



## MEMORANDUM

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Date: December 8, 2016

Project #: 20651

To: Dayna Webb, P.E.  
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City of Oregon City  
PO Box 3040  
625 Center Street  
Oregon City, Oregon 97045

From: Susan Wright, P.E., Hermanus Steyn, P.E., and Kristine Connolly

Project: Highway 213 & Beaver Creek Road Alternative Mobility Targets (PS 16-024)

Subject: Memorandum #1: Project Background and Preliminary Alternatives Evaluation

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Oregon City's 2013 Transportation System Plan (TSP) determined that the intersection of Highway 213 (OR213) and Beaver Creek Road will not meet mobility standards in 2035. The TSP recommended a project be conducted to identify what improvements may be necessary to meet current standards or whether an alternative mobility target is necessary. A Community Advisory Group (CAG) and Technical Advisory Group (TAG) have been formed to help the City evaluate the feasibility and practicality of the alternatives set forth in this project. This memorandum provides background information, operational and safety information, and identifies preliminary alternatives for the improvement of the OR213/Beaver Creek Road intersection. These alternatives will be reviewed with the CAG and TAG to determine if any may be feasible and merit further exploration, or if an alternative mobility target needs to be pursued.

### ALTERNATIVE MOBILITY TARGET BACKGROUND

The Oregon Highway Plan (OHP) defines policies and investment strategies for Oregon's state highway system for the next 20 years. The OHP gives policy and investment direction to corridor plans and transportation system plans that are being prepared around the state, but it leaves the responsibility for identifying specific projects and modal alternatives to those plans.

Policy 1F: Highway Mobility Policy states, "It is the policy of the State of Oregon to maintain acceptable and reliable levels of mobility on the state highway system, consistent with expectation for each facility type, location and functional objectives. Highway mobility targets will be the initial tool to identify deficiencies and consider solutions for vehicular mobility on the state system. Specifically, mobility targets shall be used for:

- Identifying state highway mobility performance expectations for planning and plan implementation;
- Evaluating the impacts on state highways of amendments to transportation plans, acknowledged comprehensive plans and land use regulations pursuant to the Transportation Planning Rule (OAR 660-12-060); and
- Guiding operations decisions such as managing access and traffic control systems to maintain acceptable highway performance.”

Mobility targets for state highways, as established in this policy or as otherwise adopted by the Oregon Transportation Commission as alternative mobility targets, are considered the highway system performance standards in compliance with the Transportation Planning Rule (TPR) (OAR 660-012), including applicability for actions that fall under Section -0060 of the TPR.

Mobility targets are the measure by which the state assesses the existing or forecasted operational conditions of a facility and, as such, are a key component ODOT uses to determine the need for or feasibility of providing highway or other transportation system improvements; and therefore impact local land use and transportation planning as well as development review. The OHP currently includes alternative mobility targets in many locations throughout the State.

## EXISTING CONDITIONS

The existing conditions analysis identifies the transportation conditions and current operational and geometric characteristics of the roadways within the study area. Exhibit 1 below provides an overview of the intersection.

### Exhibit 1. Highway 213 (OR213) and Beaver Creek Road Intersection



At the OR213/Beaver Creek Road intersection, OR213 has a 4-lane section and a speed limit of 55 mph and is classified as an Expressway to the north and a District Highway to the south. Beaver Creek Road is classified as a Major Arterial with a 4/5-lane section and a speed limit of 35 mph. OR213 is under the

jurisdiction of the Oregon Department of Transportation (ODOT), the west leg of Beaver Creek Road is under the jurisdiction of Oregon City, and the east leg is under the jurisdiction of Clackamas County. OR 213 and Beaver Creek Road are both designated as a Local Truck Routes in the City’s TSP at the study intersection. The City designated truck routes in the TSP to ensure trucks can efficiently travel through and access major destinations in the City.

Sidewalks are provided along the north and south sides of Beaver Creek Road, and a multi-use path is provided along OR213 south of Beaver Creek Road along the east side of the highway. Bicycle lanes are provided along Beaver Creek Road. TriMet operates Bus Route 32 between Clackamas Community College and Milwaukie City Hall. There are stops located on the west leg of Beaver Creek Road at the intersection for both directions of travel (i.e. far-side for westbound and near-side for eastbound).

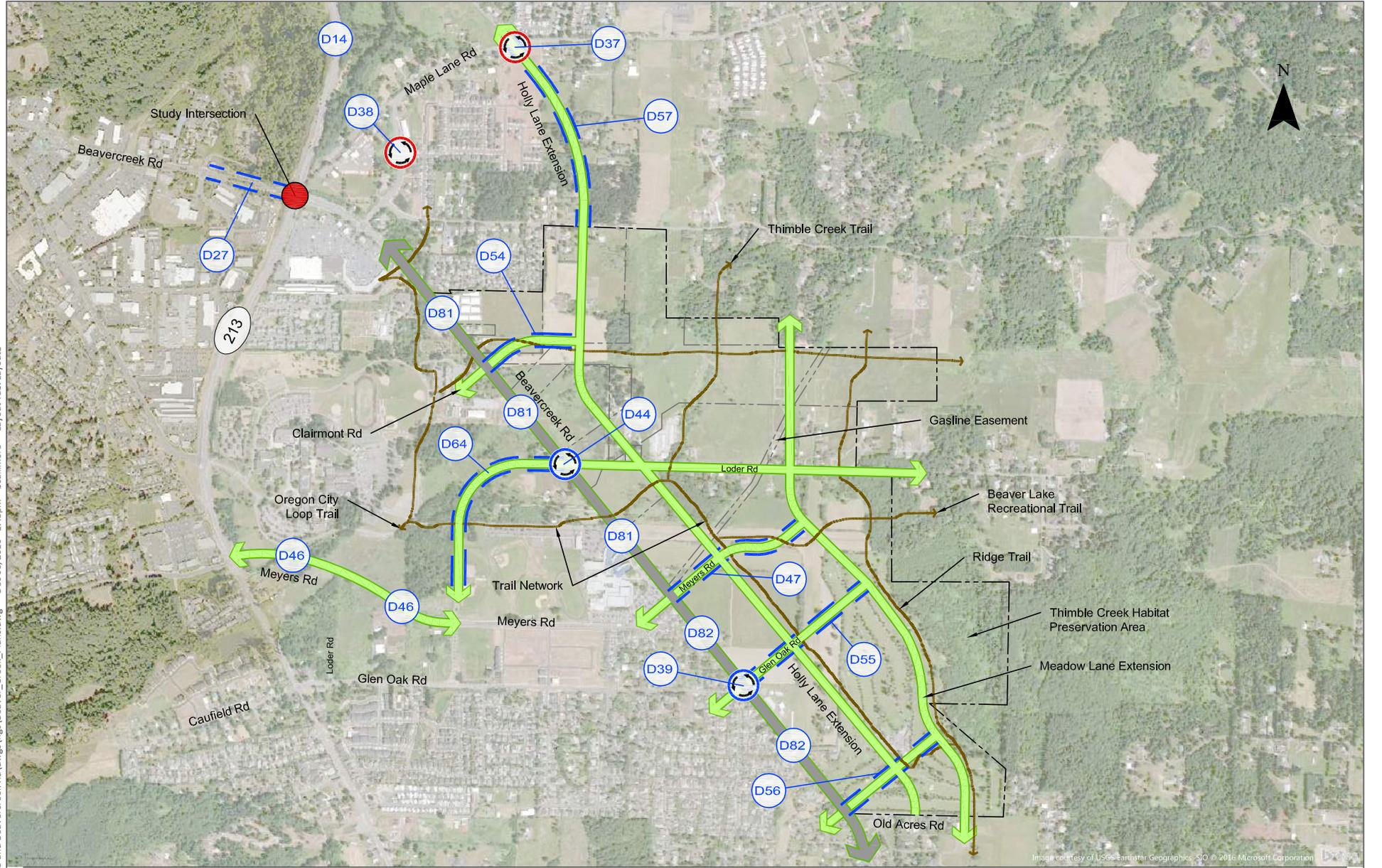
There is a stream running under the north leg of OR213 at the intersection, with corresponding wetlands. There are also geologic hazards in the vicinity of the intersection, with steep slopes and landslides primarily on the northwest corner. More details can be found in the Oregon City GIS maps in **Appendix A**. The presence of these features increases the expense of any improvements requiring additional widening, as significant earthwork, culvert extensions, or wetland mitigation may be necessary.

