

# EXHIBIT 2



February 14, 2022

Stephen F. Best, Associate  
Jones, Skelton & Hochuli, P.L.C.  
40 North Central Avenue, Suite 2700  
Phoenix, AZ 85004

RE: JSH File No: **17412-00067**  
File Type: Residential  
Property: Gallery Condominiums Subdivision  
Address: 7107 East Earll Drive  
Scottsdale, AZ 85251  
BSC File No: 220080S

Dear Mr. Best:

Per Jones, Skelton & Hochuli, P.L.C.'s (JSH) request, Evan J. Marshall, SE of BSC Forensic Services, LLC (BSC), formerly of Envista Forensics, LLC (Envista), performed on-site inspections at the referenced property on March 9-11, 2021. Reportedly, subsequent to construction completion, water infiltration through various locations of the roof and exterior wall cladding caused water damage to interior finish surfaces of several units of the buildings.

---

## Claim Information

### Scope of Work

JSH retained BSC to determine the following:

- Whether the wood framing construction work performed by LeBlanc Construction was the cause of the reported water penetration.
- Whether there was missing wood construction at the balcony edges as reported on pages 8-9 of the MCC Defect Issue Report dated January 31, 2022.
- Whether missing shear wall components can be extrapolated to entire project.

### Property Description(s)

Four three-story wood-framed buildings were constructed between 2017 and 2018 for the Gallery condominiums subdivision project. Exterior walls were clad with stucco and the roofs were covered with an elastomeric coating over spay-foam (SPF) insulation and/or modified bitumen sheets with an elastomeric coating. Interior walls and ceilings were clad with gypsum board (i.e. drywall). The buildings were constructed on slab-on-grade concrete foundations separated by a common drive lane paved with asphalt concrete. The buildings had cement concrete driveways, sidewalks, patios, and gutters. LeBlanc Building Company, Inc. (LeBlanc Construction, LeBlanc) was contracted by the developer (K. Hovnanian Homes, K Hovnanian) to perform wood framing work for the project.

## Provided Document(s)

BSC was provided with documents for review and consideration during the performance of the aforementioned Scope of Work. The following document(s) (available upon request) contained information used as a part of BSC's investigation, and as a basis for the discussion and conclusion(s) presented in this report:

1. Architectural drawings prepared by Otak, Inc. dated April 29, 2016, and August 2, 2016.
2. Structural drawings prepared by Felton Group dated April 28, 2016, and June 8, 2016.
3. Mechanical, Electrical, and Plumbing drawings prepared by Energy Inspectors dated April 25, 2016.
4. Standard Specifications prepared by K Hovnanian Homes dated May 3, 2016.
5. Pre-engineered truss calculations and drawings prepared by Miltek dated September 6, 2016.
6. Plaintiff's Eleventh Supplemental Rule 26.1 Disclosure Statement, Gallery Community Association, v. K. Hovnanian at Gallery, LLC et al., Case No. CV2020-008714, dated December 27, 2021.
7. Preliminary site observation report prepared by SBBA, Inc. dated July 2, 2019.
8. Gallery COA v K Hov at Gallery, LLC, BHA # 19-7096, Preliminary Defense Cost of Defense Scope Estimate dated August 21 and 22, 2021.
9. MCC Defect Issue Report dated January 31, 2022.
10. Various provided photographs of water stains, deconstructed ceiling, roof, and wall surfaces, and repair work.

---

## Property Observations

Property condition observations are depicted in the images in the appendices. Further description of the relevance of these observations is provided in the *Discussion of Findings* section herein. Except where indicated otherwise, images presented herein were captured by BSC on the date(s) of our inspection(s). In addition, supporting images, such as historical aerial images, may be included in the Appendices as detailed herein.

---

## Claim Research

### Documents Research

The following additional documents (or parts contained therein) and/or sources were reviewed and/or referenced as part of BSC's investigation, and as a basis for the discussion and conclusion(s) presented in this report:

1. Aerial/Historic Image(s) from CONNECTExplorer, URL: <https://explorer.pictometry.com>.
2. Weather history provided by the National Weather Service (NWS), URL: [www.weather.gov/climate](http://www.weather.gov/climate).
3. Weather history provided by the National Center for Environmental Information (NCEI), URL: [www.ncdc.noaa.gov/stormevents](http://www.ncdc.noaa.gov/stormevents).
4. National Design Specification for Wood Construction (NDS) with Supplement American Forest & Paper Association, American Wood Council, Washington D.C.

# EXHIBIT 2

5. "What are common construction tolerance limits for light-frame wood construction?", Wood Products Council, URL: <https://www.woodworks.org/experttip/common-construction-tolerance-limits-light-frame-wood-construction>.
6. Breyer, Donald E., Fidley, Kenneth (2007), Design of Wood Structures ASD/LRFD, 6th Ed., The McGraw-Hill Companies.
7. Carper, Kenneth L, Forensic Engineering: Second Edition (2001), CRC Press.
8. International Building Code (IBC), International Code Council, Washington D.C.
9. Minimum Design Loads for Buildings and Other Structures (ASCE7), American Society of Civil Engineers, Reston, Virginia.
10. ASTM E620 - Standard Practice for Reporting Opinions of Scientific or Technical Experts, American Society for Testing and Materials, West Conshohocken, Pennsylvania.
11. ASTM E678 - Standard Practice for Evaluation of Scientific or Technical Data, American Society for Testing and Materials, West Conshohocken, Pennsylvania.
12. ASTM E2713 - Standard Guide to Forensic Engineering, ASTM International, West Conshohocken, Pennsylvania.

