



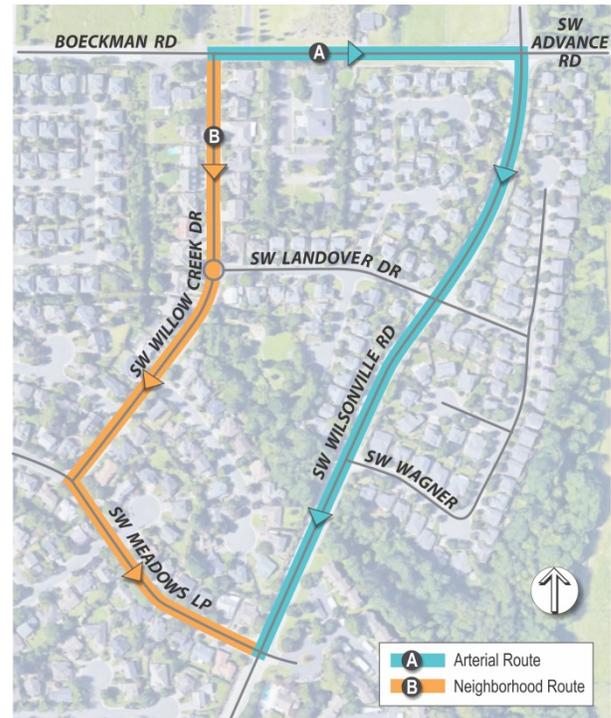
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MEMORANDUM

DATE: March 7, 2017
TO: Joe Dills, APG
 Chris Neamtzu, Planning Director, City of Wilsonville
FROM: Scott Mansur, P.E., PTOE
SUBJECT: Frog Pond Willow Creek Drive Alignment Transportation Evaluation *P14033-001*

This memorandum addresses issues raised related to the planned street extension of Willow Creek Drive north of Boeckman Road to serve the Frog Pond west neighborhood. The extension has been envisioned as one of several multimodal connections to the west neighborhood that includes residential single family units and a new primary school. Concerns have been expressed that this direct street connection may encourage cut-through vehicle traffic in the Meadows neighborhood rather than using adjacent arterial routes. To minimize this impact, it has been suggested that the Boeckman Road/SW Willow Creek Drive intersection be constructed as two offset tee-intersections, rather than a single, aligned, 4-legged intersection as shown in the adopted Frog Pond Area Plan and draft Frog Pond West Master Plan.

The following sections highlight the tradeoffs to be considered in choosing between the planned 4-legged intersection and the proposed two offset tee-intersections. The primary arterial route and an alternative neighborhood route are illustrated above.



Arterial Route vs Neighborhood Route



EXHIBIT P DKS S. MANSUR LETTER

Operational Differences between the Arterial and Neighborhood Routes

DKS reviewed and compared various operational aspects of the two travel routes as summarized in Table 1 below, and illustrated on the previous page. The key differences between the two routes are in the background daily volumes, the posted travel speeds, and the number of fronting residential units. The overall travel times during peak hours would be similar to each other, averaging just over one minute each. However, the arterial route is estimated to be about 10 to 35 seconds faster than using the neighborhood route. The neighborhood route is slower due to the potential delays related to traveling through a residential area with a traffic circle, internal stop signs, roadway characteristics such as driveways and on-street parking, and other neighborhood activities.

Furthermore, the City of Wilsonville and West-Linn Wilsonville School District are currently constructing an eastbound right turn lane along with a new traffic signal at the Wilsonville Road-Stafford Road/Boeckman Road-Advance Road intersection that will improve operations for all movements at the intersection. The estimated delays from the planned traffic signal were used to help estimate the arterial route travel times.

Table 1 - Operational Data Summary

| Operational Aspect | Arterial Route | Neighborhood Route |
|---|--|--|
| Route description | Boeckman Road to Wilsonville Road to SW Meadows Loop Road | Willow Creek Drive to SW Meadow Loop to Wilsonville Road |
| Functional class | Both roads are minor arterial roadways | Willow Creek is a local street Meadows Loop is a collector road |
| Posted vehicle speeds | 40 MPH on Boeckman Road 35 MPH on Wilsonville Road | All facilities are 25 MPH |
| Travel distance | 2,800 feet | 2,200 feet |
| Estimated vehicle travel time during peak hour | SB Travel: 1 minute, 15 seconds NB Travel: 1 minute, 15 seconds | SB Travel: 1 minute, 25 seconds NB Travel: 1 minute, 50 seconds |
| Estimated daily traffic volumes (build out) | About 8,000 to 10,000 vehicles daily | About 1,000 vehicles daily |
| Fronting residential units | None | 42 units |

