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MEMORANDUM

Date: 11/25/2019

To: Sean Simonson, City of Northfield Engineering Manager

From: Brad Fisher, P.E.

Subject: 2020 Mill & Overlay
City of Northfield
City Project #STRT2020-A45
BMI Project No.: T18.119539

Mr. Simonson,

The above-mentioned project's Feasibility Report was on the Tuesday November 5th City Council meeting for discussion. The City Council approved the Feasibility Report and subsequently ordered the preparation of plans and specifications for the project with a couple modifications: an On-Street Cycle Track on College Street from First Street to Third Street that is to be funded by Carleton College was added to the project, the two proposed bumpout locations at Third Street and College Street and at Third Street and Winona Street were removed from the project, and two bumpout locations at Seventh Street and Water Street and at Third Street and Oak Street were added to the project. There were many questions on the selection of proposed bumpout locations during public comment and council discussion that I would like to clarify to give the Council more information on design guidelines and rationale for application of bumpouts moving forward. Guidance on bumpouts from the Federal Highway Administration (FHA) and Minnesota Department of Transportation (MnDOT) was referenced along with supporting information on bumpout policies/guidelines from municipalities across the country, including from the Minnesota cities of Minneapolis, St. Paul, Hopkins, and Winona, which is all summarized below.

A bumpout, or curb extension, is a horizontal extension of the curb line and sidewalk into the roadway that reduces the crossing distance and results in a narrower street width. Bumpouts increase safety for pedestrians by shortening the crossing distance and improving the lines of sight/visibility between motorists and pedestrians. Bumpouts are also intended to be a traffic calming device that can lower the speed of traffic by giving drivers a visual cue and making it uncomfortable to traverse a narrower street section at higher speeds, particularly for right-turning vehicles. The tighter corners have the potential to make turning movements difficult for larger vehicles, such as delivery trucks, buses, and emergency vehicles so design considerations should be made to minimize impacts to regular routes. Bumpouts are compatible with snow plowing operations, but design considerations should be made with maintenance crews to accommodate equipment. They need to be customized to each proposed location based on topography and roadway geometry. Storm sewer systems require relocation of catch basins to fit the new curb alignments and optimize rainwater collection which can present challenges when retrofitting corners and can add significant expenses to the installation. Typically, bumpouts should be installed at least in pairs and can be designed to extend into only one street or both cross streets.

Bumpout placements are appropriate on all streets with all levels of traffic and should be considered at all pedestrian crossings. They should only be applied on streets with a parking or loading lane and should not extend into traffic lanes, including bike lanes. Placement of bumpouts should be prioritized based on need for a number of considerations such as trigger points/risk factors. These include number of lanes, pedestrian volumes, average daily traffic, speed limit, geometry, and intersections with demonstrated pedestrian issues. Common installation locations are near large institutions that produce a lot of foot traffic, commercial districts, schools, and parks. Bumpouts also provide additional space for pedestrian waiting areas at locations where pedestrian volumes are high. Pedestrian and vehicle counts can help identify high volume intersections, but no research identifies minimum pedestrian volumes as a threshold level indicating the need for bumpouts. Regular users should also be considered when evaluating bumpout placement and prioritization should be made for children, the elderly, and other disadvantaged persons.

The City of Northfield does not have any specific guidelines as to the criteria or placement of bumpouts, but the adopted Pedestrian, Bike, and Trail System Plan indicates that they should be placed at strategic locations, such as around schools. It also states that they should be installed in place of one or two on-street parking spaces in order to calm traffic and should be designed so not to interfere with on-street bikeways.

Engineering judgement needs to be applied for applicability to any given corner. Beyond that, information provided from the municipality and the general public should then be considered based on the criteria described when selecting locations because it is not financially feasible to install bumpouts at every applicable location. Since there are no strict rules, based on hard data or numbers, that apply to bumpout placement, just general guidelines, a collaborative decision needs to be made by all vested parties to determine final locations that best serve the City and its residents based on the available information.

From our limited information gathered for the 2020 Mill & Overlay project from general observation in the project area, pedestrian crossings were grouped based on observed pedestrian crossing densities relative to one another. Locations with low crossing densities, locations with bikeway conflicts, locations on truck turning routes, and locations not entirely within the project area were eliminated from consideration. The remaining locations were all considered for installation of bumpouts and the criteria laid out above was applied to these locations. Based upon the information communicated at the time of the Feasibility report, bumpouts were proposed at the intersection of Third Street and College Street due to its proximity to the Weitz Center for Creativity and its high pedestrian concentration and at the intersection of Third Street and Winona Street due to its proximity to Central Park and its assumed higher usage by children over the Summer. These locations were removed from the project based on resident's and the City Council's judgement of need based on their experiences at these locations.

The City Council, along with resident input, used their experiences and knowledge of the area to determine that the intersection of Seventh Street and Water Street and the intersection of Third Street and Oak Street were potentially good candidates for bumpouts and voted in favor of adding these to the project. These determinations were made upon the fact that there is a high percentage of elderly citizens living in the area near Seventh Street and Water Street and the proximity of Third Street and Oak Street to the Laura Baker Services Association which provides services for people with special needs.

Based on this background information made available to us at the City Council meeting, we were able to better refine and select locations important to the City. Then applying the criteria laid out above to these locations identified by the Council, it was determined that Third Street and Oak Street is a great candidate for the installation of bumpouts, but Seventh Street and Water Street has significant issues due to it being a delivery truck turning route. Laura Baker Services Association will need to be reached out to

in order to confirm no negative impacts come from the addition of bumpouts near their facility and ensure their needs are being best served. In addition, we recommend reconsidering the inclusion of the two original bumpout locations. The project would include bumpouts at three intersections in total with this recommendation that provides pedestrian improvements to Third Street & College Street, Third Street & Winona Street, and Third Street & Oak Street.

The cost of a bumpout can vary greatly depending on the design and existing site conditions, especially storm sewer relocation needs, but a rough estimate of $15,000 per quadrant can be assumed for this project.

Let us know if you would like a more thorough investigation than what we are currently scoped for into the bumpout application at any specific locations. A next level of information gathering would involve actual pedestrian counts which would provide us with numerical data for comparison. Please feel free to reach out with any questions related to any of the provided information.

Sincerely,

Bolton & Menk, Inc.

Brad Fisher P.E.
Project Engineer

cc: Brian Hilgardner P.E., Principal Engineer