---

## Understanding Stucco Assemblies

Cement plaster, or stucco as it is commonly called, is considered an exterior cladding finish system. Stucco is further classified as a concealed water-resistive barrier (WRB) system, which is a drained system. Drained systems refer to a cladding that accommodates moisture intrusion that is expected to occur, such as through the cement plaster, at windows, through vents, etc. The moisture encounters the WRB (a moisture-resistant barrier behind the stucco that impedes liquid moisture but allows moisture vapor migration) and subsequently drains out of the wall assembly at scheduled weep openings within the cladding.

As is common with masonry veneer drainage systems, stucco drainage systems require the underlying sheathing to be protected from moisture, generally by the application of a WRB. The International Building Code (IBC) require the WRB be a minimum of two (2) layers of Grade D building paper on wood- or steel-framed buildings. Various flashings are also required within the stucco as well as at doors, windows, and other penetrations, to direct moisture to the exterior of the assembly.

# EXHIBIT 2

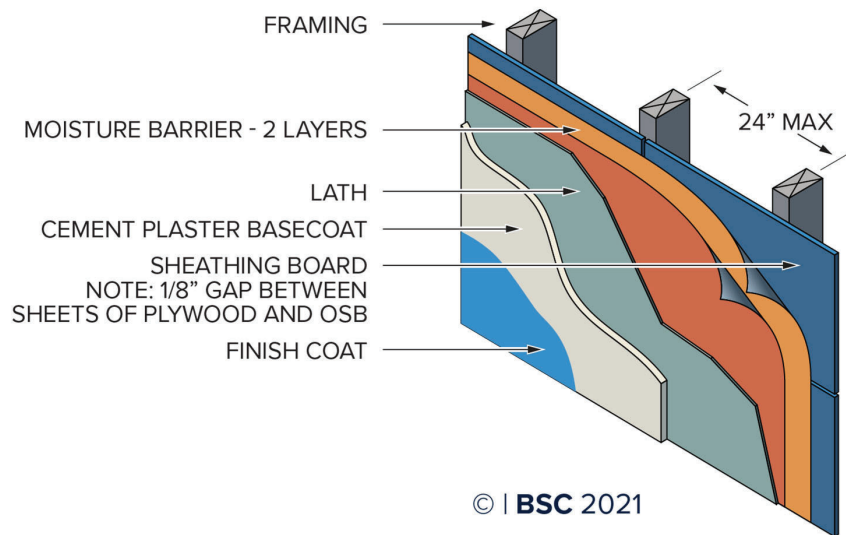


Figure 1. Typical stucco veneer cross-section with proper components.

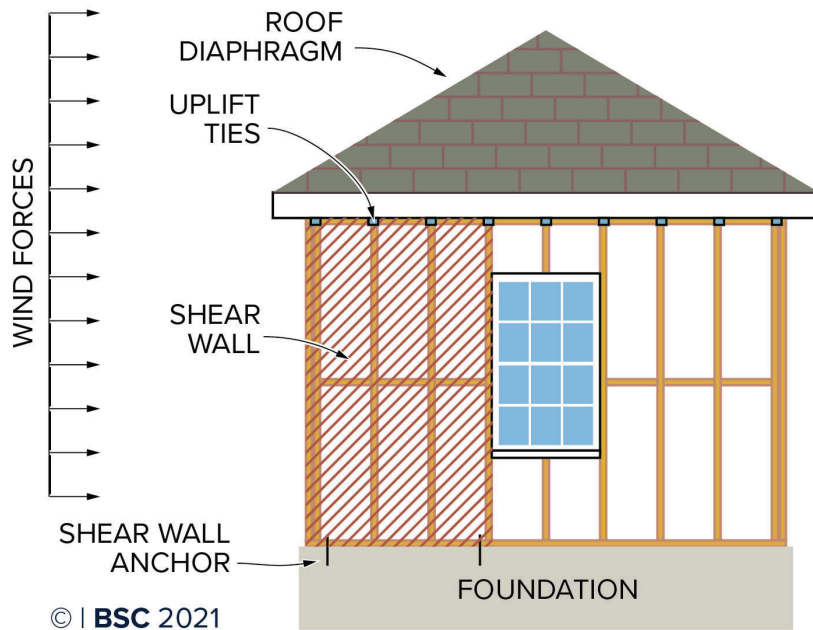
## Understanding Wood Structures

### Lateral Force Resisting Systems (LFRS)

When analyzing a building for structural framing movements, BSC finds it appropriate to discuss basic engineering principles of Lateral Force Resisting Systems (LFRS) in wood buildings. The appropriately named LFRS refers to the components of a building which collectively resist lateral forces – such as wind or earthquake – that may impact a structure during its service life. Residential wood-framed structures, such as the subject property, have the following LFRS components: roof diaphragm, shear walls (also called strong walls), and shear wall anchors (attaches the shear wall edges to the foundation). Uplift ties are generally present (but not always) and provide resistance to wind uplift forces acting on the roof. The figure below identifies each component in a simple elevation.

Lateral forces acting on a building are collected by the roof diaphragm and outer walls and are then transferred through the LFRS into the foundation. The connection between the shear wall and the foundation is a shear wall anchor, which normally consists of a steel threaded rod or bolt and a metal component nailed to the studs at either end of a shear wall.

# EXHIBIT 2



© | BSC 2021

Figure 2. LFRS Components – Elevation View.

