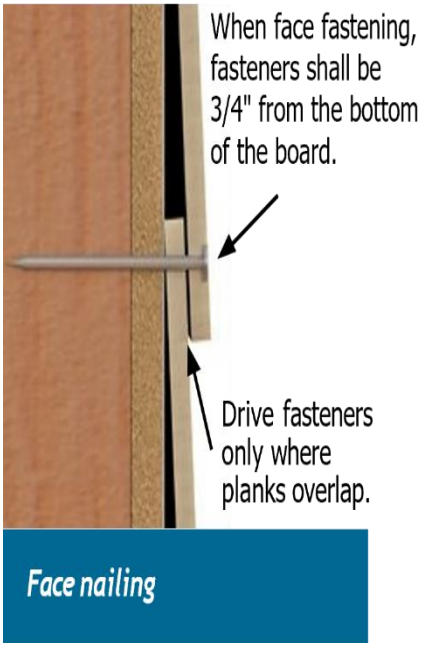

Figure 2. Allura® Lap Siding Face Nail Fastening Details

9.2 ALLURA® PANEL SIDING INSTALLATION

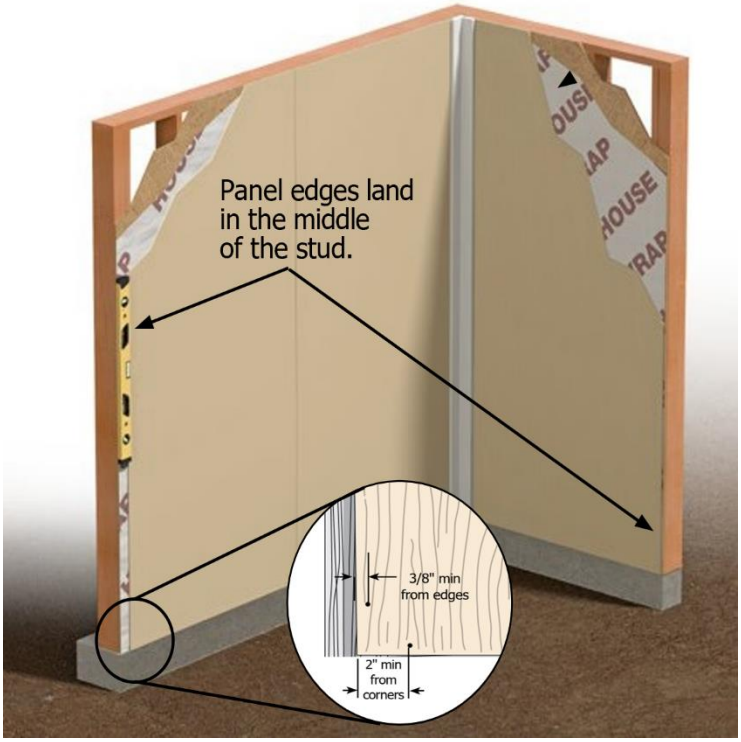

Figure 3. Allura® Panel General Installation

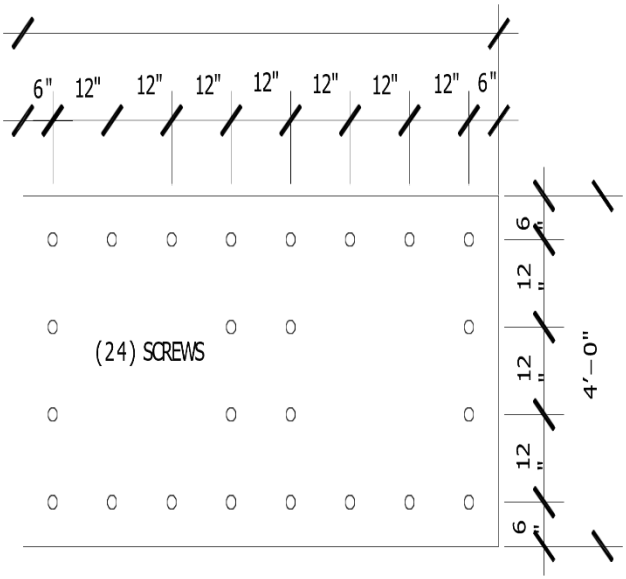

Figure 4. Allura® Panel Commercial Pattern "A"

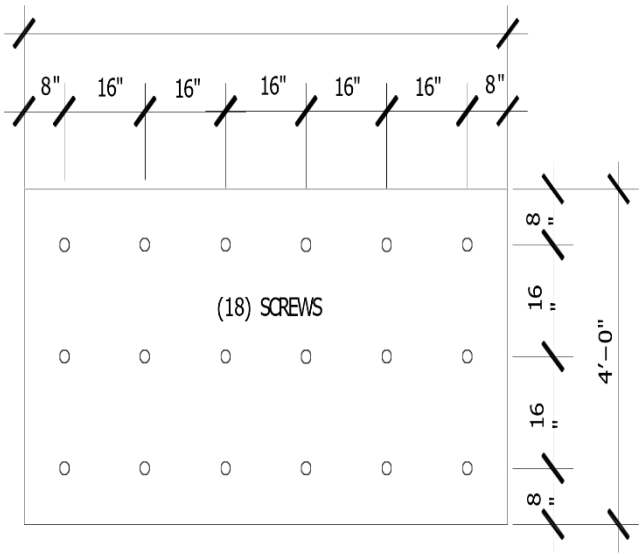

Figure 5. Allura® Panel Commercial Pattern "B"

