



Board Summary Report

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Agenda Date: 3/4/2024

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To: Board of County Commissioners

Through: Bryan Weimer, PWLF Director, Public Works & Development

Prepared By:

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Presenter: Daniel Wiseheart, Transportation Engineer, Public Works and Development

Subject:

1:00 PM *Tempe Roundabout Full Closure Request

Purpose and Request:

Arapahoe County Public Works and Development Staff are requesting the Board of County Commissioners (BOCC) approve a full roadway segment closure for the duration of construction of the Tempe Street Roundabout located between Progress Avenue and Pennwood Avenue (approximately 0.2 miles). The full closure of South Tempe Street during construction of the project would be for 74 calendar days (from May 28th through August 9th). The Public Works and Development Director authority to close roadways is for a maximum of 20 days. BOCC approval is required for closures of a longer term.

Background and Discussion: The Versailles Corridor Study (Study) was started in 2021 to identify potential improvement opportunities along the study area-the Study was from the intersection of Versailles Parkway and Smoky Hill Road and extending north to the intersection of Tempe Street and Copperleaf Boulevard. The Study identified the intersection of Tempe Street and future Belleview Avenue as a great location for possible intersection improvements. The Study then analyzed those options-including adding stop signs, a full traffic signal, and a roundabout. Of the options analyzed, the single-lane roundabout was anticipated to offer the best Level of Service (LOS) with the current traffic volumes, as well as, with the future predicted traffic volumes. The roundabout also increases the safety of the intersection. Per the Federal Highway Administration (FHWA) roundabouts reduce the number of crashes, the severity of crashes (90% fewer fatalities & 75% fewer injuries), 10% to 40% fewer pedestrian/bicycle crashes on average. Forecasted traffic volumes did account for the future Belleview Avenue traffic when, and if it is, connected to Gun Club Road. Capacity for the intersection, utilizing the roundabout design, increases capacity of the intersection between 30% to 50%. This increase in capacity means less waiting time at the intersection which reduces pollution (cars idling), reduces noise, and reduces fuel consumption. From that analysis, PWD staff contracted a design consultant to create a final design and prepare construction plans for the roundabout. Those plans included vehicle and pedestrian detour routes. In regards to the project constructability, County staff discussed a number of items, specifically: construction approach, project timing, and construction access.

The conclusion of the discussion was that a full closure of the road segment for the duration of the project

would be the best approach for the construction of this roundabout. Specifically for the following reasons:

Construction Approach

A phased approach (only parts of the roadway are closed off at a time) would see a longer construction duration increasing impacts to the public, would restrict trucks, busses, and large vehicles from traveling through the construction zone; and the increase in time, would cost more money. The extended construction would also impact school traffic. It is estimated that the phased approach would be 2-3 months longer in duration than the full closure approach. A full closure approach would see a shorter construction duration; minimize interaction between construction and non-construction traffic and operations; provide the contractor with a staging area that does not disturb additional soil; and would allow for a better product in the end. The shorter construction duration would allow for school impacts to be minimized. Additionally, County staff held a public meeting on November 8th, 2023, to show the roundabout design and answer questions about the project. Staff displayed the phased approach compared to the full closure approach. It was generally agreed that, for construction, a shorter disruption was preferred to a longer, more drawn-out schedule.

Project Timing

It is anticipated that full construction of the roundabout could occur between the end of the 2023 school year and the beginning of the 2024 school year. Thus, minimizing any impact to traffic for trips to or from school.

Construction Access

As mentioned in the project approach, a full closure would allow for contractor personnel to access and work at the site and keep non-construction vehicular traffic away via the detours-this would greatly decrease potential conflict points between non-construction personnel and construction activities. Additionally, the area beyond the 'Road Closed' signs could be used for contractor personnel parking and contractor project staging which would reduce the overall footprint of the disturbed area for the project.

Detours for the closure

A detour route will be required for the full closure approach. The fullest extent of the closure (driving from Pennwood at the south end around to Progress at the north end) is approximately 2.7 miles (or 6 min from Google Maps). The project will post detour signs to alert and divert drivers before dead-ending at a road closed sign. A detour map was created by the County's design consultant and will be shared on the project website and with the neighboring HOAs. Additional notifications will be made through staff connections with the HOA boards for Saddle Rock Ridge and Copperleaf communities. PWD staff have reached out to South Metro Fire Rescue and Arapahoe County Sheriff's and have started coordination efforts to address any concerns that they might have with the closure.

Contingency Plans

Many factors influence the progress of a construction project-the two biggest concerns are typically weather and utilities. Generally, summer in Colorado is a great time for construction: however, as the rain in June of 2023 has demonstrated, weather is not a guarantee. In a forward-looking approach to schedule, PWD staff has discussed a contingency plan to mitigate delays, if outside control of the contractor.

In the event that weather becomes a factor in completing the project in the required timeframe, the project would revert back to utilizing phases. In this scenario, the roadway would be prioritized to be open and passable prior to the opening of school. The remaining portion of the work would then be completed with lane closures.

Utility relocations for this project are limited. The majority of relocations, that would have been required, have

been designed around. If an unknown utility that needs relocated is identified, the project team will work diligently to identify what is required to relocate the affected utility as necessary. Schedule will be discussed at the weekly progress meetings in order to identify any schedule impacts that need to be addressed and revise the schedule. This will allow the project to revert back to phasing at the appropriate time. To mitigate any delays that the contractor can control, the project will include the standard liquidated damages provision. This provision allows the County to charge the contractor a daily rate for every non-excusable day the project is delayed.

Fiscal Impact: Granting this closure request would decrease the overall duration of the project, which would lessen construction costs, management and oversight costs, and reduce time demands on County staff. The full closure will allow for the project to remain with budget.

Alternatives: The BOCC could choose to not support the full roadway closure and work would proceed under a phased approach. The project would likely experience a higher cost, a longer construction duration, a lesser quality project, and still would require intermittent minor closures.

Alignment with Strategic Plan:

- Be fiscally sustainable
- Provide essential and mandated service
- Be community focused

Staff Recommendation: Staff recommends supporting the request for full closure for the construction of the Tempe roundabout.

Concurrence: Coordination with the South Metro Fire District and the Arapahoe County Sheriff Office regarding the full closure. In addition, there was general agreement through public outreach that a shorter disruption during construction was preferred to a longer, more drawn-out schedule.