Deer Valley Estates
Bayfield, CO

Long Term
Road Maintenance Plan

Approved by the Board:

November 18, 2020

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ROAD MAINTENANCE COMMITTEE

The RMC was initially an ad hoc committee that was appointed by the Board in 2019. The committee consisted of three members, two of which were board members. The first year the committee developed a request for proposal process to solicit bids, and ultimately select a contractor to conduct the road maintenance. The gravel and road chemical were not part of the bidding process due to the lack of contractors. It was learned early on that we do not have the budget to complete the maintenance equally on all the roads every year. In August of 2019, the Owners passed an increase to the Association dues, which is intended to be allocated to road maintenance each year.

In 2020 the Committee further revised the Request for Proposal and further defined the work to be completed but were still unable to complete maintenance on all our roads. At this point we developed a schedule of rotating through the roads with the hopes that we would ultimately be able to have the same thickness of gravel and the same chemical applied to all our roads within 5 years.

After the 2020 road maintenance was completed the Committee met to review the work that was completed, and to document improvements and lessons learned. (attached as appendix A). During this meeting, we discussed having the Committee as a standing committee with a Board member and two members at large. This would allow a more streamlined process of developing the RFP for each year's work, and possibility of developing a multi-year contract. This would also allow better communication between the RMC, the contractors, and the Board. In October 2020, the Board approved the Road Maintenance Committee as a standing committee, with two Board members and three members at large.

This plan documents the RMC recommendation of road maintenance for all our roads, along with the rotation of the maintenance. The plan was developed from past years' lessons learned, and discussions with our current road maintenance contractor.

INTRODUCTION

Deer Valley Estates consists of approximately 4 miles of gravel roads that require regular maintenance. DVE has a limited budget, that prohibits the maintenance of all the roads every year. The RMC has developed a multi-year plan that ensures our roads are receiving regular maintenance while staying within the road maintenance budget.

In our end of maintenance meeting the RMC developed terms to define our roads as follows

- Main:
  - Lower Beaver Creek to the intersection of Elk Valley (1.28 mi)
- Intermediate:
  - Upper Beaver Creek (Intersection of Elk Valley to Cul-de-Sac) (.5 mi)
  - Elk Valley (.63 mi)
  - Sawmill (.25 mi)
  - Wieland (.52 mi)
- Feeder:
  - Log Cabin (.07 mi)
  - Spur (.16 mi)
  - Stagecoach (.12 mi)

These definitions are based on the amount of traffic each road receives, and the length of the road itself.

ROAD MAINTENANCE GOAL AND OBJECTIVE

The goal of this plan is to provide the highest possible level of service within the available resources that preserves the Owners' investment into our roads and to have all of our roads with a minimum of 3 inches of gravel and bound with Road-Loc within five years.

The objective and goal for the maintenance of our roads is to ensure they are properly maintained to withstand the forces of nature and traffic until the next maintenance cycle by

- having the proper crown of 3-5%,
- ditches have the appropriate drainage,
- controlling fugitive dust, and
- the road will handle 20 mph traffic

ROAD MAINTENANCE SPECIFICATIONS

Each road shall be bladed with a 3-5% crown to allow drainage of rain waters with adequate drainage ditches on each side. Gravel shall meet La Plata County requirements and is defined as "3/4 minus ABC" or "CDOT Class 6". All roads will have a binding chemical applied as specified in this plan. Prior to the application of any chemical the moisture content of the road shall be 5-7%.

The RMC should determine the amount of gravel in tons and therefore truck loads needed which will determine the costs of the gravel. The RMC has found there are several different formulas used to calculate the amount of gravel needed, and formulas may vary from contractor to contractor. After conducting research and consulting with the road contractor we have determined the industry standard used to calculate the needed gravel. The calculations for gravel shall be based the formula below.

