The Villas at Fairloop Run Association, Inc.
c/o: Mark Rudland
Tropical Isles Management, Inc.
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April 24, 2020

Subject: Roof Inspection Report
The Villas at Fairloop Run
Fairloop Run
Lehigh Acres, Lee County, Florida
Velocity Project Number: 19-413

Dear Mr. Rudland:

Per your request, Velocity Engineering Services, LLC (Velocity) has performed a roof inspection of the 33 single story villa structures for the above referenced project.

Project Description

Velocity understands that The Villas at Fairloop Run Association, Inc. (the Association) consists of 33, single-story villa buildings that were constructed between 2004 and 2006. The Association has concerns that the roofs were damaged during Hurricane Irma. Therefore, the Association requested that Velocity perform an inspection of the damage on the 33 villa roofs.

Scope of Work

The purpose of this inspection was to document and evaluate the roof damage on the 33 villa buildings throughout the community. Velocity therefore performed the following scope of services:

- ✓ Retain Advanced Roofing and Sheet Metal to remove and reinstall portions of the roof tiles from specific areas of a representative portion of the buildings (10 buildings) in order to facilitate inspection of the tile attachment and underlayment. This portion of the inspection included the villa roofs at Building No. 1 (4816/4820), Building No. 5 (4784/4788), Building No. 11 (4736/4740), Building No. 14 (4712/4716), Building No.17 (4688/4692), Building No.21 (4656/4660), Building No.23 (4693/4697), Building No. 27 (4721/4725), Building No. 30 (4747/4759), and Building No. 33 (4813/4817).
- ✓ Perform visual inspections and document the condition of the roofing on all 33 villa buildings.
- ✓ Prepare a report documenting our findings and evaluation of the damaged on the roofs.

Roof Construction

It is understood that the buildings were constructed between approximately 2004 to 2006. The villa buildings roof geometry is all similar but differs slightly from building to building; however, the roofs generally consists of hips and gables with slopes of approximately 5:12. The villas roofs range in size from approximately 55 to 67 roof square.

Roof covering throughout the community consists of concrete flat profile roof tile (lifetile series) manufactured by Boral. The underlayment for the villa buildings consist of a 90-pound cap sheet hot mopped to a mechanically attached 30-pound felt.

Roof tile on the villa roofs is attached to the deck with one screw for field tile and two screws at eave tile (first course). Hip/ridge tile were observed to be mortar set.

Roofing Inspections

Velocity performed the roof inspections of the villa roofs on various dates in March and April of 2020. Select photos taken during the roof inspections of the buildings are presented in Appendix A, attached to this report.

The following conditions were common deficiencies observed throughout the roofs;

- ✓ Cracked tile including corner and horizontal cracks (Photo 4 through 6).
    - The corner of the tile is typically the most susceptible to cracking as this is the thinnest portion of the tile. During a high velocity wind events, such as Hurricane Irma, lifting of the tile, can cause this pattern of cracking. This condition was observed in all roofs.
    - Horizontal cracks can be an indication of a point load being applied to the tile. Generally, this deficiency is caused by foot traffic. This condition was observed at isolated areas in all roofs.
- ✓ Cracked and/or detached ridge and hip tile (Photo 7 through 10)
    - Detached and/or loose ridge tile was observed throughout the villa buildings at various locations.
    - Widespread cracked mortar was observed along the ridge and hip tile in all roofs.
- ✓ Tile uplift causing withdrawn fastener (Photo 11 through 14).
    - Withdrawn fastener (screws) and the associated damage to the screw holes in the tile was observed at isolated areas at each villa building where tile was removed to facilitate the inspection. During high velocity wind events, such as Hurricane Irma, uplift forces can cause the nose of the tile to lift. This lifting motion can cause screw movement including backout. This screw movement can compromise future uplift resistance, can increase the potential for water intrusion directly around the fastener penetration, and can cause damage to the underlayment. It is important to note that at some withdrawn fastener locations, Velocity was unable to determine if the fastener was withdrawn or if the screw head was never properly driven down during initial installation.

- At some locations observed, the fasteners appeared to be in the original installed location indicating that fastener withdrawal was isolated (Photo 15).

✓ Tile Movement/Shifting (Photo 19 through 24)

- Areas of tile movement/shifting were observed throughout all buildings. This movement/shifting was visually observed and also noticed when walking across the roof. This resulting movement can disturb tile interlocking and water shedding ability.

✓ Roof underlayment (Photo 16 & 17)

- Where observed the roof underlayment appears to be in fair condition, consistent with its age. At isolated areas, damage to the underlayment caused by fastener withdrawn and movement was observed.

A summary of the tile damage at each building is provided in the tables below.