The City’s TSP includes projects which may impact operations, safety, and travel patterns at the OR213/Beaver Creek Road intersection. Many of the projects will increase connectivity in the vicinity of the OR213/Beaver Creek Road intersection via parallel routes and roadway extensions between these parallel routes, providing alternate routes for those who do not need to pass through the intersection. All new roads and roadway upgrade projects will include facilities for bicycles and pedestrians. In addition, the TSP includes projects specifically to complete and enhance the bicycle and pedestrian networks. The roadway projects likely to increase connectivity and impact safety and operations at the OR213/Beaver Creek Road intersection are included in **Table 1** and **Figure 1**.

**Table 1 – 2013 Oregon City Transportation System Plan Projects located in the southeast part of the City**

Project #	Project Description	Project Extent	Project Elements	Priority	Funded ?
D14	Southbound OR 213 Advanced Warning System	Southbound OR 213, north of the Beaver Creek Road intersection	Install a queue warning system for southbound drivers on OR 213 to automatically detect queues and warn motorists in advance via a Variable Message Sign	Short-term	Likely
D27	OR 213/Beaver Creek Road Operational Enhancement	OR 213/Beaver Creek Road	Lengthen the dual left-turn lanes along Beaver Creek Road to provide an additional 200 feet of storage for the eastbound approach	Short-term	Yes
D37	Maple Lane Road/Holly Lane Operational Enhancement	Maple Lane Road/Holly Lane	Install a single-lane roundabout	Long-term	Unlikely
D38	Maple Lane Road/Walnut Grove Way Operational Enhancement	Maple Lane Road/Walnut Grove Way	Install a single-lane roundabout or realign Maple Lane Road in correlation with development	Long-term	Unlikely

D39	Beaver Creek Road/Glen Oak Road Operational Enhancement	Beaver Creek Road/Glen Oak Road	Install a roundabout	Long-term	Unlikely
D44	Beaver Creek Road/Loder Road Extension Operational Enhancement	Beaver Creek Road/Loder Road Extension	Install a roundabout	Medium-term	Likely
D46	Meyers Road West Extension	OR 213 to High School Avenue	Extend Meyers Road from OR 213 to High School Avenue as an Industrial Minor Arterial. Create a local street connection to Douglas Loop.	Short-term	Likely
D47	Meyers Road East extension	Beaver Creek Road to the Meadow Lane Extension	Extend Meyers Road from Beaver Creek Road to the Meadow Lane Extension as an Industrial Minor Arterial. Between the Holly Lane and Meadow Lane extensions, add a sidewalk and bike lane to the south side of the street, with a shared-use path to be added on north side per project S19. Modify the existing traffic signal at Beaver Creek Road	Medium-term	Likely
D54	Clairmont Drive extension	Beaver Creek Road to Holly Lane South Extension	Extend Clairmont Drive from Beaver Creek Road to the Holly Lane South extension as an Industrial Collector. Add a sidewalk and bike lane to the south side of the street, with a shared-use path to be added on north side per project S17	Long-term	Likely
D55	Glen Oak Road extension	Beaver Creek Road to the Meadow Lane Extension	Extend Glen Oak Road from Beaver Creek Road to the Meadow Lane Extension as a Residential Collector. Install a roundabout at Beaver Creek Road (per project D39)	Long-term	Likely
D56	Timbersky Way extension	Beaver Creek Road to the Meadow Lane Extension	Extend Timbersky Way from Beaver Creek Road to the Meadow Lane Extension as a Residential Collector. Add a sidewalk and bike lane to the south side of the street, with a shared-use path to be added on north side per project S20	Long-term	Likely
D57	Holly Lane South extension	Maple Lane Road to Thayer Road	Extend Holly Lane from maple Lane Road to Thayer Road as a Residential Collector. Add a sidewalk and bike lane to the west side of the street, with a shared-use path to be added on east side per project S14. Install a roundabout at Maple Lane Road (per project D37)	Medium-term	Likely
D58		Thayer Road to Meyers Road	Extend Holly Lane from Thayer Road to the Meyers Road extension as an Industrial Collector. Add a sidewalk and bike lane to the west side of the street, with a shared-use path to be added on east side per project S15	Medium-term	Likely
D59		Meyers Road to the Meadow Lane Extension	Extend Holly Lane from the Meyers Road extension to the Meadow Lane Extension as a Mixed-Use Collector. Add a sidewalk and bike lane to the west side of the street, with a shared-use path to be added on east side per project S16	Long-term	Likely
D64	Loder Road Extension	Beaver Creek Road to Glen Oak Road	Extend Loder Road from Beaver Creek Road to High School Avenue as an Industrial Collector. Add a sidewalk and bike lane to the west side of the street, with a shared-use path to be added on east side per project S18. Create a local street connection to Douglas Loop.	Short-term	Likely
D81	Beaver Creek Road Upgrade	Clairmont Drive (CCC Entrance) to Meyers Road	Improve to Industrial Major Arterial cross-section	Medium-term	Likely
D82		Meyers Road to UGB	Improve to Residential Major Arterial cross-section	Long-term	Likely



