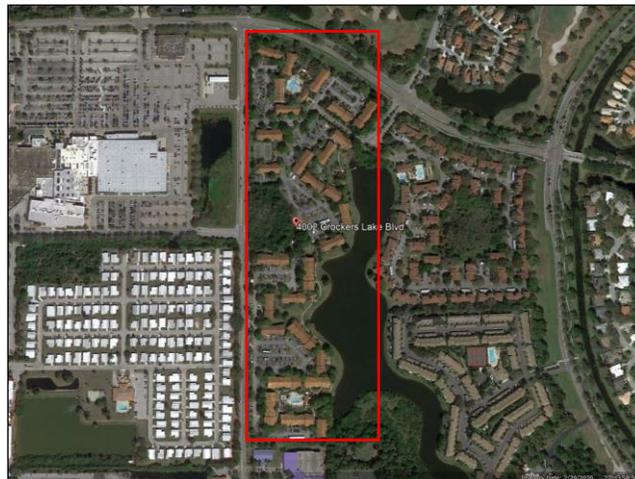


Byron K. Anderson, M.S.C.E., P.E. 60987, S.I. 7017423, C.G.C. 1525393, April 27, 2021 (Revised)



Roof Damage Assessment

**Vintage Grand Condominium Association
4002-4069 Crocker's Lake Boulevard
Sarasota, FL 34238
Claim Number: CLM-33876**



**16105 N. FLORIDA AVE., SUITE B, LUTZ, FL 33549
PH: (813) 849-5769 FAX: (813) 849-5770
FL EB NO. 9196**

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April 27, 2021

Larry E. Bache, Esq.
Merlin Law Group
777 South Harbour Island Boulevard, Suite 950
Tampa, FL 33602

Regarding: Roof Damage Assessment
Vintage Grand Condominium Association
4002-4069 Crocker's Lake Boulevard
Sarasota, FL 34238
Date of Loss: September 10, 2017 (Hurricane Irma)
Type of Loss: Wind
Claim Number: CLM-33876

1.0 Introduction

1. The scope of our services was to review the available prior art, inspect the roofs and buildings due to property-related damages following Hurricane Irma on or about September 10, 2017, document the damages, and determine the repairability of the roofs and other necessary repairs.

2.0 General Information

1. The Vintage Grand Condominium Association consists of twenty-eight (28) two-story residential buildings, one (1) single story clubhouse, and two (2) single story pool houses.
2. According to the Sarasota County Property Appraiser's records, the buildings were constructed in 1989.¹
3. The buildings have several roof configurations.
4. The exterior walls of the buildings are covered with stucco.
5. According to the BuildFax² reports of the subject buildings, permits for re-roofing were pulled from April 2005 to June 2005.
6. The roof of the condominium buildings is constructed in a gable configuration with a predominant pitch of 5:12. The roof of the clubhouse and pool house are constructed in a hip configuration with a predominant pitch of 7:12.
7. The roofs of the buildings are covered with concrete tiles (Monier Lifetile "Capri" Double "S" Profile (12.375"x17")) except for Building 24 (4053), Building 26 (4061), Building 27 (4065), and Building 28 (4069) which are covered with concrete tiles (Hanson / Currier "Venetian Roll" Double "S" Profile). Building 25 (4057) has a combination of both tiles (four (4) slopes covered with Monier Lifetile "Capri") and the rest of the roof is covered with "Venetian Roll". The field tiles are mechanically fastened with one (1) #8 screw per tile. The ridge / hip tiles are adhesively set with mortar.

¹ Sarasota County Property Appraiser. (2020) Retrieved from <http://www.sc-pa.com>.

² BuildFax Property History Reports. Retrieved from <https://www.buildfax.com> on August 11, 2020.

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8. The condominium buildings have a roof surface area between approximately 7,673 and 15,739 square feet. The clubhouse building has a roof surface area of approximately 4,359 square feet. The pool house has a roof surface area of approximately 1,906 square feet.³ See **Appendix A** for additional information.
9. On or about September 10, 2017, the buildings were subjected to high winds from Hurricane Irma.
10. Based on operating expenses of the association, the association has spent \$48,018 on roof repairs from January 1, 2015 through the date of Hurricane Irma and \$197,264 since Hurricane Irma through December 31, 2020.

