

# **WOOD CREEK LODGE**

CRESTED BUTTE COLORADO

## **CAPITAL IMPROVEMENT PLAN STRATEGY**



**SGM ENGINEERING/SURVEYING**  
**GUNNISON COLORADO**

**MAY 6, 2015**

Prepared by: Gerald Burgess P.E.  
Luke Schumacher E.I.

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## Condition Assessment and CIP Strategy

This condition and needs assessment and Capital Improvement Plan (CIP) Strategy is based on our July 17, 2014 proposal to Crested Butte Lodging and Property Management. That proposal is attached for reference. In brief the scope of work consists of providing a targeted condition assessment and a CIP Strategy for owners to consider in regards to:

1. Roof
2. Parking and paved areas
3. Grading and drainage
4. Exterior finishes including stucco
5. Exterior wood beams and columns
6. Retaining walls
7. Assessment of exterior soffit/eave areas that appear to have sustained water intrusion from the roof drainage will be closely examined.
8. We propose to assess interior common areas but not individual units at this time.
9. An option the board could consider is a whole building analysis from a total performance and energy consumption standpoint. This analysis would assess the entire building envelope including windows, doors and heating system.

Per the July 17 letter, item 9 was not included in the scope of work.

A goal of this condition assessment report is to identify projects and to propose a strategy for a Capital Improvement Plan (CIP). We use the term “potential strategy” for the CIP because of owner priorities and budget constraints will finalize the final plan. In general, the building has been well taken care of over the years and is a structure the owners should be proud of. We agree with the owners and Crested Butte Lodging that the current handrail improvements and roof replacement are critical. A final roof condition report and bid/construction documents have been delivered. We currently have a pre-construction meeting with a roofing contractor set for May 08, 2015. Other project priorities include:

- Wood Column replacements
- Trash Enclosure area paving replacement
- Stucco Repair
- Building Painting
- Drainage, site grading and retaining walls
- Roof drains piped away from structure
- Parking area chip and seal

SGM has reviewed the Draft Ten Year plan assembled by Crested Butte Lodging. The list of projects is detailed and includes items we did not assess. Items such as windows for replacement, hot tub, sauna, exterior lighting, signs, re-keying of the building, doors, furnishings and other items. We understand that the owners will be prioritizing these work elements. We have created a CIP strategy for the work elements that were the focus of our assessments. Budgetary opinions of cost for the work have been updated and refined since earlier condition assessment reports were drafted.

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## Summary of Findings

This summary of findings will follow the individual work elements as described in our scope of work and identified on page 1. Additional details of the findings can be found in the attached reports.

1. Roof: The roof assessment has been discussed and reported thoroughly in a previous report. The contractor, Top Line Installers is scheduled to start work on site the first of June. Residents should be made aware of this disruption. The contractor did indicate that they wanted to work long days and possibly weekends to get the work done as soon as practicable.

The roofing replacement budget is included in the attached “potential CIP strategy” worksheet.

2. Parking and paved areas: In general the parking and paved areas are in a fair to good condition. It appears that the parking areas have been seal coated with some frequency over the years and well taken care of. The pavement near the trash dumpster is severely rutted and is an area that should be addressed relatively soon. The issue with the rutting and surface distortion near the trash enclosure is that the failed area allows water into the pavement subgrade from the adjacent hill sides and normal precipitation. It is our recommendation that this area have the asphalt removed, subgrade improved and a concrete structural slab placed to resist the loading from the trash trucks. Trash trucks are often culprits for this type of damage and most often the areas in front of the dumpsters are structural concrete. This is similar to concrete slabs one sees along many bus stops on paved roads.

Another recommendation is chip sealing of the parking surface. Surface seals such as a slurry seal or fog seal is what appears to have been placed on this parking lot, probably numerous times within the pavements life. The seals over time tend to build up similar to numerous coats of paint. They also are fairly smooth and really do not offer much of an improved friction factor. A chip seal utilizes an emulsion asphalt followed by a layer of 3/8” rock. After rolling the excess rock is swept off the surface. Sometimes the chip can be followed by a asphaltic fog seal to make a nice black parking lot. The added chips provide a good wearing surface and improved friction factor. The recommended chip seal will typically extend the life of a paved surface from 7 to 10 years.

Both of these items are placed in the “potential CIP strategy” worksheet.

3. Grading and drainage: In general the grading and drainage around the structure and parking area is in good condition with a couple exceptions. One exception is the drainage that enters the rutted area by the trash dumpsters. Another area has to do with the roof drains. Although we could not discern that the roof drains dumping of water into the court yard area, or elsewhere is problematic, it is a situation worth remedying at some point. Several roof drains could be routed away from the building to enhance overall drainage. One on the SE corner near the timber retaining wall is one that could be piped toward Wood Creek. Another is as shown in the photo 1 below. It is not a good practice to direct water to areas around structure or decking.

The court yard area roof drain would be a bit of a challenge to pipe without removing a significant amount of the decking (photo 2). The decking in photo 2 has dark areas from moisture. This moisture was mostly from recent rains (at the time of the photo). However, it is our opinion that water that gets below this deck will keep the sub structure and sub grade wet or moist. Over time this will detract from the life of the synthetic decking (it appears to be a Trex product) and sub

framing. We do recommend that the drainage in this area be corrected at some point in the future. We do not feel that this work is a high priority at this time however, we have placed a line item in the CIP strategy for this work. The time to do this work would be with court yard decking replacement and for some of the other roof drains when the retaining walls are rebuilt.



Photo 1



Photo 2

4. Exterior finishes including stucco: The overall condition of the painted surfaces at Wood Creek Lodge are fair to poor. A quality prep, sealing, minor repair and painting project should take place within the next few years. The stucco finish in general is in good condition. The exceptions are the areas on the north and east where snow tends to build up and sit against the finish. These areas are in poor condition. We have placed these elements in the CIP strategy for 2016.



Photo 3



Photo 4

Photo 3 shows a concrete retaining wall covered with stucco. This is not an unusual application. However, when this wall is repaired the top of the wall should be capped with a metal or other material that will shed water better than the stucco that is now on the horizontal top of wall surface.

5. Exterior wood beams and columns: Our initial condition assessment identified a number of columns and beams that we visually thought would need removal and replacement. A secondary visit and subsequent report dated April 09, 2015 (attached) verified and provided recommendations. The April 09 report identified 4 columns in need of attention. Those were identified and those have been placed in the CIP for 2015. This work could be deferred until 2016 but should not be deferred any longer.

6. Retaining walls: The timber retaining walls are clearly in a failed or failing condition. The failure of these does not pose a safety or threat to the structure. They are predominantly a landscape and aesthetic feature. When the owners decide to replace these landscape walls, a number of attractive options exist. All of the options will enhance the aesthetics of the landscape and certainly add to the “curb appeal” of the building and site. When it comes time to replace these retaining walls, we would recommend a Pavestone or Redi-Rock type retaining wall. Item 6 in the CIP strategy considers replacement of the failed timbers with a cementitious type block wall.
  
7. Assessment of exterior soffit/eave areas that appear to have sustained water intrusion from the roof drainage will be closely examined: These areas were closely examined when on the roof and during the condition assessment. Initially, when we were scoping the project the dark areas along some of the eaves between soffit and stucco was concerning. We later found that this was some type of material placed on the eave/sidewall interface to prevent birds (barn swallows) from nesting on the building. At least this is what we were told. If nesting of birds on the building is a concern, stainless steel bird spikes could be included in the painting project and installed at that time.
  
8. We propose to assess interior common areas but not individual units at this time: The common areas were assessed and have been well maintained over the years. Nothing overly stood out with the following exceptions:

Stairs. The stairs appeared to be in good condition. However, we feel that they should be inspected yearly. We did place a line item in the CIP strategy for this inspection. The stairs are made from wood timbers and are aging. Most likely during the paint prep work a more detailed inspection can be done of the wood and the stair tread interface. Some stair treads did seem borderline hence the recommendation for continued observation and diligence.

Court yard decking. This product appears to be a Trex synthetic decking product. Trex does hold up for many years and it is hard to determine how many useful years of life this product has left. We inserted a placeholder in the CIP strategy for decking replacement. We did not attempt to provide a replacement cost because it is possible that the court yard area could be configured by a landscape architect to further enhance the outdoor setting. In general, this decking is mentioned because at some point it will lose its attractiveness and possibly the underlying sub structure could start to fail. We do not know the age of the sub structure and did not remove deck to investigate. When issues start with this deck we do not feel the issue will pose a safety concern, it will mostly be aesthetics. When the decking is replaced, the roof drains should be piped to daylight (grassy area to the SE).

Of all the work elements identified, it is our opinion that the owners are taking on the most important element this year, the re-roofing. We also understand that the hand rails have been identified as not meeting current codes and will be addressed this year.

We hope you find the attached CIP strategy helpful for your future year budgeting purposes. The opinions of costs utilized were based on the best information available. Detailed final project scoping and aesthetic enhancements to the building will certainly change the opinions of cost. For the retaining walls and site work we do recommend that a landscape architect be consulted. We recommend this because we feel that the Wood Creek Lodge is in such a beautiful setting, taking better advantage of your outdoor space for both owners use and aesthetic “curb appeal” is owner money well spent. If you have any questions or would like to discuss this strategy please contact me at 970-641-5355 or via email at [jerryb@sgm-inc.com](mailto:jerryb@sgm-inc.com)

Respectfully Submitted,

A handwritten signature in blue ink that reads "Gerald E Burgess".

Gerald E. Burgess P.E.