9.3 ALLURA® SELECT SHAKE SIDING INSTALLATION

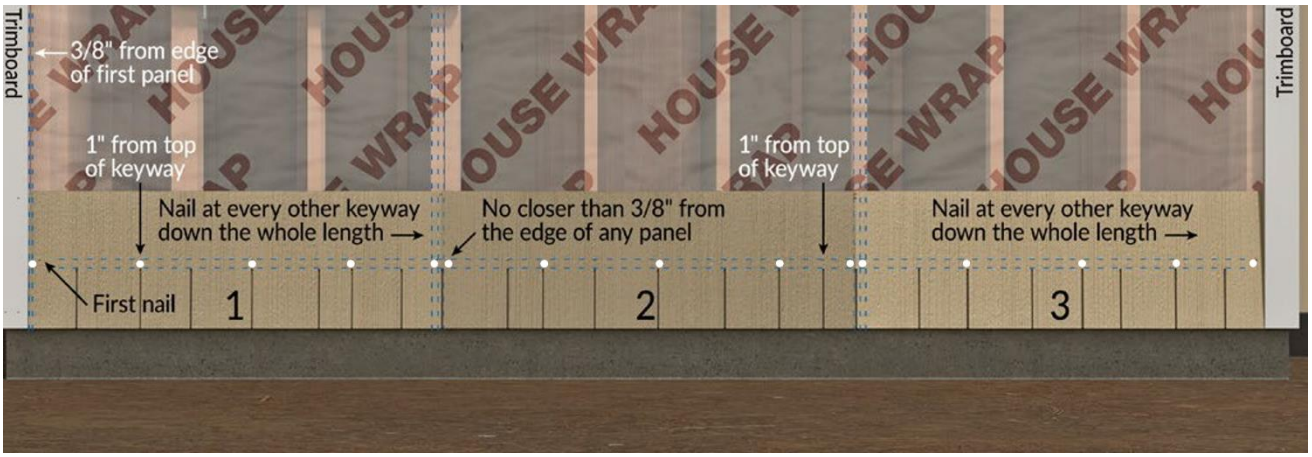

Figure 6. Allura® Select Shake General Installation

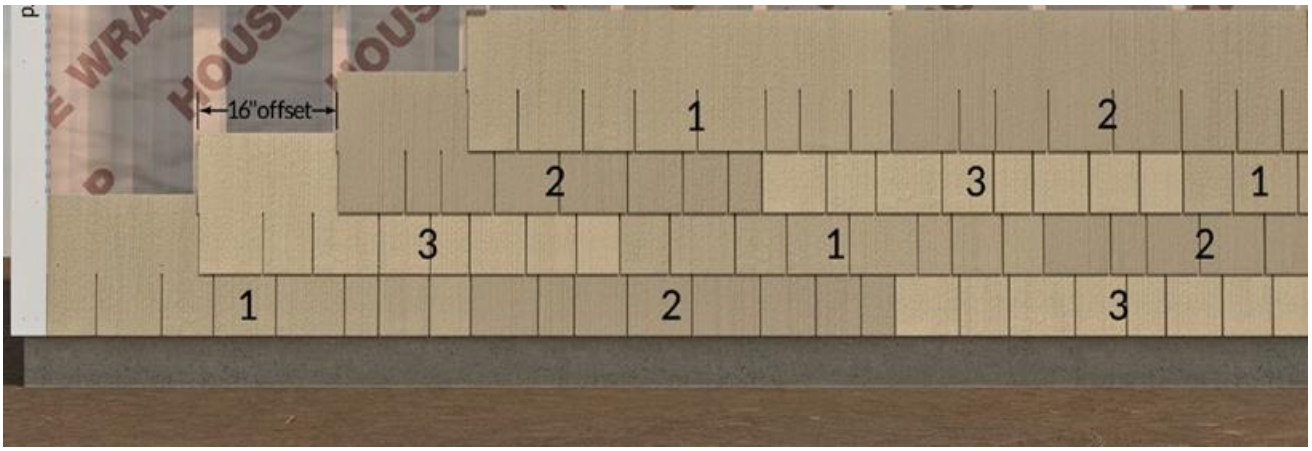

Figure 7. Allura® Select Shake Staggered Installation

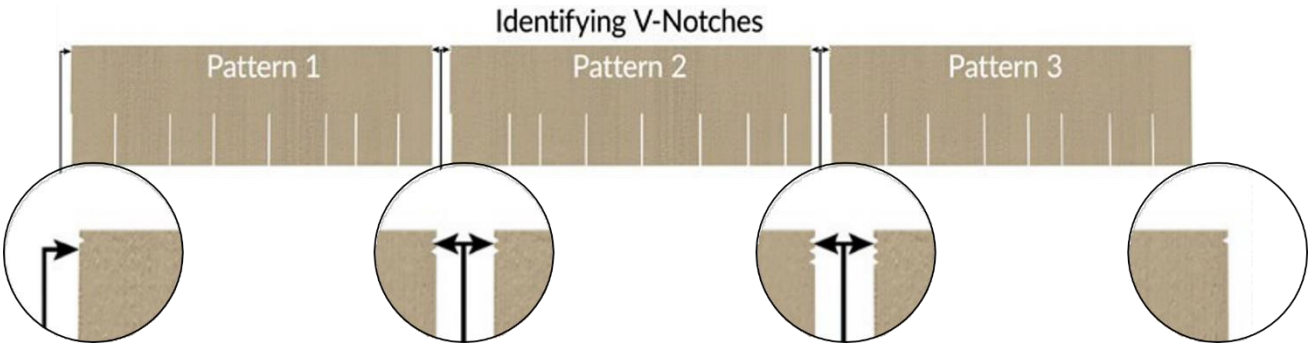

Figure 8. Allura® Select Shake V-Notch Identification of Select Shake Panel Types

9.4 ALLURA® SOFFIT INSTALLATION

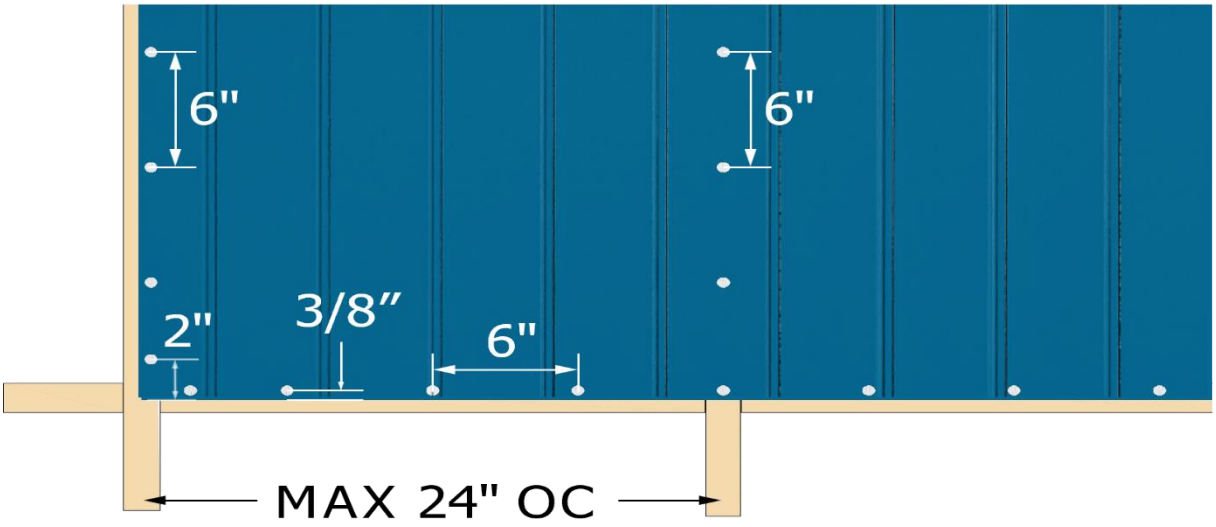

Figure 9. Allura® Soffit General Installation

10.0 ELIGIBILITY OF REPORT

The attached report has been reviewed by a QAI Registered Professional Engineer approved by the specific state Board of Professional Engineers noted on the specific P.E. seal(s).

Per section 1703 of the IBC, QAI is an independent third-party testing, inspection and certification agency accredited by the International Accreditation Service, Inc. (IAS) for this specific scope (see IAS PCA-118, PCA-119). QAI can confirm that based on its IAS accreditation it meets IBC Section 1703.1 on Independence, Section 1703.1.2 on Equipment and Section 1703.1 on Personnel.

This Evaluation report has been designed to meet the performance requirements of IBC Section 1703.4 and contains the required information to show the product, material or assembly meets the applicable code requirements.

The product is labeled per section IBC 1703 and subject to follow-up inspection per IBC 1703.6 using QAI IAS accredited ISO 17020 inspection program (see IAS AA-635, AA-723).

For more information regarding QAI Laboratories, please visit www.qai.org.

The above is an example of the QAI registered Listing mark. The Listing mark may only be used by the Report Holder per the QAI service agreement on products defined in this report. The 'us' indicator in the 8 o'clock position indicates the product complies with the properties evaluated with limitations outlined in this report for use in the US market. A 'c' indicator in the 4 o'clock position indicates the product has been evaluated for use in the Canadian market.

10.0 REFERENCED STANDARDS

ASTM E84 *Standard Test Method for Surface Burning Characteristics of Building Materials*.
ASTM C1186 *Standard Specification for Flat Fiber-Cement Sheets*.
ASTM E330 *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Uniform Static Air Pressure Difference*.
ASTM E119 *Standard Test Methods for Fire Tests of Building Construction and Materials*.
ASTM E136 *Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C*.