

October 30, 2017

Matt Hawley,
Kiewit Engineering Group Inc.
9401 Renner Blvd, Lenexa, KS 66219
(402) 596-5406

Dear Matt Hawley,

Thank you for meeting with us and explaining more about the Temporary Slope Repair Project in Irving, Texas. We are grateful for the opportunity to work on this project. We have recently received a RFP from our project manager, Kaylee Bateman, and have created a proposal based on the RFP as well as our meeting with you. We hope to create an innovative solution and meet your expectations. Please look over the proposal enclosed and feel free to contact us regarding any questions and/or solutions. We look forward to meeting with you soon.

Warm regards,

SAMM Engineering
Stephen Isaacson
Amanda McFarland
Mary Ririe
McKay Parkinson

mckayparkinson@gmail.com
(505) 660-4405

Enclosed

**TEMPORARY SLOPE REPAIR FOR HIGHWAY
EXPANSION**

Project ID: CEEEn_2016CPST_006

by

SAMM Engineering

Kaylee Bateman / Project Manager

McKay Parkinson / Team Lead

Stephen Isaacson / Task Lead

Amanda McFarland / Task Lead

Mary Ririe / Task Lead

A Capstone project submitted to

Matt Hawley

Kiewit Engineering Group Inc.

**Department of Civil and Environmental Engineering
Brigham Young University**

October 30, 2017

Introduction

PROJECT TITLE: Temporary Slope Repair for Highway Expansion
PROJECT ID: CEEEn-2016CPST-006
PROJECT SPONSOR: Kiewit Engineering Group Inc.
TEAM NAME: SAMM Engineering

The project for the SAMM Engineers is to create a temporary slope repair design for highway expansion, creating an innovative solution to meet Kiewit's expectation. This will be accomplished by understanding the problem and researching solutions that will be best suited for the client.

The team will consist of Kaylee Bateman as project manager, McKay Parkinson as the team lead, Stephen Isaacson as a drafter and calculations specialist, Amanda McFarland as a drafter and technical writer specialist, and Mary Ririe as the design and calculations specialist. Kiewit Engineering has provided pictures of the site, boring logs, and a summary of the issue, and will provide AutoCAD drawings with the slope drawing.

The project will begin in January 2018, and will be followed by team members working on it at least 8 hours per person per week. The team will also meet weekly with Matt Hawley to provide feedback and give updates on the work progress. Monthly status reports will be submitted every 1st of the month starting in February 2018. Upon identifying and understanding the problem, the students will choose a design method and options by January 22, 2018. Next, the drawing set and calculations will be submitted for approval on February 16, 2018. The engineer's estimate and construction schedule will be sent to Kiewit on March 16, 2018. A final report, presentation, and poster will be included with all deliverables and will be submitted by April 6, 2018 to the sponsor and Capstone Committee.

This proposal includes the team's proposed work plan, detailed schedule, summary of facilities, tools, data, and equipment to be used, the project budget, deliverables, performance standards, and statement of qualification.

Proposed Work Plan

The BYU Capstone Team will provide a temporary slope repair design to aid construction of a temporary road facilitating construction of a road widening project. To provide this design, the team will first analyze the mechanisms causing the temporary slope to fail. This will be done at BYU during the first few months of the project, utilizing data provided by Kiewit Engineering group. Boring logs taken from the site will be used in particular to determine possible causes of slope failure.

Once the cause of slope failure is determined, the BYU team will evaluate several possible solutions to facilitate slope stability. Factors such as cost, speed, ease of construction, and effectiveness will be taken into consideration in order to decide upon the most economical solution possible. This work will be completed by the end of January, 2018 by the BYU Team.

The BYU team will then work on evaluating the chosen design and providing the following deliverables to Kiewit Engineering Group by the end of the project:

- Drawing set for slope repair design
- Calculation package for slope repair design
- Engineer's estimate for slope repair design
- Construction schedule for slope repair design

The drawing set for the slope repair design shall be constructed using CAD software, and will show the proposed design.

The calculation package shall list all assumptions made during design process, as well as document calculations supporting the design parameters shown in the drawing set.

The engineer's estimate for the slope repair design shall detail a cost estimate for the materials and labor for the proposed design.

