Roof Investigation Report

124 to 139 Vischer Drive Mountain Village, CO 81435

By

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PURPOSE

To determine the existing condition of the roofs at Pine Meadows located at 124 to 139 Vischer Drive Mountain Village, CO 81435. Also, to determine the expected life remaining along with the costs for repairs or replacement.

QUALIFICATIONS

The following report is based on my inspection of the roofs at Pine Meadows in Mountain Village, Colorado along with my personal industry experience over the last 38 years. That includes engineering, construction, and inspection experience; 21 years of which has been in the roofing industry. During that time, I have inspected, specified, supervised, and/or managed the installation of over two thousand roofing and/or exterior projects. This includes working over 1,200 property damage claims. I am very familiar with the different types of steep and low slope roofing and roof structures along with the various components and installation methods. I also have extensive experience with determining the scope of work and estimating construction costs. I put multiple roofing projects out for bid each year and work with several dozen contractors, suppliers and manufacturers. I fully understand construction costs including the various components of labor, materials, overhead and profit. I have been responsible for over 1,800 estimates on a wide variety of residential and commercial roofing and exterior projects.

Over the last 10 years I have trained multiple personnel in the inspection, estimating and installation of a wide variety of steep and low slope roof systems and exterior restoration projects. I am an NRCA ProCertified Trainer, HAAG Certified Roofing Inspector and have my OSHA 10-hour certification. I helped start the roofing education program for the Colorado Roofing Association in 2011 as part of the Education Committee and helped write our initial curriculum for roofing classes. I was on the Colorado Roofing Association State Licensing committee in 2009 and 2010 from which our efforts led to Senate bill SB38 and CRS 6-22 that went into effect June 6, 2012. I helped form and cochaired our CRA Code and Standards committee in 2013 on which I am still active. I am a board member and incoming president of the Colorado Chapter of IIBEC (International Institute of Building Envelope Consultants) and am a member of the Colorado Chapter of the International Code Council and am on the City of Arvada Code Review Board.

As a roofing consultant I provide inspection and design services for a wide variety of residential and commercial roofing projects along with investigations and expert witness work for construction defects and property damage insurance claims. I am intimately familiar with most types of steep and low slope roofing systems including but not limited to asphalt shingles, wood shake, tile, metal, steel and synthetic steep slope roof systems to built-up, single ply, EPDM, modified low slope roofs and vegetative roof systems. I have consulted on projects from small single-family residences to large industrial buildings, commercial roof structures, apartment buildings, and multiple unit condominiums. A copy of my CV is provided in appendix E at the end of this report. Reference to myself and/or Professional Construction Services is noted as “PCS”.

PROCEDURE

I personally inspected the roofs and related components to document the roof details and condition of the existing roofs. I relied on these personal inspections and review of the applicable building codes, along with the current Xactimate software and pricing, and my personal experience to form the opinions contained in this report. My findings are documented with the diagrams, scope, and estimates contained in this report.

BUILDING AND ROOF INFORMATION

A. SITE

The existing site is located at 124 to 139 Vischer Drive in Mountain Village, Colorado (Telluride) and consists of 5 buildings with a total of 13 units.

B. BUILDING INFORMATION

Location: Mountain Village (Telluride) Colorado
Building Use: Multifamily Condominiums
Classification: Residential Group R
Structure: Wood frame construction
Year Built: 1995 to 1999
Gross Square Footage: approximately 20,117 SF

C. EXISTING ROOF DETAILS

Roof Type: Steep slope
Year Installed: 1995 - 1999
Roof Age: 23 to 27 years
Roof Slope: 3/12, 9/12
Roof Height: 5 to 16 feet at eaves
Roof Access: From drives and parking areas