## Understanding Water Penetration at Glazed Fenestrations

Proper assessment of building leakage involves a specific forensic investigation process, following protocols outlined in ASTM E2128-20 *Standard Guide for Evaluating Water Leakage of Building Walls*. When glazed fenestrations are a suspected potential pathway for water penetration, it is also prudent to reference AAMA 511-08 *Voluntary Guideline for Forensic Water Penetration Testing of Fenestration Products*. The following sections detail requisite knowledge, terminology, and/or principles that aid in the understanding of such investigations. Generally, a glazed fenestration assembly functions as intended when a) water that enters the assembly drains back to the exterior through intended drainage pathways and b) water that penetrates the assembly does not come in contact with vulnerable (moisture-sensitive) finishes or building elements. The following *Figure* depicts a demonstrative fixed glazed fenestration assembly (in the depicted example, an integral nail-fin polymer window with fixed insulated glazing) cross-section, functioning as intended.

# EXHIBIT 2

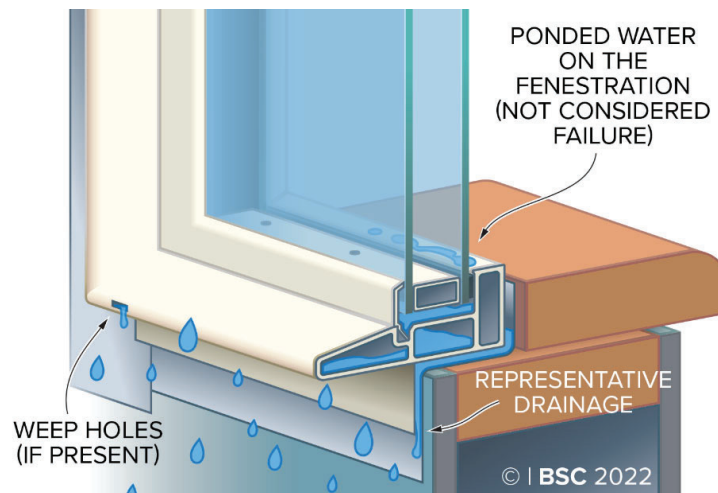


Figure 3. BSC diagram depicting proper drainage performance of a glazed fenestration.

## Terminology

Building elements and leakage of buildings are described in different ways and using different terms, depending on the party. The following terms are referenced in a forensic assessment of building leakage:

- **Water Infiltration:** According to ASTM E2128-20, water infiltration is defined as “a process in which water passes through a material or between materials in a system and reaches a space that is not directly or intentionally exposed to the water source.”
- **Water Leakage:** According to ASTM E2128-20, water leakage is defined therein as “water that is uncontrolled; exceeds the resistance, retention, or discharge capacity of the system; or causes subsequent damage or premature deterioration.”
- **Water Penetration:** According to AAMA AG-13 *Glossary*, published by the Fenestration & Glazing Industry Alliance (FGIA, formed in 2020 when the American Architectural Manufacturers Association (AAMA) and the Insulating Glass Manufacturers Alliance (IGMA) combined), **water penetration** is defined as, “Penetration of water beyond the plane intersecting the innermost projection of the test specimen, not including trim and hardware, under the specified conditions of air pressure difference across the specimen.” The subsequent Figure herein depicts a demonstrative fixed glazed fenestration assembly cross-section, where water penetration has occurred (i.e. water has penetrated beyond the plane at the innermost projection of the assembly).

# EXHIBIT 2

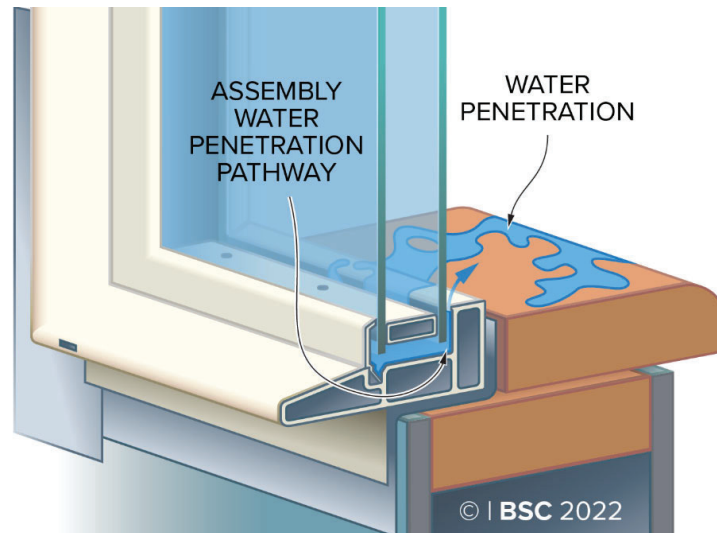


Figure 4. BSC diagram depicting water penetration through a glazing-to-frame interface.

- **Water Penetration Resistance (WPR):** Glazed fenestrations are laboratory tested and certified to establish a rated **water penetration resistance (WPR)**, which is the wind-related static pressure at which a properly constructed and installed fenestration must resist water penetration. It is important to note that the WPR is valid for a newly installed assembly and is no longer valid six (6) months after installation, or once a Certificate of Occupancy has been issued, whichever occurs first. Thereafter, it would not be unusual for an installed assembly to allow water penetration at static pressures below the WPR, particularly as the assembly ages. In practical terms, water penetration through a newly-installed assembly at a static pressure below the WPR would be **unexpected**, while water penetration through a newly-installed assembly at a static pressure above the WPR would be **expected**. In existing construction more than six (6) months old, water penetration through an installed assembly at any static pressure should be assessed in accordance with the standards detailed herein and accepted engineering practice to determine the pathway(s) and cause(s). On this basis, an occurrence of water penetration alone does not constitute a “*failure*” of any installed elements; additional forensic investigation is required to determine such.