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Image courtesy of USGS Earthstar Geographics, SIO © 2016 Microsoft Corporation

- - TSP Improvements Likely to be Funded
- ⦿ - TSP Roundabout Likely to be Funded
- ⦿ - TSP Roundabout Not Likely to be Funded

- == - Beavercreek Road Upgrades
- == - Conceptual Road Network

## Conceptual Planned Area Connectivity Improvements Oregon City

Figure  
**1**

Planning level operations and safety analyses were conducted at the OR213/Beaver Creek Road intersection, and compared to the 2013 TSP. The (2011 base) volumes from the 2013 TSP were compared to 2016 weekday p.m. peak hour count data (see **Appendix B**) collected by the City at the following intersections:

- OR213 and Beaver Creek Road
- OR213 and S Caufield Road/Glen Oak Road
- S Holly Lane and S Maple Lane Road

This comparison showed an overall 2% linear annual growth rate for the area from 2011 to 2016. Based on this calculation, the growth rate experienced during the last five years appears consistent with the long term growth trend predicted in the TSP.

It should be noted that there is larger than average growth for the southbound right-turn movement from Holly Lane to Maple Lane Road. This is likely due, in part, to S Holly Lane functioning as a parallel alternative route to OR213. Drivers may be using S Holly Lane to avoid making a southbound left-turn from OR213 to Beaver Creek Road due to long queues and delays for this movement.

The existing mobility standard for the OR 213/Beaver Creek Road intersection set forth in the 2013 TSP is based on volume-to-capacity Ratio (v/c). The v/c ratio is a measure that reflects mobility and quality of travel. It compares roadway demand (vehicle volumes) with roadway supply (carrying capacity). For example, a v/c of 1.00 indicates the roadway facility is operating at its capacity. The following mobility standard is set forth in the 2013 TSP for the OR213/Beaver Creek Road intersection:

- During the highest one-hour period of the day, a maximum volume-to-capacity (v/c) ratio of 0.99 shall be maintained.

The analysis completed for the 2013 TSP shows the intersection operating with a v/c ratio of 0.83 under 2011 existing conditions.

The OR213/Beaver Creek Road intersection was identified in the 2013 TSP as a high collision intersection. The ODOT Crash Analysis and Reporting Unit provided crash records at the intersection for the 5-year period from January 2010 through December 2014. **Table 2** summarizes the reported crash data. The crash data is included in **Appendix C**.

**Table 2 - OR213/Beaver Creek Road Intersection Crash Summary and Crash Rate Assessment (2010-2014)**

Crash Type				Severity			Total	Critical Crash Rate by Intersection Type	Critical Crash Rate by Volume	Observed Crash Rate at Intersection	Observed Crash Rate > Critical Crash Rate?
Rear-End	Turning	Angle	Other	PDO	Injury	Fatal					
116	7	5	5	58	74	1	133	0.59	0.50	1.20	Yes

PDO = Property Damage Only

Crash Rate = crashes per million entering vehicles

The intersection was in the top 5% of the ODOT Safety Priority Index System (SPIS) List for the years 2012-2014. The SPIS List is maintained by ODOT and updated each year with the latest available year of crash records and traffic volumes. 2012-2014 is the most current SPIS list. The intersection also has a crash rate that exceeds the Critical Crash Rate meaning that it exceeds the crash rate of other comparable intersections.

Beaver Creek Road is the first at-grade intersection on OR213 for over two miles south of Redland Road, in a corridor that generally feels rural. A lack of driver expectation of southbound queues from the signal may contribute to the high number of reported rear-end crashes at the intersection. The reported fatality occurred in 2011, and was an angle crash in which the driver ran a red light under dark and rainy conditions. The 2010-2014 crash rate of 1.20 is already lower than the crash rate of 2.05 identified in the 2013 TSP, indicating that safety and/or driver attentiveness have improved in recent years. Lengthening the dual eastbound left-turn lanes to provide additional storage (Project D27; funded) and an advanced queue warning system on southbound 213 will further improve safety at the intersection.

## ALTERNATIVES DEVELOPMENT

The Synchro analysis in the 2013 TSP indicates that by 2035, without a major improvement, the intersection will function beyond the current mobility standard. Under 2035 Planned System Conditions, the intersection is expected to operate with a v/c ratio of 1.05, exceeding the existing mobility standard of a maximum v/c ratio of 0.99.

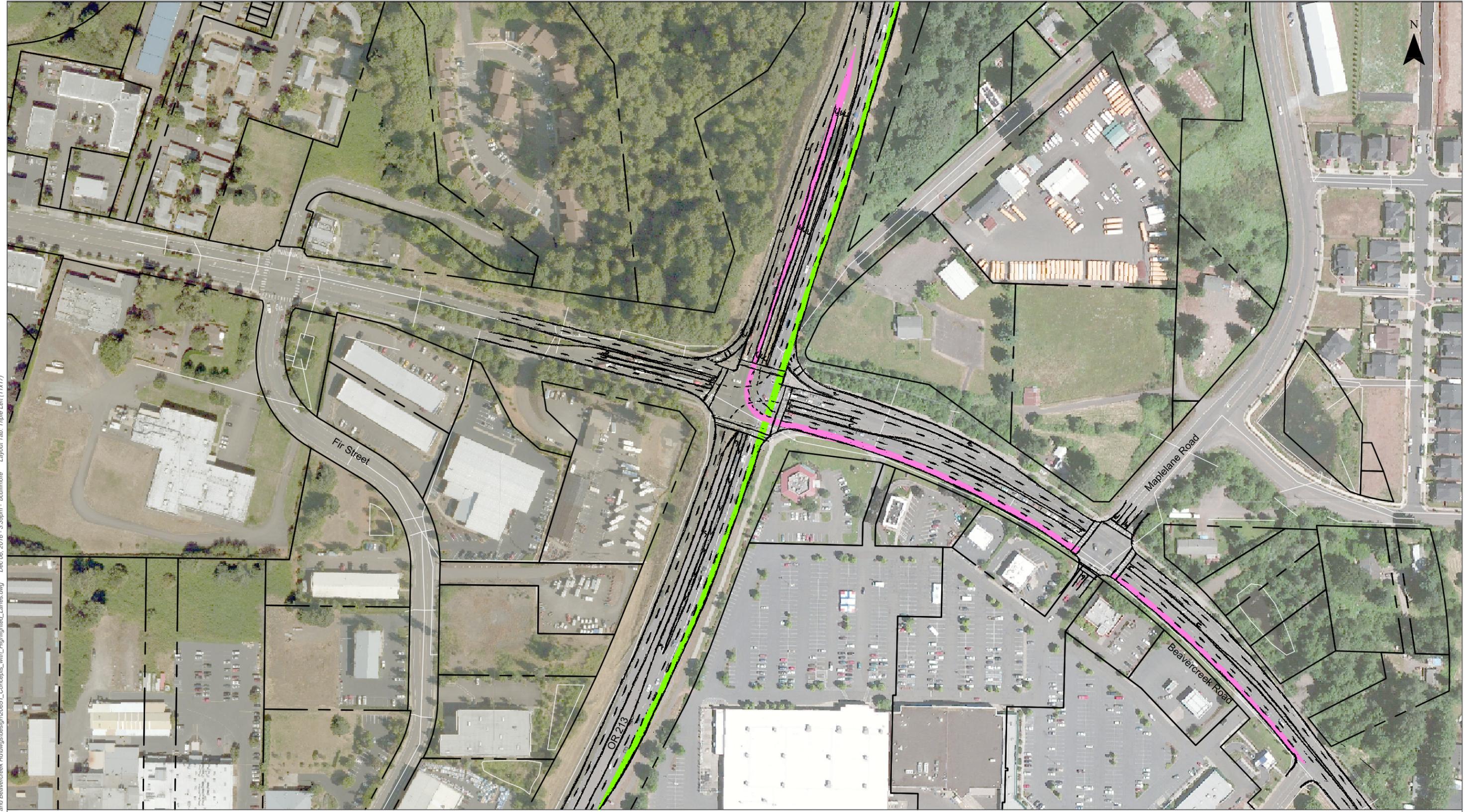
Alternatives to modify the existing intersection configuration and traffic control, which would bring the intersection into compliance with the current mobility standards in the year 2035, were identified and include:

