

04 September, 2021

Pineridge Home Owners Association
Pineridge Condominiums
Ketchum, Idaho

**PINERIDGE CONDOMINIUMS-
ROOF DRAINAGE ISSUES
PHASE ONE IMPROVMENTS NARRATIVE**

All,

I have been contracted to review the architectural drawings and visit the property, going into units' attics and evaluate existing conditions with regards to roof drainage and associated issues. The Phase One improvements being implemented apply to Buildings 1 East & 1 West and Building #4. It was concluded that the original design for the roof forms and drainage from upper roofs to intermediate roofs to lower roofs and to grade is complex and some specified gutters, down spouts and certain heat tape was not originally installed. I observed interior installation of closed cell spray foam insulation in attics as originally specified was done quite well except for one condition in Building #1 East where I was not able to confirm quality of install due to limited access to confirm at a location that is known to have exterior ice damming conditions.

I have additionally met on site with the projects' electrician and gutter installer. We mutually discussed the phase one roof drainage improvements as designed and specified should greatly help roof drainage related issues. The situation overall is that the roofs/ attics of the homes are designed/ constructed to be what is called a "hot roof", meaning this is a non-vented roof assembly. A vented assembly is my preferred roof design in snow country, in that heat loss from a building is vented through a vented attic to reduce the amount of melting of snow cover on a roof on the underside of the snow during the mid-winter months. This snow is kept solid under the insulating snow above due to cold air in an attic below as compared to the snow melting and becoming liquid and flowing under the insulating snow above and when it reaches the eave an ice dam forms due to cold air underneath the eave re-freezing the liquid water. The "hot roof" design does not have the venting cold air of an attic above the insulation and as such the ice dam issue has occurred on these buildings and has been exacerbated on this project due to complex roof design of valleys, dripping from one level to multiple levels below, building orientation with north sides not receiving solar exposure and southern sides being shaded by vegetation, and not having a full heated gutter and down spout system with heat tape to manage run-off/ kept the liquid melted snow in a liquid state. Complex roofs with these other conditions need the heated gutter and down spouts / drainage systems as I will comment on next.

So, based on the current conditions of the attics/ insulation and roof design I have specified a much more extensive gutter and down spout system with heat tape to be installed. This will take liquid at the extent of the eave and keep it liquid due to the heat tape and divert it in a controlled fashion to below grade drywells. Additionally, to mitigate the building of ice dams on certain roof eave locations heat tape has been added in the classic "W" pattern onto the roof eave surface- this you will see visually on top of the

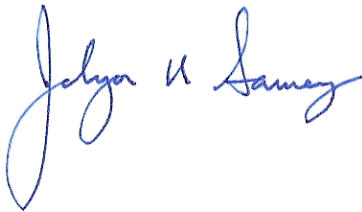
shingles. This heat tape is intended to keep melting snow in a liquid form where the water follows the “V” shape over the eave (above cold outside air) to the new heated gutters/ dn spouts system. Simply the concept is to keep liquid water in liquid form in the mid-winter months and managing how it drains from the roof(s) until it can get to grade, below frost depth and be absorbed by the earth. This requires electricity to run the heat tape from roof to below grade and there is a specific control system for the heat tape such that it does not run all the time and runs in specific temperature ranges to reduce operating costs and be most effective.

The above outlined improvements should greatly improve roof drainage but may not solve all issues. Again, due to the “hot attic/roof” design and the complex roof shapes this may not solve all issues but this is my professionally recommend first phase. Phase two is an option that can provide additional benefit. This would be the installation of a “cold roof/vented roof assembly” over the existing roof structure. For financial reasons I suggest that this be considered when the life of the roof shingles is met and at that time build a 2x cold roof on top of the existing roof with intake eave venting pathways and roof vents and ridge vents to allow warm air form the attic below to be cooled through this passive venting methodology similar to a ‘cold roof’. Then put the new shingles on top of this roof system. This would be additionally beneficial in managing roof/ snow melt, but again may not address all issues. If you elect with this phase two recommendation, contact me at that time for further design/ specification and or another architect.

I have met with the electrician and gutter installer and will be performing construction administration on your behalf; and have full confidence in the quality of the teammates and that this first phase will be professional installed and operate as I have designed/ specified. But again, I state this will generate improvement in roof drainage issues but will not solve all issues.

Please call with any questions.

Sincerely,



Jolyon H. Sawrey, Architect/Land Planner