# EXHIBIT 2

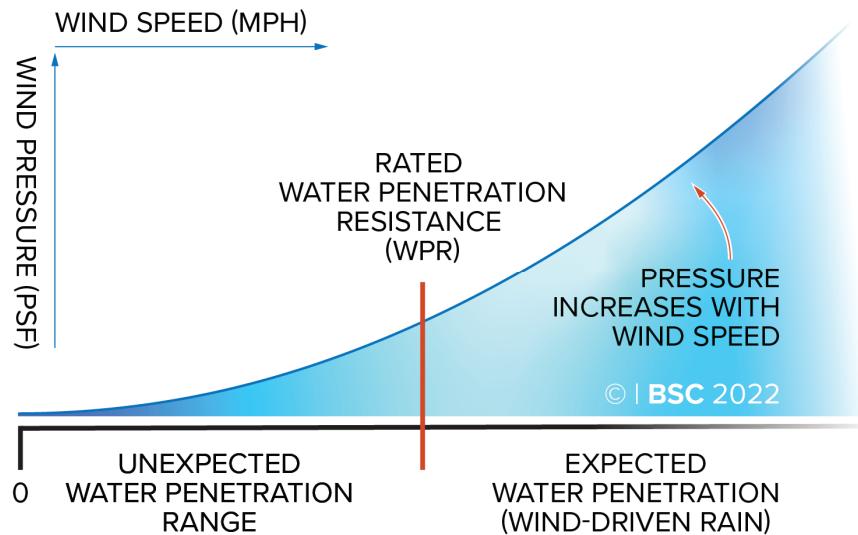


Figure 5. BSC diagram depicting the relationship between wind-related static pressure and water penetration; note water penetration is expected above the WPR for any newly-installed glazed assembly, and water penetration below the WPR does not in itself indicate “failure.”

- **Water-Resistive Barrier (WRB):** Sometimes called the weather-resistive barrier, water-resistive barrier (WRB) systems serve to protect moisture-sensitive building materials from water infiltration. The International Code Council defines WRB as, “A material behind an exterior wall covering that is intended to resist liquid water that has penetrated behind the exterior covering from further intruding into the exterior wall assembly.” Proper installation of a WRB system involves proper laps, seams, and/or integration with other waterproofing elements, in accordance with applicable codes, standards, and manufacturers’ installation instructions, such that water that reaches the system drains down, to the exterior, and away from the structure.

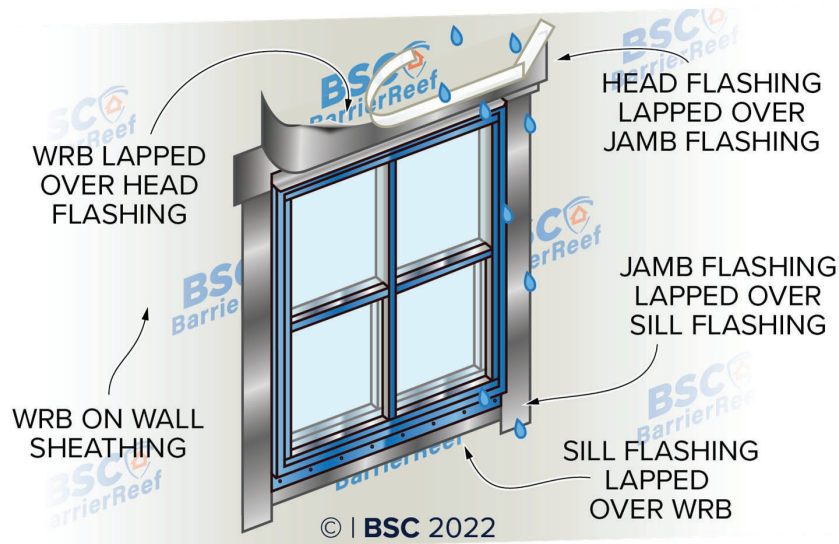


Figure 6. BSC diagram depicting proper drainage performance of a WRB system at a glazed fenestration.

---

## Understanding Moisture Mitigation Systems

### Building Envelope

A building's moisture mitigation system (i.e. building envelope) is comprised of components specially designed to be resistant to water penetration and to be installed in accordance with building code requirements and in such a way as to positively drain water away from the building. In the case of this building, the moisture mitigation system consisted of stucco (1/4" to over 1" in thickness) on the walls, sprayed foam insulation with elastomeric coating on the roof, and required flashings, transition pieces, and sealants at various locations of the wall and roof surfaces. Roof slopes should be depicted to facilitate proper water drainage.

BSC would expect that the roof slope would be determined by the architect and implemented into the contract documents via the architect and structural engineer.

---

## Understanding Shear Walls

### Lateral Force Resisting System (LFRS)

A building's LFRS is comprised of components specially designed to resist the effects from lateral forces caused by wind, seismic, or other causes. These components may consist of a variety of materials and configurations. In the case of this building, the LFRS consisted of gypsum wall board (i.e. drywall) and wood structural panels (e.g. plywood) shear walls, as well as required metal fasteners, straps, and anchors.

BSC would expect that the wall locations would be determined by the architect, with shear walls specifications designed and implemented into the contract documents by the structural engineer.