- Addition of lanes to current configuration
- Quadrant road in the southwest quadrant of the intersection,
- Variations of displaced left-turns (also referred to as continuous flow intersection), and
- Grade-separated interchange forms.

The potential operational impacts of each alternative are shown in **Table 3** and evaluated for a variety of additional considerations in **Table 4**.

### *Alternative 1: Triple Left-Turns*

To maintain the current mobility standard with the existing intersection control, a third southbound left-turn lane and a third northbound through lane through the intersection would be required to bring the intersection back to a v/c ratio of 0.90. The effectiveness of the additional northbound through lane is dependent on the planned extension of Meyers Road from Beaver Creek Road to OR213 which would allow some eastbound right-turns at the intersection to be converted to northbound through movements based on the new network connectivity. **Figure 2** shows a sketch of these potential lane additions.



█ = New Lanes

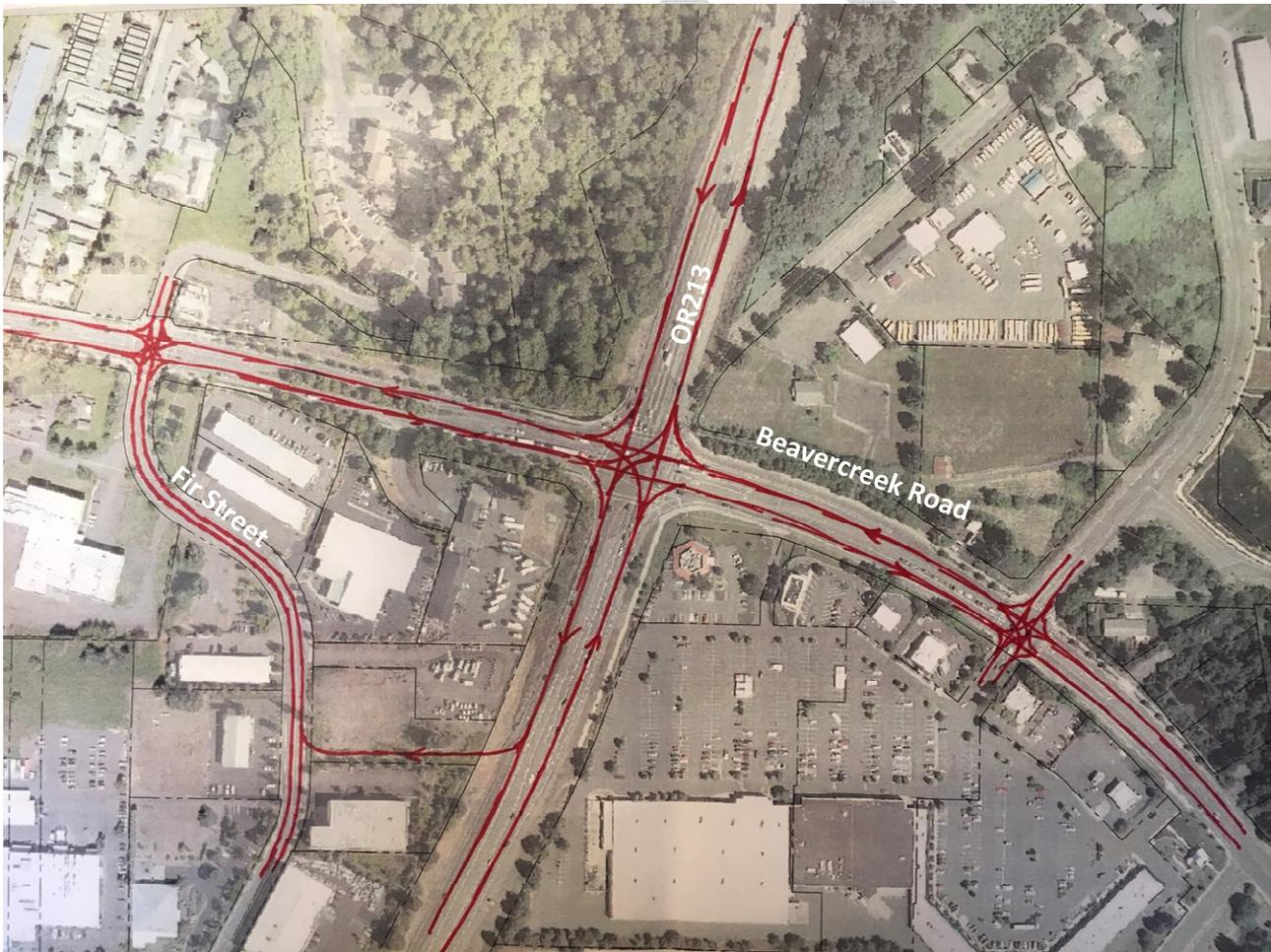
Alternative 1: Triple Southbound Left Turn Lanes  
& Three Northbound Through Lanes  
Oregon City, Oregon

Figure  
2

### Alternative 2: Quadrant Road

A quadrant road, or indirect left, in the southwest corner of the intersection would allow southbound left-turns to be prohibited at the OR213/Beaver Creek Road intersection. These vehicles would instead travel southbound through the intersection, turn right onto a new street to the south that would connect to Fir Street, and make a right-turn onto Beaver Creek Road to continue east on their desired route. A third southbound through lane and third eastbound through lane would be necessary to accommodate the large volumes traveling through the intersection twice instead of once. This would reduce overall intersection delay but increase travel time for the southbound left-turn movement. The widening is likely to impact the culvert and retaining walls on the northwest and northeast corners of the intersection.

