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MEMORANDUM

DATE: September 17, 2013

TO: Ben Austin, HHPR

FROM: Peter Coffey, PE

SUBJECT: Sherwood TSP Amendment (Highway 99W/Adams Avenue) – TPR Findings

P#12038-001

This memorandum summarizes findings to support a proposed amendment to the Sherwood Transportation System Plan (TSP)¹ related to future roadway connections in Sherwood. The amendment would include the proposed extension of Adams Avenue from its existing terminus at Highway 99W (near Home Depot) to the west side of Highway 99W. The primary purpose of the street extension is to develop access and street system improvements to address capacity and safety issues in the area.

As part of Sherwood's Comprehensive Plan, amendments to the TSP require that OAR 660-012-0060, the Transportation Planning Rule (TPR), is addressed to ensure that the amendment does not further degrade the transportation system. The following sections summarize the relevant sections of the TSP and findings for the proposed amendment. Based on the Sherwood TSP, a future collector public street connection to the west side of Highway 99W at Adams Avenue would not have a significant impact on the transportation system and would meet TPR requirements.

BACKGROUND AND CONTEXT

The following section provides background and context for several planning elements: current planning projects, Sherwood's TSP, and relevant past planning studies.

Current Planning Projects

Washington County has been planning for future corridor improvements to Tualatin-Sherwood Road. Through this planning process, the County is addressing safety and capacity issues on Tualatin-Sherwood Road through the City of Sherwood area. The approach to addressing these issues includes four primary elements:

1. Access Management
2. Roadway Widening
3. Intelligent Transportation Systems (ITS)
4. Off-Corridor Circulation

The roadway widening element is being addressed as part of the MSTIP 3d Tualatin-Sherwood Road (Adams to Borchers) project, which is currently in design. The ITS element will be evaluated over the next year as the

¹ *City of Sherwood Transportation System Plan*, adopted through Ordinance 2005-006, March 2005.

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County implements improved traffic signal timing along Tualatin-Sherwood Road from Teton Avenue to OR 99W and along OR 99W from the Home Depot intersection to Sunset Boulevard with the possibility of using adaptive signal timing. The proposed Baler extension will address the off-corridor circulation element. This TSP amendment addresses the access management element.

Sherwood TSP

Sherwood's TSP was adopted in March 2005.² The TSP provides a framework for a transportation system that guides future growth in Sherwood, including functional class and mapping of existing and planned future roads. The TSP has a planning horizon of year 2020 and is currently being updated to address Metro compliance requirements and include a horizon year of 2035. The proposed amendment to the TSP would include updating Figure 8-1: Functional Classification.

Previous Planning Studies

Several significant planning studies in and around Sherwood have been completed since the TSP was adopted in 2005. These studies include both concept planning for new growth areas (Brookman, Tonquin Employment, Adams, etc.) as well as planning for future transportation corridors (Adams Avenue, 124th Avenue, 99W/I-5 Connector, etc.). One particular study that is directly relevant for this proposed TSP amendment is the Adams Avenue North Concept Plan³.

The Adams Avenue North Concept Plan provided a concept for future land use types and the transportation system for the area generally bounded by Highway 99W to the west, Tualatin-Sherwood Road to the south, and Adams Avenue to the east and north. The plan included a street network (Figure 1) with Adams Avenue (designated a collector roadway) connecting Tualatin-Sherwood Road to Highway 99W (near Home Depot).

The proposed amendment to the Sherwood TSP is consistent and compatible with the Adams Avenue North Concept Plan that was completed since the Sherwood TSP. Specifically, the proposed element of an extension of a collector roadway (Adams Avenue) across Highway 99W is consistent with the road network included in the Adams Avenue North Concept Plan.

² City of Sherwood, Oregon, Ordinance 2005-006, March 15, 2005.

³ *Adams Avenue North Concept Plan*, August 2009.



Figure 1 – Adams Avenue North Concept Plan and Roadway Network

METHODOLOGY

In order to protect the future function of Roy Rogers Road as an arterial facility, the County is seeking to clarify future site access and roadway network in Sherwood. Specifically, the County desires to clarify how properties in the northern quadrant of the Highway 99W/Tualatin-Sherwood Road intersection (west of Highway 99W and north of Roy Rogers Road) achieve access. Access to some properties is currently provided directly to Roy Rogers Road. Providing future access to other streets in place of Roy Rogers Road would help maintain the intended function of arterial mobility. Access to properties in this area, primarily to the north and west, is somewhat constrained by topography (a ravine) and the Tualatin River National Wildlife Refuge. Potential future access to this area could be provided via a public street connection that extends from Adams Avenue west of Highway 99W. The future street extension is located in a uniquely constrained area and will likely require



collector designation in order to satisfy ODOT’s Grant of Access requirements⁴. Designating the roadway as a collector would provide needed transportation infrastructure to serve these properties.

