Traffic Signal Improvements – Route 108

City of Dover, NH

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Engineering Report

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Appendix A – Proposed Improvement Locations

1   Overview

This Engineering Report will serve as a working document to be used to facilitate the development and implementation of information collection and reporting on the project's performance with respect to the relevant outcomes that are anticipated to be achieved through the traffic signal improvements in the Route 108 area. This project is part of a larger traffic signal upgrade program, and will tie in with a separate Accelerated Innovation Deployment Demonstration project that the city is undertaking with Sebago Technics, Inc.. This document is intentionally very similar to the Engineering Report created for that project and the project will be run in a similar fashion but at a much smaller scale.

2   Project Background and Statement of Purpose and need

The City of Dover was selected by the NHDOT as recipients of a $150,000 as part of the Congestion Mitigation Air Quality (CMAQ) Program.

This project will allow the City of Dover to improve to NH Route 108 in the area of Week's Crossing. These improvements will be along Central Avenue and New Rochester Road at four intersections from Week's Lane to Long Hill Road and would include installation of a camera system to monitor traffic flow. The cameras allow for in time adjustments to lights and coordination adjustments during peak times. Furthermore, they allow for real time traffic count information, and automatic incident detection, improving public safety response times. This project ties in with a concurrent project that Somersworth is proposing, which will improve regional efficiency.

3   Existing Conditions

As indicated in Appendix A, this Project's focus will be on four signalized intersections located in the Week's Crossing area. These four intersections are as follows:
1. New Rochester Road and Long Hill Road
2. New Rochester Road and Hotel Drive
3. Central Avenue and Weeks Lane
4. Indian Brook Drive and Weeks Lane

4   Design Standards

The reference standards that will be adhered to for this traffic signal improvement project will include:
- Systems Engineering – Model SE Documents for CTSS/ASCT/ATSPM
- Automated Traffic Signal Performance Measurements - Sturdevant, J. R., T. Overman, E. Raamot, R. Deer, D. Miller, D. M. Bullock, C. M. Day, T. M. Brennan, H. Li, A. Hainen, and S. M. Remias. Indiana Traffic Signal Hi Resolution Data Logger Enumerations. Publication., Indiana Department of Transportation and Purdue University, West Lafayette, Indiana, 2012. doi: 10.4231/K4RN35SH.
- NTCIP – NTCIP 1202 Actuated Signal Controllers (ASC)
- NEMA – TS 2 2016 or later

5   Alternative Analysis

For this project, two alternatives were analyzed.
1) Replacing four traffic signal controllers to synchronize equipment. This alternative will move traffic through two congested corridors of the City, reducing idle time and lowering air emissions.
2) No-build alternative. This alternative would not make any improvements to the signalization, thus providing no mitigation to the congestion or reduction in air emissions.

6   Proposed Action

The proposed project will include the following actions:
3) Replacing four traffic signal controllers to be compatible with the City's central management software – McCain's Transparity. Synchronization of system equipment is critical to the success of this project's goals.
4) Adding new above-ground vehicle detection at the intersections that can record vehicle presence as well as vehicle volumes. This data is currently stored in the video processor and can be archived at the City's central traffic server for an indefinite period of time. The volume of this information does not currently represent a storage problem for the City, but as the system grows this will be monitored by the City's IT Department and alternative action taken if necessary.
5) Adding advanced vehicle detection equipment at the intersections to allow operators to sample key performance metrics, like arrivals on green.

7   Public Involvement Strategy

This Engineering Study will be placed on the City of Dover Community Services current project webpage.

8   New Equipment Cost Estimate

Purchase and install video detection at the four intersections for vehicle counting, vehicle detection, real time remote monitoring and incident management:

Total = 4 intersections at an estimated cost of $30,000 each = $120,000

9   Traffic Control Plan and Traffic Control Committee Memo

The City of Dover police will provide on-site traffic control for the short-term durations when the contractor needs to be in the roadway and during the replacement of traffic controllers. The City intends to comply with the Department's Work Zone Safety and Mobility Policy and as such will submit

a request to the Department for a determination if a presentation is warranted before the Traffic Control Committee.

10 Utility Impacts

The proposed scope of work described herein will not have any impact on existing underground utilities since no earth disturbance is required.

11 NEPA Documents

The City is preparing and plans to submit separately to the NHDOT's Environmental Bureau in support of a Programmatic Categorical Exclusion.

12 Post Installation Monitoring and Reporting Plan

The goal of this project is to:
- Create smooth traffic flow
- Maximize throughput
- Equitably distribute green time
- Manage queues
- Maintain the system's health

To measure the success in achieving these goals, the City will continue to monitor and improve traffic signals as part of the $90,000 traffic signal program that is funded in the operating budget each year.

Appendix A

Proposed Improvement Locations

To Somersworth/Rochester
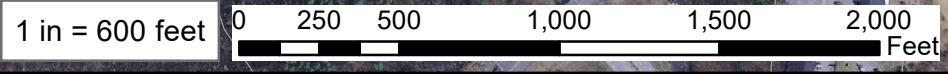
Long Hill Road

N

New Rochester Road

Hotel Drive

Weeks Lane/Rt 9

Central Avenue

Webb Place/Weeks Lane

Traffic Signal Upgrades
Route 108

Parcels

1 in = 600 feet

0   250   500   1,000   1,500   2,000
                                                                    Feet

To Downtown