Building No.	Address	Typical Damage Observed	Cracked Tile Count
1	4820/4816	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked ridge/hip tile • Cracked hip/ridge mortar • Fasteners withdrawn	• Edge cracking – 344 tiles • Middle cracking – 23 tiles
2	4812/4808	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar	• Edge cracking – 218 tiles • Middle cracking – 12 tiles
3	4800 – only one unit inspected	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar	• Edge cracking – 156 tiles • Middle cracking – 20 tiles
4	4796/4792	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar • Cracked ridge/hip tile	• Edge cracking – 239 tiles • Middle cracking – 15 tiles
5	4788/4784	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar • Fasteners withdrawn	• Edge cracking – 513 tiles • Middle cracking – 3 tiles
6	4780/4776	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar	• Edge cracking – 289 tiles • Middle cracking – 45 tiles

Building No.	Address	Typical Damage Observed	Cracked Tile Count
7	4772/4768	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar • Cracked ridge/hip tile	• Edge cracking – 337 tiles • Middle cracking – 6 tiles
8	4764/4760	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar • Mismatching tile	• Edge cracking – 277 tiles • Middle cracking – 9 tiles
9	4756/4752	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar	• Edge cracking – 102 tiles • Middle cracking – 56 tiles
10	4748/4744	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar • Cracked ridge/hip tile	• Edge cracking – 132 tiles • Middle cracking – 46 tiles
11	4740/4736	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar • Cracked ridge/hip tile • Fasteners withdrawn	• Edge cracking – 168 tiles • Middle cracking – 62 tiles
12	4732/4728	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar	• Edge cracking – 274 tiles • Middle cracking – 43 tiles
13	4724/4720	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar	• Edge cracking – 600 tiles • Middle cracking – 136 tiles
14	4716/4712	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar • Cracked ridge/hip tile • Fasteners withdrawn	• Edge cracking – 620 tiles • Middle cracking – 52 tiles
15	4708/4704	• Widespread tile cracking • Misaligned and/or shifted tile • Mismatching tile • Cracked hip/ridge mortar • Cracked ridge/hip tile	• Edge cracking – 348 tiles • Middle cracking – 47 tiles

Building No.	Address	Typical Damage Observed	Cracked Tile Count
16	4700/4696	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar	• Edge cracking – 117 tiles • Middle cracking – 31 tiles
17	4692/4688	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar	• Edge cracking – 93 tiles • Middle cracking – 50 tiles
18	4684/4680	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar • Cracked ridge/hip tile	• Edge cracking – 300 tiles • Middle cracking – 90 tiles
19	4676/4672	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar	• Edge cracking – 112 tiles • Middle cracking – 31 tiles
20	4668/4664	• Widespread tile cracking • Misaligned and/or shifted tile • Mismatching tile • Cracked hip/ridge mortar	• Edge cracking – 111 tiles • Middle cracking – 42 tiles
21	4660/4656	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar • Cracked ridge/hip tile • Fasteners withdrawn	• Edge cracking – 114 tiles • Middle cracking – 47 tiles
22	4652/4648	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar	• Edge cracking – 230 tiles • Middle cracking – 32 tiles
23	4697/4693	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar	• Edge cracking – 125 tiles • Middle cracking – 2 tiles
24	4703/4701	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar • Cracked ridge/hip tile • Mismatching tile	• Edge cracking – 197 tiles • Middle cracking – 6 tiles
25	4709/4705	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar • Cracked ridge/hip tile	• Edge cracking – 347 tiles • Middle cracking – 39 tiles

Building No.	Address	Typical Damage Observed	Cracked Tile Count
26	4717/4713	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar	• Edge cracking – 210 tiles • Middle cracking – 14 tiles
27	4725/4721	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar • Fasteners withdrawn	• Edge cracking – 277 tiles • Middle cracking – 14 tiles
28	4733/4729	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar	• Edge cracking – 173 tiles • Middle cracking – 15 tiles
29	4741/4737	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar	• Edge cracking – 218 tiles • Middle cracking – 19 tiles
30	4759/4747	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar • Fasteners withdrawn	• Edge cracking – 232 tiles • Middle cracking – 17 tiles
31	4787/4775	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar	• Edge cracking – 497 tiles • Middle cracking – 17 tiles
32	4805/4891	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar	• Edge cracking – 389 tiles • Middle cracking – 34 tiles
33	4817/4813	• Widespread tile cracking • Misaligned and/or shifted tile • Cracked hip/ridge mortar • Cracked hip/ridge tile	• Edge cracking – 358 tiles • Middle cracking – 14 tiles

Evaluation

Chapter 706.1.1 of the 2017 Florida Building Code (FBC) – Existing Building, states that not more than 25 percent of the total roof area of any existing building shall be repaired in any 12-month period unless the entire existing roofing system is replaced to conform to the current FBC.