Roof Deck: 1/2-inch plywood

Insulation:	Not verified
Roof Tiles:	**Type:** Westile Series 2000 Capistrano Concrete Tile (terra cotta red) - Discontinued **Size:** (std. weight concrete tiles) **Exposure:** 13 to 13-1/2-inch exposure **Fastening:** Varies one per tile at first 2 or 3 courses on steep 9/12 roof slopes and at other locations.
Ridge Cap:	Westile Series 2000 Concrete Barrel Tile (terra cotta red)
Rake Tile:	Westile Series 2000 Concrete Barrel Tile - 6.5" x 6.5" x 16.5" long (terra cotta red)
Underlayment:	Grace Ice and Water Shield (starting to wear and become brittle)
Ice Barrier:	Full ice barrier installed as underlayment (grace ice and water shield)
Battens:	1 x 4 elevated wood battens 1/2” off roof with 3/4 x 2 vertical lath (1/2 x 1-1/2)
Valleys:	5 rib 16 oz copper valley flashing
Eave Flashing:	6” x 6” 16 oz copper drip edge with 1/2” kick
Rake Flashing:	None
Head Walls:	5” x 6” 16 oz copper flashing
Side Walls:	6” x 6” 16 oz copper flashing under tiles, no L-Flashing installed on top of roof.
Chimneys:	Stone chimneys flashed with head wall and side wall flashing and counter flashing
Counter Flashing:	Installed at chimneys (16 oz copper)
Pipe Vents:	Molded lead pipe flashings
Stack Flashings:	None
Intake Vents:	There is no intake venting
Exhaust Vents:	There is no exhaust venting
Diverters:	16 oz copper diverter flashing at exposed eaves that extend past normal drainage area at rake edges.
Snow Fence:	Single rail snow fence at some eaves above decks (16 oz copper)

D. EXTERIOR DETAILS

Siding:	EIFS / Stucco and Stone
Fascia	14” painted cedar fascia (2 x 10 or 2 x 12 with 8-1/2" exposed and 1 x 6 with 5.5" exposed)
Soffit	Open 1 x 6 tongue & groove painted cedar soffit
Gutters:	6-inch half round copper gutters
Downspouts:	3-inch round copper downspouts

SCOPE OF WORK

A. Existing Roof Details and Scope

The existing roof details scope is provided in appendix A and shown below. This includes the estimated scope to repair, recover, or replace the existing roofs. This scope is estimated based on areal imagery and measurements of various roof slopes and should be verified prior to sending out for bid.

Roof Scope
Pine Meadows
09/30/22

TILE ROOF SCOPE			
Item	**Qty**	**Unit**	**Details**
Roof Area	32,446	SF	for all 5 buildings
Area OFF	324.5	SQ	Area of tiles that would need to be removed and replaced
12.5% Waste	40.6	SQ	Estimated waste to account for cuts (at hips, ridges, valleys and walls) and for breakage.
Area ON	365.0	SQ	Westile Series 2000 Capistrano Concrete Tile 16-1/2 x 13-1/4 x 2-1/4 (terra cotta red)
2 Story	297.7	SQ	2 Story Access
Steep	266.9	SQ	9/12 roof slope
Low Slope	98.2		3/12 low slope roof area requires ice barrier or double felt
Ridge Tile	1,133	LF	Westile Series 2000 Concrete Barrel Tile - 6.5" x 6.5" x 16.5" long (terra cotta red)
Ridge Battens	1,133	LF	2 x 2 or 2 x 4 wood ridge battens
Ridge Covering	1,133	LF	Ice & water shield
Drip Edge	1,312	LF	6” x 6” 16 oz copper drip edge with 1/2” kick
Rake Tile	1,464	LF	Westile Series 2000 Concrete Barrel Tile - 6.5" x 6.5" x 16.5" long (terra cotta red)
Rake Battens	1,464	LF	2 x 2 or 2 x 4 wood rake battens
Rake Flashing	1,464	LF	None
Underlayment	324.5	SQ	Grace Ice & Water Shield (Condition fair at eaves and rakes, okay elsewhere)
Ice Barrier	324.5	SQ	Full ice barrier installed as underlayment (grace ice and water shield)
Battens	324.5	SQ	1 x 4 elevated wood battens 1/2” off roof with 3/4 x 2 vertical lath (1/2 x 1-1/2)
Valley Flashing	951	LF	24-inch wide 5 rib 16 oz copper valley flashing
Valley Underlayment	951	SF	Unknown
Head Walls	291	LF	5” x 6” 16 oz copper flashing
Side Walls	463	LF	6” x 6” 16 oz copper flashing under tiles, no L-Flashing installed on top of roof.
Chimneys	10	EA	Cover chimney crickets with metal saddles, metal pans or IB PVC membrane.
Counter Flashing	180	LF	Installed at chimneys (16 oz copper)
Pipe Flashings	17	EA	Molded lead pipe flashings
Roof Anchors	34	EA	Required for safety (None are installed)
Snow Fence	286	LF	Single rail snow fence (16 oz copper)
Heat Cable	0	LF	None installed
Gutters	787	LF	6-inch half round copper gutters (approximate lineal feet)
Downspouts		LF	3-inch round copper downspouts (not measured)