(length ft.) (Width ft.) (depth conversion)/27= cubic yards (1.8) = Tons

Depth conversion is determined by dividing the desired thickness by 12. (i.e. 2/12=.16)

The binding chemical shall be calculated based on the cubic yards, with an application rate of .5 for roads receiving new gravel, and .3 for roads that do not receive any gravel. Once the total amount of chemical has been determined a 10% increase shall be added to ensure adequate amount of chemical is onsite to ensure all roads have the proper amount of chemical applied.

One of the major lessons the RMC learned is not to blade roads that are not receiving any new gravel. In 2020 we tried to blade several roads to get the proper crown but there was not enough gravel to complete which left the road in worse shape than it was prior to the blading. By blading without enough gravel caused some of the 3-inch road base to be bladed to the surface. This may change as more gravel is added and the driving surface is adequately above the road base.

ROAD MAINTENANCE ROTATION

The following rotation is recommended from the RMC, attached as appendix B is the anticipated costs for each year.

Year 1 (2020)

Upper Beaver Creek .61 mile (2" Minimum new gravel) (pavement to cul-de-sac)
A total of .61 mile (3220.8 LF) of Beaver Creek Drive shall have a minimum of 2" of the above described gravel, with a crown and drains and then compacted with minimum of a 20,000 lb. roller compactor prior to the application of the DMC Blend by Desert Mountain. The DMC Blend shall have an application rate of .5. The work shall begin from edge of pavement at top of "Romere Hill" and continue to the end of Beaver Creek at the cul-de-sac. The contractor shall ensure that ditches provide proper drainage.

Wieland Dr. .52 mile (2" Minimum new gravel)
A total of .52 miles (2746 LF) of Wieland Drive shall have a minimum of 2" of the above described gravel applied and bladed with a crown and drains, and then compacted with minimum of a 20,000 lb. roller compactor prior to the application of the DMC 730 by Desert Mountain. The DMC Blend shall have an application rate of .5. The contractor shall ensure that ditches provide proper drainage.

Elk Valley .63 mile (2" Minimum new gravel)
A total of .63 mile (3326LF) of Elk Valley Road shall have a minimum of 2" of the above described gravel applied and bladed with a crown and drains, and then compacted with minimum of a 20,000 lb. roller compactor prior to the application of the DMC 730 by Desert Mountain. The DMC Blend shall have an application rate of .5. The contractor shall ensure that ditches provide proper drainage.

Sawmill .25 mile (1" Minimum new gravel)
A total of .25 mile (660LF) of Sawmill Road shall have a minimum of 2" of the above described gravel, with a crown and drains. and then compacted with minimum of a 20,000 lb. roller compactor prior to the application of the DMC Blend by Desert Mountain. The DMC Blend shall have an application rate of .5. The contractor shall ensure that ditches provide proper drainage.

Spur Lane, Stagecoach Rd, and Log Cabin .6 mile total (no new gravel)
Spur Lane, Stagecoach Road, and Log Cabin Lane .6 mile (3169 LF) shall be bladed with a crown and drains, and then compacted with minimum of a 20,000 lb. roller compactor prior to the application of the DMC Blend by Desert Mountain. The DMC Blend shall have an application rate of .3. The contractor shall ensure that ditches provide proper drainage.

Lower Beaver Creek received no work.

Year 2 (2021)

Lower Beaver Creek 1.28 mile (1" Minimum new gravel)
A total of 1.17 mile (6758.4 LF) of Beaver Creek Drive shall have a minimum of 1" of the above described gravel, with a crown and drains. The section of Beaver Creek from the Intersection of Elk Valley to the pavement shall have no new gravel applied. The gravel on all of Lower Beaver Creek shall than be properly blended with Road Loc and then compacted with minimum of a 20,000 lb. roller compactor. The Road Loc shall have an application rate of .5. The work shall begin from edge of pavement at the entrance to the Elk Valley intersection excluding paved sections. The paved areas of Beaver Creek shall be assessed for needed maintenance (cracks filed, resurfacing, resealing), The contractor shall ensure that ditches provide proper drainage.