Based upon Velocity's visual inspection, storm related damage caused by Hurricane Irma was observed on all building roofs. However, the damage did not appear to exceed 25 percent of the roof area of each building. Therefore, Velocity recommends that repairs be performed to the villa buildings through the Association to prevent further deterioration.

Should the Association wish to further evaluate the damage on the roof, Velocity recommends performing a more comprehensive evaluation that would include performing uplifting testing. Velocity can provide this service upon request.

Limitations

This report reflects the conditions observed at the locations and time of our inspection only. Conditions may differ at other locations and will vary with time. The inspection was limited to visual observations only.

This report is not intended to serve as reroofing or repair specifications for the project and should not be used as the basis for contractor bids.

These services have been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the location where the Work was performed. No other warranty, expressed or implied, is made including, without limitation, any warranty of fitness for a particular purpose other than those expressly stated herein.

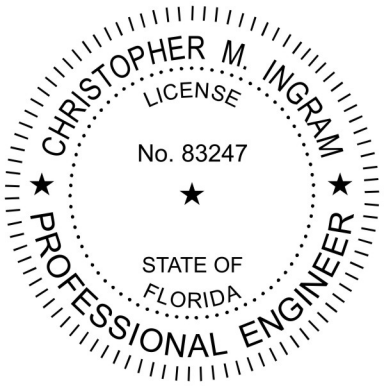
Closing

We appreciate the opportunity to be of service to you on this project. Please do not hesitate to contact us if you have any questions or if we may further assist you.

Sincerely,

Velocity Engineering Services, LLC
12821 Commerce Lakes Drive, Suite 7
Fort Myers, FL 33913
FBPE CA# 30362

Christopher M. Ingram, P.E.
Project Manager



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Date: 2020.04.24 15:36:26 -04'00'

on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Attachment: Appendix A – Photographs

Photo 1: Existing tile – Boral Lifetile


Photo 2: General view of roof on Bldg 1


Photo 3: General view of roof at Bldg 5


Photo 4: Tile cracking at Bldg 13


Photo 5: Tile cracking at Bldg 23


Photo 6: Tile cracking at Bldg 33

Appendix A

Photo 7: Cracked ridge tile at Bldg

Photo 8: Cracked hip tile at Bldg 4

Photo 9: Cracked and mismatching hip tile at Bldg 10

Photo 10: Cracked hip tile at Bldg 14

Photo 11: Fastener withdrawn & cracked tile at Bldg 21

Photo 12: Fastener withdrawn & cracked tile at Bldg 27


Photo 13: Fastener withdrawn & damage to fastener hole at Bldg 27


Photo 14: Fastener withdrawn & damage to fastener hole at Bldg 30


Photo 15: Fastener that doesn't appear withdrawn at Bldg 1


Photo 16: Undamaged underlayment at removed tile on Bldg 27


Photo 17: Undamaged underlayment at removed tile on at Bldg 11


Photo 18: Cracked tile adjacent to withdrawn fasteners at Bldg 33


Photo 19: Cracked and shifted tile at Bldg 13

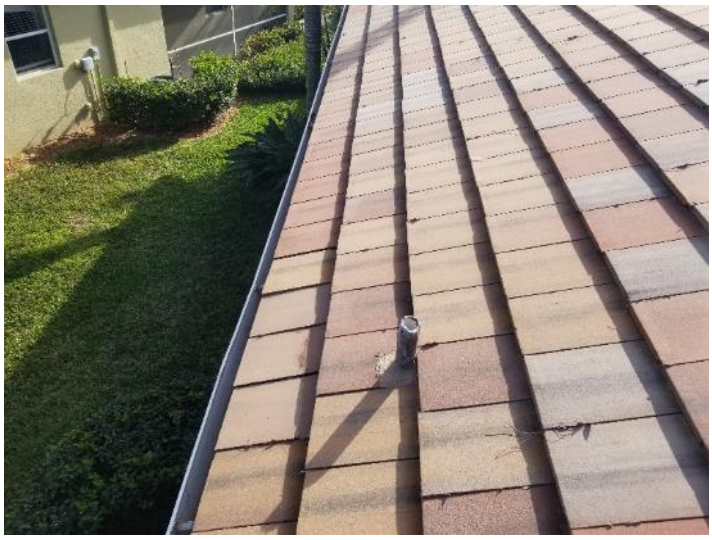
Photo 20: Shifted tile at Bldg 5


Photo 21: Tile shifting at Bldg 6


Photo 22: Tile shifting at Bldg 8


Photo 23: Tile shifting at withdrawn fastener locations at Bldg 30


Photo 24: Tile shifting at Bldg 31

Appendix A