Among other components, the TSP includes plans for future public street network and system connectivity. The future public roadways connections are mapped in Figure 8-1 (Functional Class) and Figure 8-7 (Local Street Connectivity). The functional class map shows planned public roadway connections designated as neighborhood or higher (also includes collector, arterial, and principal arterial facilities). In some cases, future local streets are designated on the map, though the inclusion is not comprehensive and is limited to three locations that show potential alignments. In general, future local road connections are typically limited to Figure 8-7 Local Street Connectivity. The Sherwood TSP currently includes local street connectivity arrows in the vicinity of the proposed amendment. The proposed amendment seeks to further clarify access within this area and address the location of an access point to the existing Sherwood street network.

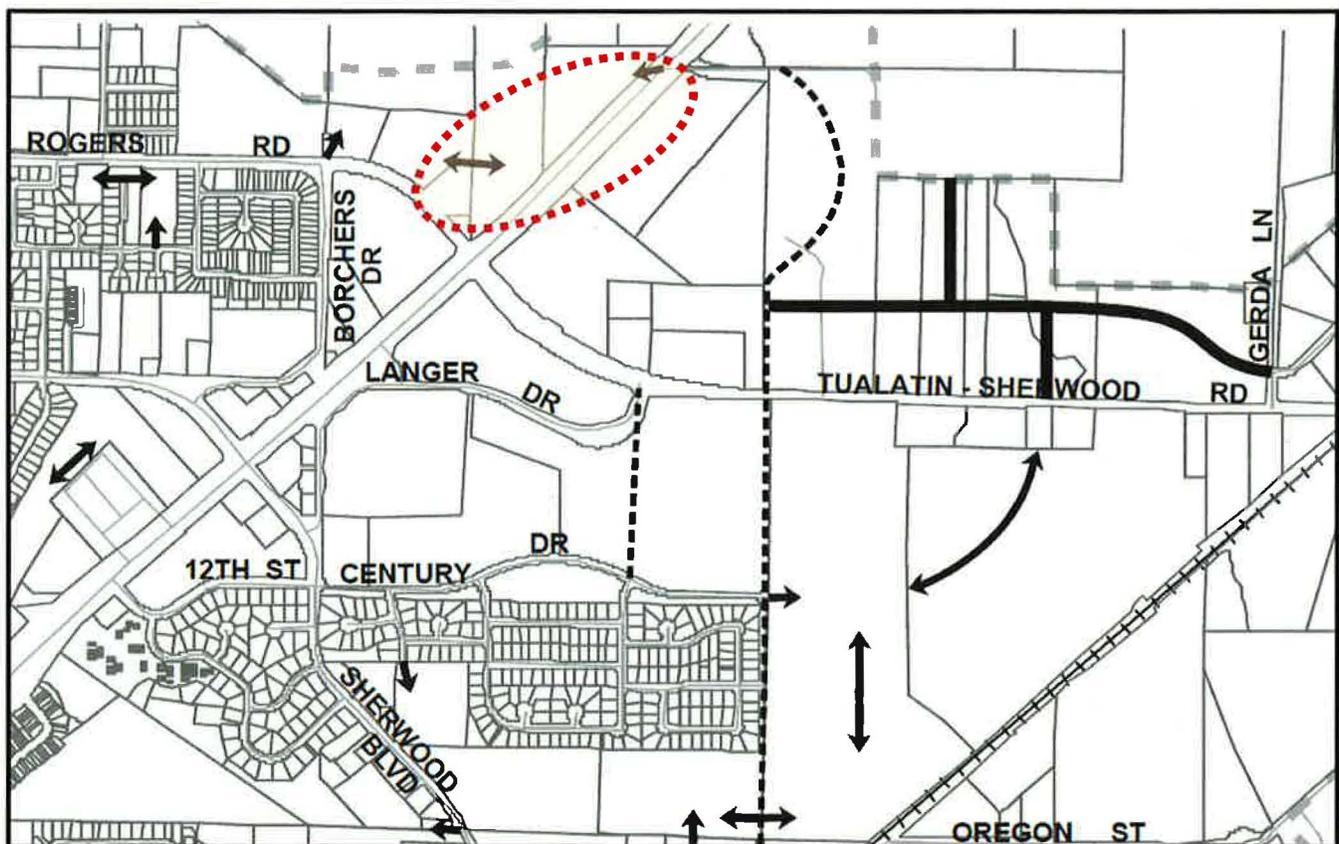


Figure 2: Local Street Connectivity Map Excerpt (Highlight Added)

