Construction-Driven Execution Design Challenge: PUMP IT UP (Template)

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## Introduction

1. Write about your team and background
2. Time management to get the design challenge done
3. Challenges you faced and how you overcame the challenges
4. List 3 things you learnt about yourself (as a team, as an individual), technical challenge, and overall one key life lesson learned.

## Hydraulic Calculations Explanation

1. Show the design basis
2. Assumptions (if any)
3. And calculations.

## Excavation Calculations

1 Show the design basis

2. Assumptions (if any)

3. And calculations.

## Foundation Calculations

1 Show the design basis

2. Assumptions (if any)

3. And calculations

## Modularization (Pros and Cons)

This is the process in which we utilize a compact design of process equipment and condense the pipe, steel, and instruments so that it can be fabricated safely and with high quality control. The entire module is then moved to site and set in place with minimal efforts in the field. Show in your narrative what aspects of the design have the scope for modularization and list the pro-cons of modularizing the design.

## Zero Based Execution (show calculations)

This is your team’s primary opportunity to provide design innovation to the overall concept. This is Fluor’s term for revisiting the early decisions that were made on a project that may have inadvertently driven cost and schedule high. For example, in this case if the pipeline is operating 24 hours, thereby reducing the flow rate condition.

It was also decided that the pump cannot be placed within the first 30,000 feet of the start of the pipeline; if that decision was revisited, how it could positively impact the overall cost of the project. Show calculations for how it impacts the design (wall thickness, pipe diameter, pump size, etc) and how it leads to lower costs.

## Risk Assessment

Your team will be tasked with determining the risks of the project and quantifying them in terms of costs. Several sets of criteria will be given to the teams so that they can brainstorm the issues and provide mitigations against those risks. Now that you are familiar with aspects that entail design, costs of procuring and installing them, identify five risk areas and your plan to mitigate them. List your assumptions

## Innovation Idea

Any idea you have come up during design development that you think would improve safety, ease of construction, or cost/schedule.