### Exhibit 2. Quadrant Road Alternative



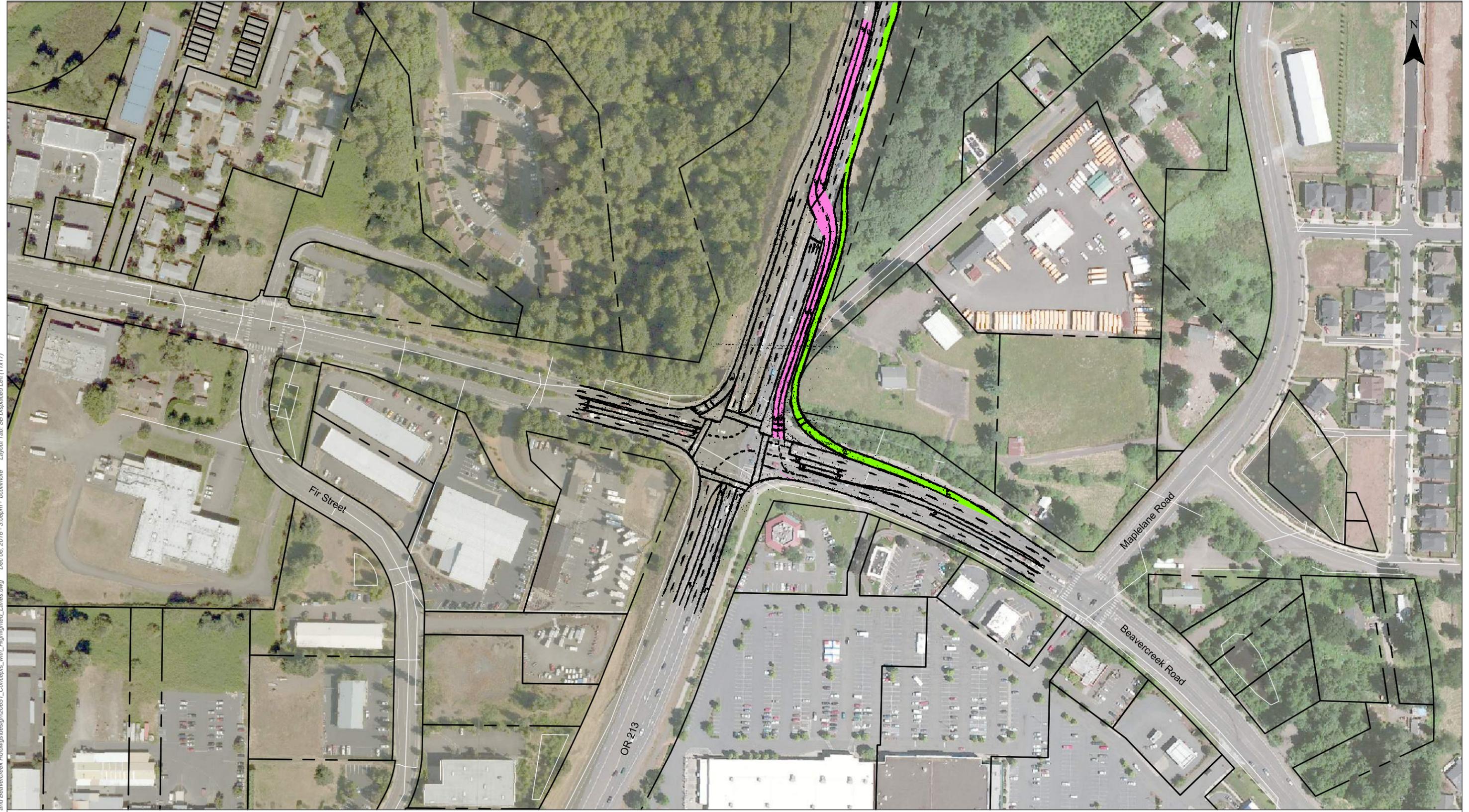
### **Alternatives 3 & 4: Displaced Left-Turns**

In a displaced left-turn<sup>1</sup>, or continuous flow, intersection, left-turns are removed from the main intersection and relocated to a new upstream signal. With proper coordination, vehicles are able to make a left-turn simultaneously with opposing through traffic. Displaced left-turn intersection alternatives would reduce the number of signal phases and conflict points in the OR213/Beaver Creek Road intersection, thereby improving capacity and safety, but would require coordinated partial signals on the approaches with displaced left-turns. The heaviest left-turn movements at the OR213/Beaver Creek Road intersection are on the southbound and eastbound approaches. **Figure 3** shows a sketch of a displaced left-turn for the southbound approach only. **Figure 4** shows a sketch of displaced left-turns for both the southbound and eastbound approaches. In either case, the southbound approach requires dual left-turn lanes. Consideration could be given to prohibiting the northbound and westbound left-turn movements as these movements have minimal traffic volumes and have alternate routes; however, these restrictions are not mandatory. Additional analysis (microsimulation) is necessary to fully understand the benefits of these potential restrictions.

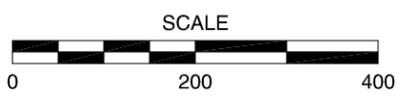
Alternative 3 includes impacts to the culvert and retaining walls in the northeast corner of the intersection. Alternative 4 includes culvert and retaining wall impacts to both the northwest and northeast corners of the intersection.