The construction schedule shall provide an estimate of the total speed of construction, as well as estimate how long certain construction tasks should take.

Schedule

Table 1. Proposed Schedule*

Task	Date
Choose design method	January 22, 2018
Weekly meetings	Every Tuesday at 8 am CT beginning January 9, 2018
Monthly status reports	Submitted via email every 1st of the month, starting in February, 2018
All team members work schedule	Mondays, Wednesdays, and Fridays from 3 pm - 5:50 pm
Drawing set and calculations approval	February 16, 2018
Engineer's estimate and construction schedule	March 16, 2018
Final report and presentation	April 6, 2018

*this is only a preliminary schedule and is subject to change as our schedules for Winter semester become clearer.

Facilities, Tools, Data and Equipment

The CAEDM lab at the Clyde Engineering building will be the facility used for this project with all the tools, data and equipment necessary. The students will use AutoCAD, Revit, Microsoft Office Suite, and Google Earth to accomplish the drawing, calculations, and reports for this project.

Project Budget

No monetary value will be accepted for the work performed. Each team member is expected to work 8 hours a week including weekly progress meetings with the Sponsor and weekly meetings with the team members. By the end of the semester, each team member is anticipated to have spent 100-110 hours on this project. For a more detailed timeline, see Table 1.

Deliverables

The BYU Capstone team will deliver the following items over the course of the project:

- Monthly Status Reports which will include the answers to 4 questions:
 - What challenges has your team encountered in your Capstone project?
 - What actions did your team decided to do to overcome these challenges?
 - Is there any progress overcoming these challenges?
 - Is the Project on Schedule?
- A final report detailing project findings including the following deliverables:
 - Drawing set for slope repair design
 - Calculation package for slope repair
 - Engineer's estimate for slope repair
 - Construction Schedule for slope repair
- A poster reflecting a summary of the project which will be presented to BYU students, faculty, and other interested individuals during the Civil and Environmental Engineering Seminar
- A PowerPoint presentation summarizing the project to be delivered to Kiewit Engineering Group Inc.

Performance Standards

Team will provide work for this Capstone project “as is” using best practices and with best effort. Project results cannot be construed as work performed by licensed professionals and cannot be used as “stamped deliverables” without first being reviewed, approved and stamped by a qualified and relevant license professional engineer.

Although this project addressing this proposed problem has already been solved, the Team will do their best to come up with a competitive, cost effective solution that can be used to solve this problem again if the need arises.

Statement of Qualification

SAMM Engineering is qualified to for this slope project because the team has been academically prepared through BYU's Civil and Environmental Engineering as well as various work experiences in different disciplines of engineering. Each member of this has learned important technical skills and technical writing through a variety of classes and have utilized programs such as AutoCAD, Revit, ArcGIS and Microsoft Office. The team will work closely with the Project Manager and meet regularly with each other as well as attending weekly progress meetings to ensure steady progression and team involvement in solving the proposed problem. Each member is expected to do their part in ensuring the success of this project and will be expected to be professional.