Attachments:

Budgetary Capital Improvement Plan	May 05, 2015
Condition Assessment Proposal	July 17, 2014
Roofing Condition Assessment	August 2014
Building Condition Assessment	December 2014
Column Testing Results Report	April 09, 2015

**Wood Creek Lodge  
CIP - Budgetary Implementation Strategy**

DATE: 28-Apr-15

	Project or Work Task	Estimated Cost	Contingency (15%) except as noted	Total Budgetary Estimate 2015 dollars	2015	2016	2017	2018	2019	2020
1	Roof Replacement	\$151,316.00	\$12,105.28	<b>\$163,421.28</b>	\$163,421.28					
2	Wood Column Replacement	\$28,000.00	\$4,200.00	<b>\$32,200.00</b>	\$32,200.00					
3	Stucco Repair	\$9,800.00	\$1,470.00	<b>\$11,270.00</b>		\$11,608.10				
4	Building Painting	\$35,000.00	\$5,250.00	<b>\$40,250.00</b>		\$41,457.50				
5	Concrete Paving at trash enclosure	\$6,200.00	\$930.00	<b>\$7,130.00</b>			\$7,564.22			
6	Retaining walls and minor site grading	\$21,000.00	\$3,150.00	<b>\$24,150.00</b>			\$25,620.74			
7	Stair and stair stringer yearly inspection	\$250.00	NA	<b>\$250.00</b>	\$250.00	\$257.50	\$265.23	\$275.00	\$283.00	\$292.00
8	Roof Drains to Daylight (court yard not incl.)	\$9,750.00	\$1,462.50	<b>\$11,212.50</b>					\$13,000.00	
9	Parking Lot Chip and Seal	\$12,100.00	\$1,815.00	<b>\$13,915.00</b>				\$15,205.00		
10	Court Yard Decking with roof drain to daylight	\$22,500.00	\$3,375.00	<b>\$25,875.00</b>						\$30,000.00
<b>Yearly Project Totals:</b>					<b>\$195,871.28</b>	<b>\$53,323.10</b>	<b>\$33,450.18</b>	<b>\$15,480.00</b>	<b>\$13,283.00</b>	<b>\$30,292.00</b>
General notes regarding CIP budgets Opinion of costs based on area projects and discussions with contractors. Roof Replacement Note: Contingency for this work item reduced to 8% due to contract in place Note* 3% inflation factor added to years past 2015										

Wanda Bearth - President  
Crested Butte Lodging & Property Management  
701 Gothic Rd. P.O. Box 5013  
Crested Butte, CO.  
81224

July 17, 2014

**RE: Condition and Needs Assessment – Wood Creek Lodge**

Dear Wanda;

SGM is pleased to provide the Wood Creek HOA, through Crested Butte Lodging our proposal for a comprehensive condition assessment (CCA) on selected portions of the Lodge. I would first like to briefly introduce our firm. SGM is a full service engineering and surveying firm headquartered in Glenwood Springs Colorado. We have offices in Gunnison, Salida, Grand Junction, Aspen and Meeker. We have been in business since 1986 and have grown to over 70 employees. We specialize in serving the mountain communities of Western Colorado. Jerry Burgess P.E. from our Gunnison office will manage and perform the bulk of the work for Wood Creek Lodge.

In keeping with our thoughts after my July 09 initial site visit and subsequent email to Wanda Kimbrell, SGM proposes to perform a CCA on the following elements of the Wood Creek Lodge:

1. Roof
2. Parking and paved areas
3. Grading and drainage
4. Exterior finishes including stucco
5. Exterior wood beams and columns
6. Retaining walls
7. Assessment of exterior soffit/eave areas that appear to have sustained water intrusion from the roof drainage will be closely examined.
8. We propose to assess interior common areas but not individual units at this time.
9. An option the board could consider is a whole building analysis from a total performance and energy consumption standpoint. This analysis would assess the entire building envelope including windows, doors and heating system.

Our overall proposal is relatively brief. If you would like additional detailed information or would like to discuss this proposal further please feel free to contact me.

## Team Overview

We propose to utilize the following SGM team members for the Wood Creek Lodge.

Team Member's Relevant Experience and Qualifications Table	
Project Team Member	Relevant Experience/Qualifications
	-
<b>Jerry Burgess, PE</b> Principal, Senior Engineer	<ul style="list-style-type: none"> <li>- 22 years' experience in engineering and facility/condition assessments.</li> <li>- Experienced with all phases of capital improvement planning</li> <li>- Extensive facility experience including design, construction, cyclic maintenance and repair/rehabilitation work.</li> </ul>
<b>Mike Suhrbier</b> <i>Energy Rater, Building Envelope Specialist</i>	<ul style="list-style-type: none"> <li>- Residential Energy Services Network (RESNET) certified Home Energy Rating System (HERS) rater. Mike is a building envelope specialist with blower door testing and infrared camera analysis expertise.</li> <li>- 7 years experience as a HERS rater and Energy Auditor in Western Colorado.</li> <li>- Specializes in condition assessment work</li> </ul>
	<b>ADDITIONAL RESOURCES AS NEEDED</b> (not anticipated or budgeted for at this time)
<b>Jeff Grebe, P.E.</b> <i>Electrical/Mechanical Engineer</i>	<ul style="list-style-type: none"> <li>- is SGM's Senior Energy Engineer. Jeff has over 30 years of experience in the design of mechanical, electrical and plumbing (MEP) systems for a wide variety of commercial and institutional buildings. Jeff has successfully completed over 1000 projects including 20+ school projects.</li> </ul>
<b>Tony Haschke, EI, CEM, CBCP, CLEP</b> <i>Energy and Mechanical Systems Engineer</i>	<ul style="list-style-type: none"> <li>- Mechanical Engineer, Certified Energy Manager, Certified Building Commissioning Professional, Certified Lighting Efficiency Prof.</li> <li>- 28 yrs experience in HVAC maint., troubleshooting and training</li> <li>- Managed projects realizing energy-related savings of over \$1M</li> <li>- Mechanical lead for mechanical and plumbing Condition Assessments</li> </ul>

## General Project Approach and Scope of Services

- Provide a condition assessment of the identified assets. Once the condition assessment is complete we will provide an estimate of the remaining useful life of the asset and provide cost estimates for the cyclic maintenance needs, repair, rehab or replacement of said asset. The work will include the following:
  - 1 Roof: For this asset we have been informed that the roof is at the end of its design life and in need of replacement. Our work will include recommendations for replacement material type and quality. Also, an evaluation as to any value added by increasing roof underlayment insulation will be provided.

2. Grading and Drainage: We will assess the overall effectiveness of storm water drainage and movement through and around the compound. We will also assess the pavement condition and identify any drainage issues that could shorten the life of the pavement. We will identify future cyclic maintenance requirements for the paved surfaces, such as seal coats and provide cost estimates for various treatments. Additionally, site work improvements (if any) related to drainage will be cost estimated..
3. Exterior finishes including stucco. Areas showing deterioration will be assessed and repair recommendations made. Also, recommendations will be provided that could prevent future premature deterioration.
4. Exterior wood beams and columns. Assessed for structural integrity. Our initial site visit suggests that selected columns and beams will need replacing. The extent will be field verified and quantified. Cost estimates and a prioritization of the work will be provided.
5. Retaining walls. Our initial site visit has suggested that the retaining walls are nearing the end of their useful life. Although, probably not a high priority, recommendations for replacement wall types and costs will be provided.
6. Assessment of exterior areas that appear to have sustained water damage and are possibly fostering the growth of mold. Please note, what potentially appears to be mold at the sidewall/soffit interface could be a bird repellent or something else. This will be investigated closely and will require the use of a relatively long ladder.
7. Electrical, Heating, Plumbing and ventilation systems are not included in our current scope of work at this time. If after our initial assessment and after collaboration with the owners, if additional mechanical, electrical or plumbing (MEP) assessments are required, a revised scope of services will be provided for your consideration.
8. We propose to assess interior common areas but not individual units at this time. We will look for signs of structural distress, water intrusions or other deficiencies.

After our assessment work is complete, and in an effort to ensure that the assessments and our findings are consistent with Wood Creek's goals and priorities; we will provide a draft report of our findings and a list of potential capital improvements. This will help us prioritize recommended projects, strategize work elements that can be packaged into single contract actions, add HOA desired improvements, and obtain HOA budget numbers. The budget numbers will be used to set yearly asset improvement budgets and scopes of work. After your review and comment we will put together a formal report and plan identifying projects to be accomplished over the next 2 to 5 years depending upon extent of work and available construction budget.

**Client responsibilities:** Wood Creek, through Crested Butte Lodging will provide SGM with access to the roof and permission to be on site and within interior common spaces. We will also require the use of a ladder long enough to access the soffit/eaves. We would much appreciate a ladder being made available.

**SGM Fee Estimate:**

We propose to work for Wood Creek HOA through Crested Butte lodging on a time and materials basis with a “not to exceed” initial budget. Our estimate for the aforementioned scope of work and deliverables is \$7260.00. SGM invoices for work actually performed. If the scope of work is reduced or requires less time than anticipated, we will only invoice for actual work performed. If the owners determine that additional work is required we will provide an estimate of additional services for your approval prior to initiating the work.

If you find that this proposal is acceptable, please sign and return the attached letter agreement for professional services. If you have any questions or need additional information please contact me at the numbers below or via email at [jerryb@sgm-inc.com](mailto:jerryb@sgm-inc.com).

Respectfully submitted,



Gerald E. Burgess P.E.



AGREEMENT FOR PROFESSIONAL SERVICES

Date: July 17, 2014 Project Name:
Client Name: Crested Butte Lodging Description:
Address: P.O. Box 5013 Contact Person:
City: Crested Butte Project Manager:
State & Zip: CO 81224 SGM Project No.:
Phone: 970-349-2400
Mailing Address (if other than above):

Client requests and authorizes SGM to perform the following services:

Scope of Work: (including assumptions, limitations & exclusions) provide a condition assessment, letter report and cost estimate for repairs/rehab work. Work with HOA and CB Lodging to create an asset management plan that prioritizes and plans for the improvements based on an HOA provided budgets.

Legal Description of Property: (including owner's name, address & phone) Wood Creek Condos (Wood Creek Lodge). Wood Creek HOA.

Time & Compensation by Client to SGM will be on the basis of: (Time & Materials per current Fee Schedule, Not to Exceed amount, Lump Sum, Per Proposal, etc.) Not to exceed \$7260.00 per proposal dated July 17, 2014

When compensation is on a cost-reimbursable basis, a service charge of 10% will be added to Direct Expenses. All sales, use, value added, business transfer, gross receipts, or other similar taxes will be added to SGM's compensation when invoicing Client.

Other Terms:

Services covered by this Agreement will be performed in accordance with the Provisions stated on the next two (2) pages along with any attachments or schedules. This Agreement supersedes all prior agreements and understandings and may only be changed by written amendment executed by both parties.

IN WITNESS WHEREOF, the parties have made and executed this Agreement to be effective as of the date first above written.