---

## Discussion of Findings

Reportedly, water infiltration through various locations of the roof and exterior wall cladding caused water damage to interior finish surfaces of several units of the buildings. Following are observations and notes recorded by BSC during its 2021 inspections:

Field observations on March 9, 2021:

1. No horizontal control joints in stucco.
2. Widespread hairline cracks in stucco at re-entrant corners and at midpoints between joints
3. Window ledge for Unit 3112 measured 5 degrees positive slope to 0.5 degrees negative slope. Typically measured 0.5 degrees positive to 1.5 degrees positive.
4. No sagged headers above garage doors or windows.
5. No flexure cracks at headers.
6. Back patio wall of Unit 3122 was cut open near the sliding glass back door. No moisture stains were evident on the exposed framing/sheathing.
7. Exterior sheathing was oriented strand board (OSB).
8. Terry with Bert Howe & Assoc. was the construction expert for the general contractor (GC).
9. Stucco window ledge above 3118 slope measured from 0.8 degrees+ to 4 degrees positive.
10. Jeff with SBBA was the expert for the owner.
11. Stucco window ledge above 3112 slope measured 4 degrees+ to 1 degrees-.
  - a. Waterproofing below stucco measured 5 degrees+ to 1.5 degrees+.

# EXHIBIT 2

- b. No moisture stains above ledge.
- c. Left (south) side: Moisture stains on wood below ledge.
- 12. Window ledge above 3118:
  - a. Surface beneath stucco slope measured 4.5 degrees+ to 4 degrees+
  - b. Minor wood discoloration.
- 13. 3104 back balcony:
  - a. Stucco removed at lower right corner of sliding glass door.
- 14. 3118 3rd floor:
  - a. No stains.
- 15. No water spray testing of windows done.
- 16. No interior inspections of water damage allowed for now.

## Field observations on March 10, 2021:

- 1. No water spray testing of windows done.
- 2. No interior inspections of moisture exposure conditions allowed for now.
- 3. Balcony above 3109 had light moisture stains on wood.
  - a. Balcony slope by edge measure 0.5 to 1.5 degrees+
- 4. Rear balcony of 3105:
  - a. No moisture stains on wood.
  - b. Moisture stains on balcony floor.
  - c. Slope front to back measured 3.5 degrees+ to 1.5 degrees+ to 0 degrees.
  - d. Balcony is 70" wide.
- 5. Unit 3111 3rd floor:
  - a. No moisture stains.
  - b. Sporadic loose nails.
- 6. Balcony above 3121 had sporadic moisture stains.
  - a. Balcony measured 0 to -2 degrees at edge.

## Field observations on March 11, 2021:

- 1. Roof above 3120, 3122, and 3124:
  - a. No torn roofing or breaches in stucco on parapet.
  - b. Widespread hairline and larger cracks in stucco.
  - c. Locations of missing stucco coating and exposed wire reinforcement.
  - d. Flat parapet tops slope measured 0.5 degrees to 1.5 degrees.
  - e. Wall surfaces were generally planar, level, and square.
  - f. Sporadic loose (i.e. unused) screws on roofing.
  - g. Terry with BHA was on-site approximately two (2) years prior to BSC's inspection to inspect for roof leaks. Repairs were completed about six (6) months prior to BSC's inspection, which included roof patches and relocation of various HVAC units.
- 2. Unit 3110:
  - a. Slight water stain and crack on east ceiling of 3rd floor master bedroom that drips water with rain.
- 3. Two (2) cracks in roof coating, one (1) above master bedroom ceiling crack.

## Roof Slopes

Reportedly, water infiltration was attributed to defects in the roof coverings and exterior wall claddings. BSC reviewed the architectural and structural drawings for depictions of roof slope

# EXHIBIT 2

requirements. Following are excerpts taken from the architectural and structural drawings depicting sloped roof surfaces and notes calling for roof slope measurements.

SLOPE : 1/4" PER 12"  
REF. DETAIL 2/A8.05 FOR  
TYP. ROOF CRICKET/  
SLOPE INFO.

Figure 7. Taken from Architectural Sheet A5.14 calling out roof slope of 1/4-inch vertical per 12 inches horizontal.

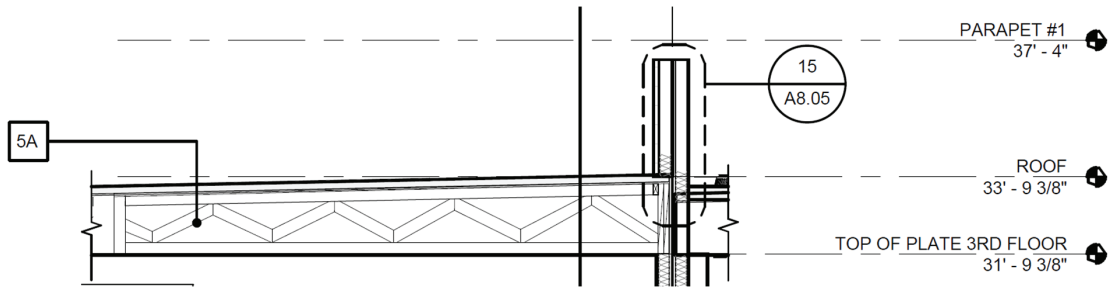


Figure 8. Taken from Section 4 on Sheet A5.02 depicting visible slope in roof surface.