Spur Lane .16 mile (2" Minimum new gravel)
A total of .16 miles (845 LF) of Spur Lane shall have a minimum of 2" of the above described gravel applied and bladed with a crown and drains, and then compacted with minimum of a 20,000 lb. roller compactor prior to the application of the DMC 730 by Desert Mountain. The DMC Blend shall have an application rate of .5. The contractor shall ensure that ditches provide proper drainage.

Stagecoach .12 mile (2" Minimum new gravel)
A total of .12 mile (634 LF) of Stagecoach Road shall have a minimum of 2" of the above described gravel applied and bladed with a crown and drains, and then compacted with minimum of a 20,000 lb. roller compactor prior to the application of the DMC Blend by Desert Mountain. The DMC Blend shall have an application rate of .5. The contractor shall ensure that ditches provide proper drainage.

Log Cabin .07 mile total (2" Minimum new gravel)
Log Cabin .07 mile (370 LF) shall be bladed with a crown and drains, and then compacted with minimum of a 20,000 lb. roller compactor prior to the application of the DMC Blend by Desert Mountain. The DMC Blend shall have an application rate of .5. The contractor shall ensure that ditches provide proper drainage.

Upper Beaver Creek, Wieland Dr, Elk Valley, and Sawmill have no road maintenance conducted other than emergency repairs.

Year 3 (2022)

Upper Beaver Creek .5 mile (1" Minimum new gravel) (pavement to cul-de-sac)
A total of .5 mile 2640 LF) of Beaver Creek Drive shall have a minimum 1" of the above described gravel, with a crown and drains. The gravel shall than be properly blended with Road Loc and then compacted with minimum of a 20,000 lb. roller compactor. The Road Loc shall have an application rate of .5 The contractor shall ensure that ditches provide proper drainage. The contractor shall ensure that ditches provide proper drainage.

Wieland Dr. .52 mile (1" Minimum new gravel)
A total of .52 miles (2746 LF) of Wieland Drive shall have a minimum of 1" of the above described gravel, with a crown and drains. The gravel shall than be properly blended with Road Loc and then compacted with minimum of a 20,000 lb. roller compactor. The Road Loc shall have an application rate of .5. The contractor shall ensure that ditches provide proper drainage.

Elk Valley .63 mile (1" Minimum new gravel)
A total of .63 mile (3326LF) of Elk Valley Road shall have a minimum of 1" of the above described gravel, with a crown and drains. The gravel shall than be properly blended with Road Loc and then compacted with minimum of a 20,000 lb. roller compactor. The Road Loc shall have an application rate of .5. The contractor shall ensure that ditches provide proper drainage.

Sawmill .25 mile (1" Minimum new gravel)
A total of .25 mile (660LF) of Sawmill Road shall have a minimum of 1" of the above described gravel, with a crown and drains. The gravel shall than be properly blended with Road Loc and then compacted with minimum of a 20,000 lb. roller compactor. The Road Loc shall have an application rate of .5. The contractor shall ensure that ditches provide proper drainage.

Lower Beaver Creek, Spur, Stagecoach, and Log Cabin have no road maintenance conducted other than emergency repairs.

Year 4 (2023)

Lower Beaver Creek 1.28 mile (1" Minimum new gravel)
A total of 1.28 mile (6758.4 LF) of Beaver Creek Drive shall have a minimum of 1" of the above described gravel, with a crown and drains. The gravel shall than be properly blended with Road Loc and then compacted with minimum of a 20,000 lb. roller compactor. The Road Loc shall have an application rate of .5. The paved areas of Beaver Creek shall be assessed for needed maintenance (cracks filed, resurfacing, resealing). The contractor shall ensure that ditches provide proper drainage.

Spur Lane .16 mile (1" Minimum new gravel)
A total of .16 miles (845 LF) of Spur Lane shall have a minimum of 1" of the above described gravel applied and bladed with a crown and drains, the gravel shall than be properly blended with Road Loc and then compacted with minimum of a 20,000 lb. roller compactor. The Road Loc shall have an application rate of .5. The contractor shall ensure that ditches provide proper drainage.

