Rake Purchase Report

7/6/19

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I. Summary and Recommendation

It is recommended that the Nine Mile Ranch Homeowners Association (9MRHOA), as soon as possible, purchase a Poor Boys Grader brand gravel road rake (Rake) for the following reasons and benefits:

1. As shown further below, the HOA owning its own Rake will be a net savings in the overall road maintenance budget.
2. Given the construction and composition of our roads, the Rake has proven to be *by far* the best – and in most circumstances the only – tool to adequately and affordably perform crowning and surface smoothing, including eliminating washboard and rutting; these maintenance tasks are central to controlling road erosion. It can also be used to move snow slush off of roads during spring melt. This tool is used extensively each year as the primary road maintenance tool for 9MRHOA. You can see a YouTube video of the rake at https://www.youtube.com/watch?v=_Y9lGa78D7Y.
3. The Rake has been used to maintain crown and surface smoothing on Ranch roads for approximately 10 years, so its effectiveness and function are well-proven.
4. Tim Roberts, the local contractor who has provided his services and his Rake for our raking needs for those 10 years, does not have a state contractor's license or a state business license, so for insurance and liability considerations the 9MHHOA BOD is advised not to continue to hire him while he remains in that status. He has also declined to either sell or rent his Rake to 9MRHOA. After extensive research it appears that, other than a single other rake that is infrequently available for rental, Tim Roberts is the only work contractor in the region who owns a Rake, so without the ability to hire him 9MRHOA is left with no practical option but to consider purchasing its own rake.
5. The cost to purchase, cost to maintain, and means of storing and using the Rake is on a scale that is feasible for 9MRHOA's budget and operating circumstances:

   (a) $19,000 initial purchase cost (with taxes and accessories); feasible when combining the expenditure ability within current cash flow and savings.

   (b) The Rake is manufactured locally (Okanogan); the manufacturer stocks replacement parts, and provides very affordable service in their shop ($65.00 p/hr) or in the field ($85.00 p/hr).

   (c) The Rake is mechanically simple to maintain and operate, allowing a wide variety of possible contractors and volunteers to be able to use and maintain the tool for 9MRHOA.

   (d) The Rake operates and locates by being towed behind a ¾-ton pick-up truck, which is obviously a commonly-owned item by contractors and volunteers and therefore does not require 9MRHOA to purchase anything but the Rake itself. A truck requires no adaptation or modification to be able to use the Rake, so any existing truck is ready able to haul and operate the rake without adaptation costs.

   (e) The Rake can be located (driven from location to location) simply by being pulled by a pick-up truck, and state RCWs classify the Rake as not needing license and registration to move over roadways = no licensing/registration costs.

(f) The Rake can be stored outside of a shelter, therefore needing only to be parked (stored) on a volunteer's land somewhere; this is a feasible and advantageous scenario for 9MRHOA because 9MRHOA does not own property or currently have the financial capacity to either purchase property or a storage building.

(g) The common potential alternative to using a Rake is using a road grader. According to the manufacturer, Okanogan County representatives, and common available wisdom, the reason the Rake was invented to start with was to perform these tasks at a small fraction of the purchase cost, complication, operation skills needed, maintenance costs, and insurance costs of a road grader. The Okanogan County Public Works Department uses a rake for the same reasons and benefits. Also, many miles of 9MRHOA roads are too narrow for a grader to properly crown, and are composed with boulderhead base rock that causes a grader to make more of a mess of road grading and pulling up road base than actually benefiting road maintenance.

(h) The Rake controls are powered by (2) 12V auto batteries which are rechargeable either by plugging a common charger into a 110V outlet or by a 12V solar panel. Both sources are commonly available, especially by volunteers, and the solar panel option allows the Rake to have its power maintained when being stored in a location that may be away from an available electricity outlet. According to the manufacturer the Rake can perform approximately 30-40 hours of use on one charge, depending on how much the operator uses the controls.

(i) Per the manufacturer's comments, and common observation, most of the maintenance can be performed by any person even reasonably mechanically inclined; this promotes lower overall maintenance costs and greater volunteer participation (which is free of cost).

(j) A common problem 9MRHOA has had is that raking must be performed when adequate moisture is present in the roads; not owning a Rake means waiting for scant others available to supply a Rake and perform the raking for us during the small windows of time when road moisture is adequate, and this is the same time when we would compete for raking with others who also need it performed (earlier this year we experienced this negative consequence when we had to cancel more than half of the raking because we couldn't get it done when road moisture was present because of this availability competition). 9MROA has (36) miles of roads and cannot afford to risk ½ or more of raking each year not getting done, and owning our own Rake would eliminate this problem and even improve on it because we could rake more or less at will.

II. Costs Enumerated *(not inluding sales tax)*

(a) Purchase price $16,900.00

(b) Spare tire and mount $375.00

(c) Replacement tines ..... $25.00 each
Depending on how aggressively the Rake is used, how much boulderhead roads are raked, and how experienced the operator is, it would be prudent to plan on replacing approximately (3) tines per year according to this author for many years watching Tim Roberts operate his rake. Tines can be easily replaced with a large wrench.