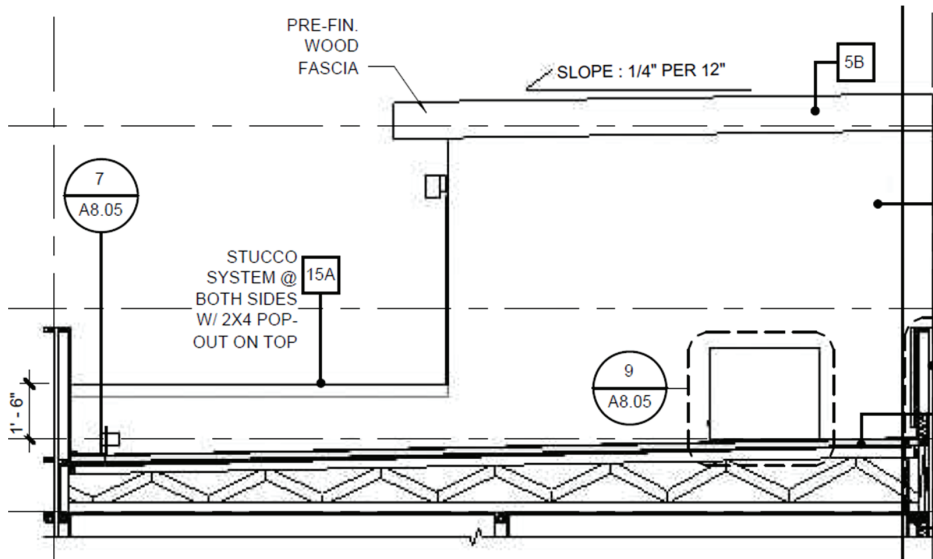


Figure 9. Taken from Section 4 on Sheet A5.16.2 depicting visible slope in roof surfaces and callout for 1/4-inch vertical per 12 inches horizontal slope on stairwell roof.

# EXHIBIT 2

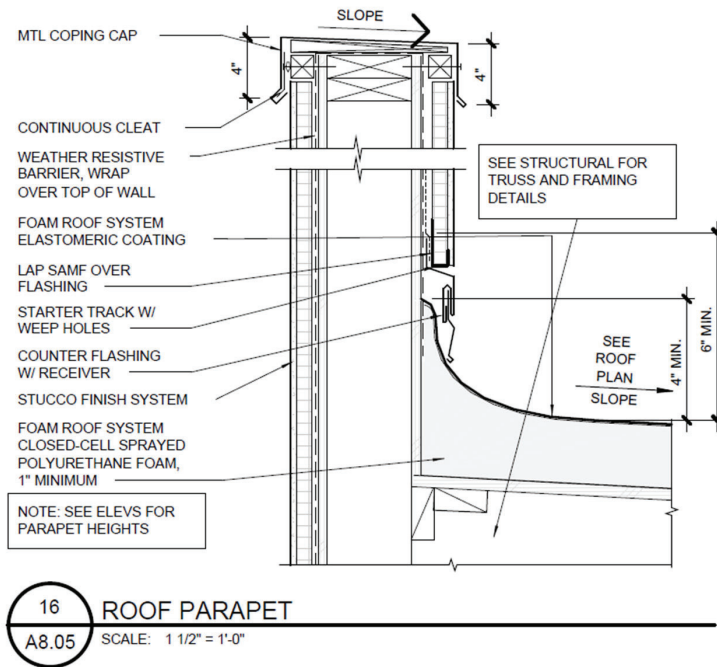


Figure 10. Taken from Section 16 on Sheet A8.05 depicting visible slope in roof surface, and callout for foam roof insulation with elastomeric coating and roof slope.

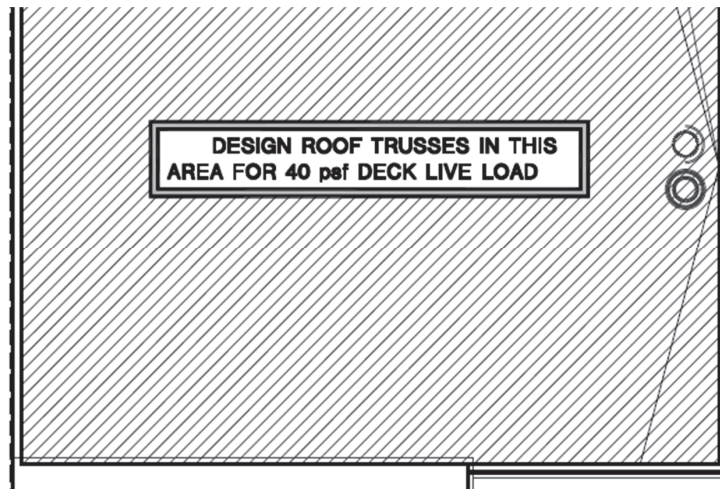


Figure 11. Taken from Sheet S2.6 of the structural drawings depicting design live load (40 psf) for roof trusses' design.

