



CITY OF BLUFFDALE: SPEED REDUCTION STRATEGIES

Overview: Develop speed reduction strategies for use throughout the city as needed. Include multiple methods and decision matrix to assist in determining which traffic calming strategy is most appropriate.

*Request for
Proposal*

Background Information

The City of Bluffdale is located between Salt Lake County and Utah County in Central Utah. Between 2000 and 2010, the population grew from 4,700 residents to approximately 7,600 residents. Some prominent features in the City include the National Security Agency Utah Data Center and the Camp Williams State Military Reservation. With the growth of Bluffdale, it has become important to improve and expand the roadway systems to accommodate the current and future population growth and expansion of the city.

As traffic increases within city limits, residents begin to complain about speeding on local roads and its related dangers on roadways within residential areas. Some of the intersections of interest include (see Figure 1):

- Noell Nelson Drive (1000 W) and Red Glare Drive (see Figure 2)
- 3600 W and 13800 S (see Figure 3)
- 2200 W and 14400 S (see Figure 4)
- Rock Hollow Drive (15010 S) and approaching roads (see Figure 5)

The residents are very adamant that the City find a solution to help reduce the speeders on these roads. In many instances, the citizens request specific treatments for the reduction in speed of traffic which would bring other negative effects, such as speed bumps, four way stops, or radar signs.