CLIENT

BY:
NAME: (PLEASE PRINT)
DATE:

SGM

BY:
NAME: Gerald E. Burgess P.E. (PLEASE PRINT)
DATE:

CLIENT'S REPRESENTATIVE

BY:
NAME: (PLEASE PRINT)
DATE:

## Provisions

### 1. Authorization to Proceed

Execution of this Agreement by Client will be authorization for SGM to proceed with the Project, unless otherwise provided for in this Agreement.

### 2. Billing Rates

Both parties understand and agree that all work not specifically delineated within the scope of work described herein shall be billed on a time and materials basis and shall be in addition to any budget, bid or maximum price agreement for the above-described Scope of Work. Fee adjustments shall be made accordingly for delays and interruptions not the fault of SGM.

### 3. Direct Expenses

SGM Direct Expenses are those necessary costs and charges incurred for the Project including, but not limited to: (1) the direct costs of transportation, meals and lodging, mail, courier services, equipment materials and supplies; (2) SGM's current standard rate charges for direct use of SGM's vehicles, computing systems, word processing and printing.

### 4. Standard of Care

Services performed under this Agreement are performed with care and skill ordinarily exercised by members of the profession practicing under similar conditions at the same time and in the same or similar locality. No warranty, expressed or implied, is made or intended by the interpretation of consulting services or by furnishing oral or written reports of the findings made. SGM's services shall be performed as expeditiously as is consistent with professional skill and care and the orderly progress of the Project.

### 5. Termination

This Agreement may be terminated for convenience on 30 days written notice, or for

cause, if either party fails substantially to perform through no fault of the other and does not commence correction of such non-performance within 5 days of written notice and diligently complete the correction thereafter. On termination, SGM will be paid for all authorized work performed up to the termination date plus any related closeout costs such as copying of files, blueprints copies, etc.. If no notice of termination is given, relationships and obligations created by this Agreement will be terminated upon completion of all applicable requirements of this Agreement.

### 6. Payment to SGM

All fees, commissions, product charges and expenses billed shall be due within thirty (30) days of the date of billing. Interest on unpaid or late bills shall accrue at 1½ percent per month (18.0 % A.P.R.). In the event any sum is not timely paid, SGM shall be entitled to the recovery of all costs of collection, including reasonable attorney's fees and expenses. In addition to any right and remedy conferred hereunder or by law, SGM shall specifically have the right to assert a lien on the property described above. Client agrees that all Statements not objected to in writing within fifteen (15) days of receipt are assumed to be final and binding upon the parties as to the amount due, the adequacy of SGM's performance and the value of the services provided to Client.

### 7. Venue

This Agreement is subject to the Laws of the State of Colorado, the venue of the County of Gunnison shall control any proceedings arising in the transaction described herein.

### 8. Engineers' Responsibilities

Engineer shall review laws, codes, and regulations applicable to the Engineers' services. The Engineer shall respond in the design of the Project to requirements imposed by governmental authorities having jurisdiction

over the Project. Engineer's certification of the amounts due the Engineer shall constitute a representation that to the best of the Engineer's knowledge, information & belief, the quality of the work is in accordance with the contract documents. Engineers may review shopdrawings "for the limited purpose of checking for conformance with information given & the design concept expressed in the Contract Documents." This review will not relieve the Contractor or client from the responsibility for errors or deviations from the Contract requirements. "Contract Documents" include; Advertisement For Bid, Instructions To Bidders, Bid, Agreement, General Conditions, Supplementary General Conditions, Notice of Award, Notice To Proceed, Change Order, Drawings, Specifications and Addenda.

## **9. Insurance**

SGM shall secure and maintain throughout the full period of this Agreement, sufficient insurance to protect itself adequately from claims made by its employees under applicable Workers' Compensation Act and from claims of bodily injury, death or property damage as may arise from the performance of services under the Agreement. CLIENT must obtain its own insurance. SGM will, upon request, file certification of such insurance coverage with CLIENT or authorized representative.

## **10. Limitation of Liability**

The liability of SGM, for any actions, damages, claims, demands, judgments, losses, costs and expenses arising out of or resulting from the negligent acts, errors or omissions of SGM is limited to the proceeds available to SGM. The term 'proceeds available to SGM' means the proceeds of liability and/or errors and omissions insurance available to SGM. The parties understand and agree that SGM is acting as an engineer and not as a contractor hereunder and nothing shall be construed as imposing on SGM any duty or obligation to have authority over Contractor's work, nor shall SGM have authority over, or responsibility for, the means, methods, techniques, sequences or procedures of construction selected by the Contractor, or for

safety precautions and programs incident to the work of the Contractor, or for any failure of the Contractor to comply with laws, rules, regulations, ordinances, codes or orders applicable to the Contractor furnishing and performing the work.

## **11. Indemnity**

Client and SGM each agree to indemnify and hold the other harmless, and their respective officers, employees, agents, and representatives, from and against liability for all claims, losses, damages, and expenses, including reasonable attorneys fees, claimed by third parties to the extent such claims, losses, damages, or expenses are caused by the indemnifying party's negligent acts, errors or omissions. In the event claims, losses, damages or expenses are caused by the joint or concurrent negligence of Client and SGM, they shall be borne by each party in proportion to their respective negligence.

## **12. Opinions of Cost**

When included in SGM's scope of services, opinions or estimates of probable construction cost are prepared on the basis of SGM's experience and qualifications and represent SGM's judgment as a professional generally familiar with the industry. However, since SGM has no control over the cost of labor, materials, equipment, or services furnished by others, over contractor's methods of determining prices, or over competitive bidding or market conditions, SGM cannot and does not guarantee that proposals, bids, or actual construction cost will not vary from SGM's opinions or estimates of probable construction cost.



**FEE SCHEDULE  
2013**

**HOURLY RATE**

PRINCIPAL ENGINEER .....	\$165.00
SENIOR ENGINEER II.....	\$145.00
SENIOR ENGINEER I.....	\$135.00
SENIOR PROJECT MANAGER.....	\$125.00
PROJECT MANAGER .....	\$115.00
ENGINEER III .....	\$120.00
ENGINEER II .....	\$110.00
ENGINEER I .....	\$ 90.00
DESIGN TECHNICIAN .....	\$ 65.00
SENIOR ENERGY CONSULTANT .....	\$135.00
ENERGY MANAGER.....	\$105.00
ENERGY AUDITOR.....	\$ 95.00
CONSTRUCTION MANAGER .....	\$110.00
CONSTRUCTION TECHNICIAN II .....	\$100.00
CONSTRUCTION TECHNICIAN I .....	\$ 90.00

CADD MANAGER.....	\$115.00
SENIOR CADD DESIGNER.....	\$100.00
CADD DESIGNER .....	\$ 90.00
CADD DRAFTER.....	\$ 75.00
GIS COORDINATOR/ANALYST.....	\$110.00
GIS/CAD SPECIALIST.....	\$ 85.00
GIS DATA ENTRY .....	\$ 65.00
GIS FIELD DATA COLLECTION .....	\$ 50.00
MARKETING MANAGER.....	\$ 90.00
CLERICAL STAFF .....	\$ 65.00

SURVEY MANAGER .....	\$140.00
LAND SURVEYOR .....	\$120.00
SURVEY PROJECT MANAGER.....	\$100.00
SENIOR SURVEY TECHNICIAN.....	\$ 90.00
SURVEY TECHNICIAN .....	\$ 75.00
FIELD SURVEY (1-Man Crew) .....	\$150.00
FIELD SURVEY (1-Man Crew OVERTIME).....	\$225.00
FIELD SURVEY (2-Man Crew) .....	\$200.00
FIELD SURVEY (2-Man Crew OVERTIME).....	\$300.00

EXPERT TESTIMONY.....	\$325.00
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**REIMBURSABLES**

<b><u>Equipment</u></b>	<b><u>Rate</u></b>
Vehicle Mileage.....	\$ 0.565/mile
ATV / SNOWMOBILE .....	\$ 125.00/day
Flow Tote .....	\$ 125.00/day

<b><u>Reproduction</u></b>	(Plot Sheets are typical "D" size @ 2' x 3', Oversize higher)
Black & White Plots.....	\$ 5.50/sheet
Mylar Plots .....	\$19.00/sheet
Color Plots .....	\$30.00/sheet
Photocopies .....	\$ 0.25/page

**Miscellaneous**  
Overtime will be charged out at 1½ times hourly rate (field survey overtime rates noted above).  
10% will be added to all direct expenses, including FedEx, special delivery and courier charges, special consultants, subcontractors, laboratory tests, airfare, lodging, meals, car rental, telephone, outside printing expense, etc. **Interest of 1.5% per month will be charged for invoices past 30 days.**

# COMPREHENSIVE CONDITION ASSESSMENT

## WOOD CREEK LODGE ROOF

CRESTED BUTTE COLORADO



SGM ENGINEERING/SURVEYING  
GUNNISON COLORADO

AUGUST 2014

# **COMPREHENSIVE CONDITION ASSESSMENT**

August 2014

SGM Engineering/Surveying  
Gunnison Colorado

## **WOOD CREEK LODGE ROOF**

Crested Butte Colorado

### **Background**

Responding to a request for services from the Wood Creek Lodge HOA, SGM was contracted to conduct a comprehensive evaluation of the existing roof condition at the lodge. Assessment services provided by SGM included review of existing documents, interviews with knowledgeable maintenance staff, and onsite investigations of the roof structure and finishes.

### **Introduction**

This document provides the results of SGM services performed which include documentation of deficiencies, estimated costs to correct identified deficiencies, and recommendations for alternative corrective actions.

In addition to providing the comprehensive condition assessment findings and documentation, SGM is submitting up-to-date as-built drawings generated from field measurements taken during the inspection process.

The assessment team for this effort included representatives from Crested Butte Lodging, a crew from Pinnacle Construction and engineering and support staff from SGM. The following identifies team members and roles performed:

- Jean –Luc Fouquet, Maintenance Manager Crested Butte Lodging
- Jerry Burgess representing SGM as the project manager and primary onsite engineer conducting inspection
- Pinnacle Construction: crew of 3 led by Pete – only onsite for the destructive investigation on August 18.

