Fall 2011 CEE 3090 Steel Bridge Project Team (ID 16467)

Term:
August 24, 2011 – December 3, 2011

SECTION 1: Project Team Description

Description:
The Steel Bridge Team is designed to provide students interested in the structural concentration of the civil engineering school with hands-on experience. The main goal of the team is to construct a bridge comprised entirely of steel while abiding by competition rules set forth by the American Institute of Steel Construction (AISC) with the ultimate goal being to win the competition. For the 2011-2012 year, the competition will be held in ____________. In the fall, the team will draft the design and connections for the bridge, and begin fabrication by the end of the semester. Students will learn to apply classroom knowledge, outside research, and their own intuition and creativity through moment diagrams, tension calculations, connection proposals, and other parts of the drafting process. They will have the opportunity to share and critique each other’s ideas, learn machine shop skills, gain the experience of working on a project team, and bond with other classmates and faculty of similar interests. Although the Steel Bridge Team is based in the Civil and Environmental Engineering department, other majors such as Materials Science and Mechanical Engineers have participated in the past. The team is open to all students interested in participating.

Competition:
The AISC sponsors this competition, which this year will be held in ____________, at ____________. Our current schedule for the weekend of competition, which is from ____________, is to depart from Cornell on ____________, in the afternoon and to return to campus on ____________, in the afternoon. Much of our trip is being subsidized directly through the Civil and Environmental Engineering School.

Major Accomplishments:
External: The Steel Bridge team at Cornell has been competing at the regional level for several years now. In the past years, the program has been smaller; however, we look to learn from each iteration and progress in a positive direction, ideally placing at this year’s regional competition to qualify for the national competition.

Internal: The leaders of both the Concrete Canoe and Steel Bridge project teams have been working hard to gain elevated recognition from the Civil and Environmental Engineering School, as well as the greater College of Engineering. Through several meetings with individuals within the department, the leaders have been able to progress the project teams: the teams, especially Steel Bridge, have grown in popularity this past semester, and a process is being put in place to make certain that knowledge gained in one semester is carried through to the next and from one leader to the next.

SECTION 2: Team Organization
**Faculty Advisor:**
William Philpot, wdp2@cornell.edu

**Status:**
Cornell’s Steel Bridge project team is associated with the academic course CEE 3090, and may be taken as a 1 credit hour, S/U course.

**Internal Organization:**
Unlike last year, there will not be sub-teams. Instead, all members will be required to take part in the design and fabrication process. This ensures that those fabricating the bridge will have an understanding of what they are building, and allows the entire team to be on the same page. In the spring, the team intends to implement a Senior/Junior system, to train and prepare future leaders so that they may lead in the following year.

The team will be managed by 5 leaders, whose role and descriptions are as follows:

**Project Manager:**
- oversees general organization of the project, manages meetings and registration/budget issues, creates gantt sheet schedule for completion of project
  - *Senior:* Beverly Yang (CEE) graduating Spring 2013, bry3@cornell.edu
  - *Junior:*

**Public Relations:**
- responsible for finding sponsors, advertising on campus, designing logos, posters, and shirts, fundraising
  - *Senior:* Wesleigh Sisco (CEE) graduating Spring 2012, wos6@cornell.edu
  - *Junior:*

**Guidelines:**
- will comprehend and enforce the guidelines set by the AISC for the competition, occasionally checking in with reminders or quizzes to ensure the entire team has an understanding of the rules
  - *Senior:* Robert Liptack (CEE) graduating Spring 2012, rjl229@cornell.edu
  - *Junior:*

**Design:**
- will lead the team in the design process of the bridge with responsibilities such as working with team members as well as faculty for ideas, helping team members learn to use structural analysis programming software, working to design connectors, keeping in mind compliance with competition regulations and feasibility of construction
  - *Senior:* Rudolph Powser (CEE) graduating Spring 2013, rep222@cornell.edu
  - *Junior:*

**Fabrication:**
- will lead the team in the fabrication process of the bridge, with responsibilities such as ensuring bridge implementation from design to construction is possible, getting all team members machine shop trained, designating and training welders, delegating fabrication tasks to team members, checking in at the end of every day of fabrication (if possible) to update gantt sheet and resolve any fabrication issues
  - *Senior:* Robert McCombs (CEE) graduating Fall 2012, rjm377@cornell.edu
  - *Junior:*
All team leaders are currently enrolled in the school of Civil and Environmental Engineering. There are currently (number enrolled in class) team members overall, with their major and graduation year as follows:

(Insert table of team members, major, graduation year)

Safety Officer will fall under one of the roles of the Fabrication leader.