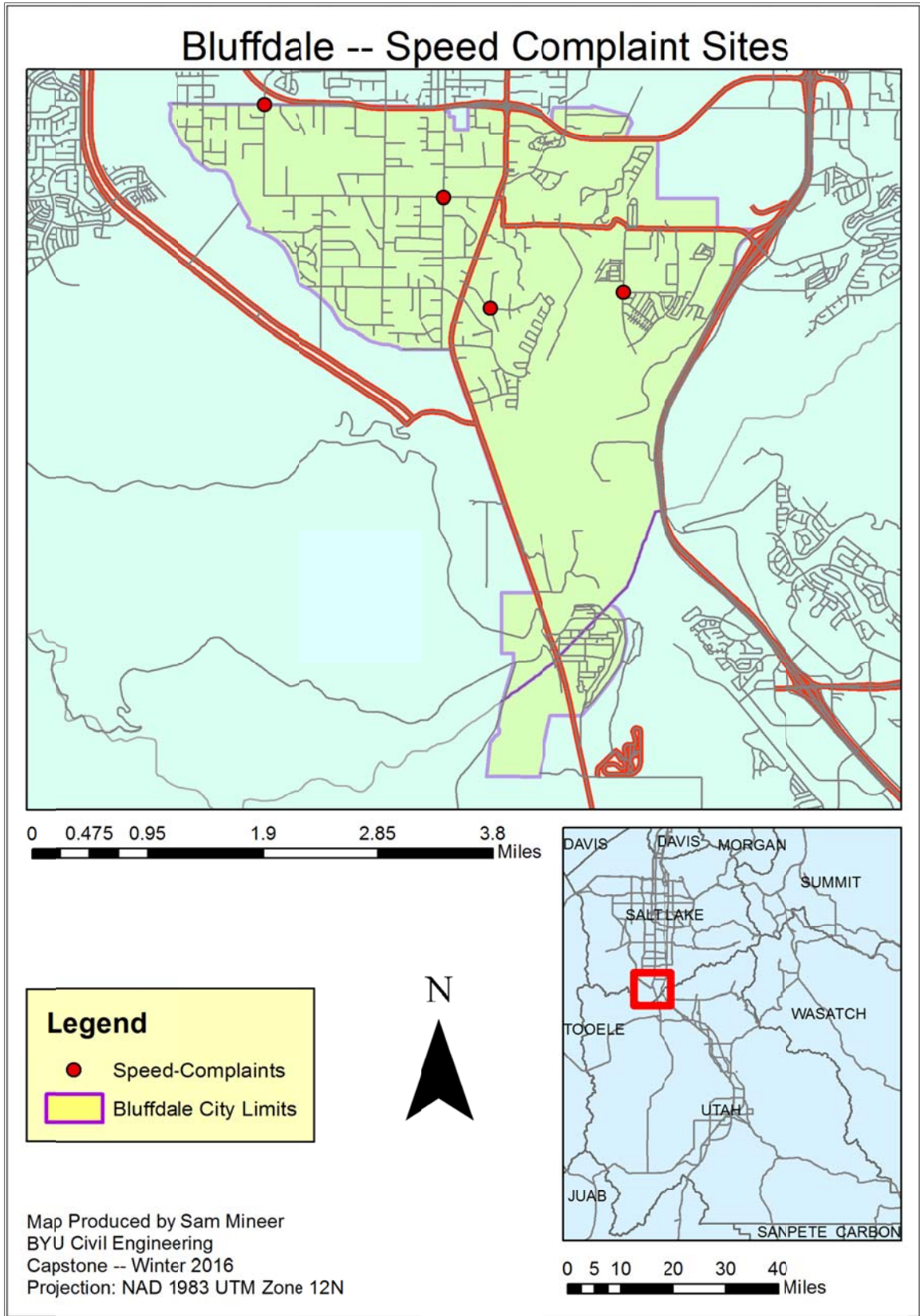


Figure 1: Bluffdale city limits and speed complaint sites.

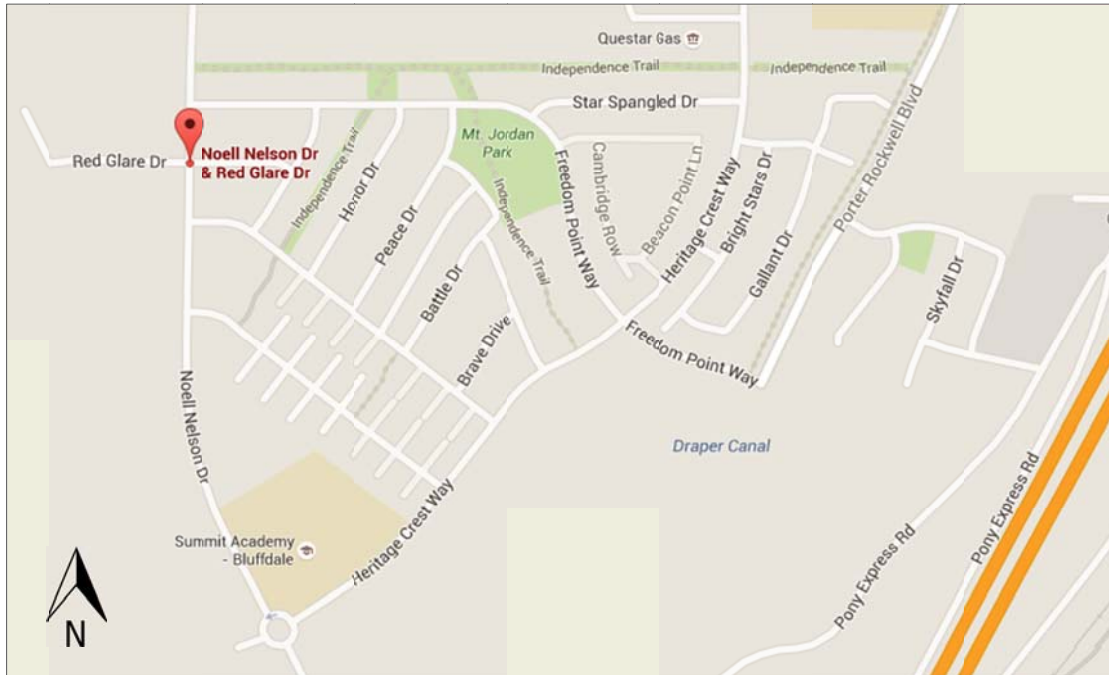


Figure 2: Noell Nelson Dr (1000 W) and Red Glare Dr (maps.google.com 2015).

