CIV102 Project Time Log

Meeting 1 - Sunday, November 29th

2 hours - spent organizing the team's initial ideas and how we are going to begin the design process as well as set out to begin our initial tasks. We decided to design a very basic baseline bridge as an initial starting point before improving upon its aspects down the line. Ming was responsible for the finding of the cross section of a simple I beam and a simple pi beam. Peishuo was responsible for finding the forces of failure due shear and flexural stresses. John's part was to find the failure forces due to thin plate buckling

Independent Tasks 1 - Sunday November 29th - Saturday December 5th

Ming - Pi and I cross section calculations as well as the comparison between both cross sections and their respective potential for concept 1 bridge design - 1-2 hours

Peishuo - Material property force finding for the initial baseline design with an I and Pi cross sections to find necessary improvements - 1-2 hours

John - Thin wall force finding for the initial baseline design with an I and Pi cross sections to find necessary improvements - 1-2 hours

Meeting 2 - Saturday December 5th

2 hours - we discussed and revised our calculations and then we had finally compiled the results of the varying failure stresses for the I and Pi simple bridges. We had then decided to build upon the Pi beam concept as it possessed greater potential to become our design.

Collaborative Work Session 1 - 2 hours and 30 mins - Saturday December 5th

Discussed the next steps as a team and opted to create an excel calculator to verify our calculations for the forces upon the bridge. The report was also started within this session, noting down the progress up until this moment and documenting the work completed in regards to concept 1's cross section. Within the work session, the first design iteration was calculated finding the forces with a double top flange, and the excel calculator was completed. Individual tasks were discussed as well.

Independent Tasks 2 - Saturday December 5th - Wednesday December 8th

John - Complete Design Iterations 2 and 3 for the cross section to maximize force withstood whilst minimizing material use - 3 hours

Peishuo - Complete the Report up until the design iterations, documenting the evolution of the design found, explaining the engineering design process - 3 hours

Ming - Redone the Shear Force Diagram and Bending Moment Diagrams as well as Design Iterations 1 - 3 calculations in neat fashion to be presentable for the calculations document as well as verify the lack of errors - 4 hours

John - Complete CAD drawings of the completed design iteration 3 as the final design of the concept 1 bridge - 2 hours

Collaborative Work Session 2 - 5 hours - Wednesday December 8th

We confirmed the completion of all elements of concept 1 among the entire group and then discussed the beginning design concepts for concept 2. We discussed the possibility of a truss bridge as a concept but then eventually decided on the use of a modified version of the beam bridge with varying heights along its span to combat flexural stresses due to increasing moment whilst also having a changing cross section structure to combat positive and negative moment. The team then went on to begin the design, finding the Shear Force Diagram and Bending Moment Diagram associated with the design through the use of deflection to find the total effect of the column on the design. Furthermore, these diagrams were neatly written for submission and work was instantly transitioned towards finding a working cross section for the positive moment of the bridge. Another set of excel calculators were created for the negative and positive moments of the bridge to verify calculations. In addition, the report was expanded upon to document and reflect the progress completed towards concept 2.

Individual Tasks 3 -

Peishuo - Find optimized cross sections for the positive and negative moments of the bridge concept - 2 - 4 hours

John - Complete the report on concept 2 and complete the timelog and complete all CAD drawings of concept - 2 - 4 hours

Ming - Complete calculations for the varying iterations and verifying with the written concept 2 excel calculators for positive and negative moments - 4 hours

Collaborative Work Session 3 - 6 hours -

We finished the middle beam calculation, verified it with further calculation, and drew it in CAD. Then, we completed the final report and compiled the calculations. Finished the time log and polished the CAD design drawings.