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<sup>1</sup> Steyn, H., Z. Bugg, B. Ray, and A. Daleiden. *Displaced Left-Turn Informational Guide*. FHWA, Washington, D.C., 2014. [http://safety.fhwa.dot.gov/intersection/alter\\_design/pdf/fhwas14068\\_dlt\\_infoguide.pdf](http://safety.fhwa.dot.gov/intersection/alter_design/pdf/fhwas14068_dlt_infoguide.pdf)



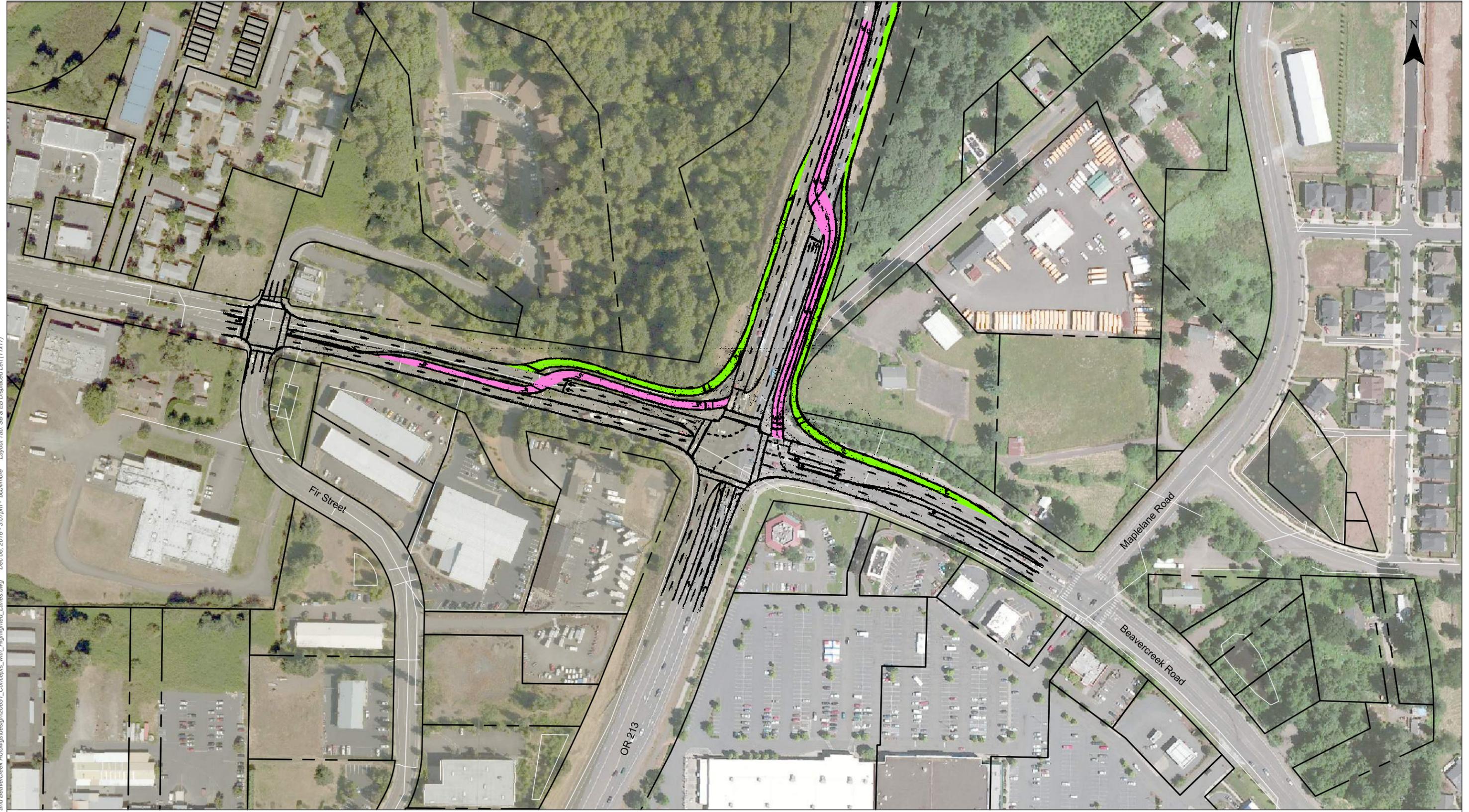
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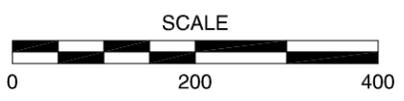
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Alternative 3: Southbound Displaced Left Turn  
Oregon City, Oregon

Figure  
3



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Alternative 4: Southbound & Eastbound Displaced Left Turn  
Oregon City, Oregon

