

Executive Summary

Howard/Stein-Hudson Associates (HSH) conducted a transportation study in the South Medford area along Harvard Street and Mystic Avenue. The primary purpose of the study was to assess the existing transportation conditions in the study area and to provide traffic data in response to specific community concerns. The study also recommends improvements at many locations throughout the study area. If implemented, the recommendations will improve safety and traffic operations within the study area that will benefit the community.

Below is a summary of the study's methodology and findings.

Study Area and Methodology

Through meetings with City officials and the community, the team defined a study area comprising 13 intersections, then collected the following data to lay the groundwork for addressing specific community concerns:

- 24-hour continuous traffic volumes along important study area roadways;
- Morning and afternoon peak-hour pedestrian, bicycle, and vehicle movements at all study area intersections;
- Vehicle classification and speed data along important study area roadways; and
- Accident data and safety analysis at all study area intersections.

The team used Synchro intersection software in the analysis and evaluated intersection operations according to "Level of Service" (LOS) indicators, as explained fully in the report. Safety was evaluated according to MassHighway procedures.

Study Findings

Following are key findings of the traffic study:

Traffic Operations

Harvard Street and Mystic Avenue are important roadways within the City of Medford due to their connections to locations within the City and to the regional roadway network. As a result, significant traffic volumes are typical at intersections along these roadways. During both the morning and afternoon peak periods, the intersection of Mystic Avenue and Harvard Street operates at overall LOS

F, as does the intersection of Harvard and Main Street. Other unsignalized intersections in the study area also operate at LOS F, primarily because they intersect with the heavily traveled Mystic Avenue.

Overall, traffic operations within the study area are not uncommon for an urban setting.

Heavy Vehicle Traffic

HSH classified all vehicles on Mystic Avenue, Harvard Street and Bonner Avenue. The data indicated the following percentages of heavy vehicles on each roadway:

- 3.7% along Alexander Avenue;
- 3.8% on Bonner Avenue;
- 3.5% on Harvard Street westbound;
- 2.9% along Harvard Street eastbound;
- 4.4% on Mystic Avenue northbound;
- 6.4% on Mystic Avenue southbound; and
- 4.3% on Mystic Avenue center turn lane.

The heavy vehicle volumes along Harvard Street, Alexander Avenue, and Bonner Avenue do not meet MassHighway volume requirements for heavy vehicle restrictions.

Safety

HSH reviewed the last 3 years of available accident data and found that the following locations exceeded the MassHighway average rate for the area:

- Harvard Avenue at Willis Avenue;
- Harvard Avenue at Pierce Avenue;
- Main Street at Alexander Avenue;
- Bonner Avenue at Willis Avenue; and
- Alexander Avenue at Willis Avenue.

HSH recommends that these locations be studied further to determine if corrective measures can improve safety.

Recommendations

Based on the existing traffic data, HSH modified the lane arrangements, traffic signal timing, and traffic signal phasing to increase capacity at study area intersections. The proposed changes will improve traffic operations and safety. It is important to note that the recommendations developed for this study did not distinguish between locations controlled by the City and those under MassHighway jurisdiction. As noted below, many of the improvements require MassHighway's initiation and implementation. The improvements by location are as follows:

Harvard Street at Mystic Avenue—HSH recommends installation of an additional lane on the westbound approach to create 2 left-turn lanes, 1 through lane, and 1 right-turn lane. HSH also proposes creation of a northbound left-turn lane. The additional capacity that would result, combined with a modification to the timing and phasing, will improve operations and safety at this location. MassHighway would be responsible for these changes.

Main Street at Bonner Avenue—HSH recommends that peak-hour parking restrictions be implemented along a 50-foot section on the Bonner Avenue approach to the intersection. This will provide 2 lanes to increase capacity and reduce vehicle delay.

Harvard Street Corridor—HSH recommends that signal timing and phasing be modified at the Harvard Street intersections with Main Street, Willis Avenue, and Mystic Avenue. HSH further recommends that vehicle detection be installed on the Willis Avenue approaches to take advantage of lower vehicle volumes on the side street and reduce the number of requests for green time from the traffic signal controller. The vehicle detection, combined with modifications to the timing and phasing along this corridor, will reduce vehicle delay and improve overall operations.

Mystic Avenue Pedestrian Improvements—The existing pedestrian crossing of Mystic Avenue is an important community concern. HSH reviewed previous recommendations by MassHighway to improve the crossing and concurs with the findings that include re-striping the existing crosswalks using a special-emphasis “ladder” style striping and providing additional ground-mounted and overhead crosswalk signage.

Alexander Avenue at Bonner Avenue—Due to the congestion experienced by vehicles turning left from Harvard Street at Mystic Avenue, many vehicles divert to Bonner Avenue to make this same movement. Despite signage to restrict left turns and thereby to reduce the number of vehicles on Bonner Avenue, this illegal movement continues. HSH recommends that the curb line and sidewalk be modified to create a physical obstacle that will eliminate left turns. HSH also suggests increased enforcement by the Medford Police Department. The improvements within the state highway layout would need to be performed by MassHighway.

Conclusions

This traffic study indicates significant traffic volumes along Harvard Street and Mystic Avenue consistent with its character as an urban area. The volumes create poor operating conditions at the study area intersections, resulting in vehicle queuing, vehicle delay, and cut-through traffic to other roadways. In its analysis, HSH has developed recommendations that can improve operations, enhance safety, and reduce cut-through traffic.

Once implemented through a collaborative effort between the City and MassHighway, these recommended improvements will greatly benefit the City and its citizens.