The local street connectivity map indicates a future local road connection (designated with an arrow) at Highway 99W as a western extension to Adams Avenue, as shown in Figure 2. Washington County has proposed a future collector roadway at this location which is an extension of Adams Avenue from its existing terminus at Highway 99W to the west side of Highway 99W as shown in Figure 3. This future connection would allow properties

⁴ Oregon Administrative Rule (OAR) 734-051-2020 (4)(e)(B)(i), Amended May 2012.



located in the northern quadrant of the Highway 99W/Tualatin-Sherwood Road intersection access to a new public road. While the actual alignment of this roadway is not yet planned, the general alignment indicates that properties located east of the ravine are planned to have public street access to an internal road connecting to the Highway 99W/Adams Avenue intersection.

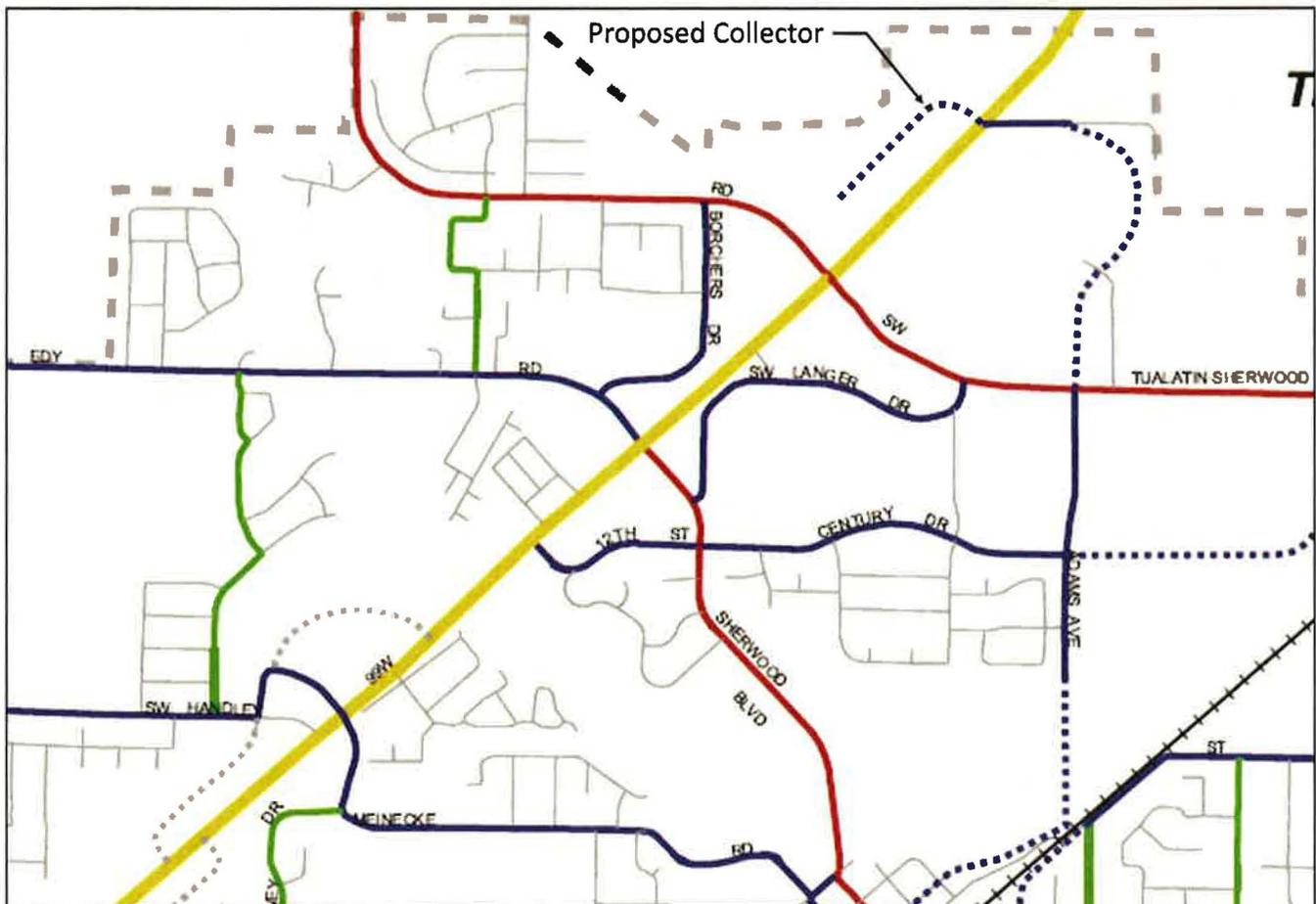


Figure 3: Functional Class Map Excerpt – Washington County Proposed Amendment and Map Revision