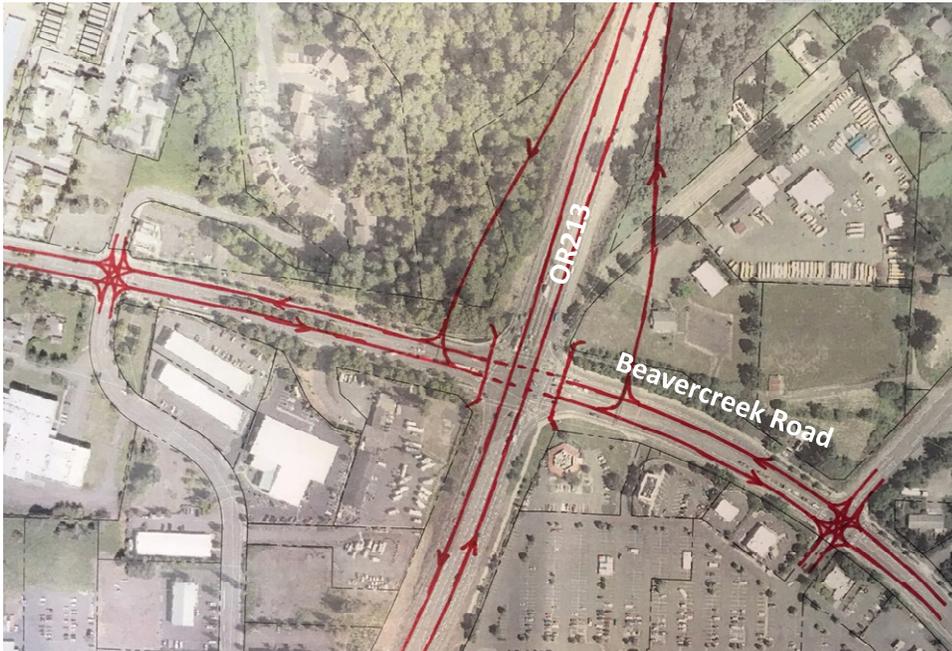
Figure  
4

### Alternatives 5 – 7: Grade-Separated Interchange Alternatives

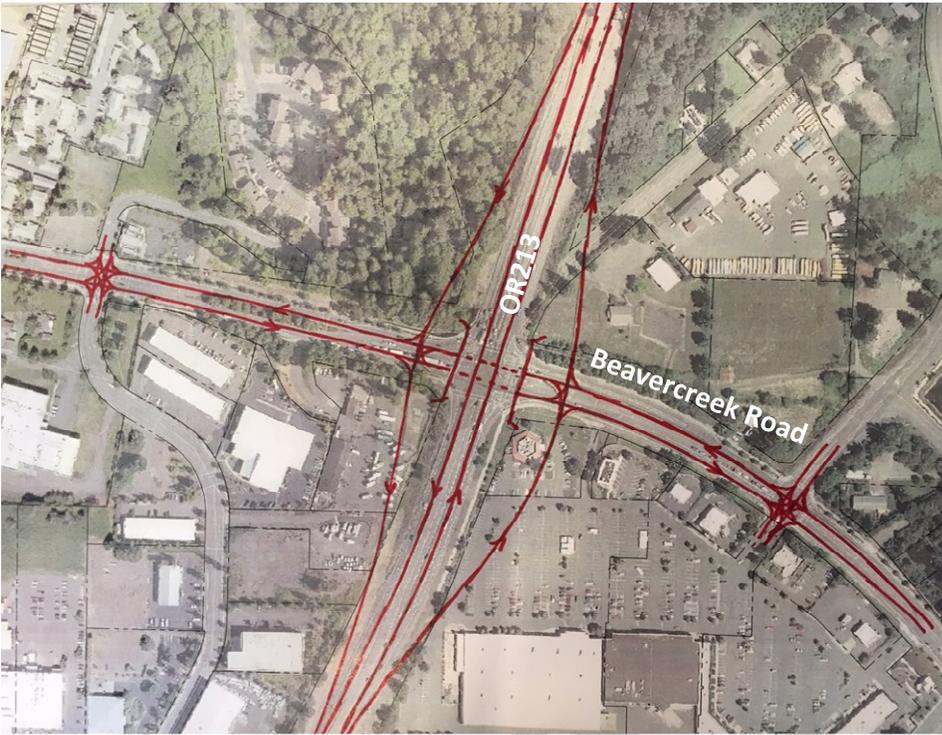
Several grade-separated interchange configurations were considered including full diamond, half diamond (i.e., southbound off-ramp and northbound on-ramp only) and single-point interchanges. A project to constructing an interchange at this location was removed from the TSP in the 2013 Update at the request of ODOT as it was determined to be financially unfeasible given other regional priorities.

The construction of an interchange at the OR213/Beaver Creek Road intersection would have many challenges and impacts on surrounding land uses as shown in Exhibits 3 through 5.

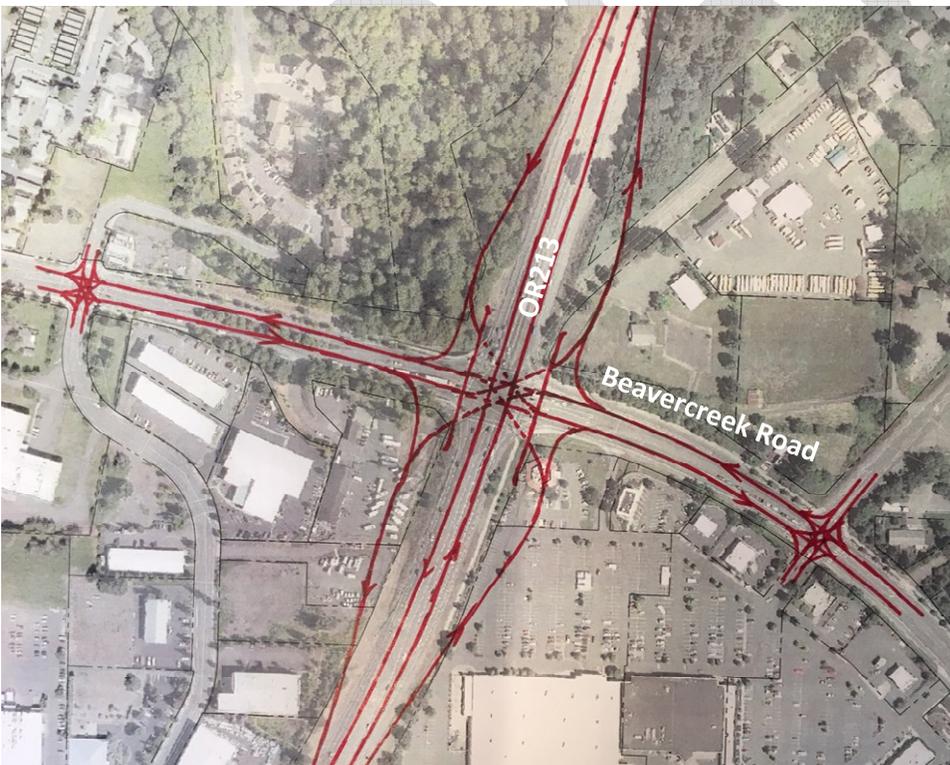
#### Exhibit 3. Half Diamond Interchange Alternative



**Exhibit 4. Full Diamond Interchange Alternative**



**Exhibit 5. Single Point Interchange Alternative**



## ALTERNATIVES EVALUATION

The following provides an overview of operational analysis conducted on each alternative and summarizes the qualitative assessment for each alternative.

### *Operations Analysis*

Planning level operational analysis was conducted using the CAP-X tool developed by FHWA<sup>2</sup>, which can be used to evaluate alternative intersection forms and interchanges. The tool provides a total intersection (v/c) ratio. It was used for all alternatives to provide a consistent comparison of alternatives, but was found to be less conservative than Synchro in the base condition. **Table 2** summarizes the v/c ratios provided by CAP-X for each alternative. If one of these alternatives is identified as potential viable solution, it should be modeled in VISSIM to refine the forecast v/c ratio.

**Table 3 – CAP-X Alternatives Operations Analysis Summary (Year 2035)**

	Alternative	v/c	Figure/Exhibit
1	Lane Additions: Triple Southbound Left-Turn Lanes and Three Northbound Thru Lanes	0.90	Figure 2
2	Indirect Left (S/W Quadrant Road) with Three Southbound and Eastbound Thru Lanes	0.94	Exhibit 2
3	Southbound Displaced Left-Turn	0.86	Figure 3
4	Southbound and Eastbound Displaced Left-Turns	0.81	Figure 4
5	Full Diamond Interchange with Dual Eastbound and Westbound Left-Turn Lanes	0.82	Exhibit 3
6	Half Diamond Interchange with Dual Eastbound Left-Turn Lanes	0.79	Exhibit 4
7	Single Point Interchange with Dual Eastbound and Westbound Left-Turn Lanes	0.80	Exhibit 5

As shown, all alternatives meet the mobility standard. Differences on their costs and impacts are provided in the following section.