Dates of inspections: August 04, 2014 and August 18, 2014

### **Document Research**

In response to a referral from Mr. Fouquet, a partial set of drawings were secured from Global Linings in Gunnison CO. Disparities were identified between the original drawings and actual current conditions. There was not enough documentation located to understand whether the differences were due to original roof construction failing to conform to construction documents, or if undocumented roofing reconfigurations may have occurred over the years. One critical detail discrepancy noted between original drawings and existing conditions, was the roofing system construction material. The historic drawings indicated that the flat portion of the roof was a metal standing seam

design; specifically identified on the drawings as a MR-24 roofing system. MR-24 is a metal roof specific to the Butler Company. It is suspected that the original design was wisely changed from the metal flat roofing to an EPDM.

Finally, Mr Burgess contacted the Carlisle Warranty department as a possible source for additional roof history information, as well as affirming whether any warranty benefits remained effective. The minimal records that Carlisle was able to locate indicated that the roof was installed in 1988. Because the original construction documents were released for building permit in 1979, and because the 1979 drawings did not include the covered porte-cochere structure at the entry, it is surmised that the roof section covering the entry structure, which was constructed in 1988, is the only roof section Carlisle had on file. That warranty is no longer effective.

### **Onsite Inspection/Evaluation**

On Monday August 04, 2014, Mr Burgess and Mr Fouquet met onsite to begin the assessment process. Mr. Fouquet provided access and then departed. An accounting of the existing roofing system is described below:

The existing roof consists of both flat sections of roof deck and steeply pitched sections. Pitched sections are metal, and are fairly steep (38-degree slope in some areas). 'Flat' sections consist of a black Carlisle 45 mil single ply membrane EPDM (ethylene propylene diene monomer) and are slightly pitched (1/4" per foot) to allow water to drain while retaining snow.

EPDM has been used in the roofing industry for over 40 years. It is a type of synthetic rubber material formulated for roofing and other sealing applications. The roof structure consists of five distinct EPDM roofing sections (see existing condition's drawing)

The visual inspection by Mr. Burgess began at the highest roof deck (noted "Deck 1" on attached roof drawing). As indicated on the drawing, Roof Deck 1 is on the north (true NW) portion of the building. The progression of inspection moved from this point to each succeeding lower deck and finally to the porte-cochere roof deck where the visual inspection was completed.

After the initial onsite inspection and discussion with the maintenance staff, it was determined that water may have penetrated beneath the single ply membrane at and around the elevator shaft. To assure the roof structure substrate was sound in this location, and throughout the roof assembly, it was agreed that a section of the EPDM, underlayment board and section of wood roof deck would be removed for examination. This task was performed on August 18, 2014 with the work being performed by Pinnacle Construction.

## **Summary of Findings** (detailed notes and photographs can be found in the appendix):

All indications are that the existing EPDM roofing material has served well over its lifetime as a protective barrier. However, visible small cracks and tears can be seen in several areas of the EPDM material signaling that the barrier is at the end of its service life. The deterioration is the result of age and exposure to our climate.

Based on available documentation and inspection of the roof sections, it is reasonable to conclude that the EPDM material on the main building was installed at the time of building construction (approx. 1980). I also suspect that the entry porte-cochere was constructed at a later date as noted above. The main building roof covering has provided a service life in excess of 30 years. Replacing or “recovering” the roofing is timely. Often building owners wait on a project like this until the roof experiences significant leaks and/or the roof deck has been compromised due to water infiltration. Our investigations did find water in the underlayment material. In all cases the plywood roof structure and underlying fiberglass insulation was not wet.

The destructive investigation performed on August 18, 2014 has determined the following:

- The roof section consists of the black EPDM over a fiber underlayment board, a layer of 3/8” gravel on 3/4” plywood over 2”x12” roof joist. A plastic vapor barrier followed by drywall is located on the bottom of the roof joists. Fiberglass insulation is located between the 2x12 joists. The gravel was adhered to the plywood with a black asphaltic material.
- The roof deck was opened and exposed to the vapor barrier at three locations. In all locations, the fiber underlayment board was saturated with water. The saturation was more prevalent where the EPDM was cracked or torn. However, in one area where no tears were evident, the underlayment was wet. The plywood roof deck was dry as was the insulation and roof joist at all locations investigated.

## **Recommendations/considerations**

At this point in time, replacing the roof single ply covering is imminent. This work needs to be performed in the near future. The timing should be this fall (2014) or spring of 2015. If the work is deferred past this fall some maintenance is recommended. At minimum, the small cracks and tears should be sealed with an elastomeric roof sealant. Sealant should also be applied at the EPDM termination bars (where needed) and where flashing has come loose.

After our evaluation of the roofing material and underlying materials it is our recommendation to remove the EPDM, underlayment, and gravel to the plywood roof deck. Our recommendation is to replace with a similar black EPDM product. We recommend upgrading the underlayment with a polyisocyanurate (polyiso) board for added insulation with a cover board (dens-deck) followed by the EPDM. The polyiso

product provides an R value of 5.7 per inch. For the Wood Creek lodge we recommend a minimum of 1.5". However, we will provide a cost estimate for an upgrade to 3".

#### Opinion of Construction Costs

(note: cost estimates based on information from 3 different roofing contractors. They include Pinnacle Construction, B&M Roofing and Topline Installers. All are qualified and would provide competitive bids.

#### Option 1:

- Remove and dispose of the EPDM membrane, underlayment, loose gravel, and BUR roofing down to the wood deck. Complete tear off and removal.
- Furnish and install new 2x6 wood nailers at the perimeter.
- Mechanically attach 1.5" polyiso using fasteners and plates.
- Adhere ½" thick Dens-Deck Prime using manufacturer's two part urethane adhesive.
- Adhere 90 MIL Black EPDM membrane using solvent based bonding adhesive.
- Furnish and install 24 gauge prefinished steel drip edge with 22 gauge hook at roof edges.
- Furnish and install 24 gauge prefinished steel counter-flashing at walls
- Remove and replace rain gutters where they currently exist
- Install new ice/snow melt on roof edges and in rain gutters
- Remove and replace metal roofing on steeper slopes, includes ice and water shield, flashing, color to match existing.
- 20 year full system manufacturers warranty for EPDM. (30 year available for additional cost of about \$1,500)
- 10 year installers warranty on metal and EPDM installation.
- The bid documents will include an item for roof deck removal and replacement. This is for the situation where we find a section of plywood roof deck that has been damaged by water and needs to be replaced. We will include this bid item and only use it if absolutely needed. It is always better to get this price up front when contractors are bidding competitively.

Total budgetary cost:       \$ 86,000.00

#### Option 2

- Same as option 1
- Increase polyiso from 1.5" thickness to 3" thickness. Increases additional R value from 8.5 to 17.

Total budgetary cost:       \$103,000.00

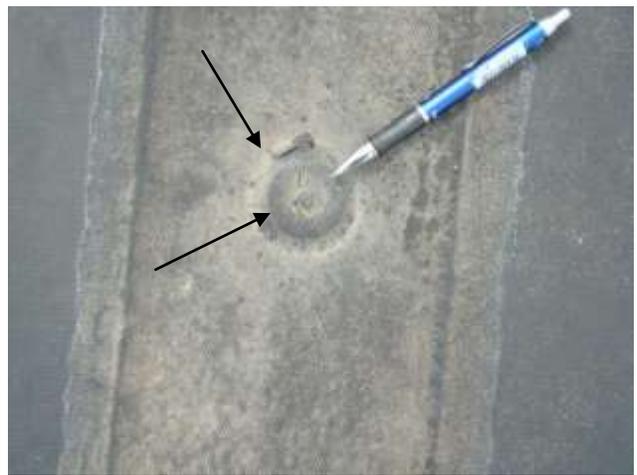
APPENDIX A – PHOTOS & SITE OBSERVATIONS

Observations Roof Deck #1



Roof Deck 1 overall photo. Photo depicts seams in the EPDM single ply roofing material, two of the three plumbing vents and the wireless LAN access point in the upper left corner.

PHOTO 1



Round spots are the EPDM over fasteners that attach underlayment board to the roof deck. Cracking and small cuts are depicted in this photo at the tip of the arrows. They are about a 1/4" in length.

PHOTO 2



NW corner of upper roof deck. Photo attempts to depict a condition where the stucco at the corner is deteriorated to the point that water could penetrate (lower arrows). Attempts have been made to seal the stucco on these corners. Likewise, the seal between the edge metal and EPDM is starting to deteriorate (top arrow). Due to steepness of metal roof deck, unable to closely inspect the vertical corner or flashing. The metal roof deck appeared to be in fair condition.

PHOTO 3

**Observations Roof Deck #2**



Overall photo of Roof Deck 2 from Roof Deck 1. Patching from previous repairs are visible.

PHOTO 4



Roof Deck 2. Photo depicts snowmelt cable at roof edges and in rain gutters. This detail will be carried over into the replacement roofing.

PHOTO 5



This photo shows Roof Deck 2 from Roof Deck 1. There is a 10" step down from Roof Deck 2 to Roof Deck 3.

PHOTO 6



Same type of crack/cut at the covered fastener as noted on Roof Deck 1. All roof sections had this condition at various locations.

PHOTO 7

**Observations Roof Deck #3**



Photo depicts snowmelt cable at eaves and rain gutters. Shown in PHOTO 11 below is “checking” in the EPDM surface. This was noted in this area.

PHOTO 8



A little more pronounced cut/crack. This IS an area where a cut was made into the roof deck to determine if water intrusion has caused problems.

PHOTO 9



Photo shows loose seams between EPDM. To avoid further damage these seams were not probed. They should not be loose.

PHOTO 10



Photo depicts loose seam and checking. Checking is hard to see in the photo but is a sign of aging EPDM subjected to conditions prevalent in Mt Crested Butte. This area will be investigated to the wood deck.

PHOTO 11

**Observations Elevator Shaft Roof Deck**



Recently installed elevator power ventilation unit. Photo shows temporary “ice and water shield” flashing between sheet metal vent and roof deck. This needs proper flashing.

