

ENGINEERING CHANGES VS. NEIGHBORHOOD IMPACT ASSESSMENT

PROJECT MANAGEMENT PLAN

**Prepared by:
BMK Engineers
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**A Capstone project submitted to:
Jared Penrod
City of Orem Department of Transportation
Department of Civil and Environmental Engineering
Brigham Young University**

Overviews

Vision Statement

At BMK Engineering, we are committed to providing accurate, professional work. Projects we design will be carried out in a timely manner, meeting all deadlines. Each member of the team is ethical and prepared to provide the City of Orem with the expertise required for this project.

Purpose of the Project

Orem is a city in central Utah County. With each passing year, the city's population increases, which has been effecting traffic flow. The 800 East corridor in Orem has experienced peak hour problems. The intersections at 800 North and on Center street have been especially problematic with D, E, and F level-of-service (LOS) ratings during peak hours. Throughout the corridor, all but one of the major intersections are controlled by traffic signals. The intersection at 400 North is currently a 4-way stop.

Orem city wishes to acquire consulting services to analyze the 800 East corridor. This analysis is to be focused particularly at the 400 North 800 East intersection to determine how changing its intersection control system would affect the peak-hour problems at 800 N and at Center Street.

The specific needs of the client are:

- The effect of control systems on peak-hour problems at 800 N and at Center Street
- A proposal for a new signal timing for the 800 East corridor for both peak and off-peak hours
- Roundabout and signal analysis
- Modification of intersections to help Northbound and Southbound flow

BMK Engineering has reviewed the requirements of Orem City's Engineering division. We are committed to providing Orem City's Engineering division with the necessary assistance to meet these needs.

Objective and Overview

BMK will provide accurate design alternatives and analysis by gathering traffic and intersection counts and other raw data regarding the flow at the designated intersection and adjacent streets. This data will be analyzed according to engineering standards for intersections and roundabouts. The engineering team will complete a cost-benefit analysis of each design option. Based on the analysis, recommendations on the best course of action for future use at this intersection will be given. These components will constitute the final deliverables.

The numerical analysis will take place either at the Orem Department of Transportation offices or at Brigham Young University's engineering computer lab. Once the numerical

analysis is complete, the engineering team will work on Brigham Young University campus to complete the report and recommendations. The schedule for these tasks is contained in the schedule.

Sponsor and Mentor

The sponsor is Jared Penrod, a traffic engineer for the City of Orem Department of Transportation.

Phone: (801) 229-7331

Email: jpenrod@orem.org

The mentor for this project is Spencer McDonald, a civil engineering graduate student at Brigham Young University.

Phone: (801) 922-0369

Email: spencermcdonald11@gmail.com

Organizational Structure

BMK Engineers work well as a team because we have similar backgrounds. We have taken classes together and know how to make this team function as efficiently as possible. We are confident in our abilities to meet deadlines and exemplify each team member's strength to best meet the requirements of this project. Martin Seneca's familiarity with engineering software will assist us while we collect and analyze data. Kaylee Bateman has experience working in close contact with professional engineers, which will help coordinate the project. Brad Fellows is experienced working on site. Each member has unique skills that will assist the team during the project.