TPR FINDINGS

As shown in Figure 3, extension of a public street from Adams Avenue at Highway 99W to the west to serve properties north of Highway 99W/Tualatin-Sherwood Road is consistent with the Sherwood TSP. As described above, due to physical constraints in this location, a through street connection is not part of this application. If the public street is a “stub street” and provides access to adjacent properties without connecting to other public streets (other than Highway 99W at Adams Avenue), then the future public street would not change traffic circulation or increase trips on other public roads and is consistent with conditions as planned in the Sherwood TSP.



Prior analysis⁵ was conducted to determine the potential impacts of land development in the area of the proposed extension. Through trip generation development, it was anticipated that approximately 500 PM peak hour trips will use the western leg of Adams Avenue at Highway 99W. As listed in Table 1, the functional classification of the roadway would not change the level of traffic carried by the future public street.

Table 1: Approximate PM Peak Hour Traffic Volume (Two-Way) On Western Leg of Highway 99W/Adams Avenue Intersection

	As Previously Reported*	As Local Street	As Collector Street	Change with TSP Amendment (Collector Street)
PM Peak Hour Traffic	500	500	500	0
Average Daily Traffic (ADT)**	5,000	5,000	5,000	0

Note: * Prior documentation (*Technical Memorandum: Sherwood Adams Avenue North Improvements: Sensitivity Analysis*, prepared by DKS Associates, October 1, 2009; attached.) notes potential growth of 400 additional PM peak hour trips from 10.2 vacant acres zoned General Commercial and Light Industrial. Existing counts indicate approximately 100 PM peak hour vehicles use the western leg of the Highway 99W/Adams Avenue intersection.

**ADT approximated to be 10*PM peak hour traffic; or 5,000 daily vehicle trips.

By not changing circulation or increasing traffic on other public roads, the proposed collector would not impact the transportation system beyond conditions planned in the City’s TSP. Therefore, modification to Sherwood TSP Figure 8-1 Functional Class to clarify the public street extension would meet OAR 660-012-0060 and would not impact the transportation system.

Attachments: *Technical Memorandum: Sherwood Adams Avenue North Improvements: Sensitivity Analysis*, prepared by DKS Associates, October 1, 2009

⁵ *Technical Memorandum: Sherwood Adams Avenue North Improvements: Sensitivity Analysis*, prepared by DKS Associates, October 1, 2009. This memorandum documents 10.2 acres of land that is vacant and zoned general commercial and light industrial. The 10.2 acres is estimated to generate approximately 400 new PM peak hour vehicle trips to be added to the existing 100 PM peak hour vehicle trips.

TECHNICAL MEMORANDUM

TO: Ben Austin, P.E., Harper Houf Peterson Righellis

FROM: Chris Maciejewski, P.E.
France Campbell, P.E.

DATE: October 1, 2009

SUBJECT: **Sherwood Adams Avenue North Improvements:
Sensitivity Analysis**

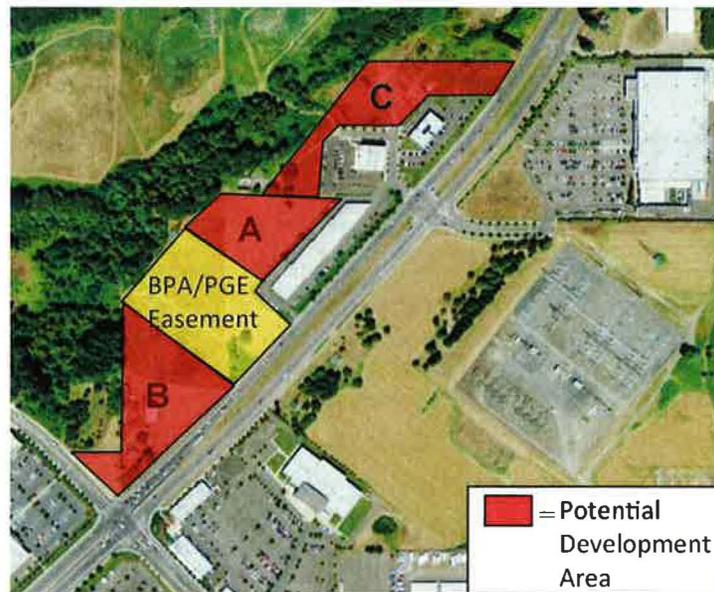
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This memorandum presents the results of the sensitivity analysis to determine the potential impacts of land development west of Highway 99W. Land use assumptions, trip generation, intersection operations, and potential improvements needed at the Highway 99W/Adams Avenue intersection are described to inform the City of the ultimate intersection design needs.