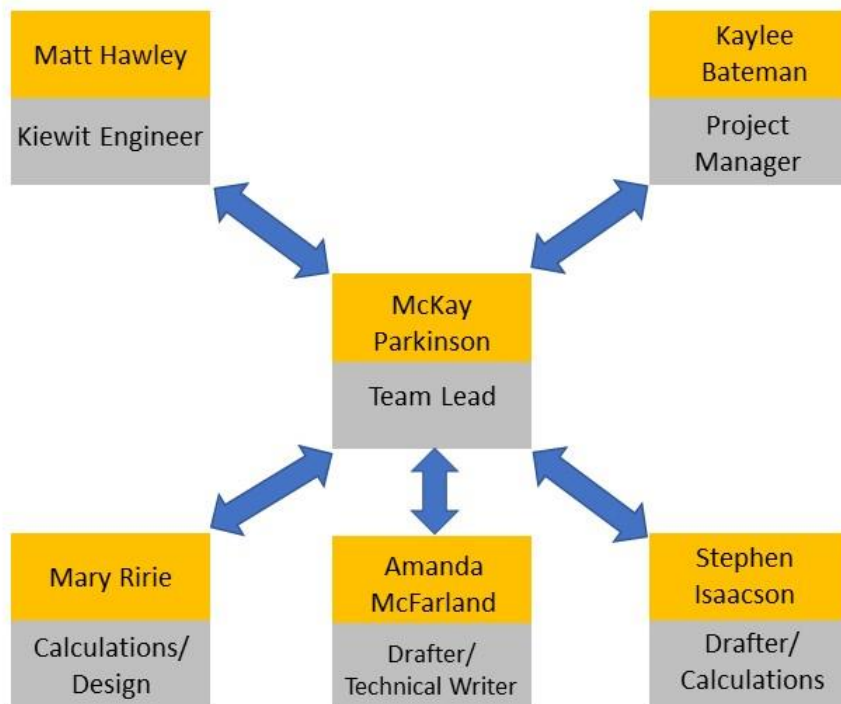


Figure 1: Team Organizational Chart

Meet the Team:



Kaylee Bateman

Project Manager

- BS in Civil Engineering, BYU (August 2017)
- Will graduate with Masters for BYU in April 2018 emphasizing in steel reinforcement and chloride concentrations in concrete bridge decks



McKay Parkinson

Team Lead

- Liaison between the Team and the Sponsor

Task Lead

- Coordinating team meetings and ensuring the Team sticks to the schedule

Relevant Coursework

- Soil Mechanics
- Foundations Engineering

Relevant Work Experience

- Currently an intern at a Civil Engineering Consulting Firm (Horrocks Engineers)



Amanda McFarland

Task Lead

- Drafting and technical writing

Relevant Coursework

- AutoCAD and Revit
- Foundations Engineering

Relevant Work Experience

- Interior Designer Assistant at Leslie Schofield Design



Mary Ririe

Task Lead

- Design work and Calculations

Relevant Coursework

- Geometric Design of Highways
- Reinforced Concrete Design

Relevant Work Experience

- Interned full-time at a Civil Engineering Consulting Firm (Keller Associates)



Stephen Isaacson

Task Lead

- Drafter and Calculator

Relevant Coursework:

- Soil Mechanics / Foundation Engineering
- Revit / AutoCAD

Relevant Work Experience:

- 4 + years Project Manager / Architectural Drafter at the Architectural Coalition-Guil Rand.

Faculty Advisor:



Dr. Rollins

- Ph.D. Geotechnical Engineering, University of CA, Berkeley, 1987
- Professor at BYU since 1987

Appendix A

KAYLEE BATEMAN

15 E 200 N Apt. 3, Orem, Utah 84057 ♦ (208)390-4544 ♦ kayleedebateman@gmail.com

EDUCATION

Masters of Science, Structural Engineering	Estimated Apr 2018
<i>Brigham Young University</i>	<i>Provo, UT</i>
Master's Thesis: Relationship between delaminations of steel reinforcement and chloride concentrations in concrete bridge decks	
Bachelors of Science, Civil Engineering	Aug 2017
<i>Brigham Young University</i>	<i>Provo, UT</i>
Member of national and student chapter of American Society of Civil Engineers	

RELATED WORK EXPERIENCE

Graduate Research Assistant	Feb 2017 – Present
<i>Brigham Young University</i>	<i>Provo, UT</i>
- Performed chloride testing on bridge decks to determine structural integrity of the bridge - Carried out a unique process preparing, diluting, and titrating chloride samples - Communicated amongst peers and the research professor to define problems, collect data, establish facts, and draw conclusions	
Undergraduate Researcher	Oct – Dec 2016
<i>Brigham Young University</i>	<i>Provo, UT</i>
- Tested and developed grout mixtures with specified compressive strengths - Reviewed calculations and analytical data to maintain accuracy during testing	
Civil Engineering Structural Intern	Apr – Aug 2016
<i>Engineering Systems Solutions (ES²)</i>	<i>Idaho Falls, ID</i>
- Created concrete design spreadsheets for concrete shear, column interaction diagrams/ loadings and beam moment analysis - Utilized proprietary software from ES² to check company designs with reinforced concrete - Coordinated with other project engineers to review projects for construction	