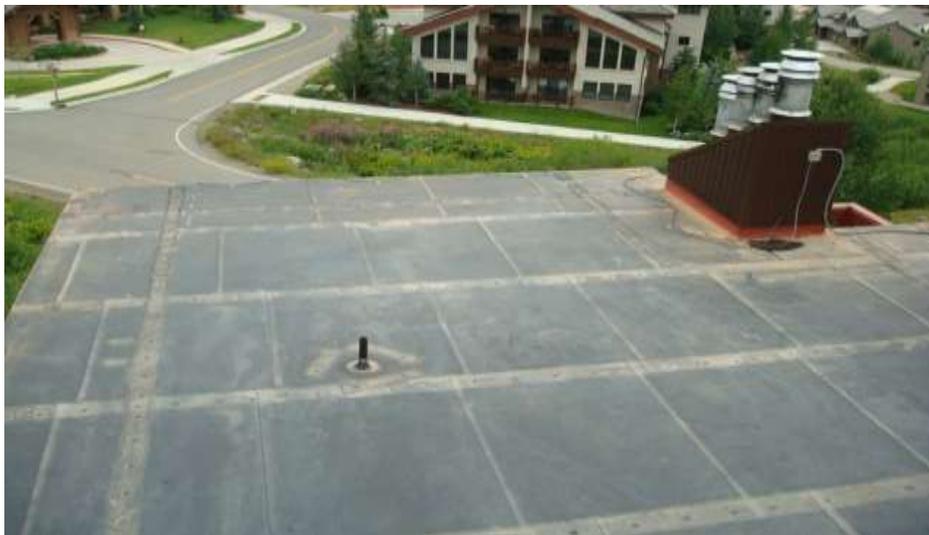
PHOTO 12



Photo shows loose flashing below wood fascia. Also, metal edging with exposed fasteners. Single ply roofing manufactures today still use the edge metal to hold the single ply along edges but the edge metal is sealed with an adhesive applied membrane strip. Fasteners and metal (termination bars) are not exposed in more modern installations.

PHOTO 13

**Observations Roof Deck #4**



Roof Deck 4 exhibited similar small cracks as other roof decks.

PHOTO 14

**Observations Porte-cochere Roof Deck**



PHOTO 15



PHOTO 16

The entry porte-cochere roof deck exhibits minor ponding and similar small cracks as noted elsewhere. The ponding is not ideal but not overly concerning for this type of roofing material not over living space. This indicates that the other roof decks drain well. Often times flat roof decks will not drain and ponding can be problematic or allow water to sit over small cracks and seep into the deck underlayment.

**Miscellaneous Observations**



Top of wood column exposed to elements.

PHOTO 17



Photo depicts slope on roofing for drainage along with gutters, down-spouts and snowmelt cables. Good details that we will want to maintain.

PHOTO 18

**Miscellaneous Observations**



Weathered wood fascia and trim. Re-staining should be performed soon. Also, photo depicts aged metal deck.

PHOTO 19



Corner flashing damage.

PHOTO 20



Weathered fascia and trim. Re-staining should happen soon.

PHOTO 21



Roof downspout could bring significant water to this area. Is this problematic? Other downspouts could potentially drain water to areas where not wanted. This will be studied further as part of the building and grounds assessment.

PHOTO 22

**Destructive Investigations of Roof Sections**



Roof deck 3. Directly under the EPDM is a black underlayment that looks like a “celo-tex” material with a 3/8” gravel below. The underlayment material is identified by the arrows.

PHOTO 23



Same location as photo 23. Photo depicts EPDM pulled back, underlayment board, gravel, asphaltic material, plywood and insulation. The underlayment is wet. The underside of plywood, insulation and 2x12 joist are dry.

PHOTO 24



Roof deck 1. Underlayment was wet as was the gravel.

PHOTO 25



Same location as photo 23. Can't really tell in this photo but the underlayment board is completely saturated with water. Underside of Plywood, roof joist and insulation are dry.

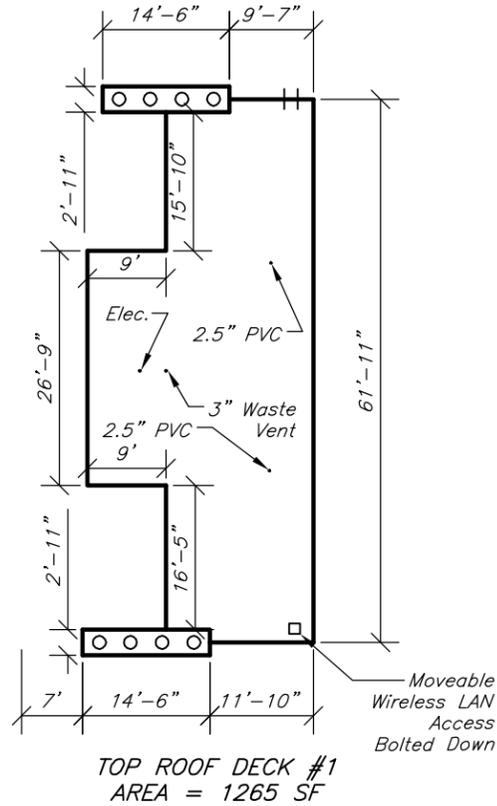
PHOTO 26



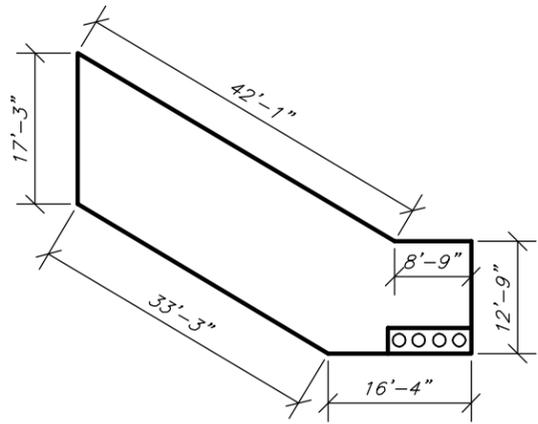
This is roof deck 2, at a location where no cuts or tears were visible. The underlayment and gravel was wet but not as saturated as locations where cuts were present. The dark areas on the underlayment is water brought up by the saw. The gravel in this photo is wet.

PHOTO 27

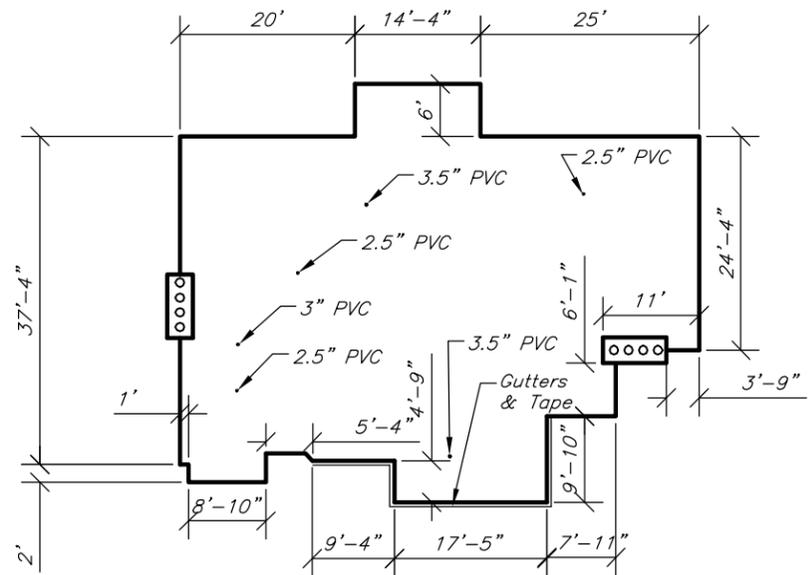
I:\2014\2014-223-Woodcreek Lodge\H\_Dwgs\WoodCreek\_BMarch.dwg Plotted: 8/28/2014 9:33 AM By: Tammy Warrick



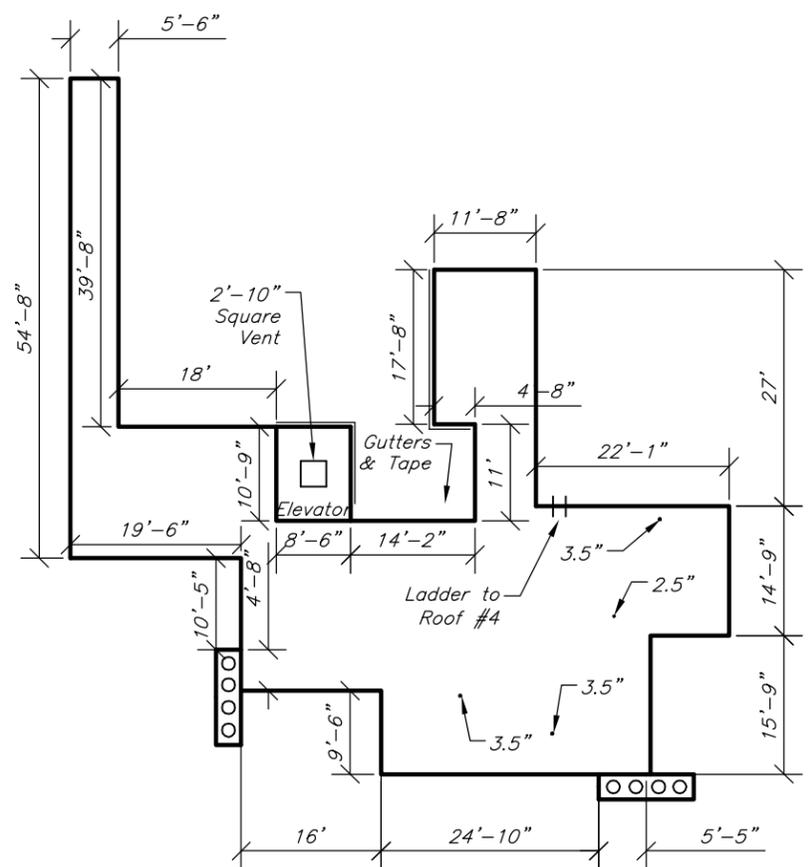
TOP ROOF DECK #1  
AREA = 1265 SF



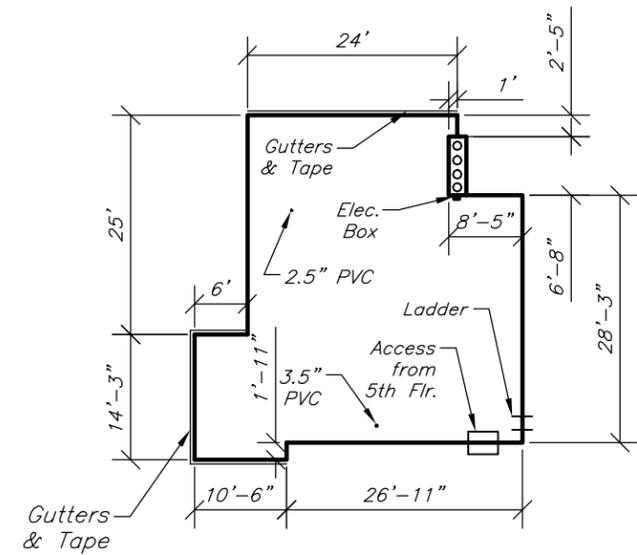
PORTE COCHERE ROOF DECK #5  
AREA = 691 SF



ROOF DECK #2  
AREA = 2196 SF



STEP DOWN ROOF DECK #3  
AREA = 2278 SF



TOP ROOF DECK #4  
AREA = 1193 SF

NOTES  
1. Metal roof not shown.  
2. All dimensions and areas are approximate.