3.0 Author Information

1. See the attached CV for the Author's Information in **Appendix B**.

4.0 Investigation Methods

1. SEI performed the following steps as part of our assessment, not necessarily in this order:
 - a. A review of available historical aerial imagery was completed.
 - b. A review of available previous inspections and subsequent reports / estimates was completed.
 - c. An inspection was performed where visible and accessible.
 - d. An inventory of the roof / exterior conditions and / or damages was completed and documented.
 - e. Two (2) 10 ft. by 10 ft. test squares were physically inspected by hand-lifting the roof tiles and documenting the percentage of loose tiles on all the buildings.
 - f. Information and measurements of the roof tiles was collected.
 - g. A review of meteorological data was completed.
 - h. A review of applicable building codes and standards was completed.
 - i. Wind and repairability analyses were completed.

5.0 Basis

1. Kyle Jensen and Yessi Munoz, E.I. with Structural Engineering and Inspections, Inc. (SEI) performed an inspection of the readily accessible portions of the buildings (roofs and exteriors) from November 2, 2020 through November 6, 2020. See **Appendix C1 through C5** for the photo catalogs of the inspections.
2. Osvaldo Delgado, E.I., with Structural Engineering and Inspections, Inc. (SEI) performed an inspection of the readily accessible portions of the building 20 (roof) on December 17, 2020. See **Appendix C6** for the photo catalog of the inspection.

³ EagleView Technologies Inc. and Pictometry International Corp. (2020). Retrieved from <https://www.eagleview.com>.

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3. Byron K. Anderson, M.S.C.E., P.E., S.I., C.G.C., with SEI performed an inspection of the readily accessible portions of the buildings on February 16, 2021.
4. The following was reported by the property manager, Mr. Glenn Aitelli, during our inspection:
 - a. Following Hurricane Irma, damage to multiple buildings in the community were noticed.
 - b. Noticed missing tiles on the roof and multiple interior leaks through the community.
 - c. The property manager retained Crown Roofing to inspect the roofs and they said the roofs had damage.
 - d. Multiple repairs have been completed to the roofs since Hurricane Irma. These repairs have been made by Crown Roofing and Colonial Roofing.
 - e. Multiple gutters and gutter downspouts have been replaced since Hurricane Irma.
5. The damages observed to the roofing systems include but may not be limited to:
 - a. Broken ridge / field / rake tile(s)
 - b. Broken field tile(s) at fastener location
 - c. Cracked ridge / field tile(s)
 - d. Field tile(s) deflecting more than 2 inches at the tile bottom
 - e. Deflected field tile(s) at corner zones
 - f. Delaminated underlayment
 - g. Damaged underlayment
 - h. Displaced ridge tile(s)
 - i. Loose ridge / hip tile(s)
 - j. Debonded rake tile(s)
 - k. Missing rake tile(s) / tile pieces on roof
 - l. Slid / loose field tile(s)
 - m. Displaced ridge tiles mortar
 - n. Damaged / missing mortar on ridge tile(s)
 - o. Tree debris on roof
 - p. Apparent damaged roof sheathing

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See **Appendix D** for a site plan of the property and the roof damage diagrams.



Example of broken ridge tile(s)



Example of broken field tile(s)

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Example of broken rake tile(s)



Example of broken field tile(s) at fastener location



Example of cracked ridge tile(s)

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Example of cracked field tile(s)



Example of field tile(s) deflecting more than 2 inches at the tile bottom



Example of deflected field tile(s) at corner zones

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Example of delaminated underlayment



Example of damaged underlayment



Example of displaced ridge tile(s)

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Example of loose ridge / hip tile(s)



Example of debonded rake tile(s)

A ***dangerous condition*** letter was submitted on November 30, 2020 addressing this issue on several buildings.



