

November 11, 2011

Selection Committee

Brigham Young University

Kennecott Land Company

4700 Daybreak Parkway
South Jordan, Utah 84095

Subject: Proposal for Daybreak Parkway Couplet Project

Dear Daybreak Selection Committee,

TWGS Engineering is pleased to submit this proposal to Kennecott Land for the Daybreak Parkway Couplet Project. Selection of TWGS Engineering will provide Kennecott Land with the following benefits:

Integrated and Qualified Team: Our team is made up of qualified engineering students with backgrounds that will add to the quality of the project. Our team consists of Shawn Larson – Transportation emphasis, Alex Wright – Geotechnical emphasis, Ken Rose – Transportation emphasis, and Bradley Magnusson – Land Development emphasis.

Approach: TWGS's approach consists of on-site analysis and comparison to similar successful projects. Our on-site analysis will ensure that our team has a firm grasp on the specifications and desired results of this specific project. In addition to this, we recognize the value of applying ideas generated from successful projects of the past. The effect of these two considerations is to create a fundamentally solid solution that will be uniquely applied to your project. We will perform all necessary tests in order to ensure the project is a success and will benefit Kennecott Land for years to come.

Commitment to Excellence: We as a team are committed to delivering the Daybreak Parkway Couplet Project to Kennecott Land in a manner that meets or exceeds all objectives outlined in the RFP. Our team has the direct experience and skills necessary to address the issues of that are present with this project.

We are available to begin working with on the project immediately. As you review our proposal, please feel free to contact us at (805) 746-9962 for any additional information. Furthermore, we welcome the opportunity to meet with you on November 21st to introduce ourselves and explain our approach.

Respectfully,

Shawn Larson

Alex Wright

Ken Rose

Bradley Magnusson

Executive Summary

Overview

The object of the Daybreak Parkway Couplet Project is to reduce the 85 percentile speed on the Daybreak Parkway Couplet located at 4700 West and Daybreak Parkway in South Jordan, Utah, to help drivers obey the law and increase pedestrian safety. This project will include a review of the signing, striping, and signalization of the Kestrel Rise Road crossing; identification of deficiencies and improvements required; preparation and comparison of several alternatives; and preparation of design drawings for the selected alternative. In addition, the project will also include a before and after analysis on the improvements currently in design. These objectives will be accomplished by performing speed/warrant and volume analysis of the Daybreak Parkway Couplet.

Key Issues

Through discussions with staff, site visits, and review of the documents given, TWGS Engineering understands the key issues included in this traffic calming project. The team will address them during the course of their work. They include:

- Pedestrian Safety
- Maximizing commercial access on site, including parking
- Meeting Agency standards

Project Team and Experience

TWGS has assembled a team of Brigham Young University students highly qualified for this project. Not only are they each individually qualified, but have already proven their effectiveness as a team in producing award winning and creative project solutions.

- Shawn Larson – Transportation emphasis
- Alex Wright – Geotechnical emphasis
- Ken Rose – Transportation emphasis
- Bradley Magnusson – Land Development emphasis

Approach Methodology

TWGS plans to take a thorough approach to this project to ensure that the best possible alternative is recommended. We plan to do initial site studies for the flow, volume, and speed of on-site traffic. An in depth literary review will be performed to research applicable traffic calming methods based on the data we collect. With this information, multiple design alternatives will then be presented and a post-implementation site study will be performed in order to evaluate the effectiveness of solutions currently in effect.

Work Plan

Purpose

The following plan outlines the unique approach TWGS will follow in developing alternatives, evaluating and selecting the best alternative. A schedule for project completion is also included.

Field Studies

In order to develop alternatives that will reduce the eighty-fifth speed on this road it is important to visit the location and gather data about the site. Some of the information about the roadway such as the lane widths, lateral clearances and signs will need to be examined. To go along with this information, speed studies and traffic counts will be performed on location. These studies will help to determine by how much the speed needs to be reduced and some of the methods that might be employed to do so.

Review of Past Projects

In any engineering project it is important to examine other projects that have been successful. Past projects can provide knowledge as well as bring insight into new or better ideas for this project. To begin our project we will review past work and studies related to traffic calming/speed limit enforcement. All of the information that will be reviewed will be taken into account as alternatives are developed and evaluated.