Preliminary  
Not For  
Construction



Wood Creek Lodge  
Mt. Crested Butte

#	Revision	Date	By
1			

EPDM Roofing  
Replacement Layout

Job No.	2014-223	
Drawn by:	TW	1
Date:	8/27/2014	
QC:	JB PE: JB	1
File:	WoodCreek_BMarch	

# BUILDING CONDITION ASSESMENT

## WOOD CREEK LODGE

CRESTED BUTTE COLORADO



SGM ENGINEERING/SURVEYING  
GUNNISON COLORADO

DECEMBER 2014

Prepared by: Gerald Burgess P.E.  
Luke Schumacher E.I.

**Condition and Needs Assessment  
Wood Creek Lodge  
Mt. Crested Butte, Colorado**

## **Introduction**

This report is based on our July 17, 2014 proposal to provide a condition and needs assessment of the Wood Creek Lodge. SGM has performed a detailed inspection of roofing, paved areas, grading and drainage, exterior finishes, exterior wood beams and columns and retaining walls. The roof replacement condition assessment and opinion of costs was provided by separate document in August of 2014.

Provided within this document are the findings from SGM's visual inspection and recommendations for correcting current deficiencies, and our opinion of probable construction cost estimates of these corrections. The on-site condition assessment was performed on August 04, August 18 and October 22, 2014. The work began on the roof and progressed down the building through the stairways and interior columns and then ending at the exterior columns, decking, and site grading and drainage.

The results from this on-site assessment will be broken down into sections with individual recommendations for each of these sections. When describing the location of features within the structure the side of the building the entrance and porte-cochere are on will be assumed to be the west side of the building. Roof levels are as shown on the attached exhibit drawing.

## **Executive Summary**

For the Wood Creek Lodge we found two elements that we felt were of equal importance. Both of these elements should be addressed in 2015.

### **Roof and timber columns:**

1. The roof as discussed and reported in our August 2014 report.
2. Several wood columns were found to exhibit dry rotting at the base. Dry rot is most often caused from continual wetting and drying of the wood fibers with prolonged periods of wet or damp. These conditions can be made worse by freezing and thawing of those fibers. The work to repair/rehab these columns will include the temporary shoring of structural members followed by the removal and replacement of the bottom column sections. We also identified one stair stringer that has the start of dry rot. This stringer could be replaced or repaired with a combination of epoxy filler and an oil based paint. Further examination should be made when the old paint can be sanded/stripped and the member evaluated a little closer.

### **Stucco repair and painting:**

- Other work elements are recommended to be performed within the next 1 to 3 years is painting and stucco repair. Stucco wall sections that have been exposed to standing snow or water have failed noticeably. These sections can be repaired. This work will require a quality stucco contractor. Getting the colors and texture to blend does take a unique skill set.

- For both painting and stucco repair work the most cost effective method to obtain competitive bids would be to provide a general scope of work to several competent contractors for their pricing and opinion of means and methods. This work would most likely need to be accomplished by two different contractors.

**Grading, drainage and retaining walls:**

Some relatively minor grading improvements are needed as part of the timber column replacement work. This work can be accomplished as a standalone project or as part of the column replacement work.

Our findings noted later in this document do discuss roof drainage and grading associated with this water. It is our opinion that water from the roof that is drained to the courtyard area is shortening the life of the decking. That water stands beneath the synthetic decking and at the time of our inspection seemed to be the cause for some undulation in the decking surface. At some point in the future, when decking work is being performed the roof drain should be piped to daylight under the decking.

The retaining walls are in an obvious state of failure. The failure of these timbers is more of an aesthetic issue than it is structural. At some point in the future, the Board will want to replace these walls with something more aesthetically pleasing. At this point, additional minor grading and drainage improvements along with roof drain piping can also be performed.

**Pavements:**

The pavement is of an unknown age. It appears to drain well and has been well maintained over the years. No additional work is recommended at this time.

**Opinion of probable construction costs:**

Roofing (cost range from August 2014 report)	\$86,000 to \$103,000
Timber column (remove and replace identified members)	\$12,500
Stucco repair/rehab (select areas)	\$9,800
Paint wood siding, fascia, soffit	\$22,000

**Inspection Findings and Recommended Solutions**

- Overall Roof Deck  
The roofing system consists of large flat areas (1/4" per foot slope) and smaller steeply sloped metal roof deck areas. The finish on the flat sections is Carlisle 45 mil single ply EPDM (ethylene propylene diene monomer) membrane and the finish of the sloped sections is metal roofing with exposed fasteners.

As detailed in a previous report to the Wood Creek HOA from SGM (August 2014) it is recommended that the EPDM sections of roofing be replaced in the near future. The condition of the sloped metal portions of the roof is fair to a point that it is not a threat to the integrity of the building. Replacing the metal roofing is a matter of aesthetics and economy of scale. In order to facilitate proper flashing and eliminate the need to do a second metal only roofing

project in the future, we recommend that both the single ply and metal roofing be replaced and be warranted at the same time by the same contractor.

Additional findings on the roof extended beyond the roofing materials. All further findings are detailed by section of roof below:

- o Roof deck number one:

Roof deck number one is the section at the highest elevation on the north side of the building (see attached drawing for further clarification). Two deficiencies were identified in this section of roof. The first concern (photo 1) is large cracks that have developed in the triangular regions of stucco where the roof transitions from flat to sloped. These cracks are a somewhat open conduit to the interior framing of the building. The second concern (photo 2) is the flashing at the base of the fireplace chimneys is loose and not well flashed into the metal siding of the chimneys. This could allow water to infiltrate to the interior structural aspects.



1. Cracks in the stucco siding. The metal roofing can be seen below the stucco



2. Improperly installed and aged flashing. This will be replaced as part of the roofing replacement.

The flashing as shown in photo 2 will be replaced and counter flashed to the chimney as part of the re-roofing project. Options to repair the cracking in the stucco can include patching to extend the service life of the existing material repaired as part of an overall larger stucco repair project or could be replaced with a different siding material based on aesthetic considerations.

Our recommendation is to properly repair this stucco area and use more robust corner detailing common to stucco construction. It is also recommended to sand, prep and paint all the wood soffit and fascia around the roof perimeter (this is common with all roof deck sections).

- o Roof deck number two:

Roof deck number two is the section on the east side of the building. The only deficiency found on the section of roofing is the same problem with the flashing on the fireplace chimneys. The same solution of replacing this flashing and ensuring it is flashed and counter flashed into the metal siding on the chimneys is recommended. It is also

once again recommended that all wood fascia and soffit be sanded and repainted. At the level of this roof the top of a column is also exposed (photo 3). It is recommended that this exposed wood is properly capped when the fascia and siding is sanded and repainted.



3. The exposed top of column



4. An example of an electrical conduit that will need to be removed and replaced

Work in this area is complicated by the presence of an electrical conduit along with gutter, and snowmelt cable. In order to properly sand and paint the fascia and soffit the conduit, gutter, and cables should be removed and then reinstalled (photos 4 & 5). It is also recommended that the snowmelt cables be replaced by a product that can be placed underneath the new EDPM layer. These products are at less risk of being damaged as they are not exposed to the environment. The down side is that they can be harder to repair. Heated Roof Systems Inc. from Aspen Colorado has a radiant heat mat ff



5. An example of the snowmelt cables that could be replaced.

- Roof deck number three:

Roof deck number three is the section on the west side of the building. It also includes the narrow walkway to section number two. The stucco along this walkway is in good condition. This section also contains areas of sloped metal roofing in fair condition.

Like the previous two sections the concerns in section number three are about the flashing. It is again recommended (and it is typically standard when re-roofing) that flashing be replaced when the roof is replaced. Similar to elsewhere all wood fascia and soffit should be sanded and repainted. Flashing also needs to be replaced where there is a step down in between sections two and three. Gutter and snowmelt cables are also present in this section and should be removed for painting and roof (photo 6).

One unique aspect of this section is the elevator shaft. The flashing on it should be replaced, it should be reroofed, and it should be given an improved slope to enhance drainage. The Grace Ice and Water Shield (photo 7) is only a temporary flashing solution.



6. The step down between roof decks two and three that should be replaced



7. A section of the elevator shaft

- Roof deck number four:

Roof deck number four is the section on the south side of the building that is at the lowest roof elevation. It is the section where the access door is located. The wall stucco in this section is in good condition. This section is similar to the rest in that the flashing should be replaced, all wood fascia and soffit should be sanded and repainted, and the gutter and snowmelt cables will need to be removed and then reinstalled or replaced.

When the fascia and soffit are replaced on this roof deck there is also an exposed beam that should be inspected. It is on the southwest side of the section and appears to have dry rotting and cracking occurring (photo 8 – next page). It was not inspected for safety reasons, but it appears and the beam condition may warrant replacement. During painting we should take a closer look. The access door jamb also needs to be sanded and repainted and then flashing around it needs extra attention when being replaced (photo 9 – next page).



8. Exposed beam that appears to have dry rot and cracking



9. Door jamb that should be sanded, repainted, and have flashing replaced

- Stucco and wood siding  
The stucco siding that was used on the majority of the building is in acceptable condition. Certain areas at the lower elevations do need attention however. While the majority of the building just needs routine maintenance and patches, there is one area where additional structural repairs need to be completed. .

The area that needs additional work is on a stucco covered concrete wall on the east side of the building (photos 10 & 11). The stucco was installed on both a vertical and horizontal surface over a concrete wall in this area. The horizontal surface (top) allowed water to penetrate and work between the wall and vertical stucco. This in turn leads to freeze thaw conditions because there is no way for the water to drain. The concrete substrate under the stucco is beginning to break apart and fail due to the freeze thaw action. It is SGM's recommendation that the stucco should be completely removed from this wall. The wall surface should be refinished with an epoxy grout material, and sealed to prevent further freeze thaw damage. The concrete wall could be left as exposed "finished" concrete or the stucco reapplied with better detailing at the top.