### *Alternatives Assessment*

Each of the alternatives was qualitatively evaluated for its impact to the intersection capacity, right-of-way impacts, environmental impact, bicycle and pedestrian impacts, cost, connectivity, and dependence on other projects. These factors are discussed below and summarized in **Table 4**.

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<sup>2</sup> Transportation Systems Institute (TSI). *Capacity Analysis for Planning of Junctions*. Version 1.2. 2011. <http://tsi.cecs.ucf.edu/index.php/cap-x>

### *Capacity*

Each of the alternatives provides sufficient capacity to meet the current mobility standard in 2035. However, the triple left-turns and indirect left alternatives (Alternatives 1 and 2) still have an overall v/c ratio equal or greater than 0.90 and may represent a short-term fix rather than a long-term solution or may not provide benefit commensurate with the costs. The displaced left-turn alternatives (Alternatives 3 and 4) provide additional capacity nearly equal to the grade-separated interchange alternatives (Alternatives 5, 6 and 7) at a significantly lower cost.

### *Right-of-Way Impacts*

Alternatives 1, 3, and 4 may be feasible within the existing right-of-way. Alternative 2 would require right-of-way through a vacant parcel to connect OR213 to Fir Street. All of the grade separated interchange alternatives include large impacts to the right-of-way. The half diamond interchange reduces right-of-way takes as compared to the full diamond interchange without eliminating necessary movements through the intersection.

### *Environmental Impacts*

For all alternatives, any widening on the north side of Beaver Creek Road, east or west of OR213 would impact the stream and wetlands and require mitigation. They would also require extending the existing culvert crossing under OR213 on the north side of Beaver Creek Road and reconstruction of the retaining walls in the northwest and northeast corners of the intersection. Additional investigation is necessary to fully understand the costs of these potential impacts and to determine if the culvert can be extended or has to be upgraded or if the widening could be accommodated utilizing existing right-of-way on the south side of Beaver Creek Road.

Alternative 1 is the only alternative with the potential to not impact the northwest and northeast corners. Alternative 3 may impact the northeast corner only. Alternatives 2 and 4 would impact the northwest and northeast corners and Alternatives 5, 6, and 7 would have significant impacts in the northwest and northeast quadrants.

### *Bicycle and Pedestrian Impacts*

All alternatives can accommodate bicycles and pedestrians; however, Alternatives 1 and 2 include additional through lanes and would increase the intersection crossing distances which is an undesirable impact. Alternatives 3 and 4 reduce the crossing distances but result in two-stage crossing of some legs of the intersection. Alternatives 5, 6, and 7 increase and decrease crossing distances depending on the leg of the intersection and result in cyclists and pedestrians navigating two major intersections instead of one.

### *Cost*

The costs of adding additional lanes, indirect lefts, or displaced left-turns are all of similar magnitude and may require extending or reconstructing the culvert and reconstructing retaining walls.

Alternatives 3 and 4 also require the addition of partial signals on one or both of the southbound and eastbound legs of the intersection, respectively. Each of the interchange alternatives (Alternatives 5, 6 and 7) are assumed to be cost-prohibitive at a minimum cost of \$25,000,000.

*Connectivity*

Turning movements to and from the south leg of OR213 are minimal due to the presence of parallel routes and/or other road network connections. The half diamond interchange alternative (Alternative 6) eliminates these movements, thereby improving capacity at the intersection. There is the potential to further improve the capacity of the displaced left-turn alternatives (Alternatives 3 and 4) by prohibiting the northbound and westbound left-turn movements as these movements have minimal traffic volumes; however, this is not a requirement of the alternatives. The connectivity improvements in the TSP are important to the flexibility and viability of these alternatives.

*Dependence on Other Projects*

As noted in the discussion of connectivity above, the half diamond interchange alternative (Alternative 6) is dependent on other projects in the area to provide the parallel routes necessary to accommodate the movements eliminated from the OR213/Beaver Creek Road intersection. The practicality of the additional northbound through lane in the triple left-turns alternative (Alternative 1) is also dependent on the provision of road extensions, particularly the planned Meyers Road extension to OR213.

**Table 4 – Alternatives Evaluation**

Alternative	Additional Capacity	Right-of-Way Impacts	Environmental Impact	Bike/Ped Impacts	Cost	Eliminates Movements ?	Dependent on Connectivity Extensions?	
Existing	None	None	None	No Improvement	NA	No	Yes	
1	Triple Southbound Left / Three Northbound Thru	Some	None to Minimal	None to Minimal	Increased Crossing Distances	Medium (\$5-\$10M)	No	Yes
2	Indirect Left (S/W Quadrant Road)	Some	New Connection on Industrial Land	NW and NE Corners	Increased Crossing Distances	Medium (\$5-\$8M)	No	No
3	Southbound Displaced Left-Turn	Significant	None to Minimal	NE Corner	Reduced Crossing Distances	Medium (\$5-\$10M)	Would provide additional benefit	No
4	Southbound and Eastbound Displaced Left-Turns	Significant	None to Minimal	NW and NE Corners	Reduced Crossing Distances	Medium (\$8-\$12M)	Would provide additional benefit	No
5	Full Diamond Interchange	Significant	High	NW and NE Quadrants	Two intersections	High (>\$25M)	No	No
6	Half Diamond Interchange	Significant	High	NW and NE Quadrants	Two intersections	High (>\$25M)	Yes	Yes
7	Single Point Interchange	Significant	High	NW and NE Quadrants	Two intersections	High (>\$25M)	No	No

### **Consistency with Policies**

The City will continue to assess if any of the alternatives are in conflict with regional land use or transportation policy frameworks or with state or locally adopted policies. Input from the Technical Advisory Group will be collected on this issue.

### **SUMMARY**

The OR213/Beavercreek Road intersection is forecast to not meet the current mobility standard by 2035. Each of the alternatives identified above provides sufficient capacity to meet the current standard in 2035; however, the additional capacity is provided at varying degrees and each alternative has cost and other impacts to consider in determining if they are feasible solutions for the City. If none of the alternatives is found to be feasible, an alternative mobility target approach needs to be pursued.

### **NEXT STEPS**

Alternatives will be reviewed with the TAG and CAG to determine if any should be further explored in more detail and/or if an alternative mobility target should be pursued.

Future meetings with the TAC and CAG are planned to discuss potential alternative mobility targets and ultimately select an alternative mobility target and/or preferred improvement(s) to be adopted into the city's TSP by the Planning Commission and City Council. Alternative mobility targets will also need to be agreed upon by ODOT and approved by the Oregon Transportation Commission.