Develop Alternatives

With the information gathered through the review and collection process a number of alternatives will be developed. These alternatives will look at different methods that can be used to reduce the eighty-fifth percentile speed. Each of these alternatives will include data such as cost, completion time, and analysis of expected effect. Initially some alternatives that will be considered are speed bumps, roadway narrowing, and lane reduction. The final design will likely include an appropriate combination of several measures.

Compare and select

TWGS Engineering seeks to produce a design in keeping with Kennecott Land's goal to "preserve the environment and quality of life for today's resident and for generations to come." Costs associated with our design will be kept within a reasonable level while still allowing for a project that will fulfill Kennecott's goal. Therefore, alternatives presented to Kennecott Land will have already been evaluated such that they will maximize safety, minimize environmental impact, create traffic efficiency, and be kept within reasonable cost. Our team will also recommend a specific alternative.

Evaluate Results

Our team will also be available after project implementation to determine the effectiveness of the selected design. The focus of this analysis will be to find if there was a significant lowering of eighty-fifth percentile speed and if pedestrian safety has been increased. The findings of this part of the project will be summarized and presented to Kennecott Land.

Work Schedule

The normal work week will follow the schedule that is shown in Table 1 below. The hours of 3 pm to 6 pm on Thursday will be reserved for group work. Individual work will occur at select hours during the week if not on Tuesday as shown below. Table 2 displays our group's overall schedule for completion of this project by April 1, 2011 and our objectives for each month.

Table 1. Weekly Work Schedule

Tues (3-6pm)	Thurs (3-6pm)	Saturday
Data analysis	Data analysis	On-site analysis
Research	Research	
Design	Design	
Drafting	Drafting	
On-site analysis	On-site analysis	
Evaluation	Evaluation	

Table 2. Overall project schedule and objectives

Month	Objectives	Lead Team Member*
January	Complete on-site data gathering and analysis	Ken Rose
	Complete research of past projects	Brad Magnusson
February	Evaluate possible design alternatives	Shawn Larson
	Complete preliminary design drawings	Alex Wright
March	Select three alternative designs	Shawn Larson
	Select recommended design	Shawn Larson
	Complete final design drawings	Alex Wright
	Post implementation speed/safety analysis	Ken Rose
April	Submit poster and report	Shawn Larson
	Presentation to Kennecott Land	Shawn Larson

*All team members will be involved in all stages of this project.

Necessary Tools, Data, and Equipment

Table 3 illustrates the types of tools, data, and equipment that may be required during completion of this project and their possible uses.

Table 3. Projected tools needed for project

Tool, Data, or Equip.	Possible Use
Survey equipment	road dimensions, marker placement
Microsoft Excel	data analysis
Infra-Red Traffic Logger	volume/speed recording
Volume counts	determine road demand
Average speed	determine 85th percentile speed
Current design drawings	off site road analysis
Traffic analysis software	data analysis/simulation
Personal safety equipment	on-site team safety

Project Budget

Table 4 summarizes the projected budget our group will hold itself to. The budget is based on a student fee of twenty dollars per hour, graduate student consultation fee of forty dollars per hour, professor consultation fee of one hundred dollars per hour. Equipment rental and transportation costs were also factored in as shown below.

Table 4. Project Budget

Cost	Amount
Student Fees	\$8,000
Transportation	\$40
Graduate Fees	\$480
Professor Fees	\$400
Equipment	\$500
Total	\$9,420

Statement of Qualifications

Shawn Larson – Project Management

Responsibilities

In charge of assigning tasks, reviewing calculations and data collection, and overseeing project completion.

Experience

Shawn has previously worked for the Texas Transportation Institute. While working there he analyzed data in Microsoft Excel for a project for TTI. Shawn has an excellent educational background for this project as he has taken CE En 565, urban transportation planning; CE En 562, traffic engineering; CE En 461, geometric highway design; and CE En 361, introduction to transportation engineering; as well as STAT 221, principles of statistics. Shawn is currently an officer of Brigham Young University's Institute of Transportation Engineers Student Chapter. From his experience conducting transportation research in the past he has developed an excellent understanding of the needs of research in general. He will be able to apply his skills towards this project successfully.