ACTIVITIES AND INVOLVEMENT

Analyst	Sep 2016 – Apr 2017
<i>City of Orem Transportation</i>	<i>Orem, UT</i>
- Analyzed effect of changing an intersection control system through a traffic corridor - Collaborated with eight city engineers and capstone team members	
Mentor	Sep 2016– Dec 2016
<i>Brigham Young University</i>	<i>Provo, UT</i>
Assisted incoming female freshman in engineering navigate their first semester by helping them coordinate schedules and build relationships with peers	
Leadership Study	May – June 2015
<i>Brigham Young University</i>	<i>Guangzhou, China</i>
Studied engineering leadership at Sun Yat Sen University	
Student Volunteer	Aug – Dec 2013
<i>Westerstede Elementary</i>	<i>Westerstede, Germany</i>
Volunteered 15 hours a week assisting German students with English	

McKay Parkinson

438 N 700 E, Provo UT 84604 | (505) 660-4405 | mckayparkinson@gmail.com

Education

UNDERGRADUATE – BRIGHAM YOUNG UNIVERSITY

EXPECTED GRADUATION: DECEMBER 2018

- Major: Civil Engineering
- Major Courses: Geometric Highway Design, Foundation Design
- GPA: 3.04

Experience

HORROCKS ENGINEERS

MAY 2017 - PRESENT

- Perform turning movement, approach, and average daily traffic counts using count-boards, pneumatic tubes, etc.
- Author Traffic Impact Studies
- Assisted with creating Impact Fee Facilities Plans for American Fork and Orem

RESEARCH ASSISTANT

JANUARY 2017 - PRESENT

- Created reports on UDOT roads using the Roadway Safety Analysis Method developed at BYU

TEACHING ASSISTANT – BRIGHAM YOUNG UNIVERSITY

JANUARY 2016 - MAY 2017

- Graded assignments, answered students' questions, and trained co-worker on various responsibilities

BYU STEEL BRIDGE TEAM

AUGUST 2015 - JUNE 2017

- Designed, fabricated, and built a steel bridge for the AISC Steel Bridge competition
- 2017 Rocky Mountain Conference champions – Competed at the National Steel Bridge Competition at Oregon State

Volunteer Work and Professional Associations

BYU AREMA STUDENT CHAPTER – ACTIVITIES COORDINATOR

APRIL 2017 - PRESENT

- Plan bi-monthly Professional Forums on campus

BYU ITE STUDENT CHAPTER – SECRETARY/TREASURER

DECEMBER 2016 - PRESENT

- Manage chapter website, maintain lists of current membership, and manage chapter funds

THE CHURCH OF JESUS CHRIST OF LATTER DAY SAINTS

MAY 2013 - MAY 2015

- Served a proselyting mission for two years in Germany and Austria training single missionaries and leading groups of 8-12 missionaries

Skills & Abilities

COMPUTER SKILLS

- Synchro 10 & Vistro 5.0
- ArcGIS
- Visual Basic Programming

LANGUAGES

- English (native), German (proficient)



Stephen J Isaacson

IsaacsonStephen@gmail.com
www.linkedin.com/in/isaacsonstephen

801.921.1216

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Architecture / Civil Engineering B.S.

Determined / Honest / Reliable

Why you should hire me

In short, I am an all-around great guy! I work hard, and will get everything you need done, done. If you want work to be efficient, successful, and far too enjoyable, hire me.

Achievements

- February 16, 2013, I married my sweetheart, Kaisha Marie Beatty, for time and all eternity in the Mt. Timpanogos Temple.
- June 17, 2014, My Son, Nathanael James Isaacson, was born into our family.
- March 2009 to March 2011, I served a full-time mission for the Church of Jesus Christ of Latter Day Saints in the California Santa Rosa Mission.

Goals

I will graduate from BYU spring of 2018 in the Civil Engineering program, with a focus on Structures, and go on to the University of Utah to obtain a Master's degree in Architecture. My ultimate career goal is to build churches and temples for the Church of Jesus Christ of Latter Day Saints.

Education

Brigham Young University | BS Civil Engineering 2018
Utah Valley University | Associate in Pre-Engineering 2013
American Fork High School | Graduate 2007

Skills

Professionally used Revit Architecture 2016, 2015, 2012, 2010, 2009, Basic Hand Drafting, Basic knowledge of AutoCad, Pro-E, and Solid Works.