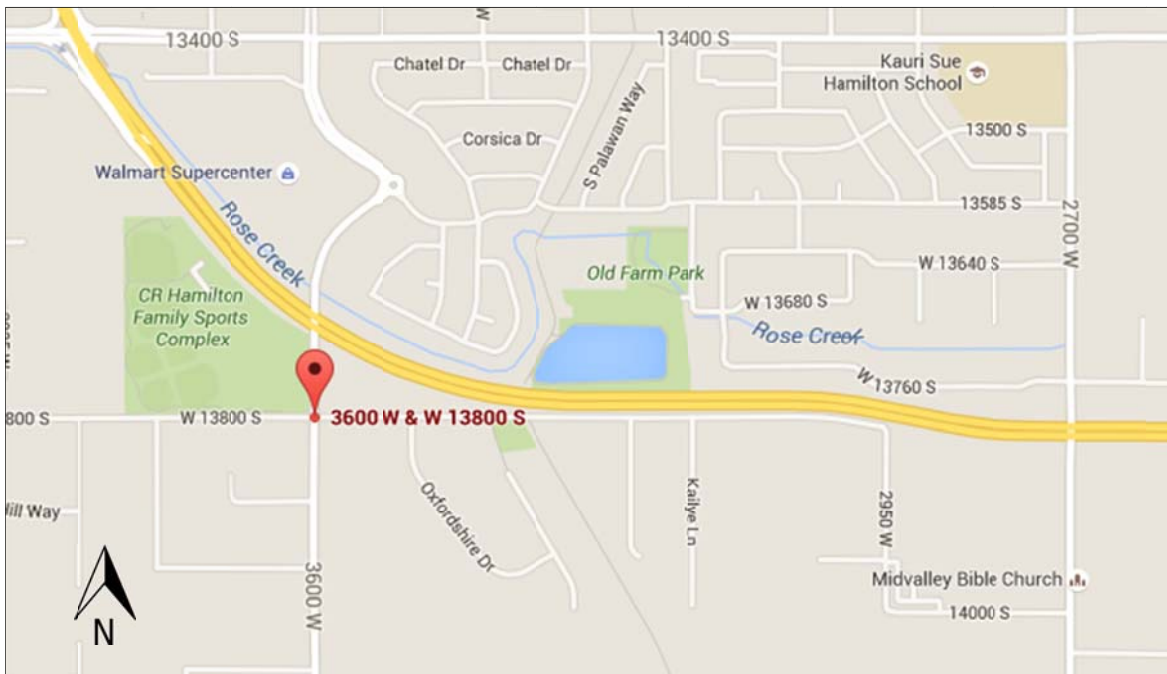


Figure 3: 3600 W and 13800 S (maps.google.com 2015).

