

Memo

Date: Friday, June 11, 2021

Project: Warrensburg, Missouri RAISE Grant Application

To: Danielle Dulin, City Manager

From: Cory Imhoff, PE; Jason Haynes, PE, PTOE

Subject: City of Warrensburg, Missouri – Maguire Street RAISE Grant Application
Project Scoping Information

HDR has been working to complete the scoping process for the Maguire Street Improvements that would be funded if a RAISE Grant is awarded. Currently, the RAISE Grant project to be submitted will focus on improvements to Maguire Street between Cooper Boulevard (north of US-50) and South Street at the north side of the University of Central Missouri campus. The project improvements being recommended by HDR include:

1. New diverging diamond interchange at US-50 / Maguire Street with bicycle and pedestrian facilities across US-50 Highway
2. Added roadway and intersection lanes from US-50 to North Street (or Gay Street)
3. Replacement of degrading roadway pavement
4. Burying of overhead electrical and communication lines
5. Pedestrian / bicycle infrastructure including a 10-foot wide sidepath trail along the east side of the project corridor and ADA-compliant sidewalks and ramps
6. Streetscaping elements and visual gateway features
7. Replacement of aging traffic signal infrastructure including signal poles, heads, and pushbuttons with reuse of signal controllers, vehicle detection technology, and wireless networking equipment.
8. Replacement of the outdated Union Pacific RR overpass bridge
9. Installation of a subsurface stormwater management system including outfall (downstream) improvements through Shepard Park
10. Water quality features such as bioswales in Shepard Park
11. Sidewalk / Trail connection along Cooper Boulevard from Maguire Street to Hawthorne Boulevard completing a connection to Hawthorne Park

A traffic analysis has been completed for Maguire Street from Cooper Boulevard at the north end to South Street at the south end that included the 2021 Existing Conditions, 2025 Opening Year (No-Build and Build), and 2045 Forecast Year (No-Build and Build). Traffic volumes growth trends were used to forecast the future year volumes for the traffic models. Existing and future operational deficiencies along the corridor were identified using these projected traffic counts and industry-standard software/methodology. Traffic analysis software, Synchro, assisted in identifying these operational deficiencies at the intersections. A segment sensitivity analysis helped determine when the corridor's

capacity will be insufficient and require added capacity. **Table 1** depicts a list of recommended capacity improvements at intersections along the corridor.

Table 1. Proposed Corridor Geometric Improvements

Location	Recommended Geometric Improvements
<i>Intersection</i>	
Cooper Boulevard	Southbound right-turn lane. Westbound left-turn lane. Restriping to provide a dedicated westbound through lane.
US-50 Interchange	Convert the interchange from a traditional diamond to a Diverging-Diamond.
Russell Avenue	Westbound right-turn lane.
Young Street	Westbound right-turn lane.
North Avenue	Restripe pavement markings to provide an eastbound and westbound dedicated through and left-turn lanes.
Gay Street	Eastbound and westbound right-turn lanes.
Grover Street	No Changes.
South Street	No Changes.
<i>Segment</i>	
Maguire Street (Cooper Boulevard to Gay Street)	Convert Maguire from a three-lane to a full five-lane roadway between Cooper Boulevard and Gay Street.

Item 2 above contemplates the need for either a 3-lane (two thru lanes with center two-way left-turn lane) roadway or 5-lane roadway between Young Street and either North Street or Gay Street. Considerations for 5-laning include the fact that it may be more desirable to extend the 5-lane roadway to Gay Street since it provides direct access into the north side of downtown and provides additional East-West continuity through the City to several major destinations. Results of the sensitivity analysis indicate that the segment between Young Street and Gay Street would operate at Level-of-Service (LOS) E in 2039 with the continuing vehicular growth trend. Typically, projects are designed to operate at no worse than LOS D twenty (20) years following project completion. Evaluation of the probable construction costs indicate that 5-lane section would add \$1.1 million to the project, which is still under the theoretical budget of \$42 million if the \$25 million RAISE grant is obtained and shared with the City’s \$17 million voter-approved bond initiative.

Given the traffic capacity benefit, east-west connectivity to City destinations, and cost relative to the budget, HDR encourages City leadership to approve the project improvement concept that includes the numbered items above and the suggested 5-lane roadway section from Young Street to Gay Street. With the suggested improvements, the delays and queues will operate in an acceptable condition until forecast year 2045.