# EXHIBIT 2

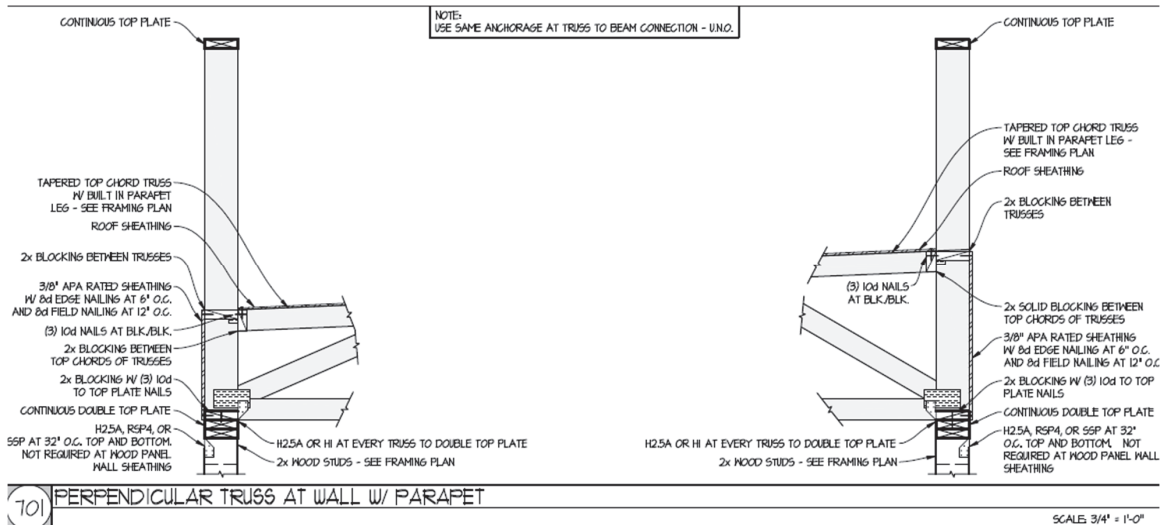


Figure 12. Taken from Sheet SD of the structural drawings depicting visible slope in roof surface and calling out tapered (i.e. sloped) roof trusses.

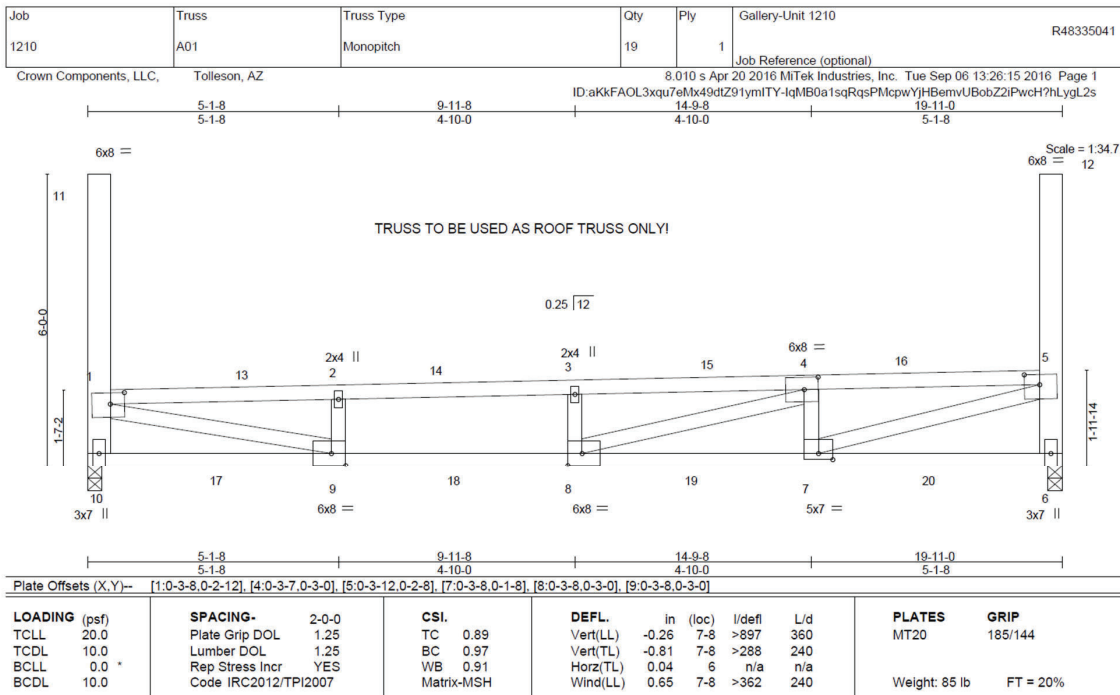


Figure 13. Taken from Miltek roof truss design calculations and drawings depicting a monopitch (i.e. sloped) top surface.

The preceding excerpt drawings indicated that the wood roof sheathing (e.g. plywood) should be installed directly onto the tops of the roof trusses. These drawings further indicated that the roof trusses and roof covering should slope at 1/4" per 12" (i.e. 1/4" of vertical rise for 12" of horizontal run), and that trusses were designed (i.e. engineered, presumably by Crown Components, LLC). Based on this information, BSC would expect that the roof slopes and installation configurations

# EXHIBIT 2

were predetermined by the architect, engineer, and truss fabricator. As such, the roof truss and sheathing installer (i.e. LeBlanc) would not be responsible for the design of those components. Additionally, LeBlanc would not be expected to second-guess the engineering design, nor to install trusses other than those specified for installation. To-date, BSC has not been provided information indicating that LeBlanc installed the roof trusses at incorrect locations or configurations.

LeBlanc would not be expected to install roof sheathing in any manner other than that which was depicted on the drawings. To-date, BSC has not been provided information indicating that LeBlanc installed the roof sheathing in an incorrect manner. Furthermore, BSC's inspections of the roofs revealed slopes and surface configurations that generally drained towards roof drains, and which appeared to be in general compliance with the architectural and structural drawings. There was no documented evidence that the roof framing or sheathing was installed incorrectly, or that they caused any of the roof leaks. Any deficiencies in the design of the roof slope would be attributable to the architect and engineer(s). Any deviations in roof slopes would be expected to be attributable to variations in the roofing applications or drain locations. As wood framing and sheathing are not considered water shedding components, roof leaks would be attributable to deficiencies in the roofing system components.