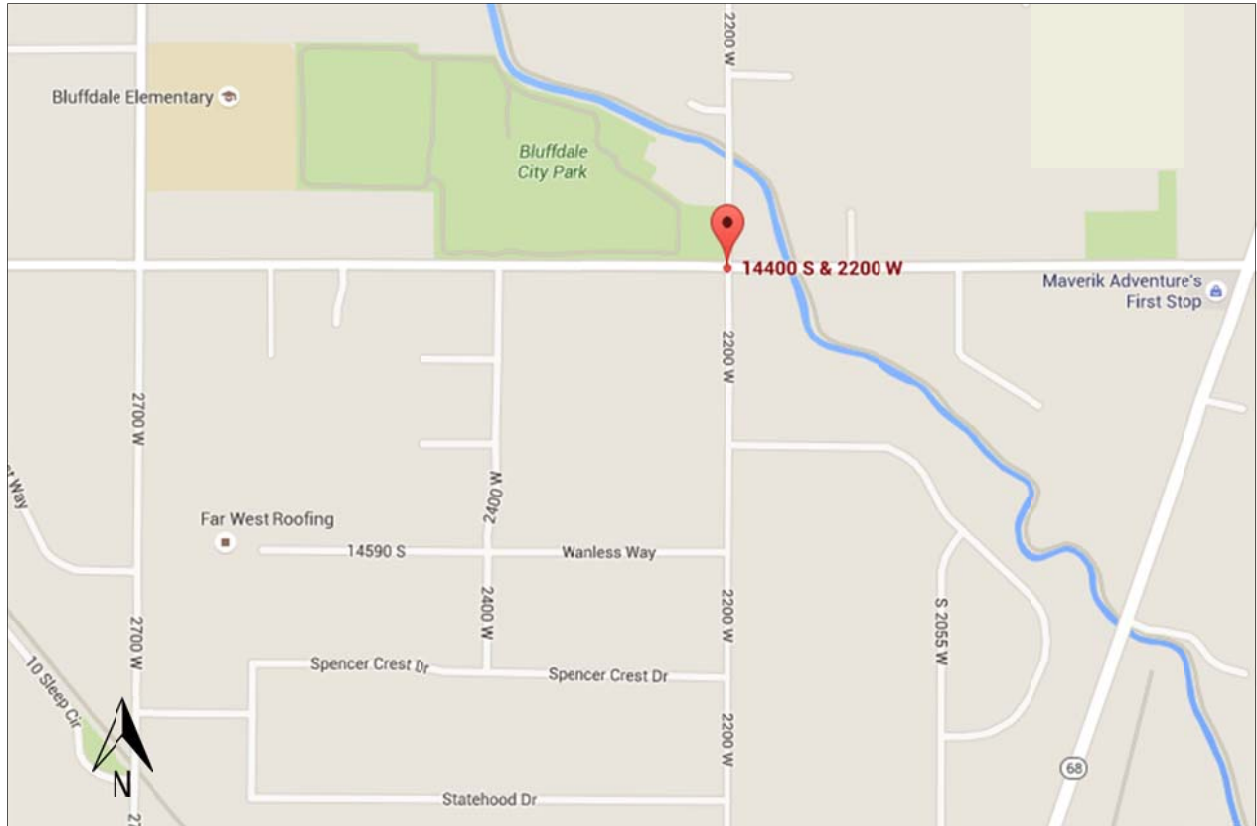


Figure 4: 14400 S and 2200 W (maps.google.com 2015).