10. Water within the concrete. This results in freeze thaw damage.



11. Damage down the side of the wall due to water infiltration

Other stucco areas that need to be addressed are readily visible and described below. Some areas of note that need this work done are above the retaining wall just to the north of the porte-cochere, portions of the north and east sides of the building, and one small section on the south side of the building. Near the porte-cochere there is no barrier between the earth and the stucco siding. When this section of stucco siding is replaced a barrier or type of flashing should also be installed to avoid the infiltration of water. The total area in need of stucco repairs is approximately 600 square feet.



12. Stucco siding exposed to the ground surface



13. Large crack on the north side of the building



14. Area on east side of building in need of stucco rehabilitation



15. Small section on the south side of the building in need of rehab

- Stairwells:

There are two main stairwells within the structure. The stairwell that will be addressed first is located on the south side of the building. There were two deficiencies identified in this stairwell that need to be addressed. The first concerns the stringer on the side of the stairs closest to the courtyard between levels four and five. The bottom of this stringer appears to have been consistently exposed to pooled water and the bottom section of it has begun to show signs of dry rot (photos 16 & 17). The second concern is the hand railing nearest to the courtyard between levels three and four has begun to rot severely at the bottom end of it.

The stairway stringer is in a borderline condition. The deterioration could be limited to just the top surface, it is hard to tell without removing paint and really examining. This element should

be further examined, when paint can be removed, and may be able to be restored. However, it may also make sense to replace this member when column elements are being replaced.

The replacement of the handrail and repainting of all members are not integral to the structural integrity of the building but could be safety concerns. Handrail replacement is a building code and an aesthetic issue while the repainting of all members will extend their service lives. It is our understanding that the board is well aware of the handrail code requirements.



16. Dry rotting stringer due to pooling of water



17. Rotted out handrail

The other stairwell is located on the west side of the building. There were no major structural concerns within this stairwell. It is recommended that all wood members be sanded and repainted in order to extend their remaining service lives. It is also recommended that an oil base primer and latex paint be applied to the base of all stringers when they are sanded and repainted in order to help extend their service lives.

- Columns:

The on-site inspection found six columns that pose a potential problem to the structure. The first of these columns bears in the concrete of the second floor next to the bike rack that is to the north east of the porte-cochere. The bottom of this column is in the beginning stages of dry rotting, but has not advanced to the point that it should be replaced. It is recommended that the lower portion of this column be scraped well, sanded, and then repainted to prevent further dry rot. As with the stringers in the stairwells, an oil based primer and latex paint should be used to keep as much moisture from penetrating the wood surface as possible.



18. Dry rot at the base of the column north of the porte-cochere



19. Intersection between stairwell column and garden timber retaining wall

The next column in question is a continuous glulam on the outer corner of the south staircase. At the base of this column a timber retaining wall intersects with the column on two sides (photo 19). This leads to moisture getting trapped between the timbers of the wall and the column, which increases the chances of dry rot occurring in the column. It is recommended that a protective barrier be installed at the end of the retaining wall to create a gap between the retaining wall timbers and the column so that there is an air gap between the two and the column is able to dry.

Each of the other four columns are in a condition that warrant replacement. The first is located on the south stairwell directly to the west of the column that was just discussed and it bears on a concrete footing in the garden. This column has evidence of both dry rot and crushing. It appears to have begun to split previously and bolts were installed near the base to prevent further splitting. It is recommended that this column is removed from the elevation of the second floor down and replaced. This will require a splice to be installed where the old columns meets the new replacement column.



20. Crushing, dry rot, and splitting in a column in the south stairwell



21. Previously installed bolts in a column in the south stairwell

The final three columns are all very similar in that they are at an advanced stage of dry rot, but have an existing splice and a height of about five foot from the base of the column. The first of these columns is at the northeast corner of the building, the next is at the southwest corner of the building, and the final one is the next column to the east of the southwest column. In each of these cases it is recommended that the column be removed up to the current splice and replaced.

For this task temporary shoring will be required to be installed to allow the removal and replacement of the members. There are a number of quality and trusted contractors in the Crested Butte and Gunnison area that are qualified to do this work. We would recommend soliciting for bids from selected contractors. The selected contractor should have the proper insurance limits, project bonding capability and a track record of similar project experience.



22. Dry rot in a column



23. Dry rot in a column

- Decking:

The synthetic decking in the courtyard area that extends to the hot tub area is in fair condition. The decking does show signs of moisture absorption and some areas appeared “spongy” under foot. The photos below (photos 24 and 25), if viewed in a color photo, show darker areas indicative of moisture saturation. Most likely the moisture problem is a combination of the roof drainage into this area and overall lack of drainage below the decking. At this time we can’t say that this is a structural issue, more of an aesthetic issue. The moisture problem will reduce the life of the decking and the condition of the sub structure is unknown. At some point within the next 5 years or so this should be addressed. It is also recommended that when the decking is replaced the roof and area be drained to daylight (Wood Creek perhaps).



24. Roof down spout and lack of area drain places water below deck and within timber retaining wall.



25. Moisture within the decking stairway evident by dark areas. It should be noted that the paint on the timbers will hold moisture and prevent the timbers from drying.

- Site Grading and Drainage:

During this on-site inspection there were several areas with drainage deficiencies. There were three areas at which the drainage was poor due to drain pipe outlets from the roof. The first of these is in the large garden in the courtyard. This is not an ideal place to have a drain outlet because of the large amounts of water draining from the roof produces a larger amount of water than can be saturated into the garden soils. This results in the water draining under the deck which poses a potential problem to its structural integrity. The other two potential problems are to the west and east of the hot tub deck. These drain pipes empty into the yard directly next to the building. Once again because of their close proximity to decking each has the potential to flow underneath the decking and causes problems with the structure.



26. Drain pipe into garden above decking



27. Drain pipe into yard next to porch

It is recommended that when the decking is eventually replaced a small pipe network is installed underground which will allow for the water from each of these drainpipes to be rerouted into Wood Creek.

The other drainage issue is to the right of the main entrance on the west side of the building behind the retaining wall. The crest of the hill behind the retaining wall is located in an area that creates a low spot at the intersection of the retaining wall and the structure. This has resulted in deterioration of the retaining wall and an excess amount of water around the foundation.



28. Moss growth where water is draining down the backside of the retaining wall.

It is recommended that the grade in this area is adjusted so that all water flows away from the retaining wall and building. This will lead to longer life spans for both the retaining wall and building substructure in this area.

- Retaining Walls:

All of the timber retaining walls around the structure are nearing the end of their service lifespans and will eventually need to be replaced. This is an aesthetic issue more than a structural issue as none of the retaining walls are an integral part of the structure of the building or are tall enough to pose a safety threat. Despite this they will all have to be replaced in the near future because of the dry rot that has eaten away at the timbers these walls are built of. Another problem these walls are facing is that the paint on them has exacerbated the dry rot problem by sealing moisture within the timbers.



29. Dry rot in retaining wall to south of main entrance



30. Dry rot in retaining wall north of main entrance

It is the walls be replaced with a material that has a better resistance to water damage than wood. Potential options could include stone, boulders or a Redi-Rock wall.

# **Wood Creek Lodge Column Testing Results**

**RESISTOGRAPH TESTING RESULTS AND RECOMMENDATIONS**

**April 9, 2015**

PREPARED BY

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During previous site visits to Wood Creek Lodge it was determined that further testing on the structure's columns and stairway stringers was needed to determine their structural integrity. This further testing was completed on Thursday, February 19<sup>th</sup>, 2015 through the use of a resistograph and visual inspection. A resistograph is a hand drill mounted machine with a thin needle inside that, when drilled into a wooden member, measures the resistance of the wood on the needle to give an accurate reading of the strength remaining in the wooden member. Results of this test are plotted onto a special type of paper used for resistographs, an example of which is shown below. This example result is that of a column with good structural integrity. This is evident because the graph of resistance never approaches zero for an extended period. Fluctuations in resistograph results, even if it approaches zero momentarily, represent the various growth rings within the wood and are not of concern to the woods structural capacity or strength.

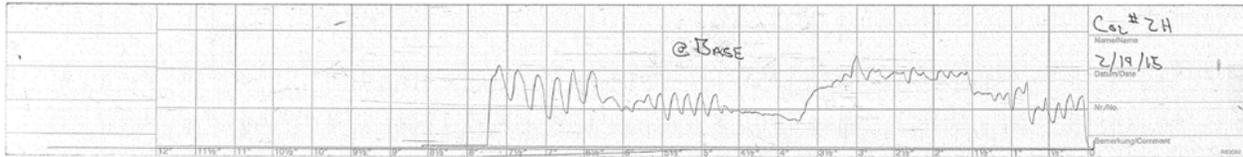


Figure 1: Example of Good Resistograph Results

In order to quantify the results of the resistograph testing a ratings scale from 1 to 5 will be used, with the following designations for each rating. A rating of 1 means the column or stringer exhibits little or no structural deficiency; 2 means there are minor signs of rotting but testing reflects that column or stringer still maintains the majority of its strength; 3 means the column or stringer is beginning to lose structural capacity and should be replaced in the next 12 to 24 months; 4 means the column or stringer has lost significant structural capacity and should be replaced in the next 3-6 months; 5 means the area needs to be immediately closed to the public.

The majority of the columns and stringers at Wood Creek Lodge rate as a 1 on this scale. A full list of columns and stringers that were tested and rate as 1s can be provided upon request. There were no structural members at Wood Creek Lodge that rated as a 5. The columns and stringers that rated from 2 to 4 will be presented in order, with ratings, from those with the most remaining structural capacity to those with the least. For the purposes of describing the locations of the columns and stringers the side of the building with the porte-cochere and main entrance will be referred to as the west side of the building.