Shawn's computer skills include excel and Civil 3D; as well as HCS+, Synchro 7, Quick Response System II, and General Network Editor. He has used these programs in classes and on projects for TTI. Shawn has, on previous projects also preformed analysis of data obtained from surveys. Shawn helped edit reports which will be presented at the Transportation Research Board's Annual Meeting from TTI. Shawn has also taken the Fundamentals of Engineering exam in October.

Bradley Magnusson – Research

Responsibilities

Collecting research and analyzing past traffic calming techniques for use in this project.

Experience

Bradley Magnusson has done work on roads for previous projects and jobs in which he employed surveying techniques and ArcGIS programs. He has excellent AutoCAD skills. His experience helping create drawings for a waste water treatment plant would easily allow him to be able to draw up or read plans for our site. He has also had experience working with subdivision plans from which he gained experience in recording data points, and analyzing data spatially. Brad has excellent Microsoft Excel analysis skills; having used excel for analysis before and in a computational methods class (CE En 270). Therefore, he will be able to contribute significantly to analysis and comparison of data collected before and after the improvements are put in place. He has also taken CE En 361, intro to transportation engineering, and will be invaluable in his ability to apply the knowledge he gained here to the problem set before us.

Ken Rose – Data Analysis

Responsibilities

Oversee collection and analysis of data from site.

Experience

Ken Rose is an excellent engineering student. He has taken CE En 361, intro to transportation engineering, and will be taking CE En 461, geometric highway design, during the course of the project. These two courses, along with problem solving abilities obtained from a broad educational background in civil engineering will allow him to approach our project in a unique and creative manner.

He will be able to apply former experiences from his work with West Jordan city. While employed by the city Ken worked under minimal supervision on the city's storm water modeling project. The project allowed him to apply the knowledge gained from his experience as a CE En 113, engineering measurements, Teaching Assistant to the surveying and ArcGIS work required for the project. Also required for this project was analysis of as-built road design drawings in order to correctly model the city's storm water system. During this project Ken was able to learn and apply good problem solving skills even when the problems presented did not fall entirely within his educational background.

Alex Wright – Design Drafting

Responsibilities

Creation and compilation of sight drawings, analysis/oversight of existing drawings provided

Experience

Alex Wright has worked on several research projects previously and has an excellent grasp of how to analyze data using excel. He has also worked on research, which was submitted to UDOT, where he analyzed the effect of an improvement before and after it was put in place. Alex has had opportunity to work with and direct teams of engineers previously in CE En 341, elementary soil mechanics, as a TA and as a student. He has taken CE En 361 and will be able to apply the skills and insights gained there to this project and help complete this project on time. Alex has also taken STAT 221, which will help in statistical analysis of the data collected in order to help determine the effect of the traffic calming measures.

Outside Consultants

Bryce Albrecht – Graduate Student

Grant G. Shultz Ph.D. – Brigham Young University Associate Professor of Civil Engineering

Mitsuru Saito Ph.D. – Brigham Young University Professor of Civil Engineering

Alexander D. Wright

(801) – 589 – 1177; readathon121@gmail.com; 445 North 400 East Provo, UT, 84606

Job Experience

Brigham Young University

Research Assistant July 2011 – October 2011 Provo, Utah

- Worked on numerical analysis of data for a bridge abutment
- Finished work to be submitted as paper and report submitted to UDOT at completion to help them compare results with pre application measurements
- Work required in depth use of Excel to analyze and organize data
- Creation of equations and graphs from data in order to determine if construction of stone columns caused desired improvement in the bridge abutment

Research Assistant May 2011 – August 2011 Provo, Utah

- Assisted in development of large scale test, in order to determine shear forces generated by a model of an abutment
- Assisted in measurement and calculation of soil properties using Excel
- Created simple AutoCAD drawings for the project

Teaching Assistant CE 341 September 2011 – Present Provo, Utah

- Supervised and instructed class in laboratory practices and calculations
- Provided experience working with and leading a group and meeting schedule

Research Assistant April 2011 – June 2011 Provo, Utah

- Worked on Hobbie Creek Project, which provided experience with research

Skills

Certifications

- Fundamentals of Engineering Exam taken (October)