REPAIR SCOPE			
Item	**Qty**	**Unit**	**Details**
Cracked / Broken Tile	149	EA	Repair or replace broken or cracked tile with old tile from roof tile bone yard
Ridge Tile	4	EA	" "
Rake Tile	11	EA	" "
Head Wall Flashing	22	LF	Install missing 5” x 6” 16 oz copper flashing
Side Wall Flashing	18	LF	Install L-Flashing at side wall or waterpprof and seal stucco in those areas
Counter Flashing	0	LF	nstall be the lineal foot as needed
Diverters	5	LF	16 oz copper diverter flashing at exposed lower eaves
Snow Fence	58	LF	Install 2 rail snow fence where missing over exterior decks
Gutters	0	LF	add 6-inch half round copper gutters where needed
Downspouts	24	LF	Replace damaged 3-inch round copper downspouts at ground level used for extensions
Heat Cable	0	0	Install heat cable as needed

Ventilation

The existing roofs were checked for proper ventilation to meet the current code requirements in sect5ion R806 of the 2018 International Residential Building Code as adopted by the Town of Telluride on October 8, 2020. The existing roofs have no existing intake or exhaust venting. The 2018 IRC section 806 and 2018 IBC 1202.2 require one square foot of venting for every 300 square feet of vented area in the attic or roof cavity provided that at least 40% of the venting is provided at the upper portion of the attic or rafter space. The roof ventilators are to be no more than 3 feet from the highest point of the vented space.

Roof ventilation is not required if a cool roof is installed with a vapor retarder and air barrier at the roof deck and a minimum of R-18 equivalent rigid insulation installed above the roof deck in excess of the interior insulation. These requirements help to prevent condensation within the roof cavity and reduce the risk of ice dams at the eaves. The existing ice barrier at the roof deck act as a vapor and air barrier. The existing tile roof is part of a natural vented cool roof as installed on the existing battens. That is if insulation is installed above the roof deck.

Based on information provided by Allen Watson there has been no history of condensation or severe ice dams. PCS did not see indications of these conditions during the roof inspections. The roofs and interiors should be monitored for possible condensation and incidences of sever ice dams at the exterior should be reported.

PCS does not recommend installing intake or exhaust venting unless the issues noted above occur or the roofs are replaced which will require compliance with the current adopted building codes.

Roof Issues

The existing roofs are in fairly good condition and expected to last an additional 7 to 10 years with minimal repairs. The items requiring repair in order to ensure continued performance of the existing roof system are noted below.

1. **Broken / Cracked Tile:** Replace all damaged roof tile and secure with a minimum of two fasteners on the 9/12 slope roofs and a minimum of 1 fastener per tile on the low 3/12 slope roofs as required by code.

2. **Broken / Displaced Ridge Tile:** Replace or repair damaged ridge tile. Secure new tile with a minimum of two fasteners per tile using minimum 3-1/2” 16-D nails. Repair tile with BASF NP1 or similar Aromatic Urethane Sealant that approximately matches the existing tile color (other sealants specified and tested for concrete or concrete tiles may be used). Reinstall displaced ridge tile and secure in please with fasteners as specified. Visible voids should be filled with mortar or crack filler specified and tested for use in concrete roof tiles.

3. **Broken / Displaced Rake Tile:** Replace or repair damaged ridge tile. Secure new tile with a minimum of two fasteners per tile using minimum 3-1/2” 16-D nails. Repair tile with BASF NP1 or similar Aromatic Urethane Sealant that approximately matches the existing tile color (other sealants specified and tested for concrete or concrete tiles may be used). Reinstall displaced ridge tile and secure in please with fasteners as specified.

4. **Head Wall Flashing:** Install new Install missing 5” x 6” 16 oz copper flashing at any head walls that are void of flashing. This is the case at the lower right (east) eave on building 3 where it meets the upper roof.

