

## Analysis of Capstone Project 2008

### METHODOLOGY

All seniors in the CM Program are required to take CNST 450, Construction Management. This course is intended to be a comprehensive experience that will replicate to some degree what the students will be required to do in industry. The students are given the construction documents for a “real-world” project and are instructed to create a proposal and present that proposal to a jury of construction professionals. The presentation is designed to be as realistic as possible. The jury is given a rubric for assessing the oral presentation and a rubric for assessing the written report. A score of 4 represents “excellent”, 3 represents “good”, 2 represents “undistinguished”, and 1 represents “poor”. The scores provided by the jury are then tabulated in a spreadsheet, and average scores are calculated. These scores form an important part of the students’ grades for the course. Then the construction faculty review the written reports and discuss the relative merits or weaknesses of each report. The conclusions are included in this analysis along with inferences about learning outcomes.

Scoring was based on a four-point scale. The jury members were allowed to score fractions or decimals. That is why some of the scores are not whole numbers. The students were instructed to prepare a written proposal for a budget (cost estimate), a construction schedule, a safety plan, and a quality control plan. Each proposal was scored separately. The oral presentation was assessed based on the following qualities: enthusiasm, preparedness, time limit, enunciation, visual aids, posture and eye contact, and content. Students were instructed that the “client” would make the final selection based on both qualitative and quantitative criteria. The quantitative criterion was the cost estimate; the qualitative criteria were schedule, safety, quality control, and oral presentation. The architect for the project was on the jury so actual costs were known.

### PROGRAM OBJECTIVES

The Construction Management Program prepared you to:

1. Communicate effectively.
2. Be aware of important ethical considerations in the construction industry.
3. Have adequate computer skills.
4. Know the basic principles of business and management.
5. Understand the theoretical principles involved in structural forces, electricity, soil mechanics, and environmental control.
6. Understand how building systems affect building design.
7. Be able to read and interpret working drawings.
8. Be familiar with basic plane surveying concepts and techniques.
9. Be familiar with construction methods and materials.
10. Have skills in estimating and preparing bids.
11. Have planning and scheduling skills.
12. Be familiar with construction accounting and financial practices.
13. Be familiar with the most important issues and instruments of construction law.
14. Be able to establish a safety program.
15. Be familiar with administrative systems and procedures.
16. Be able to develop a quality control plan.

Objectives 1, 3, 7, 10, 11, 14, and 16 were assessed directly. Assessment for objectives 2, 4, 5, 6, 8, 9, 12, 13, and 15 must necessarily be inferred.

## LIMITATIONS

The construction documents did not include confidential front-end material such as agreement forms and supplemental conditions.

There was no owner that would respond to requests for information. Students were instructed to base their report only on the documents in hand and perhaps a site visit. They were allowed to request information from city officials. Any resources on the Internet such as Google Earth were allowed.

## FINDINGS

Grand averages for the presentation, cost estimate, schedule, safety plan, and quality control plan were remarkably consistent—2.8 or 2.9; grand averages for student teams showed much more variation—2.5 to 3.2. This indicates that the jury rated the students in aggregate to be slightly below “good” and on the upper end of “undistinguished”.

## SUGGESTIONS FOR IMPROVEMENT

Teach to the test. In other words, require students in CNST 310 (Safety), CNST 414 (Quality Control), CNST 304 (Scheduling), and CNST 314 (Estimating) to prepare for a similar assignment. For instance, in the past, CNST 414 has focused more on inspections rather than preparing quality control reports. (The course description was changed just last year.)

Require students to practice more giving oral presentations. Reviewing videos of presentations might help.

Participate in more student competitions, which have a similar format.

Require each student to participate in every aspect of the report rather than delegating responsibility to one student for each specialization. This might reduce the variation between teams, but it might also level excellence to a common denominator.