(d) Labor cost to replace tines per year ..... est. $120.00
This is based on paying a contractor to do this while he's in the act of raking;
(3) tines replacement labor x .5 hours each x $80.00 per hour.

(e) Batteries replacement every two years ..... est. $300.00

(f) Regular greasing/lubrication per year ..... est. $140.00
This is based on the contractor performing lubrication after each use per year (twice), at $80.00 per hour plus $20.00 for grease.

(g) Major maintenance/repair: every (2) years ..... est. $640.00
This is based on $65.00 per hour shop rate from the manufacturer, replacing $250.00 worth of hydraulic equipment and (6) hours labor.

(h) Major maintenance and repair: every (4) years in addition to (2) year .... est. $390.00
This is to have something welded or otherwise manipulate by a heavy equipment tool shop; (6) hrs. x $65.00 per hour by the manufacturer.

(i) Insurance per year $112.00
According to recent quote from 9MRHOA insurance provider, this is the current cost to insure the rake itself and to provide non-owned auto coverage to protect all drivers who operate the rake.

III. Per Year Costs, and Compared To Prior Raking Costs

All costs based on current prices and do not include allowing for inflation.

(a) Initial purchase cost of Rake, amortized over (25) years $680.00
This assumes that 9MRHOA will be able to maintain a Rake in functional condition for 25 years. Given that all the moving parts and other maintenance/replacement costs are calculated into subsection III(b) below, that leaves only the basic frame and suspension of the Rake to account for, so it is reasonable to say those items should last for (25) years, especially given the relatively infrequent use of the tool compared to other trailered auto mechanisms.

(b) Per year maintenance costs (per ss. II(c) - (i) above) $1014.50

(c) The total per year costs for (a) and (b) above amount to $1694.50. Let's compare that to prior 9MRHOA raking costs, as were performed by a contractor. The raking charge for fiscal year 2018/2019 was approximately $3700.00, and that represented a realistic and conservative amount of needed raking; in other words, additional raking was not performed for the sole purpose of just making roads nicer to drive on. The $3700.00 contractor charge was based on a charge rate of $100.00 per hour. We can project that a contractor would charge potentially $50.00 per hour to rake for us if we provide the rake, so that would be half the prior charge. Adding all things together: $1850.00 contractor charge to rake if we provide the Rake plus $1694.50 per year for Rake costs = $3544.50 per year if we owned the rake compared to last year's charge of $3700.00. This does not account for other factors that might lower costs even further, like:

(I) lowered costs if a volunteer performs raking and other maintenance,

(ii) if more raking is performed beyond the 2018/2019 model then the per-year 'purchase and maintenance' costs are spread out over more mileage usage, thereby providing more raking to us at lower per-mile costs.

IV. Comparing Poor Boys Grader Rake to Other Rakes

The Poor Boys Grader Rake (PBR) is a patented tool, and according to reasonable internet searching there is no other comparative rake available like it, the Poor Boys having been designed specifically for

raking gravel roads while all others are either for soil/landscaping use or are very small-scale homeowner use. All others are significantly smaller in duty capacity and are much more limited in control aspects that are critical to gravel road maintenance. The closest comparative model found was a rake manufactured by Troy, a very long-standing American company who has a dealer in Okanogan. Here are some major comparisons:

1. You can see a video of the Troy rake at this link: http://assuredcomputer.com/kirk/yorkrakehr09.wmv.
2. You can see a picture of the tow-behind York model at this link: http://assuredcomputer.com/kirk/yorkrakepic.jpg.
3. The PBR costs $16,900 new while the Troy costs approximately $9000.00.
4. The PBR weighs approximately 2000 lbs while the Troy weighs approximately half that. This affects how deep one can rake into gravel; the PBR is specifically designed to dig significantly into gravel depth while the Troy rake is less able. This means less effectiveness and greater per-hour operation cost for the Troy in order to achieve the same result as the PBR.
5. The PRB has rake tines, power controlled by the person in the truck cab, that can tilt in three different axis directions and can be adjusted while the rake is rolling down the road. Again, the unit having been specifically designed for raking roads, this allows raking to be feathered lighter or deeper and at differing angles while in motion which are critical features to creating road crowning and smooth road surfacing as well as being able to raise and lower the rake over boulderheads so that fewer tines are broken. This also allows adjustments to be made without stopping raking; all of this emulates what a road grader can do. The Troy rake is not able to tilt at angles that install road crowning; road crowning sheds water and is critical to road maintenance. The Troy rake's adjustments must be made manually, while the vehicle is stopped; in other words, the operator must stop, get out of the vehicle, change adjustments on the rake by hand, and then resume raking... this lowers the effectiveness of smooth grading, increases operation time, will likely increase tines breakage, and will certainly deter some amount of both contractors and volunteers from performing raking because of such a laborious process.
6. The PBR has a tines rack that is 12' 6” wide, designed to be able to be wide enough to reach into ditches and off road edges to grab excess gravel and bring it back onto the road planes. The Troy rake is 10' wide, not wide enough to perform this feature effectively. In a recent conversation with prior raking contractor Tim Roberts, he stated that this is the reason that after a couple of years of owning a 10' wide PBR he upgraded to their 12' 6” model, and this was his main reason for suggesting a person get a rake that is no narrower than 12' wide.