

In-place Rock Processing Equipment Case Study

A comparison between Triple-Tree Inc.'s Roto-Trimmer
and Roadtech, Inc.'s V600H Linear Crusher

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Summary of Calculated Volumes

Location 1: Herron Creek Road

| Company | Method | Volume (yd ³) | Cost/yd | Output Gradation | Usage | Mat depth (ft) | Distance (mi) |
|-------------------|---------------------|---------------------------|---------|------------------|----------------|----------------|---------------|
| Triple-Tree, Inc. | In-place Processing | 4900 | \$6.27 | 3" minus | Base Course | 0.5 | 2.5 |
| Roadtech, Inc. | In situ crushing | 1500 | \$14.43 | 1" minus | Surface Course | 0.15 | 2.5 |

NOTE: When calculating total cost, linear crushing does result in a higher cost per yard; however, one must remember that this process virtually eliminates the need to back haul ditching material, and it produces a more suitable surfacing material

Location 2: Customs Road

| Company | Method | Volume (yd ³) | Cost/yd | Output Gradation | Usage | Mat depth (ft) | Distance (mi) |
|-------------------|---------------------|---------------------------|---------|------------------|----------------|----------------|---------------|
| Triple-Tree, Inc. | In-place Processing | 2820 | \$3.86 | 3" minus | Base Course | 0.5 | 1.2 |
| Roadtech, Inc. | In situ Crushing | 4693 | \$8.29 | 1" minus | Surface Course | 0.4 | 2.5 |

Summary of Costs in Time and Dollars

Table 1: Projected

| Method | Time (day-hrs) | Crew | Cost per mile | Miles | Total |
|---------------------|----------------|-----------|---------------|-------|--------------|
| Conventional | 12 – 10s | 12 | \$178,781.00 | 2.5 | \$446,952.50 |
| On Site | 5 – 10s | 12 | \$50,805.00 | 2.5 | \$127,012.50 |
| Cost Savings | 58% | 0% | 72% | | 72% |

Table 2: Actual

| Location | Time (day-hrs) | Crew | Cost per mile | Mile | Total |
|---------------------|----------------|------------|---------------|------|-------------|
| Herron Creek Rd | 5 – 11s | 6 | \$20,953.73 | 2.5 | \$52,384.32 |
| Cost Savings | 54% | 50% | 88% | | 88% |
| Customs Road | 5 – 11s | 6 | \$19,929.18 | 2.5 | \$49,822.94 |
| Cost Savings | 54% | 50% | 89% | | 89% |

NOTE: These totals combine both county force crew and contractor costs for each project and process, as we experienced them on these roads, in such a way as to protect both contractors from potentially erroneous statements on my part.

Observations

While these technologies are similar, they are not the same. Care must be taken to determine your particular need, and desired goals.

Robert from Triple Tree, Inc. is using in place pulverization of oversize rock to a depth of 0.5 feet. His process leaves a well-mixed base consisting of 2-3 inch minus. This is an extremely affordable and effective method of developing a base on roads that lack a base. We were very pleased with the process and results.

Sid from Roadtech, Inc. is using a mobile mounted linear crusher on the road surface. His process leaves a well-mixed surfacing material consisting of 1 inch minus. This is an extremely affordable and effective method of providing surfacing material. In addition to developing surfacing material, the linear crushing process, by its nature, also leaves you with well-shaped and functional drainage ditches, eliminating the need to either windrow oversize material along the edge of the road or haul it off. We were very pleased with the process and results..

As to cost, both were very competitive. As to which is better is a wrong question. The questions should be: what is my problem?, what is my available on site material?, and what are my desired outcomes?.

Our primary goal with these projects was to determine if either or both of these technologies would be viable alternatives to conventional construction and maintenance methods. We are convinced that they are, and are budgeting for additional work in the 2014 season. With our average cost of crushed maintenance surfacing rock at

\$7.00/yard, on site processing and crushing is the only thing that makes sense. On our Customs Rd. project, the surfacing material alone would have cost over \$32,000.00 before ditching, hauling and placing. You do the math!

HERRON CR. RD.—PHASE ONE: IN PLACE PROCESSING, Triple-Tree, Inc.



Before (Below)

1st Pass, rocks pulverized down 6". (Below)



1st Pass, excess staged in ditch. (Below)

2nd Pass, top 6" rock turned to gravel. (Below)



HERRON CR. RD.—PHASE TWO: IN PLACE LINEAR CRUSHING, Roadtech, Inc.



Oversize material from phase one staged in ditch to crush during phase 2. (Below left)
(Below right) Typical road material 2 inch (-) after phase one.



Oversize (18" -) from phase one pulled back onto road for crushing.



Crushing and shaping during phase 2. (Below)



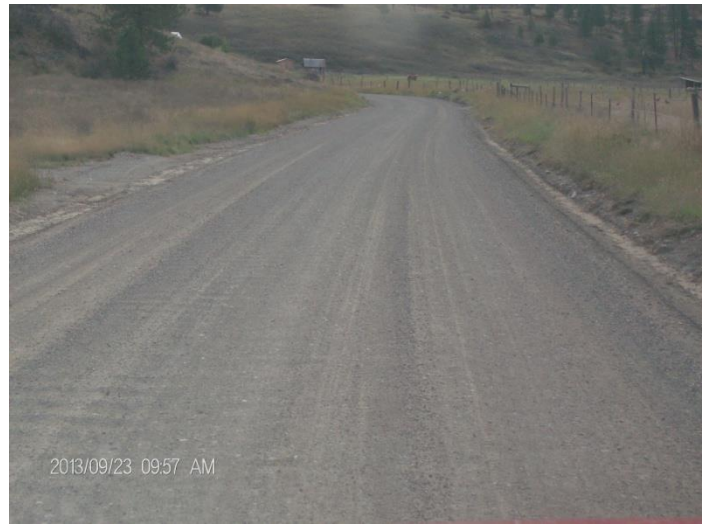
TYPICAL BEFORE (Below)

TYPICAL DURING, Phase one. (Below)



TYPICAL FINAL (Below)

TYPICAL FINAL (Below)



CUSTOMS RD.—PHASE ONE: IN PLACE PROCESSING, Triple-Tree, Inc.



CUSTOMS RD.—PHASE TWO: IN PLACE LINEAR CRUSHING, Roadtech, Inc.

Processing ditching material and oversize left over from Phase One. (Below)



Processing ditching material and oversize left over from Phase One. (Below)



Phase Two, after 1st pull and process of ditch material. (Below)



Phase Two, after final pull and process of ditch material. (Below)



Phase Two, after final pull and process of ditch material. (Below)