Example of missing rake tile(s) / tile pieces on roof

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Example of slid / loose field tile(s)



Example of slid / loose tile(s) below off-ridge vents



Example of displaced ridge tiles mortar

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Example of damaged mortar on ridge tile(s)



Example of missing mortar on ridge tile(s)



Example of tree debris on roof

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Example of apparent damaged roof sheathing

6. The following temporary repairs to the roofing systems were observed during our inspections:
- a. Replaced field tile(s)
 - b. Ridge / field tile(s) patched with adhesive
 - c. Field tile(s) reset with foam adhesive
 - d. Mortar patches on ridge / rake tile(s)
 - e. Mortar patches around vent pipe(s)
 - f. Improper patches on field tile(s)
 - g. Failing temporary repair(s)
 - h. Peel-and-stick patches to field tile(s) / vent pipe(s) / off-ridge vent(s)
 - i. Underlayment patches
 - j. Underlayment patches left without tiles

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Example of replaced field tile(s)



Example of ridge tile(s) patched with adhesive



Example of field tile(s) patched with adhesive

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Example of field tile(s) reset with foam adhesive



Example of mortar patches on ridge tile(s)



Example of mortar patches on rake tile(s)

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Example of mortar patches around vent pipe(s)



Example of improper patches on field tile(s)



Example of failing temporary repair(s)

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Example of peel-and-stick patches to field tile(s)



Example of peel-and-stick patches to vent pipe(s)



Example of peel-and-stick patches to off-ridge vent(s)

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Example of underlayment patches



Example of underlayment patches left without tiles



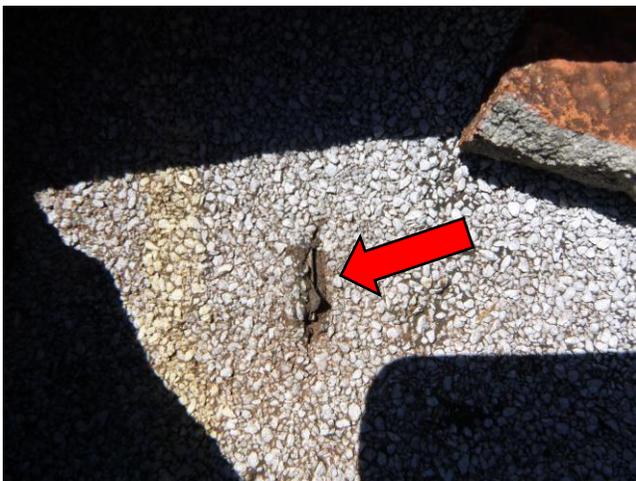
Example of underlayment patches

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Example of underlayment patch

7. During our inspections, other damages were observed on the roof systems. These other damages include but may not be limited to:
- a. Roof sheathing clip(s) protruding underlayment
 - b. Painted roof vent(s)
 - c. Damaged vent pipe lead boot(s)
 - d. Damaged rake tile(s)
 - e. Bent off-ridge vent(s)
 - f. Improper installation of vent pipe lead boot(s) / off-ridge vent(s)



Example of roof sheathing clip(s) protruding underlayment

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Example of painted roof vent(s)



Example of damaged vent pipe lead boot(s)



Example of damaged rake tile(s)

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Example of bent off-ridge vent(s)



Example of improper installation of vent pipe lead boot(s)



Example of improper installation of off-ridge vent(s)

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8. The damages observed to the building's exteriors include but may not be limited to:
- a. Tape patches above and below window(s)
 - b. Patched attic space vent(s)
 - c. Loose fascia board(s)
 - d. Displaced soffit
 - e. Bent gutter(s)



Example of tape patches above and below window(s)



Example of patched attic space vent(s)

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Example of loose fascia board(s)



Example of displaced soffit



Example of bent gutter(s)

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9. The following documents were provided for our review. Relevant excerpts are shown in *italics* and our comments, where applicable, are shown in **bold blue**.
- Roof Repairs Expenses, prepared by the Vintage Grand Condominium Association.
 - Property Policy, prepared by AmWINS Brokerage of Florida, Inc., dated June 5, 2017.
 - DRAFT Attic Survey – Vintage Grand, prepared by Delta Engineering & Inspection, Inc. (Delta), dated September 7, 2017.
 - Crown Roofing – Post Irma Repair Invoices, prepared by Crown Roofing, LLC, dated February 12, 2020.
 - Inspection Report, prepared by International Catastrophe Insurance Managers, LLC, (ICAT), dated June 14, 2020.
 - Repair Invoice, prepared by Southern Florida Restoration, LLC, (SFR), dated July 29, 2020.