5. **Side Wall Flashing:** Install 4” x 5” or 5” x 6” 16 oz copper L-flashing at side walls where there is build up of ice and water at the side wall, where there has ben a history of leakage, or where there are cracks in the stucco at the base of the side wall**.**

   Cracks or potential leaks at side walls can also be repaired using modified urethane or polyaspartic waterproofing. Backer roof should be installed in gaps that are more than 3/16-inch wide prior to applying sealant. Mortar may also be used to fill cracks. Mortar should be polymer modified. The waterproofing can be costed with a standard stucco finish within 72 hours to ensure proper bond.

6. **Counter Flashing:** Counter flashing should be installed at all side walls where the underlying flashing is exposed (is not covered by the stucco or stone)

7. **Diverters:** Install diverters fabricated from matching 16 oz copper flashing to divert water from running off the edge of eaves that are exposed and overhang traffic areas. Match existing diverters installed at these locations.

8. **Snow Fence:** Install 2-rail snow fence at locations where the roof edge or eaves are over an exposed deck or in exposed above pedestrian areas such as over entrances. Single rail snow fence has been installed in these areas but is missing in other areas where it should be installed.

9. **Gutters:** Add gutters as needed to collect and divert water, snow, and ice.

10. **Downspouts:** Replace damaged downspouts with matching 3-inch round copper leader. Building #5 on the southeast corner is an example where the downspout leader has been damaged at ground level where they are used as extensions. There is approximately 24 LF of downspout leader that is smashed to where the opening is fully closed off.

Refer to photos provided in appendix C and the additional attachments for additional images of the issues listed.

Estimates

An estimate has been provided in appendix D for the various roof repair and replacement options. These options are as follows:

1) Repair the existing tile roofs to ensure they perform for up to 10 years or more.
2) Roof Recovery removing the existing tile, installing new ice barrier and battens and replacing damaged flashings and addressing other issues.
3) Roof Replacement (Tile) - Replace the existing roof with a new concrete tile roof system
4) Roof Replacement (Standing Seam Metal) - Replace the existing roof with a new double lock standing seam metal roof system

These estimates were compiled using the scope of work listed above with Xactimate software by Verisk with the current price list for Colorado resort properties. This software uses the Xactware pricing model widely accepted as representative market pricing. It is based on the ongoing collection of industry data to support this pricing. Xactimate is the most common software and pricing model in the roofing industry and commonly used by roofing contractors, consultants, and the insurance industry.

A summary of these estimates is provided below along with the expected time frame to complete the listed repairs and the expected performance or lifetime of the completed roof system.

Option	**Amount**	**Time Frame**	**Performance** (life span)
Roof Repair	$45,709	12-24 months	10+ years
Roof Recovery	$663,952	5 to 10 years	20 + years
Roof Replacement (Tile)	$964,616	5 to 10 years	30+ years
Roof Replacement (Metal)	$1,129,564	5 to 10 years	30+ years

SUMMARY AND CONCLUSION

The following conclusions are based on my personal inspection of the roofs, review of the applicable building codes and my personal industry experience.

1. The existing tile roofs are expected to perform for a period of 7 to 10 years or more with the recommended repairs made and supplemented with additional repairs every other year. The existing Grace Ice and Water Shield which serves as the existing underlayment has weathered over time and is becoming brittle. This underlayment will eventually fail requiring a roof recovery or replacement to install new underlayment.

2. The roof recovery option is the least expensive option to permanently repair the roofs by installing new underlayment and replacing all damaged roof tiles, flashing and repairing other issues at that time. It involves removing and reusing the existing roof tiles.

3. The roof repair options require the existing roof system to be brought to code and as such are the most expensive. Therefore, they should be installed to ensure they perform as should be expected. This includes adding roof ventilation or ensuring a cool roof system is installed. Prior to a roof recovery or replacement, it is recommended that the roofs be further investigated to determine the type and thickness of existing insulation installed in the roof cavity and/or on top of the roof deck.

4. A layer of synthetic underlayment has been included in the recovery and replacement estimates as it adds additional protection and can increase the life of the new roof system by 10 years or more. A reflective underlayment such as an ECO Chief Solar Hide offers even more protection and will slightly increase energy efficiency and fire resistance.

5. A competitive bid process planned at least 18 months prior to a planned roof recovery or replacement is recommended to ensure competitive pricing. It is also recommended to plan for this project to be properly managed and supervised by a qualified roofing engineer or consultant to ensure proper installation to meet the required code and the manufacturers installation instructions.

Don’t hesitate to contact me if you have questions or require further information.

Sincerely,

Daniel Cupit

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