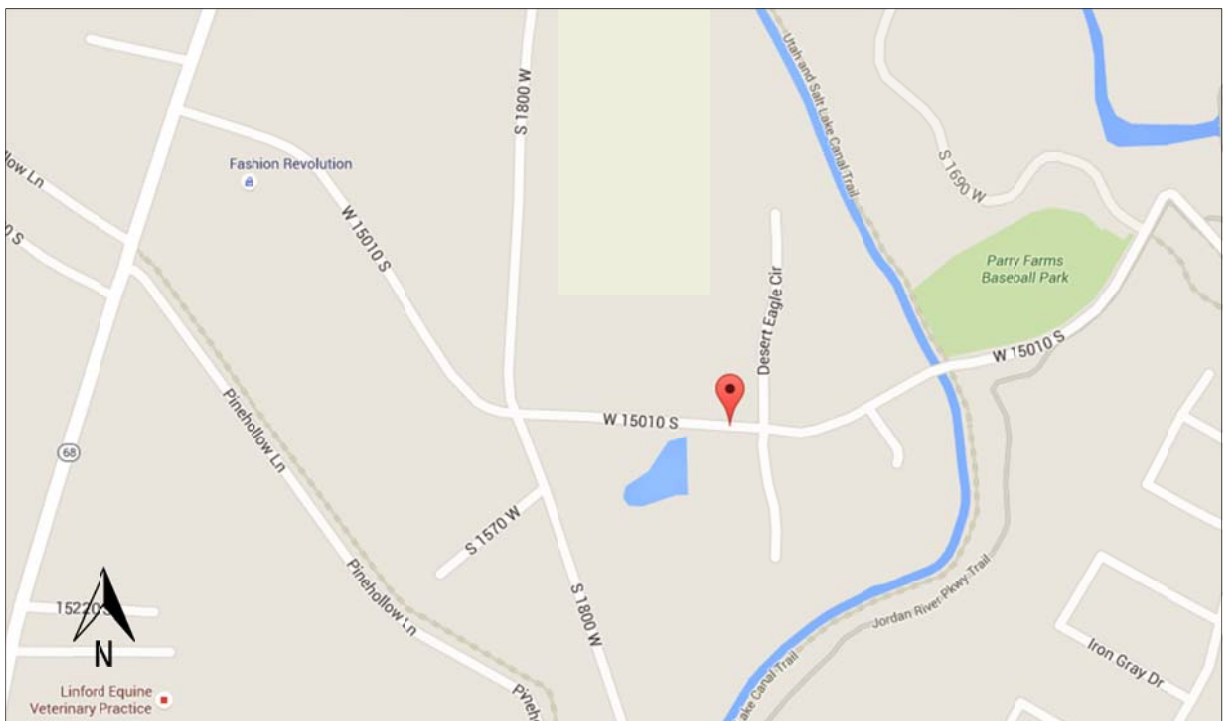


Figure 5: Rock Hallow Drive, also known as 15010 S (maps.google.com 2015).

Project Description

The City would like to have a manual (or catalog) of methods for reducing the speed of traffic, provided with references and recommendations for urban roads. The study should highlight the best practices for reducing the speed of traffic and explain why they are recommended.

The City would also like this manual (or catalog) to include a decision matrix for warranting intersection treatments to be presented to the City Council for policy adoption. The goal is to look at traditional and innovative speed-reduction treatments and their relative cost to implement (monetary, logistical, etc.).

The manual should include language for a possible ordinance describing the process of installing speed calming treatments at intersections.

The students on the winning team will have a preliminary meeting with the Bluffdale City Engineers to discuss additional details of the project, scope of work, and desired deliverables. Traffic data related to the project will be given to the student team at this meeting.

Scope of Work

The scope of work would include the following elements:

- Conduct site visit(s), as appropriate and as recommended by the City of Bluffdale
- Analyze speed/volume data of study sites with speed-complaints, provided by the City of Bluffdale
- Research and compile speed reduction methodologies
 - Including MUTCD, FHWA guidelines, AASHTO publications
- Create a manual (or catalog) that includes a decision matrix for warranting speed reduction treatments, with the pros, cons, relative cost and implementation logistics which will assist the City Engineers in the decision making process

Additional services may be specified after additional communication with the Bluffdale City Engineers.

Deliverables

The team must prepare all deliverables with the intent to present them to the Bluffdale City Council:

1. A final report including the following items (incorporated into text and necessary appendices):
 - a. Methods for reducing speeding, with appropriate references and recommendations for urban roads.

- b. Discussion of the best practices in the nation and explain why they are recommended for speed reduction measures.
 - c. A possible city ordinance for how to require the installation of recommended intersection treatments, authorizing to the city engineer to conduct proper traffic impact studies.
 - d. Results of analyzing given speed/volume data, with recommended implementations based on decision making manual/catalog.
2. A decision making manual (catalog) that includes:
 - a. A simple decision matrix for warranting speed reduction treatments, geared towards non-technical audience.
 - b. Feature pros, cons, relative cost, relative implementation time, and other at-a-glance characteristics to assist in decision making.
 3. A poster reflecting a summary of the findings from this design project.
 4. A presentation file summarizing the findings from this design project.

All deliverables are due on or before Friday, April 1st, 2016.

During the first week of April 2016, a presentation will be made to the project sponsors and their invited staff. In addition to this presentation, a poster session will be held at Brigham Young University for students, faculty, and other interest individuals to see the findings of this design project and to learn about the design work in the Civil & Environmental Engineering Capstone Program.

