

Case 15

Pave the Stockpile Area?

by

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A contractor operates a rock crusher and stores the material until needed in an adjacent stockpile area. The stockpile area is unpaved, and some of the produced material is contaminated by the sub-grade and cannot be used. The estimated stockpile losses are shown in Table 15-1. This equates to a combined loss of 8% each year.

Table 15-1 Current Stockpile Losses

<u>Material Size</u>	<u>Loss</u>
1/4" minus	12%–20%
3/4" minus & 3/4" x # 4	8%–15%
1 1/2" minus & 1 1/2" x 3/4"	4%–10%

The contractor is considering paving the stockpile area to reduce the loss of material. Paving the stockpile area would reduce the losses due to contamination to about 2%. The crusher produces 250,000 tons/year at a cost of \$1.50/ton. The new paving should last 10 years, and there is no salvage value.

The paving will cover 4.56 acres. The previous stockpile losses will serve as sub-grade and base course for the new surfacing. A 3" thick surface will require 3700 tons of asphaltic

concrete, which costs \$20/ton installed since he can supply the material at his cost. The engineering and site work involve a one-time cost of about \$5000. The surface requires routine maintenance costing about \$1000/year.

The contractor has estimated lower and upper limits for the data as shown in Table 15-2.

Table 15-2 Lower and Upper Limits on Estimated Data

Economic life	−50%	+100%
Price/ton	−20%	+40%
Tons/year	−40%	+20%
Loss with paving	−20%	+20%
Design cost for paving	−10%	+10%
Maintenance	−10%	+20%
First cost for paving	−5%	+10%

1. Determine the rate of return on the repaving, and recommend whether the contractor should pave the area?
2. Use breakeven charts or a spider plot to analyze which uncertainties could change your recommendation.
3. Construct a tornado diagram to summarize your results for management.