



Lamont County

PUBLIC WORKS DEPARTMENT



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January 23, 2007

Road Badger Inc.
PO Box 4244
Edmonton, Alberta
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Attention: Garett Schmidt

Dear Sir,

Re: ITEP Comparison Report
Road Badger Report

In June 2006 we participated in the ITEP program, to evaluate and review the machines effectiveness for our applications. In total we performed 14 km of road during our 7 day evaluation. The machine was used for a few applications including: cold mix road rehabilitation, returning old oiled road back to gravel, and reworking farmstead oiling locations.

Our current method of repairing oil road (spec crude) consists of using 2 graders, one which is equipped with blade mounted scarifiers to break up and recover from 1" to 2" of material. We also incorporate a PTO driven tractor mounted rotorvator in some applications as necessary. On average it takes about two days with 25 hours of equipment time to break up and rework 1.6 km of road. In equipment and tip tooling this costs us roughly \$3,900.00 or \$2,400.00 per kilometer (using grader rates at \$130.00/hr). This does not include costs for any material or packing.

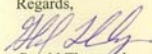
In total we used the Road Badger and completed rehabilitation of 14km oiled road, pulled by drawbar behind an older 14H. On average the Road Badger and grader were able to complete 2km per day, with an average cost of \$1,300.00 per km including our equipment time. In all applications the entire life of material (from 2" to 4") was recovered with fracturing or grinding the aggregate.

In comparison the Road Badger was able to double the production of our current method, while reducing our per kilometer cost by almost 50%. In addition, a lot more material was able to be recovered than blade scarifiers, and without the base contamination common when ripper mounted scarifiers are used. Further savings in new material would be expected from the amount and quality of the material recovered.

The machine was simple to operate and provided accurate depth control with the lights providing good feedback of operation. Daily maintenance of the machine was minimal and the tooling was very easy to adjust and/or replace. The machine is very fuel efficient and only used 250 L of fuel for the entire duration of the program.

Overall we were impressed with Road Badger and its performance. Attached is a report with more detail or the specific applications and cost from using the Road Badger.

Regards,



Gerald Thorowsky
Road Maintenance Supervisor

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Encl.

Location: TWP 551, West of RR193
 Total Length: 1.0 km
 Surface: Old Oil / Under Gravel
 Rehabilitation Depth: 2 - 2 ½" Inches
 Material Rehabilitated (est): 500 Tonnes (@ 1.65 Wt per Cu M)
 Time To Complete: 3 hrs



Costs:
 Ownership & Operating Cost: \$326.25 Fuel Usage: 19 L
 Total Tooling Cost: \$357.56 Per Lane Km Tooling Cost: \$119.18
 Total Cost: \$683.81 Cost Per KM: \$683.81

Notes/Observations:

Road Badger was utilized to rehabilitate the existing old oil surface and incorporate it with existing surface gravel. Some of the oil surface was partly exposed, but the majority was beneath the surface gravel. Loose shoulder gravel was pulled in to the path of the machine while performing the process, and it required a total of 4 lane passes to cover the road. The unit was pulled with the 14H, via the draw bar hitch. The rejuvenated and remixed material was then bladed out, followed up with packing by a steel drum packer. Subsequent water was applied to aid in the compaction process

Location: RR 202, North From Hwy 15
 Total Length: 2.0 km
 Surface: Cold Mix
 Rehabilitation Depth: 2 ½ - 4" Inches
 Material Rehabilitated (est): 1400 Tonnes (@ 1.65 Wt per Cu M)
 Time To Complete: 4 hrs (Wednesday) 6 hrs (Thursday)



Costs:
 Ownership & Operating Cost: \$1087.50 Fuel Usage: 58 L
 Total Tooling Cost: \$1750.94 Per Lane Km Tooling Cost: \$350.18
 Total Cost: \$2838.44 Cost Per KM: \$1419.22

Notes/Observations:

Road Badger was utilized to rehabilitate the existing cold mixed surface. Most of the oil surface was exposed, with only some areas with gravel on top. The first fracture of the road the unit was pulled with the 14H as above. Unfortunately rain had forced us to close up the road early in the process. The following day the unit was hooked to the JD 6WD via the ripper the complete road was reopened. After the break-up passes were completed, the unit was connected back to the 14H – and simultaneous rolling and granulating passes were performed. Subsequent passes after were made with the grader and rotovator, with the material bladed out and followed up with packing by a steel drum packer. Costs for this section are above standard, due to the lost of productivity due to rain out. The entire process was completed over and completed Thursday.



Location: RR 202, North From Hwy 15
 Total Length: 0.6 km
 Surface: Cold Mix / Old Oil
 Rehabilitation Depth: 2 - 3" Inches
 Material Rehabilitated (est): 300 Tonnes (@ 1.65 Wt per Cu M)
 Time To Complete: 2 Hrs



Costs:
 Ownership & Operating Cost: \$217.50 Fuel Usage: 14 L
 Total Tooling Cost: \$247.16 Per Lane Km Tooling Cost: \$102.98
 Total Cost: \$464.66 Cost Per KM: \$774.73

Notes/Observations:

Road Badger worked the remaining piece of road from the rail tracks. The road was granulated within the hour and windrowed up. Utilizing the additional grader and tractor w/rotovator, the first grader rolled the material over followed by the rotovator, then the grader/roadbadger levelled and granulated. A few passes were made in this manner, until further granulation with the Road Badger was unnecessary. This system complemented the ability of each machine - increasing the overall productivity.