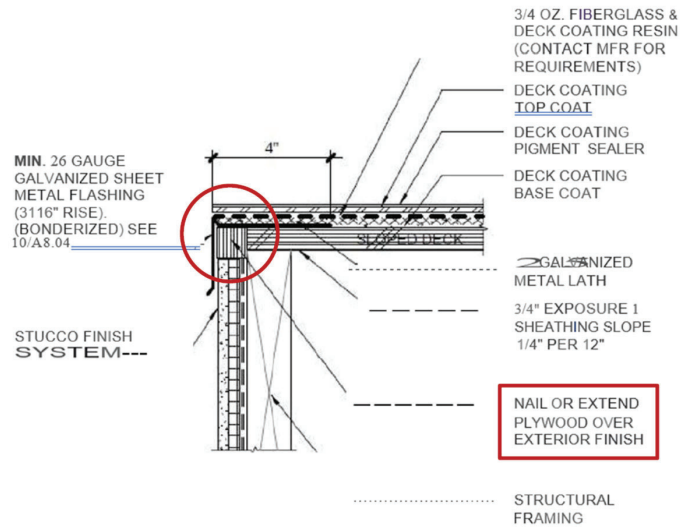
## **Exterior Wall Cladding**

LeBlanc was not responsible for the installation of waterproofing components of the exterior wall claddings, including the water-resistive barrier systems and flashings, such as at fenestrations. As such, any water infiltration through the exterior walls would not be expected to be caused by LeBlanc's work, but rather due to the work of subcontractors who installed windows, doors, water-resistive barriers (WRB), flashings, and/or stucco components.

## **Review & Response – Balcony Detailing**

The MC Defect Issue Report dated January 31, 2022, identified non-compliant metal drip edge flashing at some of the deck (i.e. balcony) edges wherein stucco did not extend up and behind the metal flashing. The report included an architectural detail at the balcony edge identifying the location of wood along the edge of the balcony.

# EXHIBIT 2



Detail 5/AS.04

Figure 14. Taken from the MC Defect Issue Report dated January 31, 2022, of an architectural detail at the deck (i.e. balcony) edge.



Figure 15. Taken by BSC of balcony condition with stucco installed behind the flashing (left), and stucco installed up against the bottom edge of the flashing (right).

The MC report indicated that the flashing installation defect was due to missing wood installation at the balcony edge. As noted in the following image.

# EXHIBIT 2

- In detail 5/AS.04 Deck Perimeter Flashing (above), Note the wood block at the end of the deck 9 (circled). This block serves three purposes:
  1. A stop for the stucco
  2. A spacer for the sheet metal
  3. A nailer for the sheet metal.
- MC did not observe a clear photograph of this component of the assembly in the plaintiff photographs to confirm the block was installed.
- If the blocks were installed, then they were not sized properly, and the client has no responsibility for this issue.
- If the blocks were not installed, the responsibility falls on the framer, stucco installer, general contractor, and the client.

*Figure 16. Taken from the MCC Defect Issue Report dated January 31, 2022, of comments made by MCC regarding the construction of the balcony edge.*

It should be noted that MC indicated that they did not confirm whether this block was installed, or presumably whether the plywood extended to the balcony edge, which was also an acceptable installation method per the architectural detail. MC also indicated that, if they wood blocks were installed, they were not sized correctly. However, as just noted, MC did not confirm whether the wood blocks or plywood were installed correctly. As such, their opinion on the cause of the misplaced flashings had not been substantiated and, as such, was speculative and unsupported by fact-evidence. Additionally, BSC observed locations where the plywood sheathing extended to the back side of flashing/drip edge.



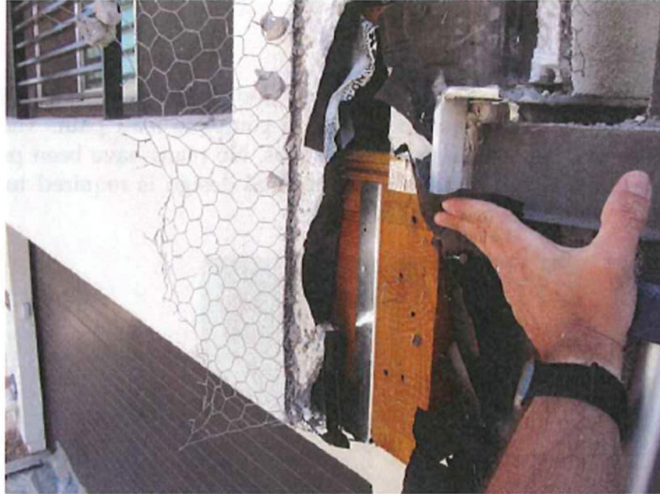
*Figure 17. Photograph taken by BSC of the deck (i.e. terrace or balcony) plywood sheathing (arrow) extending to the backside of the metal drip edge.*

Furthermore, the lack of a wood block at, or plywood extension to, this edge would not preclude installing the flashing correctly, as the flashing fasteners were installed through the top of the flashing and away (inward) from the edge. Any evidence of improper flashing installation would be a defect attributable to the flashing installer, and not the wood framing installer (LeBlanc).

# EXHIBIT 2

## Review and Response – Missing Shear Wall Components

The SBBS preliminary site observations report dated July 2, 2019, identified locations where shear wall wood panels were not installed.



May 13, 2019, Disc IT1, Photograph 50, JBF, west elevation of Building D - Unit 3113, open stud framing with no exterior sheathing.



May 13, 2019, Disc IT1, Photograph 156, JBF, south elevation of Building C - Unit 3117, open stud framing with no exterior sheathing.

*Figure 18. Taken from SBBS preliminary observations report of exposed exterior wood studs.*

# EXHIBIT 2



May 14, 2019, Disc IT3, Photograph 26, JBF, north elevation of Building A - Unit 3124, open stud framing with no exterior sheathing.



May 14, 2019, Disc IT3, Photograph 52, JBF, south elevation of Building B - Unit 3104, open stud framing with no exterior sheathing.

*Figure 19. Taken from SBBS preliminary observations report of exposed exterior wood studs.*