Chapter # 5

1) Estimate the production in compacted cubic yards per hour of a self propelled tamping foot roller under the following conditions: average speed = 5 mph, compacted lift thickness = 6 in, effective roller width = 10 ft, job efficiency 0.75 and number of passes = 8.

Solution:

$$\text{Production} = \frac{16.3 \times W \times S \times L \times E}{P}$$

$$\text{Production} = \frac{16.3 \times 10\ ft \times 5\ mph \times 6\ in \times 0.75}{8} = 458.4\ \text{CCY/h}$$

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2) Twelve mile of gravel road require reshaping and leveling. You estimate that a motor grader will require two passes at 3 mph, two passes at 4 mph and one pass at 5 mph to accomplish the work. How many grader hours will be required for this work if the job efficiency factor is 0.86?

Solution:

$$\text{Time} = \left[\sum \frac{No\ of\ passes \times section\ length}{average\ speed\ for\ the\ section}\right] \times \frac{1}{efficiency}$$

$$\text{Time} = \left[\frac{2\times12}{3} + \frac{2\times12}{4} + \frac{1\times12}{5}\right] \times \frac{1}{0.83} = 19.76\ \text{hour} \approx 19\ \text{hour and } 45\ \text{minute}$$

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