Outcome and Performance Standards

The selected team will provide the work "as is", meaning that there is no engineering stamp certifying the work. However, the work which the team compiles will greatly impact how the Bluffdale City Staff will handle future safety issues relating to speeding. It is likely that the products produced from this project will be taken directly to the City Council and be implemented immediately to solve current safety issues related to speeding.

The selected team represents the BYU Civil & Environmental Engineering Department. The expectation is that the team will interact in a professional manner at all times with the assigned graduate mentor and project sponsor, treating them with the utmost respect and consideration of their busy schedules. While successful completion of the design project is fundamental to the outcome of the work, it is expected that team members will also learn important team dynamics and leadership principles. This means that in the process of completing the project, team members will also seeking to help each member of the team to grow and develop confidence in his/her engineering abilities.

Term of Contract

Undergraduate students are to work during 2015 winter semester. On a weekly basis, each undergraduate student will be expected to work an average of eight (8) hours per week, which includes at least three hours each week working together as a team. Any class time or time spend working on the capstone project will count towards the eight hour weekly goal.

Payments, Incentives, and Penalties

There will be no monetary compensation with respect to the work completed, and all work is completed and delivered on a "best effort" basis. Each team will work together to develop personal goals and incentives for completing the work in a timely manner. The penalty for unsatisfactory work may include academic penalties or setbacks, as determined by the Civil & Environmental Engineering Department and graduate mentor.

Much of the capstone work is graded by graduate student mentors, which include evaluations of the following components:

- Team process (how well you work together to accomplish the goals)
- Project proposal
- Project management plan (PMP)
- 50% complete status report (SMP)
- Final report, poster, and presentations
- Overall satisfaction of the client in meeting specific deliverables

Contractual Terms and Conditions

There will be no monetary compensation with respect to the work completed, and all work is completed and delivered on a "best effort" basis.

Each member of the undergraduate team will be asked to sign a non-disclosure agreement that simply states the work team members do belongs to the project sponsor. The non-disclosure agreement can be found online (Learning Suite course website).

Evaluation and Award Process

Three different graduate students will evaluate proposals blindly, and the average of their scores will be the grade you are given on the proposal and used for granting awards where there is competition. They will be evaluating teams from the exact rubric listed in Table 1.

Table 1: Grading Rubric for Proposal

Criteria	Points
Timeliness (1 point off per full hour late)	5
Grammar/Spelling (1 point off per blatant error)	10
Cover Page (1 point per piece of information included) Title, Date, Sponsor, Team Name, Team Members, “Department of Civil & Environmental Engineering”, “Ira A. Fulton College of Engineering and Technology, Brigham Young University”.	8
Cover Letter (4 points per piece completed) Brief letter of introduction that states 1) your intent to propose and 2) how you may be contact	8
Executive Summary (7 points for completion, helpfulness; 3 pts max) One page summary that summarizes the contents of your proposal (3/4 – 1 page length recommended)	10
Team Abilities (2 points for including résumés; 2 points per part completed) Adjust the SOQ to make it relevant to the project. Create a summary <u>as a team</u> to include the following: 1) relevant courses and experience, 2) abilities to complete the work on time and in a professional manner, and 3) including use of specific engineering tools/software. Include current résumés. 2 points for including résumés, 6 for team abilities summary, 2 per piece completed	8
Key Personnel (5 points max per piece completed) Include the following points: 1) Identify which individuals will focus on which pieces of your potential tasks; 2) Include an organizational chart or visual describing how you will work together as a team.	10
Project Understanding (4 points max per piece completed) Include the following points: 1) Did they address specific items mentioned in the RFP?; 2) Do they repeat basic background in somewhat new terms to <i>demonstrate their understanding</i> of the project?; 3) Do they mention key deliverables they may need to provide?; 4) Did they articulate a <i>specific</i> approach for developing design alternatives and deliverables?	16
Formatting (5 points max per piece completed) Is the document professional in appearance? Is the formatting consistent through the document?	10
Concise vs. Wordy 8 points (excellent) = Concise, meaningful, accurate, and specific to project. 1 point (very poor) = Confusing, wordy, or vague. Too much “fluff”.	8
Clear and Professional Writing 7 points (excellent) = Easy to read and understand. Feels professional. You would feel comfortable handing this to your future employer/supervisor. 1 point (very poor) = “Cut-paste” document. Rushed to complete on time. Completed with little thought. Hard to read. Equivalent to high school essay.	7
Video Interview (20 points overall) Message is clear and consistent with proposal, each member participates. Professional content and engaging through video. Leniency on video/audio quality will be given with a focus on the content and overall organization.	20
Total Possible Score	120