Invoice for the replacement, sealing of underlayment and reset tiles on Building 4057 totaling \$1,772.00.

- Interior and Roof Photographs provided by client.
- Hurricane “Irma” Meteorological Expert Report, prepared by Forensic Weather Consultants, LLC (FWC), dated September 15, 2020.

Page 27 – *“The closest wind gust report to the incident locations came from a home mesonet station west of Sarasota Springs, Florida where wind gusts of 81 MPH were measured at 9:07 p.m. on September 10th, 2017.”*

Page 28 – *“Hurricane Irma produced maximum wind gusts of approximately 78 Miles Per Hour (MPH) at the incident locations.”*

Page 28 – *“Frequent strong winds between 41-47 MPH occurred at the incident locations between approximately 12:00 p.m. and 4:00 p.m. on September 10th, 2017.”*

Page 28 – *“Frequent strong to severe wind gusts between 57-61 MPH occurred at the incident locations between approximately 4:00 p.m. and 8:00 p.m. on September 10th, 2017.”*

Page 28 – *“Frequent severe wind gusts as high as 72 MPH occurred at the incident locations between approximately 8:00 p.m. and 9:00 p.m. on September 10th, 2017.”*

Page 28 – *“Maximum wind gusts of approximately 78 MPH occurred at the incident locations between approximately 9:00 p.m. and 10:00 p.m. on September 10th, 2017.”*

Page 28 – *“Frequent severe wind gusts as high as 77 MPH occurred at the incident locations between approximately 10:00 p.m. and 11:00 p.m. on September 10th, 2017.”*

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Page 29 – “Frequent strong to severe wind gusts between 51-64 MPH occurred at the incident locations between approximately 11:00 p.m. on September 10th, 2017 and 6:00 a.m. on September 11th, 2017.”

Page 29 – “Frequent strong wind gusts between 40-45 MPH occurred at the incident locations between approximately 6:00 a.m. and 10:00 a.m. on September 11th, 2017.”

Page 29 – “Approximately 5.50 to 5.75 inches of rain accumulated at the incident locations as a result of “Irma.”

10. The 2017 Florida Building Code, Existing Building, 6th Edition (2017) (FEBC) is the relevant code.⁴ See **Appendix E** for additional information.
11. The buildings are in a wind-borne debris region. See **Appendix F** for the Applied Technology Council (ATC) Hazards by Location.⁵
12. According to CoreLogic Wind Verification Report,⁶ maximum wind speeds were as high as 76 miles per hour on September 10, 2017 at the subject property. See **Appendix G** for additional information.
13. According to the National Oceanic and Atmospheric Administration (NOAA),⁷ in inland portions of Sarasota County, “...winds from Hurricane Irma were estimated to be around 60 to 70 knots (69 to 81 mph) using surrounding observations. Rainfall was generally around 5 inches or greater. The wind resulted in damage to numerous homes, as well as knocking over trees and power lines.” See **Appendix H** for additional information.
14. As part of our investigation, SEI collected information about the roof tiles of the subject buildings. Based on our analysis and similar roof tile reports (Monier Lifetile “Capri” Double “S” Profile (12.375”x17”) and Hanson / Currier “Venetian Roll” Double “S” Profile) in our database, both roofing tiles are no longer available and there is not a suitable individual tile repair type product available. There is a similar product available; however, it is only recommended in a total slope/elevation repair. See **Appendix I** for additional information.
15. According to the Tile Roofing Industry Alliance,⁸ any flat or “S” tile labeled “Monier” and “Currier” are no longer available and does not interlock with profiles currently offered by existing roof tile manufacturers. See **Appendix J** for additional information.
16. According to the Tile Roofing Institute – Evaluation of Tile Systems After Wind Events, “*In simplistic terms, we found that once the bottom edge (downslope) of the tile is allowed to lift 2” the wind will have sufficient access to withdraw the tile fastener and prevent the tile from properly securing to the sub straight for the design wind uplift resistance. The formal test protocols were reflective of a 2” lift as one of the failure mechanisms for tile approvals.*” See **Appendix K** for additional information.