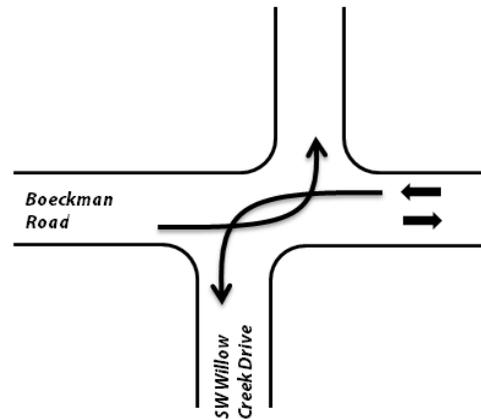
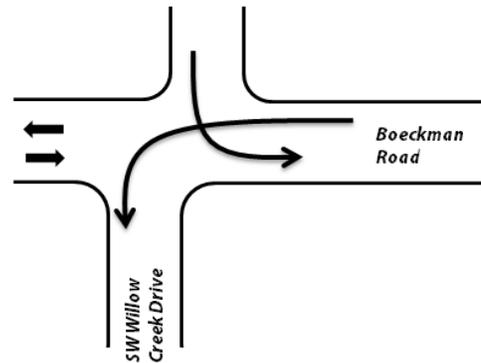
It should be noted that the current travel demand model developed for Wilsonville shows 20 vehicles traveling northbound and southbound (ten in each direction) at the SW Willow Creek Drive/Boeckman Road intersection during the p.m. peak hour. However, we are not able to

determine from the model whether all of these vehicles are neighborhood to neighborhood trips or whether they are using SW Willow Creek Drive as a cut-through route.

Impacts to Transportation Safety

Selecting two offset tee-intersections introduces several safety concerns and design limitations compared to the traditional four-legged standard intersection at this location. The adverse safety and design effects of the offset tee-intersections alternative include the following issues:

- The city’s access spacing standard for Boeckman Road is a minimum of 600 feet between adjoining intersections (Public Works standards, section 201.2.15), which cannot be met with the proposed configuration and existing adjacent access points on Boeckman Road.
- SW Willow Creek Drive is only spaced 900 feet west of Wilsonville Road, so an offset intersection to the east is not practical given spacing requirements.
- The proximity of the adjoining school property and the environmental land (SROZ) precludes a compliant offset to the west.
- Two closely spaced tee-intersections degrade traffic safety by creating additional conflict points between turning movements (see figure on right). This configuration is particularly concerning given the nature of Boeckman Road (higher speed, two-lane arterial currently without turn pockets). If two opposing vehicles attempt to make simultaneous left-turns, resulting queues could block both movements, creating safety and operations issues.
- Offset tee-intersections result in staggered crossings that require out-of-direction travel and/or additional crossings for pedestrians and bikes.
- The offset intersections would eliminate future opportunity to enhance pedestrian crossings at this location (e.g., treatments such as rapid rectangular flashing beacons with one consolidated crossing). This type of enhancement would be desirable with the future Frog Pond primary school and Boeckman Road separating the Landover Neighborhood.



Problems arising from closely spaced access connections on opposite sides of an undivided roadway: (top) conflicting left turn in and left turn out and (bottom) opposing left turns in. (Adapted from Exhibit 14-18 in the 2014 Access Management Manual)



Applicable City Transportation Policies

Several policies of the city's Transportation System Plan (TSP) support enhanced multimodal connections for the system overall, and particularly between city neighborhoods. The offset tee-intersection configuration for Willow Drive would be a less effective solution than the conventional four-legged intersection in this regard. The supporting TSP policies noted in our review include the following:

- **System Design, Connectivity, Policy 10.** Add connectivity for all modes throughout the city's transportation system to improve access between neighborhoods
- **Active Transportation, Policy 39.** Improve and expand pedestrian and bicycle facilities throughout the community, with a focus on improved connectivity within the city ...
- **Active Transportation, Policy 42.** Provide more enhanced pedestrian crossings as a way to improve safety and connectivity in city's transportation system.
- **ADA Comprehensive Access.** Providing sidewalk connectivity between neighborhoods, businesses, transit stops, and other destinations.

Conclusion

- The Wilsonville Road-Boeckman Road arterial route has a lower estimated travel time as the additional delay incurred through the neighborhood route is estimated to be between 10-35 seconds during the peak hour.
- The intersection improvements at Wilsonville Road will provide a new traffic signal and an eastbound right-turn lane for Boeckman Road traffic. This will reduce travel time delays for the arterial route.
- Traffic volumes on the arterial route can be readily served even during peak hours of the day. Most hours of the day there will be minimal congestion on the arterial street in this area, making neighborhood routes less attractive for trips through the area.
- Keeping the proposed 4-way intersection is consistent with the city's TSP goals and policies and allows the development to conform to Public Works street standards.