Process Schedule

The following dates outline the process schedule for the Fall 2015 semester:

- **October 21, 4:00 pm**
 - Request for Proposals will be available online at <http://cecapstone.groups.et.byu.net/content/winter-2016-projects>
- **October 27, 4:50 pm**
 - Declare your intent to propose on a project will begin
 - Each team will need to identify the primary target of their proposal and three other alternatives (no proposal necessary)
 - Public knowledge of projects of interest should help distribute proposals more evenly
 - Question and Answer period with respect to the proposal and submission procedures
- **November 17, 4:00 pm**
 - Three printed copies of the proposal must be submitted at the beginning of class
 - The review committee reserves the right to reject any proposal or video presentation that is not submitted in a timely fashion or in accordance with the instructions given in this RFP
 - Team video interviews should be made available (either online or on disc) and referenced in the proposal
- **December 1, 4:00 pm**
 - Project award notification

Contacts

Should any questions arise during the proposal submission process, respondents are advised to first contact Sam Mineer. Questions which cannot be resolved by Sam will be relayed to the faculty advisor and the project sponsors.

- Samuel Mineer – Brigham Young University (Graduate Student Mentor)
 - samuel.mineer@gmail.com
 - 480-773-8411 (personal cell)
- Dr. Mitsuru Saito – Brigham Young University (Faculty Advisor)
 - msaito@byu.edu
 - 801-422-6326 (direct office line)
- Michael Fazio – Bluffdale City Engineer (Project Sponsor)
 - mfazio@bluffdale.com
 - 801-559-7781 (direct office line)
- Matthew Chadwick – Bluffdale City Engineer (Project Sponsor)

- mchadwick@bluffdale.com
- 801-559-7782 (direct office line)

Additional Sources to Review

- Mini-Roundabouts
 - <http://www.shakopeemn.gov/residents/roads-transportation/current-projects/mini-roundabout-at-vierling-drive>
 - <http://safety.fhwa.dot.gov/intersection/roundabouts/fhwasa10007/ppt/fhwasa10007ppt.pdf>
- Traffic Calming.org
 - <http://trafficalming.fehrandpeers.net/measures/speed-humps/>

Submittal Requirements for Proposal

On the indicated date given in the Process Schedule, turn in three hard copies of the proposal. The proposal should include the following elements (see Grading Rubric for Proposal shown in Table 1 for additional guidelines):

- Cover letter
- Executive summary, 1 page or less (by itself)
- Work plan
 - Outline the approach to solving the problem
 - Describe how the team will work together (including weekly work schedule that shows the hours each team member will work and the time block the team will be together, this is a necessary requirement)
- Necessary tools, data, equipment, etc.
 - A few of paragraphs or a bullet list with one sentence explanation for each item.
- Schedule of important milestones
- Engineering design budget
 - This is an estimate of the design phase cost.
- Outcome and performance standards
 - Provide the following statement (italics not needed):
 - *Teams will provide the work "as is" meaning that there is no engineering stamp certifying the work.*
- Team Abilities
 - Statement of qualifications that outlines the background, experience, education, and organizational structure of the team (not a “cut and paste” of individual SOQ’s)

- Include some discussion of how the team plan to become a "high functioning" team in the course of completing the project
- Outside consultants (professors or others) that are necessary to “make this work.”
- Needed appendices:
 - Appendix A: One-page résumé for each member of the team
 - Appendix B: As needed