⁴ International Code Council. (2020). *Florida Building Code, Existing Building, 7th Edition (2020)*. Country Club Hills, IL: ICC.

⁵ ATC Hazards by Location. (n.d.). Retrieved from <https://hazards.atcouncil.org>. Retrieved on November 9, 2020.

⁶ CoreLogic Wind Verification Report. Retrieved from <https://www.wvs.corelogic.com>. Retrieved on August 11, 2020.

⁷ National Climatic Data Center – NOAA. (n.d.). Retrieved from <https://www.ncdc.noaa.gov>. Retrieved on November 9, 2020.

⁸ Tile Roofing Industry. (2017). *Obsolete Concrete Roof Tiles Formerly Produced in Florida*. Retrieved from <https://tileroofing.org/resources/technical-briefs>.

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17. The Testing Application Standard (TAS) No. 106⁹ was referenced for the roof tile uplift testing.
 - Based on the testing protocol, if more than 3% of the tiles in any roof area are determined to be loose, the roof system shall be considered to have failed the testing and be unacceptable. See **Appendix L** for a summary of the results from the testing.
18. The roof tiles are mechanically fastened to the roof deck with screws and the screws are not installed tight to the tile. The screws are installed with a slight gap between the head of the screw and the tile to allow the rigid tiles to move slightly as the building undergoes movements associated with thermal expansion and contraction. Accordingly, in a high wind event, once the uplift pressures exceed the dead load of the tile the tiles will start to move or chatter and engage the fasteners. This movement of the tile will cause some of the tiles to crack and/or break and may leave those broken pieces in place.
19. The Tile Roofing Institute Technical Brief #99-002 states, “The corners of the tile at the interlock are the thinnest portion of the tile and as such are the most susceptible to damage.” One must conclude that if the corners of the tile are the most susceptible to damage, that is exactly where the damage resulting from movement or chatter would start to occur.

6.0 Findings and Conclusions

Within a reasonable degree of professional probability:

1. We have performed a calculation, as indicated below, and have concluded that the wind pressures would exceed the dead load of the tiles at approximately:

Tile	Field Zone (Zone 1)	Eave Zone (Zone 2e)	Side Perimeter Zones (Zone 2n)	Ridge Zones (Zone 2r)	Eave Corner Zones (Zone 3e)	Ridge Corner Zones (Zone 3r)
Monier Lifetile “Capri”	60 mph	60 mph	48 mph	48 mph	48 mph	40 mph
Hanson / Currier “Venetian Roll”	64 mph	64 mph	51 mph	51 mph	51 mph	43 mph

2. Our research indicates that the windspeeds at the property during Hurricane Irma were approximately 78 mph. These wind speeds were well above those necessary to initiate movement and damage on the roof. See attached **Appendix M** for additional information.
3. Wind pressure increases exponentially with wind speed, the 78 mph winds are approximately 1.6 to 3.6 times the pressure to initiate movement and/or damage on the Monier Lifetile “Capri” tiles and 1.4 to 3.1 times the pressure to initiate movement and/or damage on the Hanson / Currier “Venetian Roll” tiles.
4. There is physical damage to the roofs of the buildings inspected resulting from winds and wind-borne debris from Hurricane Irma.

⁹ International Code Council. (2020). *Florida Test Protocols for High-Velocity Hurricane Zones, 7th Edition (2020)*. Country Club Hills, IL: ICC.