Stagecoach .12 mile (1" Minimum new gravel)
A total of .12 mile (634 LF) of Stagecoach Road shall have a minimum of 1" of the above described gravel applied and bladed with a crown and drains, the gravel shall than be properly blended with Road-Loc and then compacted with minimum of a 20,000 lb. roller compactor. The Road Loc shall have an application rate of .5. The contractor shall ensure that ditches provide proper drainage.

Log Cabin .07 mile total (1" Minimum new gravel)
A total of 07 mile (370 LF) of Log Cabin shall have a minimum of 1" of the above described gravel applied and bladed with a crown and drains, the gravel shall than be properly blended with Road Loc and then compacted with minimum of a 20,000 lb. roller compactor. The Road Loc shall have an application rate of .5. The contractor shall ensure that ditches provide proper drainage.

Upper Beaver Creek, Wieland Dr, Elk Valley, and Sawmill have no road maintenance conducted other than emergency repairs.

EMERGENCY REPAIRS

Emergency repairs are defined as those that are required to ensure road is drive able and has adequate drainage. (i.e., major erosion of roadway) This does not include potholes, washboards, etc. These repairs will be determined by the RMC.

REQUEST FOR PROPOSAL PROCESS

The RMC shall conduct a road assessment in late winter or early spring to assess the condition of our roads. Any roads needing repairs will be prioritized based on the needed repair, road type (main, intermediate, feeder) and projected cost of the repair. That year's plan may need to be modified to incorporate the repairs. The paved areas shall also be assessed for needed repairs, resurfacing, and/or resealing.

The RMC shall meet as early in the year as possible to develop that year's RFP. The RFP shall outline the required work, the specifications for such work, and the timeframe for the road work. The RFP process should be completed as early as possible to ensure that there is adequate water in Beaver Creek to support the work, ensure that contractors are available to complete the work, and timely completion of the road work as to minimize the impact on residents.

REQUIRED EQUIPMENT

The RMC has determined that our road maintenance is best completed with the following equipment

- Road grader/motor grader (one with a slope meter is preferred)
- a minimum of a 20,000 lb. roller compactor.
- An adequately sized water truck(s) to apply water to the roads to meet the moisture content requirement.

SCHEDULED TIMELINE

The road maintenance should be completed in April or May prior to the summer months if possible. Late snow and freezes may impact this goal, but the RMC shall ensure adequate water flow in Beaver Creek prior to starting the road work. If there is not adequate flow to support the road maintenance, then that year's maintenance shall be postponed until the following year.

CLOSEOUT MEETING

Once the road work is completed, the RMC shall meet to discuss the completed road work, lessons learned from that year's process, and to develop a written report that shall be forwarded to the Board. The report shall include the following

- A self-evaluation of the committee
- An evaluation of each contractor's performance (road work, gravel, and chemical)
- Review and Finalize invoices.
- Any recommendations for the following year's work.

APPENDIX

APPENDIX A: 2020 Lessons Learned

APPENDIX B: Cost Projections

2020 Road Committee Report and Notes

Proposed Organization and Operations of the Committee

1. We propose a consistent naming plan for our roads based on usage and how they are maintained as well as GPS determined distances as follows:

   Main Road - Lower Beaver Creek from entrance to junction with Elk Valley (1.28 mi (excludes asphalt))

   Intermediate Roads – Elk Valley (.63 mi), Sawmill (.25 mi), Upper Beaver Creek (.50 mi) and Wieland (.52 mi)

   Feeder Roads – Log Cabin (.07 mi), Spur Lane (.16 mi) and Stagecoach (.12 mi)

2. In conjunction with the Board's strategic planning, establish a 3-year work plan (current year plus two) so that decisions in the current year flow into a plan for future years. We enacted the 2020 plan to include 2" of gravel on all the Intermediate roads plus Beaver Creek from asphalt to Elk Valley junction (.11 mi) and only shaping and DCM treatment for feeder roads with nothing done to remainder of Lower Beaver Creek. Our preliminary strategy for 2021 is to add gravel to remainder of lower Beaver Creek (1.17 mi) with Road Loc treatment as well as 2" of gravel on feeder roads with DCM treatment and nothing done to Intermediate roads. In 2022, the preliminary plan is to potentially add some gravel to a couple of the intermediate roads and treat with Road Loc and not do anything with the remainder of roads. It is clear that Road Loc treated roads on intermediates should last several years without any attention based on how Lower Beaver Creek has held up this past year. Our eventual goal will be to treat the main and all intermediate roads with Road Loc.

