City of Dublin

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Memo

To: Members of Dublin City Council

From: Dana McDaniel, City Manager

Date: July 27, 2017

Initiated By: Megan O'Callaghan, PE, Director of Public Works
Paul A. Hammersmith, PE, Director of Engineering/City Engineer
Jean-Ellen Willis, PE, Engineering Manager-Transportation

Re: SR 161/Riverside Drive Roundabout Operations Review

Background

Engineering Staff, along with Police, have been closely evaluating the SR 161/Riverside Drive roundabout since it opened in August 2016 and since it started fully functioning in November 2016, when the bypass and all lanes of the roundabout opened. After months of evaluation, we have concluded that driver behavior has been different than contemplated within the original American Structurepoint, Inc. design, particularly on northbound Riverside Drive.

For the March 13, 2017 Council meeting, staff submitted the SR 161/Riverside Drive Traffic Collision Diagram Follow-up report, which is attached for your reference. Staff consulted with American Structurepoint, Inc., the original designer and Engineer of Record for the roundabout, and retained Mark Johnson of MTJ Engineering (MTJ) to study the crash trends, pavement markings, and signs to determine what changes could be made to improve the operations and safety at this new roundabout location. This memo provides a summary of the proposed improvements and our recommendation for implementing these changes. Detailed information on all topics can be found in the Appendix.

Summary

To improve driver comprehension and provide better overall safety performance, the identified improvements are focused on simplifying driver's decision making by modifying the northbound approach entry lane assignments and revising the associated pavement markings and signs. The northbound approach has experienced the highest frequency of crashes, with 58% of the total number of crashes occurring on this approach.

A comprehensive review and analysis of the SR 161/Riverside Drive roundabout included a study that concentrated on crash data, design performance checks, traffic counts and the pavement markings and signs.

Lane Assignments

Analysis was performed for various lane assignments for both the 2017 traffic volumes and projected 2030 traffic volumes. This work identified an important lane assignment change to the northbound entry. All other entries will remain as they are in terms of the number of lanes and their lane assignments.

The existing lane assignments are shown in Figure 1 below. Based on the sensitivity testing and analysis, proposed lane assignments are shown in Figure 2.

Figure 1: Existing Northbound Lane Assignments

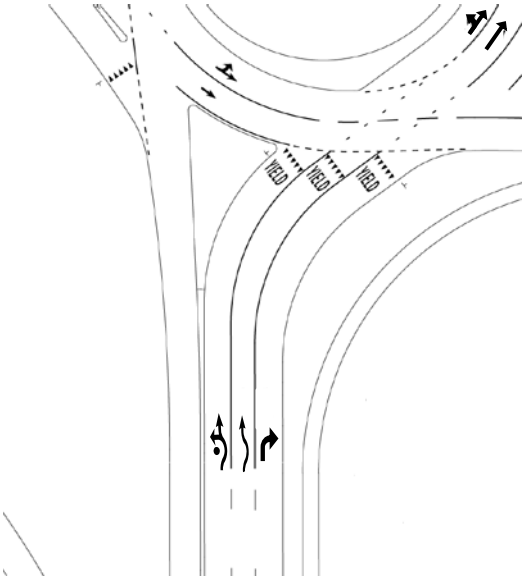


Figure 2: Proposed Northbound Lane Assignments

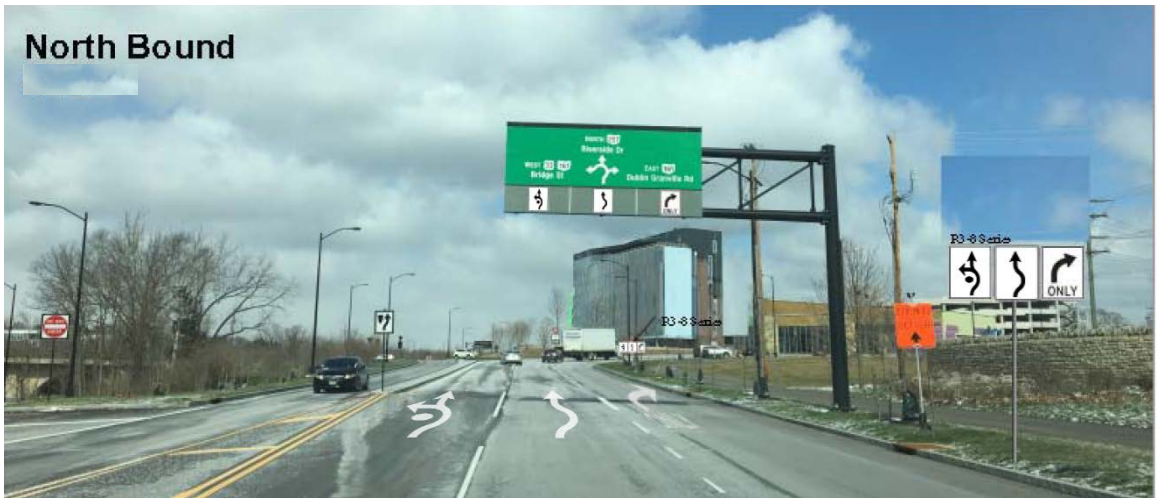
Pavement Markings

In conjunction with revising the lane assignments on the northbound approach, changes to the pavement markings will be made at the roundabout with the intent to improve driver comprehension, lane discipline, and priority messaging. The proposed pavement marking revisions include additional sets of directional arrows for the westbound and northbound approaches, new bolder yield lines at all entries to clearly delineate yield condition to entry drivers, turn lane taper markings for the northbound Right Only lane, and consistent lane assignment markings in the circulatory roadway.

Due to the amount of pavement marking removal, a 1.25-inch mill and pavement resurfacing is also included to provide the best and cleanest final surface course possible, that will be free of potentially confusing pavement scarring. Curb modifications on the south side of the central island will be performed to simplify the eastbound left turn movement.

Signs

The sign changes to support the modified northbound lane assignments add black fishhook arrows on a white background on the overhead signs and a supplemental side mounted lane assignment sign.



Other sign changes will be to replace the existing 36-inch Yield signs with 42-inch Yield signs on all approaches to increase sign visibility, replace the standard diamond shape Pedestrian Crosswalk signs with the Yield to Pedestrians in Crosswalk sign on auxiliary splitter islands and inside island, and remove Yield Ahead signs.

Recommendation

This memo is for informational purposes. The total cost to implement the pavement marking and sign revisions, central island modification, and resurfacing as outlined above is estimated to cost approximately $260,000. Staff has requested a change order cost proposal from Complete General Construction Company, the contractor for the SR 161/Riverside Drive Roundabout project to perform this work. Due to the lead time on the curb, the work is anticipated to begin in late October 2017. Staff will provide an update on the timing and schedule for the work once details are finalized with the contractor.

Funding for these improvements is expected to be paid from remaining bond proceeds received for this and other Bridge Street District roadways.