MORRISON HERSHFIELD

August 25, 2022

River View Vista Estates
Eagle Crest Management
c/o Marrissa Rainey
PO Box 1215
Redmond, OR 97755

Re: Structural Assessment – Decks and Deck Framing

Dear Marrissa,

This letter is to summarize the results of our structural assessment of the decking and structural framing of the decks located at the River View Vista Estates. As our assessment was based on a sampling of the units chosen by Eagle Crest Management and/or the HOA, our findings are generalized to the overall conditions seen and do not necessarily address individual units or decks.

Executive Summary

Morrison Hershfield performed a visual assessment of 12 units located along Redtail Hawk Drive and Snow Goose Drive. We observed the decking and structural framing of the decks from both on top (of select units) and from underneath. In the units observed, it was noted that between 15% to 20% of structural members showed signs of excessive damage, decay or defect that compromised the structural performance of the member. Additionally, the decking showed excessive signs of warping or detachment from supporting members in the majority of decking assessed. It is our opinion that the decking, the structural framing and associated connection hardware is at the end of its useful service life and should be replaced right away. While we did observe damaged framing members, we did not see any obvious framing that appeared to be an immediate life safety concern, provided the decks don't undergo atypical loading such as earthquakes, excessively large gatherings or large accumulations of snow.

Summary of Assessment

On August 3, 2022, Shawn Stevenson, P.E., S.E. and RJ Nueske, P.E. of Morrison Hershfield visited the site to perform a visual structural assessment of 12 units (7, 11, 12, 22, 24, 26, 39, 41, 43, 51, 53 and 55). Accompanying us on the site visit was Paul Fujimoto, a retired engineer and representative of the HOA. A member of maintenance staff assisted with access to the interior of Unit 7 and with removing siding elements for access to the underside of the deck on Unit 22. The temperature was in the mid-90s throughout the day, and the weather was sunny.

Framing was 2x joists supporting a composite decking (identified as Trex®). The joists were supported by ledgers and beams on the rear of the house and the far edge of the deck (away from the exterior walls of the house). The framing was then supported by wood posts that were embedded into the ground, embedded in concrete foundations or rested upon a pre-cast concrete block. The depth of embedment into the ground or concrete blocking could not be verified during the assessment. Base conditions varied by post and were inconsistent, following no pattern.

There was no seismic bracing provided, and the skirting at the edge of the deck was not properly detailed to be an adequate shear wall, and so there is not an adequate lateral load resisting system present in either direction (parallel or perpendicular to the units). See Figure 1 for typical framing arrangement.

Figure 1 – Typical Framing Arrangement

In approximately 15% to 20% of structural framing members observed there were signs of decay, damage, defect or deterioration, which compromised the structural performance of the members. Figures 2 through 5 show examples of the structural deteriorations observed.

The composite decking was noted to be excessively deformed in several locations, showing signs of settlement, warping or excessive displacement when walked upon. See Figures 6 and 7 for examples of decking failures.

Figure 2 – Damaged Joist

Figure 3 – Moisture Damage to Paneling and Connection

Figure 4 – Decaying Post at Base

Figure 5 – Split Joist

Figure 6 – Deck Warping at Exterior Wall

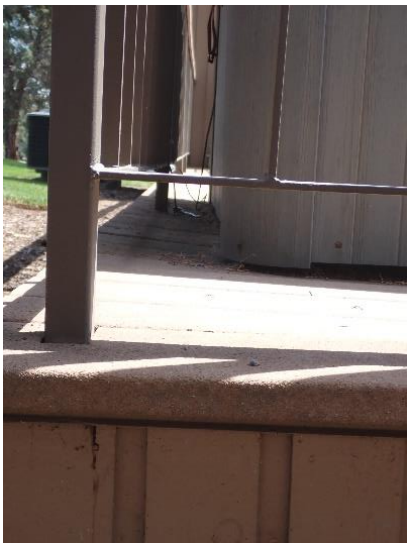

Figure 7 – Deck Warping at Hot tub

Recommendation

It is our opinion that the deck structural framing is at the end of its useful service life and should be replaced throughout the property right away. We recommend that the new decks be designed by a structural engineer, licensed in the State of Oregon, and that the design include an analysis of code required wind and seismic loading, and that the design include the necessary detailing for an adequate lateral load resisting system, such as diagonal bracing or shear panels. Our recommendation applies to all the decks at the property, regardless of location (river side versus golf course side), or contents of the deck (hot tubs versus no hot tubs). Further discussion on the structural assessment of the hot tubs is addressed in a separate letter from MH.

We hope our recommendations address your concerns about the current life expectancy of the decks, as well as outline what should be done to address our concerns. Thank you for the opportunity to work with you on this project and please reach out with any questions and we will be happy to assist you.

Sincerely,
Morrison Hershfield Corporation

RJ Nueske, P.E.
Structural Project Engineer

Reviewed by:

Shawn Stevenson, P.E., S.E.
Principal, Senior Structural Engineer