Land Use

The land west of Highway 99W near the intersection of Highway 99W/Adams Avenue intersection was assumed to develop under the City's current zoning. As shown in Figure 1, the potential development area is bound by Highway 99W, Tualatin-Sherwood Road, the Urban Growth Boundary (UGB) to the north, and wetlands/rural land to the west. No development was assumed in BPA/PGE transmission easement area shown in Figure 1.

Figure 1: Potential Development Area



The potential developable area (approximately 10 acres) is zoned as General Commercial and Light Industrial. Based on permitted uses in those zones, potential development was estimated as listed in Table 1.

Table 1: Land Use Assumption for Potential Developable Area

Area	Zoning	Land Use (ITE Code)	Acres	Total KSF	Dev KSF
A	LI	Light Industrial (710)	2.3	100.2	25.0
B	GC	General Commercial (820,934)	4.3	187.3	46.9
C	LI	Light Industrial (710)	3.6	156.8	39.2
Total			10.2	444.3	111.1

Trip Generation

Trip generation was estimated based on rates provided by the Institute of Transportation Engineers¹ (ITE) for similar land use types (e.g. light industrial, restaurants, retail uses, and office uses). The potential development area is estimated to generate 273 total new PM peak hour trips (105 trips in, 168 trips out). The total new trips account for the estimated pass-by trips². The total number of new trips was used to verify that the City’s 43 trips per net developable acre CAP³ was not exceeded in any of the potential development areas shown in Figure 1. Any locations exceeding the City’s trip CAP were scaled down to conformance. The total trip generation for the area west of Highway 99W is shown in Table 2.

Table 2: Trip Generation Summary

Area	Land Use (ITE Code)	PM Peak Hour Trips		
		In	Out	Total
A	Light Industrial (710)	6	31	37
B*	General Commercial (820, 934)	153	152	305
C	Light Industrial (710)	10	48	58
Pass-by Trips		64	63	127
Total New Trips		105	168	273

* Area developed was limited by City’s 43 trips per acre CAP

¹ Trip Generation Manual, 8th Edition, Institute of Transportation Engineers, 2008.

² Trip Generation Handbook, 2nd Edition, Institute of Transportation Engineers, 2004.

³ City of Sherwood Municipal Code Chapter 16.108.070 (CAP), Section D4.

Operations Analysis

The total new trips generated by the potential development areas were assumed to have access to the transportation network via the west leg of the Highway 99W/Adams Avenue intersection, a connection to the existing right-in/right-out along the west side of Highway 99W south of Adams Avenue, and via a new right-in/right-out along the north side of Tualatin-Sherwood Road west of Highway 99W. The new trips were assigned using the 2030 travel demand model used for the Adams Avenue North Preferred Concept Plan.

As listed in Table 3, with the development of the potential development area, the Highway 99W/Adams Avenue intersection would fail to meet the ODOT mobility standard (v/c ratio of 0.99⁴). To meet ODOT mobility standards at the Highway 99W/Adams Avenue intersection with the potential development, the following mitigations would be needed:

- Construct a eastbound left turn lane, restripe existing shared through-left lane to a through only lane
- Construct a westbound left turn lane, restripe existing shared through-left lane to a through only lane

As shown in Table 3, with the recommended improvements, the Highway 99W/Adams Avenue intersection will meet ODOT mobility standards with a v/c ratio of 0.99.

Table 3: Future Year 2030 Intersection Performance (PM Peak Hour)

Scenario	Agency	Standard	LOS	v/c Ratio
<i>Highway 99W/Adams Avenue Intersection</i>				
With Potential Development	ODOT	v/c ≤ 0.99	D	1.07
With Potential Development – Mitigated	ODOT	v/c ≤ 0.99	D	0.98

LOS = Level of Service
V/C = Volume-to-Capacity Ratio

Summary

The results of this sensitivity analysis indicate that additional improvements will be required to serve potential growth west of Highway 99W. The findings are not based on a detailed Traffic Impact Study for the site, but are appropriate for the City to plan for future improvements. To protect the feasibility of implementing these improvements in the future, it is recommended that right-of-way dedication and/or building setbacks be pursued with the Adams Avenue North project.

⁴ 1999 Oregon Highway Plan, Amendment to Table 7, December 13, 2000.