Communicating Design Details and Rationale
Capstone Design—Winter 2020
Due Date: 5pm, Friday, 21 Feb 2020

Communication Objective

This purpose of this section (ultimately part of your final report) is to address the ***what*** and ***why*** of your system design. Thus, this section needs to communicate ***details*** of the engineering design, and ***rationale*** for those design decisions. This section should both provide information on both individual components as well as how they are integrated into the over design. Remember that your primary audience is your client, as well as other stakeholders. Strike a balance: provide salient design details, but don't burrow too far into the weeds. A general rule of thumb is that you should provide enough detail that another engineering competent person could replicate your design from your writing alone. The document should also convey rationale insomuch as the trade-offs made (benefits vs. limitations) are transparent to the reader.

Break it Down: Road map of smaller questions to address the how and why

1. **The Big Picture:** What is the overview of your design (the 30,000 foot flyover view)?
2. What graphic(s) will you include to best convey the design overview?
3. **Details, details, details!** What are the important *details* individual components integrated into engineering design? For instance, we'd like to know you chose 3 inch bolt size or screws you chose, and where you purchased them? But we don't need to know it has 40 turns per cm. We'd like to know what software you used to simulate rainfall and what the spatial resolution is of the model. But we don't need to know you click this menu, then that software tool.
4. What graphic(s) will you include to best convey these components and how they fit together into the overall design? Beautiful graphics take a LONG time to make, but they arguably the most important conveyor of information. So plan to spend a lot of time on them to get them just right.
5. **Why, oh why, oh why?** Explain in clear terms the rationale for each design decisions made. For instance, why did you choose X wood over Y wood type? What advantages did place bridge footers x meters apart offer? Why was silicone used for a swirl design instead of aluminum? Each design decision made needs to be paired with clear rationale in the report.
6. Summarize the benefits and known limitations of the design.

For the **workshop**: As a team formulate clear, concise, and specific answers to the above questions (30 min). Each team will share their answers with the entire class; other teams will offer substantive feedback which to guide your thinking and written work.
For the **written document submission (Document II)**: Use your answers and thinking from the workshop as a springboard to write a formal document which will ultimately become part of your final project report. The style should be regular flowing-style of prose organized into subsections as you see fit (not a bullet point list of answers).