ENGR 1181  |  Class 2: Teamwork & Problem Solving

After-Class Assignment

Introduction
For this assignment, you will need to use the steps of the Problem Solving Method as outlined in class. Work with your team to complete this assignment and turn in one final copy of your work as a group. Be sure to clearly document all of your work and follow each step of the Problem Solving Method. You may type/print your work or write it by hand neatly on notebook or engineering paper. Clearly label the steps you take to solve the problem (see the example homework solution about painting the room).

To successfully complete this assignment will need to do some research and make several assumptions as you solve this problem. Cite all outside sources. Because of the assumptions that are necessary, there is no one correct answer to this problem. Focus on following the five steps in the Problem Solving Method, clear documentation of your process (including research and assumptions), and on evaluating your work to ensure your conclusion is reasonable.

The Problem
How much would it cost to purchase the concrete necessary to construct a six-lane highway between Denver, Colorado and Kansas City, Missouri?

Given Information
- Concrete costs $75 per cubic yard
- Rebar occupies 5% of the volume of the ‘concrete’ in the highway
- Highways often have a 2% slope for water runoff
- A “six-lane highway” has three lanes in each direction

Things to Consider
- What are the geographical and topographical constraints?
- What is the typical width of a highway lane?
- What about the highway shoulder or on/off ramps?
- What about bridges, or mountains?
- Below is a typical highway cross section. Note the 2% slope for water runoff.