William Rossell

CE 417

Homework 37 (Problem 10.3)

Due Date: 04-16-2018

Question:

Visit the Occupational Safety and Health Administration (OSHA) website to report the percentage of transportation fatalities in the workplace as a percentage of all workplace fatalities.

Solution:

“In 2016, fatal injuries among transportation and material moving occupations increased by 7 percent to 1,388,

the highest count since 2007 and accounting for more than one-quarter of all work-related fatalities.” –Bureau of Labor Statistics, Published 19 December, 2017, Accessed 12 April 2018.

Sources can be located in the following order through in page hyperlinks starting in the first cite (OSHA Website):

<https://www.osha.gov/oshstats/commonstats.html>, Accessed 12 April 2018.

<https://www.bls.gov/news.release/cfoi.nr0.htm>, Accessed 12 April 2018.

<https://www.bls.gov/news.release/cfoi.t03.htm>, Accessed 12 April 2018.

Based on all aforementioned sources, and the information there-in, the total amount of transportation fatalities in the workplace was 1,388 in the year 2016. In the same year, there was a total of 5,190 fatalities that occurred in the workplace overall.

**Final Solution:**

26.7% of all workplace fatalities in the year 2016 were fatalities related to transportation in the workplace.

William Rossell

CE 417

Homework 38 (Problem 10.7/10.8)

Due Date: 04-16-2018

Question:

(10.7) Sketch the balance curve for a truck-hauling operation with two excavators operating in tandem at 175 cy/hr each and trucks operating at 42 cy/hr each.

(10.8) For the project in Problem 10.7, sketch the $/cy vs. trucks curve (±2 truck) if each excavator operates at $110/hr and each truck operates at $70/hr. For example, if you select 6 trucks, develop data points and a curve for 4, 5, 6, 7, and 8 trucks.

Solution:

(10.7)

The above curve is simply a visualization of the increased production of trucks ideally based upon number. Considering the balance point of production between the trucks and the excavators is between 8 and 9 truck, and based on the need to not have an excavator sitting idle, I would recommend the use of 9 trucks.

This can be more simplified as follows:

(10.8)



The table above was found using the following methods:

Graphically, this table can be view in the following curve:

**Final Solution:** Based upon the curve above, and all inherent assumptions made during this analysis for idealization of production, it is most cost effective to choose to use 8 trucks for the duration of this operation.