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5. The water-shedding ability and/or the expected serviceable life of the roof has been affected.
6. The roof of all the buildings failed the tile hand-lifting testing within the test squares except for Buildings 1 (4002), Building 5 (4020), Building 9 (4036), and Building 12 (4009) which passed one of the two test squares performed. More than 3% of the roof tiles was determined to be loose on each building. According to the TAS No. 106, the roof systems are considered unacceptable.
7. The underlayment under the roof tiles is approximately 15 years old, damaged and near the end of its useful life. Spot replacing tiles will further damage the underlayment and lead to future leaks. Furthermore, it is not possible to put the underlayment back into a building complaint condition when attempting a spot repair.
8. Based on the level of damage, the observable and latent damage to the underlayment, and the fact that replacement tiles are not available, the roofs are not repairable and require replacement.
9. Given that there is physical damage throughout all the roofs inspected and that a total slope repair is necessary on slopes with damage, greater than 25% of each roof surface area requires repair; therefore, all the buildings require a full replacement.
10. The temporary repairs that have been attempted on the roofs are failing, which is further evidence that the roofs are not repairable and require replacement.
11. In order to repair the damage caused by the hurricane, the following repairs are required:
 - Remove the existing roof tiles and dispose.
 - Remove the existing underlayment, flashing, and drip edge. Note, the removal of self-adhered underlayment may result in damage to the roof deck, requiring portions of the roof deck to be removed and replaced.
 - Any damaged wood framing or sheathing shall be repaired or replaced.
 - New flashing, roof vents, plumbing stack boots, eave drip, etc. shall be installed. Specifically, new off-ridge vents shall be installed in accordance with the FBC and manufacturer specifications in order to provide adequate ventilation to the attic space.
 - The roof deck nailing shall be verified and if necessary supplemented in accordance with FBCE 706.7.1.
 - Perform an analysis of the roof diaphragm to wall connection as required by FBCE 706.8.1 and retrofit connections as necessary.
 - Primary and secondary water barrier shall be installed in accordance with the Florida Building Code.
 - Install new roof covering in accordance with the Florida Building Code.
 - Remove and replace damaged fascia board(s).

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- Remove and replace damaged soffit(s).
 - Remove and replace damaged gutter(s).
 - All the materials shall be installed in accordance with manufacturers specifications.
12. All work shall be performed by a Florida Certified Contractor in accordance to applicable building codes and standard building practices.

7.0 Closure

1. Our findings and conclusions are limited to the specific areas mentioned for the above referenced project at the time of inspection and for the structural items contained herein only. If field conditions change or are different than indicated, it is the responsibility of all parties to contact Structural Engineering and Inspections, Inc. This inspection and our findings shall not be construed in part or whole as a list of all possible defects.
2. The sign and seal on this project indicate professional engineering responsibility for the structural portion only. General architecture, life safety, accessibility, electrical, mechanical, etc. are the responsibility of others.

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8.0 Appendices

Appendix A – EagleView Roof Reports

Appendix B – Byron K. Anderson CV

Appendix C1 – Photo Catalog (November 2, 2020)

Appendix C2 – Photo Catalog (November 3, 2020)

Appendix C3 – Photo Catalog (November 4, 2020)

Appendix C4 – Photo Catalog (November 5, 2020)

Appendix C5 – Photo Catalog (November 6, 2020)

Appendix C6 – Photo Catalog (December 17, 2020)

Appendix D – Site Plan and Roof Damage Diagrams

Appendix E – Tile Roof Repairability Considerations / Building Code Analysis

Appendix F – ATC Wind Speed Map

Appendix G – CoreLogic Wind Verification Report

Appendix H – NOAA Event Details Report

Appendix I – ITEL Tile Reports (Reference)

Appendix J – Tile Roofing Alliance Industry Obsolete Concrete Roof Tile List

Appendix K – Tile Roofing Institute Evaluation of Tile Systems After Wind Events

Appendix L – Test Squares Results

Appendix M1 – Roof Tile Uplift Calculations (Monier Lifetile “Capri”)

Appendix M2 – Roof Tile Uplift Calculations (Hanson / Currier “Venetian Roll”)