Location: RR 203, South From Hwy 45
 Total Length: 0.75 km
 Surface: Cold Mix / Old Oil
 Rehabilitation Depth: 2 - 2 ½" Inches
 Material Rehabilitated (est): 430 Tonnes (@ 1.65 Wt per Cu M)
 Time To Complete: 2 Hrs



Costs:
 Ownership & Operating Cost: \$217.50 Fuel Usage: 16 L
 Total Tooling Cost: \$308.95 Per Lane Km Tooling Cost: \$102.98
 Total Cost: \$526.45 Cost Per KM: \$701.93

Notes/Observations:

Road Badger rehabilitated this section of cold mix with parts of gravel covering old oil. 6 Passes were made to rip and granulate the road. The material was then windrowed up with the grader pulling the unit. A few passes were made with both the rotovator and then followed by the Road Badger. The unit was unhooked, and the material was windrowed up for a few more rotovator passes until the second grader arrived to blade out. Packing again was completed by the steel drum.



Location: RR 203, North From Hwy 15
 Total Length: 2.25 km
 Surface: Old Oil under Gravel
 Rehabilitation Depth: 1 ½ – 2" Inches
 Material Rehabilitated (est): 950 Tonnes (@ 1.65 Wt per Cu M)
 Time To Complete: 4 Hrs



Costs:
 Ownership & Operating Cost: \$435.00 Fuel Usage: 29 L
 Total Tooling Cost: \$859.38 Per Lane Km Tooling Cost: \$190.97
 Total Cost: \$1294.38 Cost Per KM: \$575.28

Notes/Observations:

This section of road consisted of a thin old oil layer covered by gravel. Pulled again with the 14H, the depth was maintained from 1 ½" to 2" to minimize introduction of clay from under the thin oil layer. Only five passes were made, two of which the grader/Roadbadger assisted rolling and levelling the material with granulating by the unit. The material was windrowed to the side, until the material could be further worked and laid out the following day.



Location: TWP 550 & RR204
 Total Length: 0.75 km
 Surface: Abatement Strips (3X)
 Rehabilitation Depth: 2 – 3" Inches
 Material Rehabilitated (est): 370 Tonnes (@ 1.65 Wt per Cu M)
 Time To Complete: 3 1/2 Hrs



Costs:
 Ownership & Operating Cost: \$380.62 Fuel Usage: 26 L
 Total Tooling Cost: \$241.43 Per Lane Km Tooling Cost: \$107.30
 Total Cost: \$622.05 Cost Per KM: \$829.40

Notes/Observations:

The Road Badger was used to rehabilitate three sections of oil abatement strips that were potholed and broken up. The first section was completed with a second grader assisting in rolling the material and performing the layout, while the other two were completed only by the Grader / Road Badger combo.



Location: RR200 North of TWP 573
 Total Length: 2.10 km
 Surface: Cold Mix
 Rehabilitation Depth: 2 – 2 1/2" Inches
 Material Rehabilitated (est): 1100 Tonnes (@ 1.65 Wt per Cu M)
 Time To Complete: 7 Hrs



Costs:
 Ownership & Operating Cost: \$761.25 Fuel Usage: 43 L
 Total Tooling Cost: \$718.80 Per Lane Km Tooling Cost: \$114.10
 Total Cost: \$1523.05 Cost Per KM: \$725.26

Notes/Observations:

This section of road consisted of 7yr+ old cold mix, with a significant amount of rock close to the surface. Controlled depth was maintained from 2 to 2-1/2", and a slower operational speed was used to minimizing any bending of the tooling. The road was broken up in roughly 3 hrs, and the remainder was spent granulating with a second grader assisting to roll the material.



Location: RR200 North of TWP 580
 Total Length: 2.0 km
 Surface: Cold Mix
 Rehabilitation Depth: 2 – 2 ½" Inches
 Material Rehabilitated (est): 1010 Tonnes (@ 1.65 Wt per Cu M)
 Time To Complete: 5.5 Hrs



Costs:
 Ownership & Operating Cost: \$598.12 Fuel Usage: 40 L
 Total Tooling Cost: \$715.12 Per Lane Km Tooling Cost: \$119.19
 Total Cost: \$1313.24 Cost Per KM: \$656.62

Notes/Observations:

This section of road consisted of 7yr+ old cold mix as above, again with a significant amount of rock close to the surface. Rocks as large as 24"+ were uncovered by the machine. Controlled depth was maintained from 2 to 2-1/2", and no tooling was damaged in this section of road. The road was broken up in roughly 4 hrs, and the remainder was spent granulating with a second grader again assisting to roll the material.



Road Completed by Day (Includes Unit travel time)

Monday: 1 km (LM01)
Tuesday: 2.0 km (Rain Out) (LM02)
Wednesday: 2.0 km (LM02)
Thursday: 2.85 Km (LM03/LM04/LM05)
Friday: 1.5 Km (LM06/LM07/LM08/LM09)
Monday: 2.1 Km (LM10)
Tuesday: 2.0 Km (LM11/LM12)

Total Road Completed: 12 Km (14Km worked)

Tooling Costs (averaged): \$ 371.38 per completed Km

Total Costs Per Km Completed: \$ 661.87

Total Fuel Used: 245 L

Total Aggregate Material Rehabilitated (est): 6060 Tonnes

Note:

Road Badger hourly ownership and operation rates have been calculated according to ARHCA formulas. Based on a standard 5yrs/4000hour usage, the hourly rate is \$108.75/hr. See ITEP program outline for more information.