Experience

Company Name: Architectural Coalition- Guil Rand
Job Title: Project Manager/Architectural Drafter
Start Date: May 2014
End Date: Currently Employed

Amanda Correa McFarland

amanda.cc.mcfarland@gmail.com
801.654.3616
3074 Davencourt Loop, Lehi, UT 84043

EDUCATION **Candidate, Bachelor of Science, Civil Engineering**, Brigham Young University, Provo, Utah. Summer 2013 – Spring 2018, GPA: 3.47/4.00
Relevant Courses: Traffic Engineering, Urban Transportation Planning
Associate of Applied Sciences, Interior Design, LDS Business College, Salt Lake City, Utah. Winter 2010 – Fall 2011
Student in the Architecture Program, Federal University of Campinas, Sao Paulo, Brazil. 2009

EXPERIENCE **Interior Design Assistant**, Leslie Schofield Design, Salt Lake City, UT
January 2013 – Present
Efficient AutoCAD and Revit drawings, renderings, presentations, helps designer with installs and site visits, quality aid in every step of the design process
Interior Design Assistant, Brigham Young University, Provo, UT
May 2014 – December 2014
Detail work in commercial design, space planning, met with clients, presented ideas and products
Design Associate, Restoration Hardware, Salt Lake City, UT
February 2012 – October 2013
Competent works with clients helping them with their design needs, implemented high quality visual standards
Registration Assistant, LDS Business College, Salt Lake City, UT
August 2010 – February 2012
Quality customer service improving 80% of the efficiency
Interior Design Intern, Imbue Design, Salt Lake City, UT
August 2011 – November 2011
Developed 3D models; researched furniture, materials, and design fixtures; using Photoshop

SKILLS

- Proficient in AutoCAD, and SketchUp
- Intermediate in Revit and beginner in GIS
- Passion for engineering and continuous learner
- Work well under deadlines and pressure
- Detail oriented to perform quality tasks
- Leadership and team work through collaboration in college projects
- Knowledge in using Microsoft Office, Excel VBA primer, and Internet use
- Portuguese speaking

REFERENCES Upon request

MARY RIRIE

66 W 300 S #1 Springville, UT 84663 • 972.589.4211 • ririe.mary@gmail.com

EDUCATION

BS IN CIVIL ENGINEERING, BRIGHAM YOUNG UNIVERSITY, PROVO, UT

Graduation Date: June 2017

Completed relevant classes include:

- Statics
- Mechanics of Materials
- Dynamics
- Computational Methods
- AutoCAD/Revit Structure
- Intro to Transportation
- Metals, Woods, and Composites
- Concrete, Masonry, and Asphalt
- Geology for Engineers
- Engineering Measurements (Surveying)
- Moral Leadership in Technology
- Structural Analysis
- Reinforced Concrete Design
- Environmental Engineering
- Hydraulic and Fluid Flow Theories
- Geometric Design of Highways

To be completed pre-graduation:

- Elementary Soil Mechanics
- Structural Steel Design
- Hydrology
- Capstone
- Hydraulics

SOFTWARE: AutoCAD, Civil 3D, Microsoft Office Suite

WORK EXPERIENCE

INTERN, KELLER ASSOCIATES, INC., IDAHO FALLS, ID

JAN 2017 TO AUG 2017

- Analyzed data and created graphs and tables to present to clients
- Attended meetings to consult with clients
- Compiled bid documents
- Worked as a field engineer including site observation and reviewing submittals
- Aided in pump and pipe design
- Compiled quotes to help estimate the total project cost
- Worked extensively with coworkers to complete projects

TEACHERS ASSISTANT FOR STRUCTURAL ANALYSIS, BYU, PROVO, UT

AUG 2017 TO PRESENT

- Assist students in learning principles of structural analysis
- Grade papers

VOLUNTEER EXPERIENCE

ASCE MEMBER, BYU CHAPTER, PROVO, UT

JAN 2010 TO PRESENT

- Member of the BYU chapter of the American Society of Civil Engineers
- Participated in a minimum of 5 hours of service per semester. Previous service programs include Habitat for Humanity and Math Counts.
- Attend presentations from various fields of engineering weekly

WE@BYU MENTOR, PROVO, UT

AUG 2017 TO PRESENT

- Assigned to meet with a few freshmen to aid them in getting adjusted to school and engineering