**Problem Statement #5: (15 Points)**

In order to reduce the construction carbon footprint of the Milpitas station, the project team is investigating alternative concrete mix designs.

Using the provided concrete volumes and mix designs, research the supply chain of concrete ready-mix from the two suppliers and determine how to create the lowest impact mix design.

* Assume cement alternative (fly ash or blast slag) has a negligible impact on the calculation
* Assume that the supply chain is per the attached graphic
* Assume that cement and aggregate comprise the majority of the impact and ignore other components such as water and admixtures
* Assume the same mix design will be used for all concrete elements
* Assume that the capacities of the different modes of transport are per the US Army Corps of Engineers guidelines

Q1: Using the given mix designs and concrete quantities, determine the weight of cement and aggregate(in tons) that is required for the project. (xx Points)

Q2: What is the most environmentally preferable method of transport? Why? (xx Points)

Q3: How many round trips will the concrete mix trucks make from the batch plant to the project site? (xx Points)

Q4: Which supplier and mix has the lowest carbon footprint? Explain how you reached your conclusion. (xx Points)

\*\*\*\*Bonus: Given that the low carbon concrete provider has been determined, what are

 other possible impacts of that provider vs. the higher carbon impact provider? What

 other factors can influence the choice? (xx Points)

Documents that will be provided:

 Concrete quantity takeoff

 Specified Mix Designs

 Ready-Mix Supplier Names and Contact Information

 Supply Chain Graphic