3. The Road Committee should be a standing Committee of the Board. The Chairman of the Committee needs to be the only Board member. The Chairman will begin meetings early in the new calendar year to divide up responsibilities for the Committee with frequent meetings of all members so that actual spring roadwork can begin in April or early May to ensure adequate water in Beaver Creek. (If adequate water is not available in Beaver Creek, road work will not take place.) In addition to the Chairman, it is hoped that at least 2 (two) and hopefully more Owners will participate. The Committee will determine the work plan for the roads each year and recommended strategy for the subsequent 2 years. The Committee shall plan all road work including the location and amount of gravel needed and purchase it directly from a supplier (C&J). The Committee will present one proposed work plan and budget to the Board for approval including cost of gravel, chemicals, and preparation along with any recommendations for new asphalt or maintenance of existing asphalt. The Committee will be responsible for securing and overseeing individual contracts for gravel, chemical treatment, preparation work and any asphalt treatment recommended. RFPs should be used to determine the best course of action for the Association when there are adequate numbers of service providers absent any Board authorized exceptions.

4. Committee may explore doing an RFP for a long-term contact (3-5 years) with the road work contractor, similar to what we do with snow plowing. That way each year we are only dealing with the gravel and

chemical and not having to worry about the equipment and labor side of things. This would flow nicely with the multi-year road strategy. We also recommend that we discuss whether there are any viable alternatives to gravel and chemical in our area and RFP any options next year.

5. Once work begins, we should stick with the original contract as much as possible. This will limit the times the Committee has to come before the board. It is recognized that there may be times that we need to amend the contract as work is progressing but doing so should only be done if it is deemed essential.

6. The Committee shall limit the number of people interacting with the contractors. This will limit the amount of confusion and frustration with the contractors and Committee members. Once the work begins there should be 1 or 2 Committee members assigned as representatives to communicate with the contractors. Board members should only communicate with the Committee members and not directly with the contractors. It is recommended that a Committee member meet with the preparation contractor(s) each morning to discuss any issues and what work they intend to accomplish each day. Having the Committee representative available for the contractor to ask questions, and address concerns immediately, helps with ensuring work is being accomplished in accordance with the RFP. The Committee can then communicate appropriately with the Board and/or Owners as deemed appropriate.

7. It is highly recommended that two Committee members work on the numbers as in calculations for gravel and chemical costs. We learned that one person can get too close to the numbers and overlook critical errors that can have expensive implications for the budget.

8. Once contracts are awarded the Committee should meet with the contractors to:
    a. Sign the needed contracts
    b. Clarify the scope of work
    c. Determine timeframes
    d. Secure Certificates of Insurance

9. The Committee will assign members to inspect the work daily and as it is being completed to minimize corrections needed near the end of the project. Changes required from such an inspection at the end of the day can be communicated to the contractor the next morning.

10. Once the work is completed the Committee should meet with the contractors to:
    a. Discuss any issues that arose during the work
    b. Have input from the contractor on improvements to future RFPs
    c. Finalize and approve the work as completed

11. At the end of the project, the Committee shall do a formal report to the Board out lining the results including a self-evaluation of the Committee, and evaluation of each contractor's performance and suggestions and recommendations for the following year work.