General Skills

- Excel – Experience using Excel and visual basic to analyze data and compare and contrast results in order to find equations, determine trends, and extrapolate data
- AutoCAD – Proficient; Taken classes at BYU, DATC, and in high school developing AutoCAD proficiency. Used in research on bridge abutments to construct basic schematic

Education

Classes

CE EN 361 – Introduction to Transportation Engineering
Stat 221 – Principles of Statistics

CE 544 – Seepage and Slope Stability – used excel to analyze slopes
Math 302 & 303 – Math for Engineers

Kenneth L. Rose

(408) – 838 – 6121; krose@byu.edu; 735 North 400 East #26 Provo, UT, 84606

Job Experience

City of West Jordan May 2011 – August 2011 8000 S. Redwood Rd., UT 84088

- Work performed with minimal supervision
- Analysis of as-built road schematics, surveying, ArcGIS

Brigham Young University Sept - Dec 2010, Sept - Nov 2011 Provo, Utah

- Teaching Assistant, CE EN 113 – Engineering Measurements
- Instruction of Civil Engineering and Construction Management students in applied surveying principals and ArcGIS.
- Position requires collaboration with professor and other TA's in an academic setting

National Resources Conservation Services

- Volunteering Surveying – data gathering on agricultural irrigation systems

Skills

- Above average out-of-classroom exposure to ArcGIS software and surveying work
- Good knowledge of Microsoft Excel and AutoCAD programs

Education

Classes

CE EN 461 – Geometric Design of Highways (concurrent)
CE EN 361 – Introduction to Transportation Engineering
C S 142 – Computer Programming (concurrent)
Stat 221 – Principles of Statistics
Math 313,314,334 – Linear Algebra, Multivariable Calculus, Differential Equations

Bradley S. Magnusson

(916) – 532 – 6083; b1rad.magnusson@gmail.com; 1849 N. Freedom Blvd Provo, UT, 84606

Job Experience

Engeo Inc. June 2005 – August 2006 Rocklin, California

- Worked with boring logs and other sample documentation.
- Experience with road plans and road designs.
- Work with subdivision plans and aerial photos.

Coleman Engineering June 2011 – August 2011 Roseville, California

- Assisted in the writing and design of a WWTP in Tuolumne, CA.
- Wrote a Pre-Design Report for Shadow Lakes Golf Course.
- Helped design grading plan for EBMUD power station.

Skills

General Skills

- AutoCAD – Proficient; drafted details for WWTP Improvement Plans.
- GIS – Proficient; course completed at Brigham Young University.
- Excel – Experienced; Used for statistical analysis for a variety of projects.

Education

Classes

CE EN 361 – Introduction to Transportation Engineering
Stat 221 – Principles of Statistics
CE EN 414 – Civil Engineering Applications of GIS
CE EN 270 – Computational Methods
CE EN 112 – Auto Cad
CE EN 461 - Geometric Highway Design (concurrent)

Shawn J. Larson

(805)-746-9962; ShawnJLarson@gmail.com; #5 1065 East 450 North Provo, UT, 84606

Job Experience

Texas Transportation Institute (TTI) May 2011 – August 2011 College Station, Texas

- Participated in the Undergraduate Transportation Scholars Program
- Worked on Intercity Passenger Rail connections to Airport study at the Milwaukee International Airport
- Performed analysis on data received from interviews and surveys and helped to write, review final reports.
- Two papers from this project are going to be presented at the Transportation Research Board Annual Meeting, one of these papers has been recommended for publication.

Skills

Certifications

- Fundamentals of Engineering Exam taken (October)

General Skills

- Excel – Proficient, used to help in analysis done for TTI project
- Civil 3D – Good understanding, used to help with design project in Geometric Highway Design class to redesign highway junction.
- HCS+ - Proficient, used in school design project for Geometric Highway Design class project
- Synchro 7- Good understanding, used in Traffic Engineering class projects
- Quick Response System II- Some experience for Urban Transportation Planning class projects
- General Network Editor- Some experience for Urban Transportation Planning class projects

Education

Classes

CE EN 565 – Urban Transportation Planning
CE EN 562 – Traffic Engineering
CE EN 461 – Geometric Highway Design
CE EN 361 – Introduction to Transportation Engineering
Stat 221 – Principles of Statistics

Academic experiences/other

BYU Institute of Transportation Engineers Student Chapter Officer