Figure 2: Rot on Column Exterior and Dirt Piled on Top of Column

The first column in question is located near the southwest corner of the building and is rated as a 2. This column failed a visual inspection for rot, as a piece of wood easily chipped away from the column when prodded at with a knife. The resistograph yielded much different results than the visual inspection, however, as the column was tested three times at different heights and in each direction. Each of these tests showed the column to be in good condition from a structural standpoint on both the outer and inner layers. Because of this it was determined that while some of the outer portion of the column has begun to rot, the majority of it is in acceptable shape and it does not need to be replaced. The small amount of rot on the outside of this column can be

attributed to the portion of the column being partially covered by a dirt pile. It is the recommendation of SGM that the dirt be removed from around the base to keep it dry and that it be monitored for further rot.

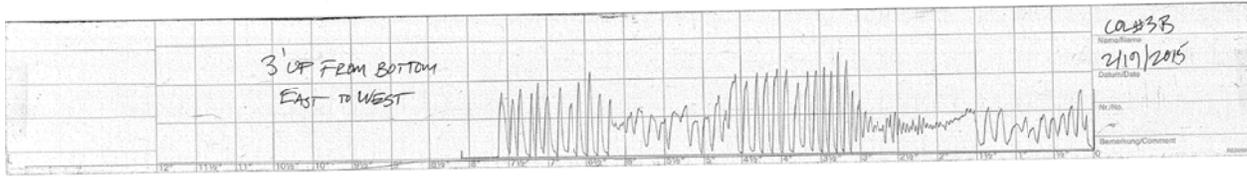


Figure 3: Resistograph Results Showing Column has Maintained Structural Capacity



Figure 4: Rot and Moisture at Base of Stringer

The first structural member to be given a rating of 3 is the stringer closest to the center of the building on the top flight of stairs in the southernmost stairwell. It is visually apparent that rotting has started at the base of this stringer, most likely due to water pooling there. Tests from the resistograph confirmed that the top side of the stringer at the base has begun to rot, but that the rest of the column has maintained its structural capacity. According to the results the top three inches of wood at the base of the column have begun to rot, but at mid-height at the base and at the midpoint between the base and top the column is still structurally sound. It is recommended that this stringer be replaced, and the new stringer be better protected from water at its base.

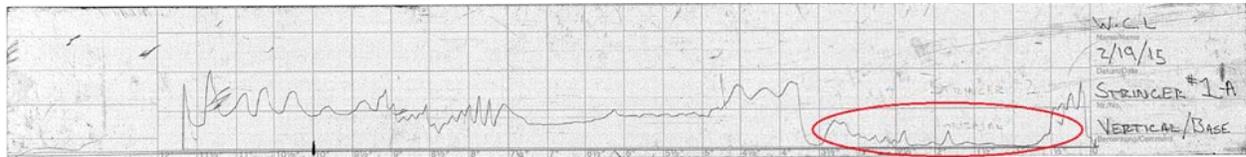


Figure 5: Resistograph Results. Circled Area Shows Rot in First Three Inches of Wood

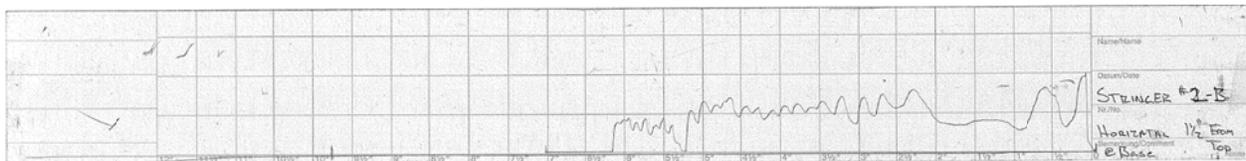


Figure 6: Resistograph Results Showing Maintained Structural Capacity in Center of Stringer

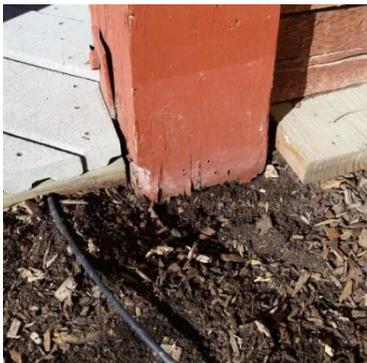


Figure 7: Rot at Column Base

The next column is located on the south side of the building in the first garden area to the east of the hot tub. The column has been given a rating of 3. This column also sits in the dirt of the garden bed which has caused it to rot. The outer portion of this column passed the visual examination and appears to be in good condition, but the resistograph testing revealed that the wood at the heart of the column has begun to rot. The center of a column provides a large portion of its structural capacity and if this column were left it would continue to rot from the inside out. It is recommended that this column is replaced and the base of it is elevated out of the dirt in the garden so it remains dry.

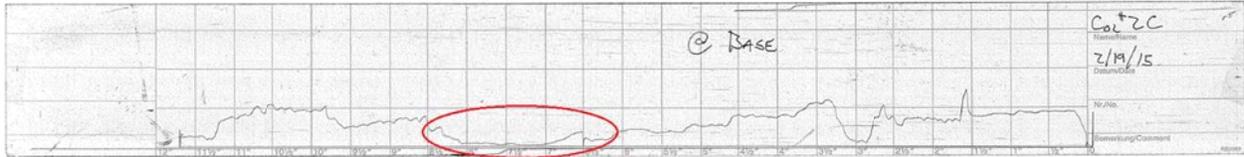


Figure 8: Resistograph Results. Circled Area Shows Rot at Center of Column

The first of two columns to receive of a rating of 4 is located on the northeast corner of the building. This column is exhibits rot at both the base and top. The second section of this column, which starts at the level of the second floor balcony, has also begun to rot. It is recommended that each of these sections of column is replaced, with the base of the first floor columns being elevated so it is not sitting in the snow. It is also recommended that the splice between these columns, which currently sits level with the porch, is redesigned and moved either below or above the level of the porch. This is recommended because the current design has been trapping water within the splice and accelerating the rotting of the wood. Because water has been trapped within that splice it is also recommended that the substructure of second floor balcony is examined when the column is replaced. There is evidence on the exterior of the balcony that there is rotting in the substructure, but this cannot be fully evaluated without destructing a portion of the balcony.



Figure 9: Existing Splice in Column at Balcony Level



Figure 10: Rot on Underside of Balcony

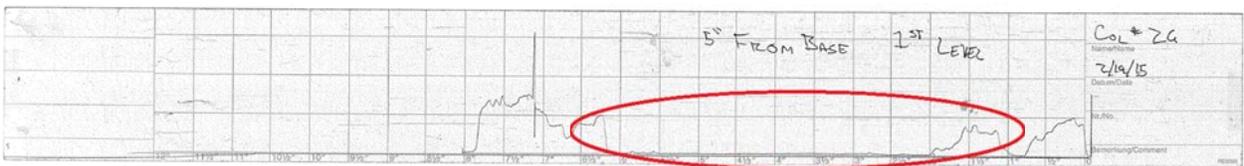


Figure 11: Resistograph Results Showing Rot Inside the 1<sup>st</sup> Floor Column

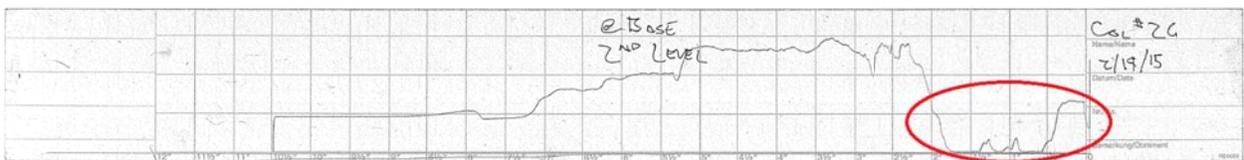


Figure 12: Resistograph Results Showing Rot Inside the 2<sup>nd</sup> Floor Column

## Resistograph Testing Results

The final column that is being recommended for replacement has a rating of 4 and is located on the east stairwell at ground level. It is the column on the southwest side of stairwell and the base of rests against ties to the retaining walls for the garden. Resistograph testing showed that this column is almost entirely rotted up 8 inches from the base. It is recommended that this column be replaced up to the level of the first floor and spliced there. It is also recommended that when this column is replaced space is left between the garden retaining walls and the new column so that dirt and water are not in direct contact with it and it can remain dry.



Figure 13: Resistograph Results Showing Significant Rot at Base of Column

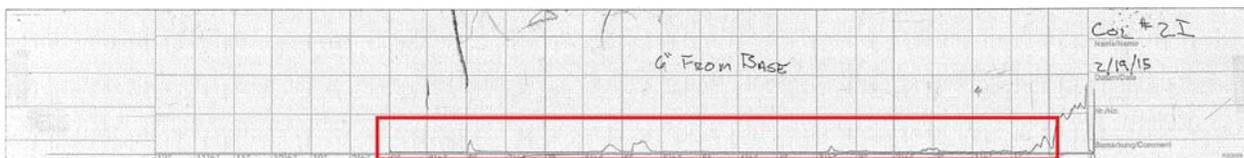


Figure 14: Resistograph Results Showing Significant Rot 6 Inches from Base of Column

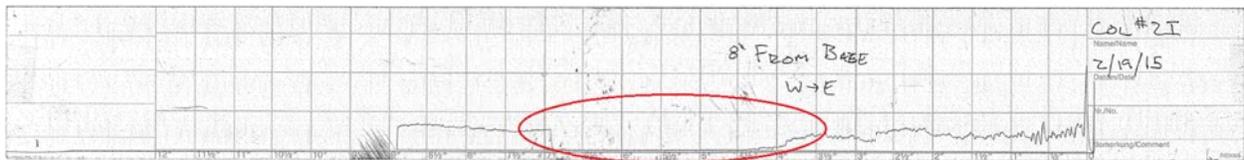


Figure 15: Resistograph Results Showing Rot at Center of Column 8 Inches from Base

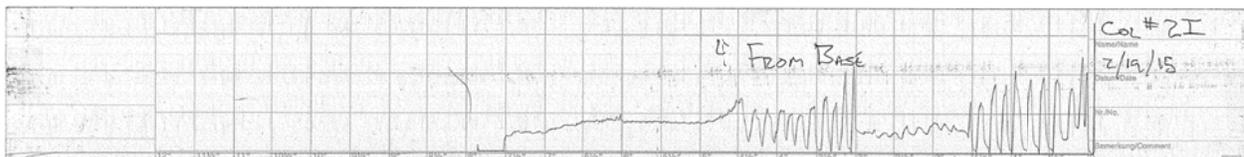


Figure 16: Resistograph Results Showing no Rot 4 Feet from Base of Column