GRAVEL

1. One of the outcomes of the 2020 roadwork was the conclusion that the Committee needs to determine how much gravel to purchase and where to apply it. In past years this was determined by the preparation contractor and based on areas where the gravel was needed the most. This resulted in applying gravel in spot locations such that it was impossible to determine just how thick the gravel was without first grading them. With an increased budget and the plan to add gravel to full road segments in specific amounts (2") we now have the future ability to re-grade and crown those roads without adding more gravel. It should now be the responsibility of the Committee to determine which complete roads receive gravel. It was also determined from the RFP process that the Committee should contract directly with a gravel company to supply and haul the gravel.

    a. The Committee should determine the amount of gravel broken down by tons and therefore truck loads needed with the resulting cost for gravel. We found that there are several different formulas used to calculate these amounts, but that consistent use of the formula used by F&M Construction, which we understand is an industry standard, would result in less confusion with the contractors. Therefore, the Committee adopts the following formula:

    (Length of road in feet) X (width of road in feet) X (depth factor in feet*)/ 27 (or the number of cubic feet in a cubic yard) = cubic yards X 1.8 (a standard factor to convert cubic yards into tons for our type of gravel) = tons of gravel.

    * The depth factor is the number of inches of gravel desired divided by 12 (necessary to convert inches of depth into feet) Example 1"/12 = .08333 factor, 2"/12 = .1666 factor, 3"/12 = .25 factor

2. Delivery cost is a big factor in the cost of gravel and how it is hauled determines that cost. Only the main road is compatible with belly dump trucks due to the length and the inability to turn those trucks around easily. Hence, when adding gravel to any road except Lower Beaver Creek, we must factor in hauling that gravel with "10 wheelers" vs belly dumps. Each delivery method costs differently and hence needs to be factored into the total cost of the gravel.

3. The quality of the gravel is a big factor of consideration. We have purchased cheaper gravel in the past that did not comply with County standards and paid a big price with muddy gravel when wet. Gravel for our roads always needs to comply with County quality standards.

CHEMICALS

1. There are two main reasons that we use two different chemicals on our roads. Both treatments try to accomplish the objective of dust suppression and gravel stabilization.

2. Road Loc is a treatment that is mixed into the gravel as well as applied topically. It is more expensive than the alternative DCM, but it has also proven to be more durable. We have traditionally used Road Loc on the main road and DCM on all other roads. Our three-year plan is to begin treating the intermediate roads with Road Loc to ultimately reduce costs.
   Road Loc is more expensive because it not only costs more per gallon, but it requires mixing into the gravel with numerous applications as the gravel is graded and then also applied topically. Water content of the gravel is also a major factor in success. The chemical company determines the gallons

required for appropriate treatment based on length and width of road. Moisture content of the gravel of 5-7% is a key ingredient to success of this product.

3. DCM treatment is less expensive per gallon and is only applied topically once the roads are appropriately crowned and rolled. On new gravel, an application rate of .5 gallon per cubic yard is recommended with two passes of the applicator truck. An application rate of .3 can be used on existing gravel primarily for dust control purposes. We used .3 on Sawmill in 2020 on 2" of new gravel. It will be a good experiment to see how it holds up vs .5 used on the other intermediate roads. Moisture content of the gravel at 5-7% is a key ingredient to success with this product.

4. One of the difficulties experienced the last two years is running out of chemical before all the treatments were complete. Also, in past years there has been leftover chemicals that we were not charged for as the company took it back for a credit. We should get this agreed to up front with the contractor and order more than we expect to use so we do not run out. Additionally, we need to ensure up front with the supplier that there will be no "hidden" deliver or application fees due to our dead-end roads.

5. The Committee needs to provide maps of the subdivision delineating what kind of chemical, the application rate and how far toward the end of the roads it is to be applied. The Committee agrees that applications beyond the last driveway on roads that do not have a turnaround is not necessary. Additionally, it is agreed that roads with turnarounds need to have chemical applied in the turnaround.

PREPARATIONS

1. The preparation contractor is critical to the success for our road project each year. Not only are they the ones who blade the roads and shape the ditches, but they also serve as the quarterback of the project coordinating with the gravel supplier and chemical applicator. We have established that our goal on a finished road has a 3-5% finished crown for proper water runoff to avoid future potholes. To achieve this, a heavy motor grader that has a slope meter is most desirable and should be specified in any RFP.

