

Final
TECHNICAL MEMORANDUM



Phase One Summary Report

Project No. SP-LC05(1)

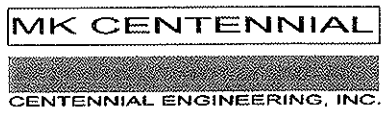
Prepared For:



UTAH DEPARTMENT OF TRANSPORTATION

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Prepared By:



This report summarizes the results and recommendations of Phase I of the Cache Valley Corridor Study. The key components of the study are a travel demand model and a traffic signal location master plan, both of which yielded valuable results.

In 2020 there will be a great deal of congestion in Cache Valley, which will be quite widespread. There is no single project that will provide the solution to this congestion; rather a number of projects will be required to maintain traffic operations at an acceptable level of service. The recommendations in this report are based solely on traffic operations. No attempt has been made to address other concerns such as environmental or safety issues.

TRAVEL DEMAND MODEL

The travel demand model is a tool used to project future traffic volumes based on demographic data and a roadway network. The model was used to project future traffic volumes for the years 2010 and 2020. The 2010 data was used in preparing the traffic signal master plan, while the 2020 data was used to analyze potential roadway improvement projects. This analysis was done in the form of four different scenarios:

- Baseline – Existing Plus Committed Scenario
- Alternative A – Financially Constrained Scenario
- Alternative B – West Side Improvements
- Alternative C – East Side Improvements

Additional information about each scenario and the projects contained within them is available in the 2020 Baseline and Alternatives Model Development Report.

Results

The model shows that the major areas of congestion are along US-91 and along routes that access Utah State University. This route travels east along Center Street to Canyon Road, northeast on Canyon Road to 600 East, north to 500 North, and east to 800 East. 800 East will also be very congested in 2020. Other congestion is on 1000 North and 1400 North west of Main Street as well as 100 West, 100 East, and 200 East in downtown Logan. Figure 1 shows congestion locations in 2020 if no more transportation improvements are made.

Recommendations

Recommended projects are listed below.

Widen 1000 West to Four Lanes – Adding capacity to Main Street in Logan is not seen as a practical solution, therefore, it is necessary to develop a parallel, multilane facility. 1000 West is seen as the best candidate due to the ease of access from US-89/91 and general lack of development along its length. This project may be done in segments. Analysis would need to be done to prioritize the various segments.

Add Capacity to East-West Streets – With the widening of 1000 West there is increased need for east-west connections between it and Main Street. Both 1000 North and 1400 North will be congested west of Main Street. 1400 North should be widened to four lanes while intersection improvements should be adequate on 1000 North. Other roads that may provide congestion relief are 1800 North and 2500 North.

Add Capacity to 800 East – None of the scenarios that were analyzed were effective at decreasing the congestion on 800 East between 700 North and 1800 North, therefore it is difficult to know exactly what improvements need to be made. Possible solutions are intersection improvements, restriping to create additional lanes, and complete roadway widening, among others.

Widen US-91 to Four Lanes North of Smithfield

Improve Access to USU from Main Street – This is a need that does not immediately lend itself to a single project since the congested route along Main Street and Canyon Road is not easily improved. It may be easier to improve an alternate route such as 500 North.

Realign SR-30 to Connect to 400 North – This project will be especially effective at reducing congestion on Main Street between 200 and 400 North in Logan.

Provide Additional Connection to Providence – An additional north-south connection should be provided to Providence. This connection may include the extending of either 100 East, 200 East, or 400 East in Logan to the south. Whichever road is extended south should also be extended and/or improved to the north to 1400 North.

Because each analyzed scenario included several projects it is sometimes difficult to tell which projects are having the greatest effect. Before any project is advanced to the Long Range Plan it is important that analysis be performed to determine the effect of the desired project only. This analysis will occur in Phase 2 of the Cache Valley Corridor study.

TRAFFIC SIGNAL LOCATION MASTER PLAN

Approximately 130 intersections were analyzed for PM peak-hour levels of service for existing and 2010 conditions. Based solely on this operations analysis, recommendations were made for new traffic signals to be installed, signalized intersections to be upgraded, and traffic signals to be removed. Complete results and recommendations can be found in the Traffic Signal Location Master Plan report.

Results

The most significant result of the study was the large impact of two intersections on the overall delay. The intersections of 400 North and Main Street and 1400 North and Main Street are major bottlenecks to the flow of traffic in 2010. Regardless of how quickly vehicles are able to travel up and down Main Street when they arrive at one of these two intersections they are faced with long delays and lose whatever time savings may have realized in getting there.

Recommendations

Recommended key improvements to the signal system are outlined in the following sections.

New Signals

New traffic signals are recommended at the locations listed below. The final three intersections do not currently exist and are dependent upon development immediately adjacent to them to warrant traffic signals.

500 North & 200 East	US-89/91 & 1000 West
1400 North & 600 East	2200 North & US-91
600 North & US-91	1400 North & 600 West
200 North & 600 West	3100 North & US-91
1400 North & 200 West	Providence Parkway & SR-165
1000 North & 200 West	Providence Parkway & US-89/91
600 South (Smithfield) & US-91	

Intersection Improvements

The following intersections are currently signalized, but will be failing in 2010 and will therefore need improvements to add capacity.

400 North & Main Street – Possible improvements include dual left-turn lanes and two through lanes on all approaches.

1400 North & Main Street – Possible improvements include dual left-turn lanes and two through lanes on all approaches as well as a free right turn from westbound 1400 North to northbound Main Street.

400 North & 100 West – Possible improvements include adding exclusive right-turn lanes on all approaches. The increased traffic from the realignment of SR-30 with 400 North may necessitate more extensive improvements.

200 North & 100 West – Possible improvements include two through lanes in each direction and adding protected-permitted signal phasing to all approaches. The decrease in traffic from the realignment of SR-30 with 400 North may necessitate less extensive improvements.

In considering these improvements it is important that a detailed study of any proposed project be performed. No new traffic signal should be installed without first examining compliance with at least one of the signal warrants as outlined in the *Manual on Uniform Traffic Control Devices*.

Access Management

The signal system model did not show any capacity benefits due to access management. However, case studies have shown that access management has improved capacity. Also, access management should be considered as a means to increase safety. Crash analysis showed that a significant number of mid-block left-turn crashes occur on US-91, from south of Logan to north of Smithfield. It is recommended that access management be implemented on US-91. Examples include:

- * One block raised medians
- * Driveway consolidation/reconfiguration

In addition to implementing access management principles on US-91, it is recommended that the CMPO and local governments work to establish access management policies that focus on guidelines for new accesses and the consolidation and reconfiguration of existing accesses.

NEXT STEPS

The next step in the process of developing a long range plan of prioritized projects is the identification of possible projects and analysis of the benefits of that single project. Based on the results of these analyses it will then be possible to develop a priority list based on evaluation criteria, which will compare transportation system benefit to project cost. Due to the high cost of many corridor improvement projects, it may be desirable to obtain a measure of congestion relief through less expensive intersection improvement projects while waiting for funding for the larger projects. An essential part of the development of a long range plan will be the balancing of large projects with small projects.