SECTION 3: Team Requirements

The Steel Bridge Project Team is a 1 credit hour, S/U course. This credit may not be used to count towards graduation requirements. To earn 1 credit, S/U, students must fulfill the following requirements:

1. Students should register for CEE 3090-ASCE Project, S/U Option only, through the Just the Facts portal on Cornell’s network (http://www.jtf.cornell.edu).

2. Attend a meeting once per week (meeting may be canceled—such discretion is left to the project/sub-team manager).

3. Students must complete assignments, which will be administered via project/team leader, totaling no less than 2 hours of lab/group/individual work on a weekly basis throughout the semester. They will be actively engaged with the team in planning, designing and preparing for construction of the project, and then executing those designs. While some flexibility is expected in regard to the amount of time an individual student dedicates to the project in any given week, a regular commitment is required on the part of all team members to sustain continuing progress. The overall time commitment is at least 28 hours per student per semester, but those in leadership positions will necessarily have a greater time commitment.

4. It is also expected that each student will continue to think about the project, brainstorm ideas, and draft proposals between group meetings so that the student is prepared for group discussions and planning sessions.

5. Students should maintain attendance and update assignment completion via an online spreadsheet, logging the minutes dedicated to the team each week. The project leader will provide an updated copy of the log to the ASCE Faculty Advisor each week.

6. At the end of each semester team members will be evaluated on the basis of time commitment, individual and team performance, and safe and responsible use of facilities, tools, equipment and materials.

SECTION 4: Team Logistics

Safety Plan:
You must submit a complete safety plan describing how you intend to provide a safe working environment. Matt Ulinski, B27 Upson Hall, mu25 is available to assist you with this process.

**Safety training planned for team members and safety officers:**
In order to participate in the fabrication of the steel bridge, all members have undergone or will undertake a brief course on lab safety. Instruction for this portion of the project team is given by the faculty who work down in the steel lab of Hollister Hall. What more, there will always be at least one faculty present while students conduct work in the lab.

**Safety in the Lab:**
The lab environment will remain safe through practice of the lessons taught in the brief introduction to the lab environment. Furthermore, safety will be maintained by taking appropriate precautions, such as the wearing of safety goggles, whenever necessary, and an appropriate cleanup after each visit to the lab.

**Safety protocols for testing, fabrication:**
When testing our design, we will have a faculty member present and will never take the design past the point of breaking. Members are encouraged to stay for testing so that they can witness where faults in the design exist, but they will be kept at a safe distance from the testing. Only a select group of individuals will be allowed near the bridge during the testing process.

**Consequences for members who fail to follow safety plan:**
Members who fail to adhere to the safety plan will be reprimanded by not being allowed back into the lab for a period of time (two weeks being the minimum span of the punishment) and/or receiving an unsatisfactory grade for the course.

**Past safety related incidents/concerns that required faculty/staff to resolve medical attention to anyone involved, or local authorities to provide service (i.e. Fire Department, Environmental Health and Safety):**
None.

**Anticipated Travel:**
- **Dates and Destination(s):**
- **Number of People:**
- **Proposed mode of Travel:**
- **Mode of Transportation of any structures/machines to the competition:**
- **Safety Plan for traveling:**
  We will be utilizing the buddy system for safety once at the location. We, hopefully, will mainly be traveling in big groups. When we do break up, we will coordinate meeting places and times to make sure that we do not lose anybody throughout our trip.

**SECTION 5: Resources**
Space:
Lab: Hollister B17
Office: Hollister B17
Storage: Hollister B17

Computer Usage:
In designing the bridge, we will utilize software programs like Mastan and AutoCAD. We look to increase our use of technology through more intensive introductory courses to the specific software used through the designing portion of the steel bridge. We also seek to maintain an online presence via an updated website.

Other equipment or resources needed: Certain equipment in the steel lab.

SECTION 6: Budget and Funding

Budget:
Estimated Expenses (this year):
Total cost of project over its lifetime:
Projected Sources of Income (include fundraising and corporate donations):
Amount of total funding requested from College and Department:
Reduced Budget Scenario:
Previous Financial Information:

SECTION 7: Schedule

August:
-First meeting: introduction to team and members, go over what the team does, experience from previous year

September:
-guidelines come out: read and understand guidelines
-begin designing
-begin machine shop/welding training

October:

November:
-finalize design
-order materials

December:
-begin fabrication