2. Appropriate road preparation requires an adequate roller of at least 20,000lbs. For 2021 and before any RFP is produced, we need to have a discussion with Matt Foutz and Desert Mountain (DM) to determine what type of roller is most recommended. We have used vibrating steel drum rollers in the past which works great on DCM prepped roads. Our recollection from the past is that Desert Mountain has recommended a pneumatic roller on Road Loc treated roads because steel drum can cause rippling from the vibrations. We need to clarify this point and decide what to specify.

3. Each year the Committee needs to evaluate the adequacy of the ditches next to the roads and specify blading out those that are not functioning properly. This is necessary and inexpensive preventative maintenance as are ensuring that all culverts are clear.

4. We have learned that pine needles on the sides of the roads that may get mixed into the gravel during blading are not as much a problem as pinecones. Prior to blading or the placing of new gravel, the Committee needs to ensure that all pinecones are removed from the road surface. Cones in ditches are less of a problem as the blade can remove them without mixing into the road surface.

5. The Committee needs to provide appropriate maps to the contractor clearly delineating what work needs to be done on which roads.

6. Perhaps the most critical role the Committee can play in the whole process is frequent inspections as the work is being accomplished and most critically prior to final application of the chemicals. This not only ensures a good final product, but also assists the contractor in correcting things along the way as opposed to waiting until the end. The most urgent timing issue in the whole process is the final application of the chemical. This requires that all blading and rolling is complete and appropriate moisture is applied. There are usually three trucks from Farmington waiting for the go signal from the contractor. We do not want to hold up this process with final corrections. One such issue from the past is that there exists some lapping of gravel from the final pass of the blade leaving ridges on the opposite side lane from the final pass. Easy to correct, if there is time before the chemical application, but should be corrected before this critical time.

ASPHALT

1. Some may believe that the ideal roads for Deer Valley would be asphalt. This has been explored and the conclusion has been that they would be prohibitively expensive to create and that maintenance is not cost free. To date we have successfully applied asphalt to three areas of heavy use and or problematic terrain. These include the entrance from the highway to the bridge, the bridge to the Y at the dumpster and the 90 degree turn and hill on lower Beaver Creek. Each year the Committee needs to access as part of the road budget utilization whether any of our existing asphalt needs crack sealing and/or surface sealing.

2. Asphalt has proven to successfully solve many problems where it is applied. The Committee needs to evaluate each year whether funds exist to add asphalt to areas that continue to be problems. One in particular may be the sharp curve and hill on Wieland as an example.

3 Year Road Maintenance Outlook

*costs are 2020 pricing

2021 Plan

Main Receiving 1" of new gravel, and Road Loc
feeders getting 2 inches of new gravel and DMC Blend
Intermediates gets no work

	Miles	Length (FT)	Width (FT.)	Conv. Factor	Cubic Yard	Tons	Trucks loads	Cost/road
Lower Beaver Creek	1.17	6178	19	0.083	361	650	27.1	$ 10,393.30
Spur	0.16	845	18	0.166	96	172	10.8	$ 2,995.10
Stagecoach	0.12	634	18	0.166	72	129	8.1	$ 2,247.21
Log Cabin	0.07	370	18	0.166	42	75	4.7	$ 1,311.47
Total	**1.42**	**7498**			**540**	**971**	**48.3**	
				Total Gravel	**$ 4,856.00**		**$18,558.69**	**$ 16,947.08**

Chem	LF	Cost/LF	Total
DMC	**1849**	**$1.10**	**$2,033.90**
Stagecoach	634	**$1.10**	$697.40
Spur	845	**$1.10**	$929.50
Log Cabin	370	**$1.10**	$407.00
RoadLoc	**6758**	**$1.84**	**$12,434.72**
Lower Beaver Creek	6758	$1.84	$12,434.72
Application Fee			
$110.00 per hour 2 Hour minimum			**$220.00**
	Sub Chemical		**$14,688.62**
	Sales Tax(2.9%)		$425.97
	Total Chemical		**$15,114.59**

Estimated Costs*	Actual Costs*
Chem/Gravel Total	
$34,561.54	**$ 32,031.67**
Equipment/Labor	
$17,000.00	**$15,300.00**
Total	
$51,561.54	**$ 47,361.67**

