US 26 / GLENCOE ROAD INTERCHANGE AREA MANAGEMENT PLAN

VOLUME I OF II

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US 26/Glencoe Road

Interchange Area Management Plan

Volume I of II

Oregon Department of Transportation

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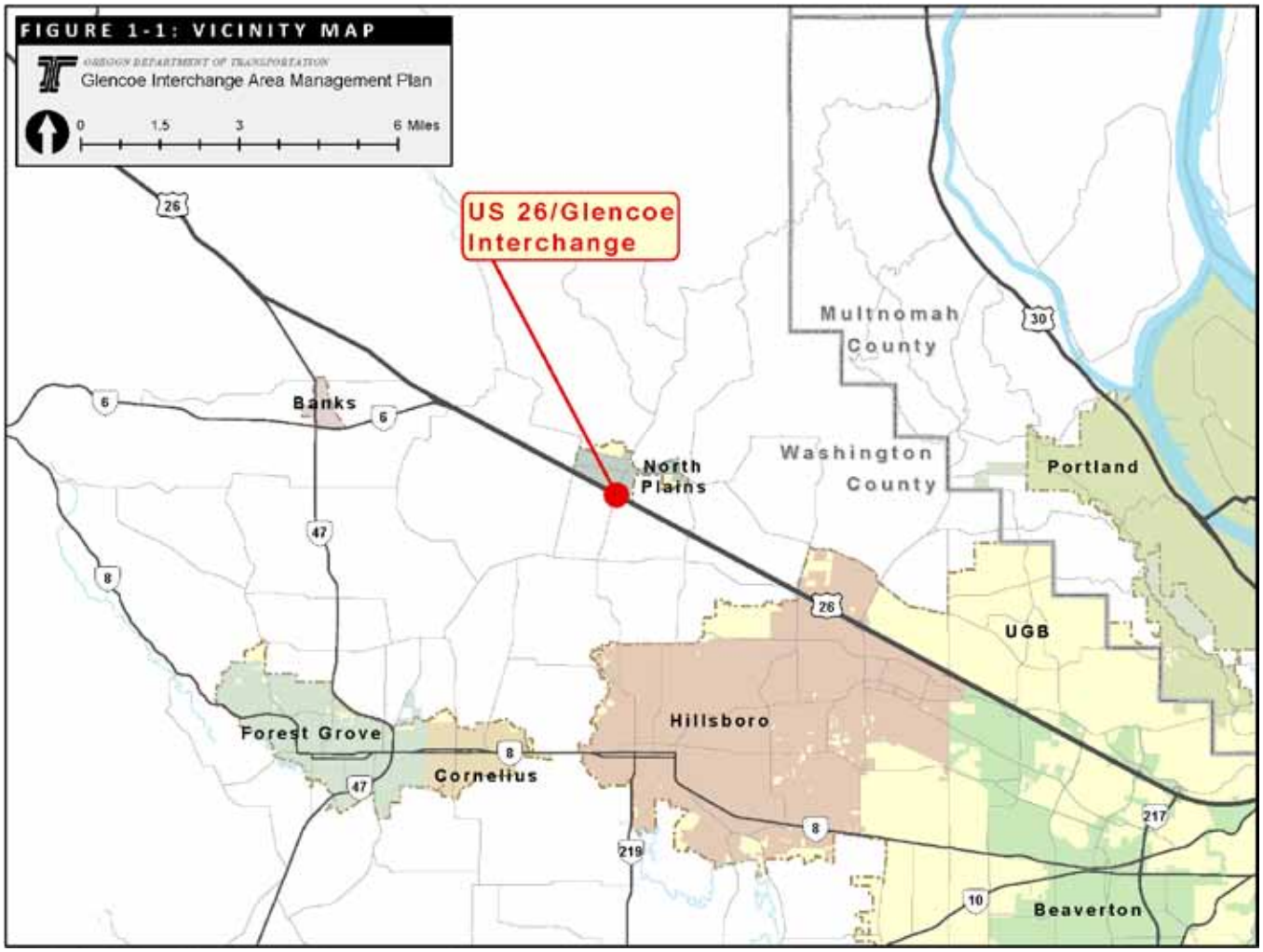
SECTION 1

US 26/GLENCOE ROAD PURPOSE AND BACKGROUND

1.1 INTRODUCTION

The Glencoe Road Interchange Area Management Plan has been prepared for the reconstruction of the interchange at US 26: Sunset Highway. It is located outside the Portland Metro area approximately 4 miles west of the City of Hillsboro and the Urban Growth Boundary, while in the City of North Plains (Figure 1-1). The interchange provides an important urban to urban freeway connection for the cities of Hillsboro, Forest Grove and Cornelius to the Portland Metro area.



In the spring of 2006, Oregon Department of Transportation (ODOT), the City of North Plains, and Washington County began planning for a US 26/Glencoe Road interchange located in North Plains, and Washington County. ODOT initiated the Glencoe Road Interchange Area Management Plan (IAMP) project to address existing and future safety and operational issues at the existing interchange. The project team developed the preferred conceptual interchange, with input from community stakeholders, including its purpose and need, goals and objectives and evaluation criteria and measures.

By 2008, the preferred conceptual interchange was put on hold as discussion continued with the City and County regarding access management issues. At this time, funding was not available to construct the interchange. The full preferred conceptual interchange would cost an estimated $80 to $90 million and would consist of lengthening and widening interchange ramps, reconstructing the overcrossing with additional through and turn lanes, accommodations for bicycle and pedestrian facilities, and making improvements to the local circulation system.

Jobs and Transportation Act (HB 2001)

House Bill 2001, also known as the Oregon Jobs and Transportation Act (JTA), a transportation funding plan, was adopted by the 2009 Legislature. It addresses important elements of Oregon's transportation system and statewide

economy. In addition, it identified funding for 37 specific highway projects across Oregon.