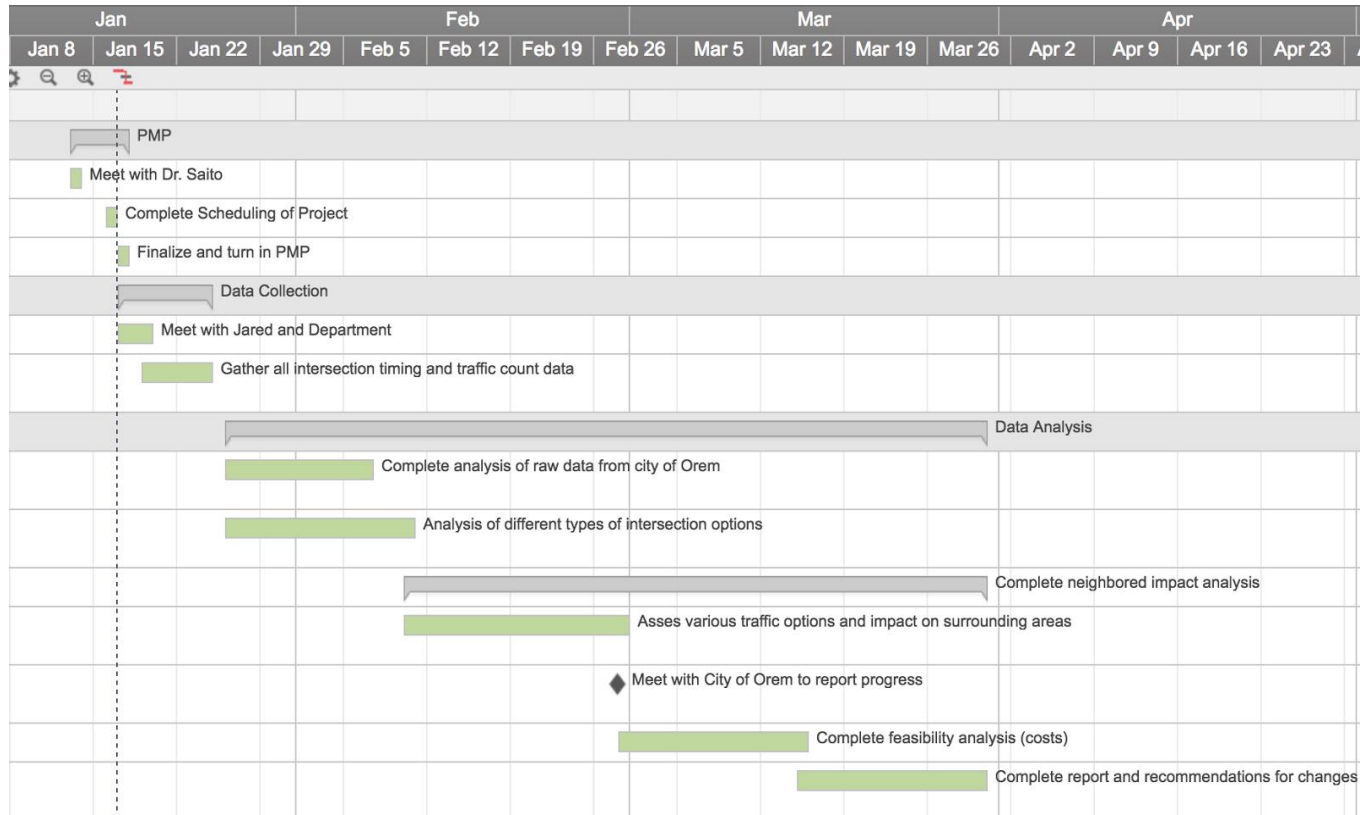
Schedule

The final report and analysis for the city of Orem will be completed by April 10, 2016. The following are intermediate deadlines for various portions of the project:

- January 20, 2016: Gather all intersection timing and traffic count data for the intersections included in the study
- February 10, 2016: Finish analysis of raw data from the city of Orem. This includes the analysis of the different type of intersection options.
- February 31, 2016: Finish analysis of neighborhood impact. This includes the assessment of various traffic options and their impact on the surrounding areas.
- February 31, 2016: Meet with the City of Orem to check analysis and request additional information for the report.
- March 15, 2016: Complete feasibility analysis of the different intersection types. This includes the cost to the department of transportation and any social costs incurred by the surrounding areas.

- March 31, 2016: Complete report of analysis and our recommendations to the changes necessary at the proposed intersections.

Team members will meet weekly at the designated class period, every Thursday, for a three-hour time period. Each team member will be responsible for a dedicating an



additional three hours of individual work each week. The team meetings will be held after this class period in order to establish weekly goals and deadlines. Team members will also use these meetings to discuss any challenges to their work. We will contact the sponsor as necessary during these meetings. As a group, we can assure that our work will be completed according to schedule.

Project Budget

The following is the breakdown of hours spent on various portions of the project:

Gather and organize raw data: 10 hours

Analyze data to predict traffic patterns of different intersection options: 20 hours

Analyze neighborhood impact: 10 hours

Meetings with sponsor: 5 hours

Feasibility analysis: 15 hours

Report and recommendations: 15 hours

The budget also includes transportation to meetings and site visits. There is additional budget included for printing and report materials.
The proposed budget for the specified costs is \$200.

Communication Plan

The following are the times that all team members can meet to discuss plans and report progress:

Monday, 12:00 - 1:00 PM

Tuesday, 3:00 - 5:00 PM

Wednesday, 12:00 - 1:00 PM

Thursday, 3:00 - 5:00 PM

Friday, 12:00 - 1:00 and 3:00 - 5:00 PM

The team will at a minimum meet every Thursday to discuss progress and plan for each phase of the project. These meetings will be held in the step-down lounge of the Clyde building. Each member of the team will report the hours worked for the week to the mentor through an online document. Accountability of effort and results to the mentor will be given in weekly meetings. The sponsor will be contacted at a minimum of once a month in order to receive information and provide key deliverables for assessment. The team will contact the sponsor through email and will schedule in-person appointments as deemed necessary by both the team and the sponsor.

Deliverables

The final deliverables will include a word document outlining the process of data analysis and recommending a specific course of action. This report will include how the data was organized and analyzed with computer software. The appendix will include key reports generated from the traffic software. A cost benefit analysis is included. The design alternatives portion will focus on the benefit of the proposed system currently and in the future. Environmental impacts will be assessed. A slide deck will be prepared with key analysis and the recommendation. This slide deck will be presented to the Orem Department of Transportation. A poster presentation will be prepared to summarize the results of the project.

Minor deliverables include monthly status reports documenting the challenges, solutions, and progress of the group. These reports will focus on the following questions.

- What challenges has the team encountered?
- What actions did the team decide to do to overcome these challenges?
- What is the progress in overcoming these challenges?
- Is the project on schedule?

The reports may also state guidance and assistance given by the sponsor in order to help the team solve problems and stay on schedule. These reports will be included in the final

report. After the project deadline, a presentation will be scheduled for students and the general public.

Conclusion

At BMK Engineering, we are committed to providing the client with professional engineering. Our education and work experience have provided us with the skills required to complete this project in a timely and professional manner. We aim to excel in our responsibilities and look forward to collaborating with the city of Orem to complete this project.