2022 Plan

Intermediates receiving 1 inch of new gravel and Road Loc all other receive no work

	Miles	Length (FT.)	Width (FT.)	Conv. Factor	Cubic Yard	Tons	Trucks loads	Cost/Road
Elk Valley	0.63	3326.4	18	0.083	194	350	21.9	$6,076.31
Wieland	0.52	2746	18	0.083	152	274	17.1	$4,752.09
Upper B.C.	0.5	2640	18	0.083	146	263	16.4	$4,568.65
Sawmill	0.25	1320	18	0.083	37	66	4.1	$1,142.16
Total	**1.9**	**10032**			**529**	**951.9**	**59.5**	
				Total Gravel	**$4,759.49**		**$22,847.91**	**$16,539.21**

Chem	LF	Cost/LF	**Total**
RoadLoc	**10032.4**	**$1.84**	**$18,459.62**
Elk Valley	3326.4	**$1.84**	$6,120.58
Wieland	2746	**$1.84**	$5,052.64
Upper B.C.	2640	**$1.84**	$4,857.60
Sawmill	1320	**$1.84**	$2,428.80
Application Fee			
$110.00 per hour 2 Hour minimum			**$220.00**
	Sub Chemical		**$18,679.62**
	Sales Tax(2.9%)		$541.71
	Total Chemical		**$19,221.32**

Estimated Costs*	Actual Costs*
Chem/Gravel Total	
$42,069.24	**$35,760.54**
Equipment/Labor	
$17,000.00	**$15,300.00**
Total	
$59,069.24	**$51,060.54**

2023 Plan

Main and Feeders receive 1 inch of new gravel, and Road Loc all others receive no work.

	Miles	Length (FT.)	Width (FT.)	Conv. Factor	Cubic Yard	Tons	Trucks loads	Costs/Road
Lower Beaver Creek	1.28	6758.4	19	0.083	395	711	29.6	$11,369.88
Spur	0.16	845	18	0.083	47	84	5.3	$1,462.31
Stagecoach	0.12	634	18	0.083	35	63	3.9	$1,097.17
Log Cabin	0.07	370	18	0.083	205	369	23.0	$6,403.04
Total	**1.63**	**8606**			**681**	**1226**	**61.8**	
				Total Gravel	**$6,131.86**		**$23,751.05**	$20,332.40

Chem	LF	Cost/LF	Total
RoadLoc	**2535**	**$1.84**	**$17,099.97**
Sawmill	1320	**$1.84**	$2,428.80
Spur	845	**$1.84**	$1,555.65
Log Cabin	370	**$1.84**	$680.80
Lower Beaver Creek	**6758**	**$1.84**	$12,434.72
Application Fee			
$110.00 per hour 2 Hour minimum			**$220.00**
	Sub Chemical		**$17,319.97**
	Sales Tax(2.9%)		$502.28
	Total Chemical		**$17,822.24**

Estimated Costs	Actual Costs*
Chem/Gravel Total	
$41,573.30	**$38,154.64**
Equipment/Labor	
$17,000.00	**$15,300.00**
Total	
$58,573.30	**$53,454.64**

* actual costs based on 2020 costs there is anticipated a 1-3% increase for future years

*Estimated costs are using the cost of belly dumps for budgeting proposes only.

Conversions

Gravel formula

$$\frac{(\text{length})(\text{width})(\text{depth conversion})}{27} = \text{cubic yards (1.8)} = \text{tons}$$

depth Conversion: desired depth of gravel in inches/12

Main would be using belly dumps to deliver gravel
Feeders and intermediates would be using end dumps to deliver gravel

Main	Lower Beaver Creek to Intersection of Elk Valley
Intermediate	Upper Beaver Creek, Elk Valley, Sawmill, Wieland
Feeder	Log Cabin, Spur, Stagecoach

2020 costs per truck load	
belly dumps	$384.04
10 wheelers	$278.00
Gravel	$1.09/ton