The Glencoe Road interchange was identified as a project and $32 million was allocated for the reconstruction of the interchange. In 2009 ODOT, Washington County and the City of North Plains actively began discussions to define and shape the goals and objectives for the US 26/Glencoe Road IAMP to fit the $32 million JTA funding allocation. This IAMP addresses the JTA project to ensure the interchange will function as intended through a future 20-year planning horizon accommodating both the City of North Plains and Washington County adopted land uses.

1.2 PROBLEM STATEMENT

The US 26/Glencoe Road interchange is a locally and regionally significant interchange along the US 26 corridor. The JTA project will address specific issues such as the lack of turn lanes and bicycle/pedestrian accommodations on the existing two-lane Glencoe Road over-crossing. The most significant safety issue is that the existing westbound off-ramp is not long enough to safely accommodate vehicles using the interchange thus creating backups onto US 26.

Even further, the interchange cannot accommodate the projected increase in traffic volumes, both from the adjacent City of North Plains and the larger regional vicinity, which includes the Cities of Hillsboro, Cornelius, and Forest Grove. The interchange is an important access point from US 26 to these aforementioned cities.

In addition to the projected long-term capacity deficiencies, poor sight distance on the overpass and inadequate sidewalks and bicycle lanes, the following summarizes the deficiencies:

Deck Width

The existing Glencoe Road bridge overpass lacks sufficient width for separate left-turn lanes at the ramp terminal intersections and does not accommodate bicycle and pedestrian traffic through the use of sidewalks and bicycle lanes. In addition, frequent users of the overpass have noted that its narrow width does not easily accommodate large trucks or oversized vehicles that need to traverse US 26.

Sight Distance

Both interchange ramp terminals have intersection sight distance deficiencies that are the result of the vertical curvature of the overpass structure and the guardrails along the roadway shoulders.

Vertical Clearance

ODOT classifies US 26 as a Freight Route; however, the existing vertical clearance under the bridge for US 26 traffic is 15′-2″ (westbound) and 15′-7″ (eastbound). These clearances do not meet the current ODOT design standard of 17′-4″.

Lane Configurations and Queues

The existing US 26/Glencoe Road off-ramps lack separate left- and right-turn lanes. This lack of vehicle storage capacity can lead to extensive vehicle queuing at peak travel periods.

1.3 IAMP GOALS & OBJECTIVES

The IAMP process is intended to protect the long-term function and safety of interchanges. As stated in Policy 3C of the OHP, "it is the policy of the State of Oregon to plan for and manage grade-separated interchange areas to ensure safe and efficient operation between connecting roadways."

City, County and ODOT Memorandum of Understanding

A Memorandum of Understanding (MOU) was developed to memorialize the intentions of the City, County and ODOT for their collaborative work to support planned land use and industrial development in western Washington County as well as support economic development and mobility in the region. This MOU helped specifically define and shape the goals and objectives for the US 26/Glencoe Road IAMP to fit the $32 million JTA funding allocation.

The MOU memorialized the following aspects of the JTA project:

Project Definition

Increase vehicular capacity and safety of the west to south movement at the Glencoe Road Interchange within the proposed JTA budget.

Goals

From this definition, the generalized goals and objectives of the US 26/Glencoe Road IAMP are to:

- Develop a new Glencoe Road interchange form through a collaborative effort involving design professionals, jurisdictional representatives, local citizens and business owners
- Ensure that the interchange form meets projected long-term travel demands and continues to support local economic development
- Protect the long-term function of the interchange through access management techniques

Primary Project Priorities

- Increase interchange vehicular capacity to meet the needs for existing and future land use consistent with the adopted comprehensive plans to the extent possible
- Improve the primary movement of westbound to southbound, and the secondary movement of northbound to eastbound
- Consider and evaluate freight mobility and vertical clearance on US 26
- Maintain or improve safety at the interchange
- Improve pedestrian and bicycle connectivity across the Glencoe Road structure over US 26

Additional Project Priorities

- Minimize construction impacts on North Plains traffic
- Minimize property impacts to Highland Court and properties facing Glencoe Road
- Examine opportunity for a right turn lane from eastbound Highland Court to southbound Glencoe Road
- Examine opportunity for right turn lane from southbound Glencoe Road to westbound US 26
- Accommodate potential trail under proposed Glencoe Road structure replacing the current culvert

1.4 PROJECT ELEMENTS AND PROJECT DEVELOPMENT STRATEGY

The JTA Project consists of needed improvements that have been identified and developed through previous planning work, as well as traffic analysis of the interchange and the other connected roadways. The approximate project limits of the JTA Project are the US 26/Glencoe Road Interchange and Glencoe Road north to Highland Court and south to Beach Road.

The specific interchange improvement components associated with the JTA Project include:

- Lengthening and widening the US 26 westbound exit ramp
- Replacing the Glencoe Road structure over US 26 to accommodate 4 travel lanes and improving vertical clearance and structurally accommodate future widening to 5 lanes when and if needed
- Constructing ramp terminal intersection improvements that improve the efficiency and safety of the interchange
- Improving pedestrian and bicycle connectivity across the structure

1.5 IAMP PURPOSE

OAR 734-051-0155 requires that an IAMP be prepared for any new interchange and recommends an IAMP for significant modifications to existing interchanges. The purpose of an IAMP is to ensure safe and efficient operations between connecting roadways, to protect the function of the interchange, and to minimize the need for future major interchange improvements. Because new interchanges are very costly, state and local governments and citizens have an interest in ensuring that they function as intended and for as long a period as possible, while still supporting adopted land use.

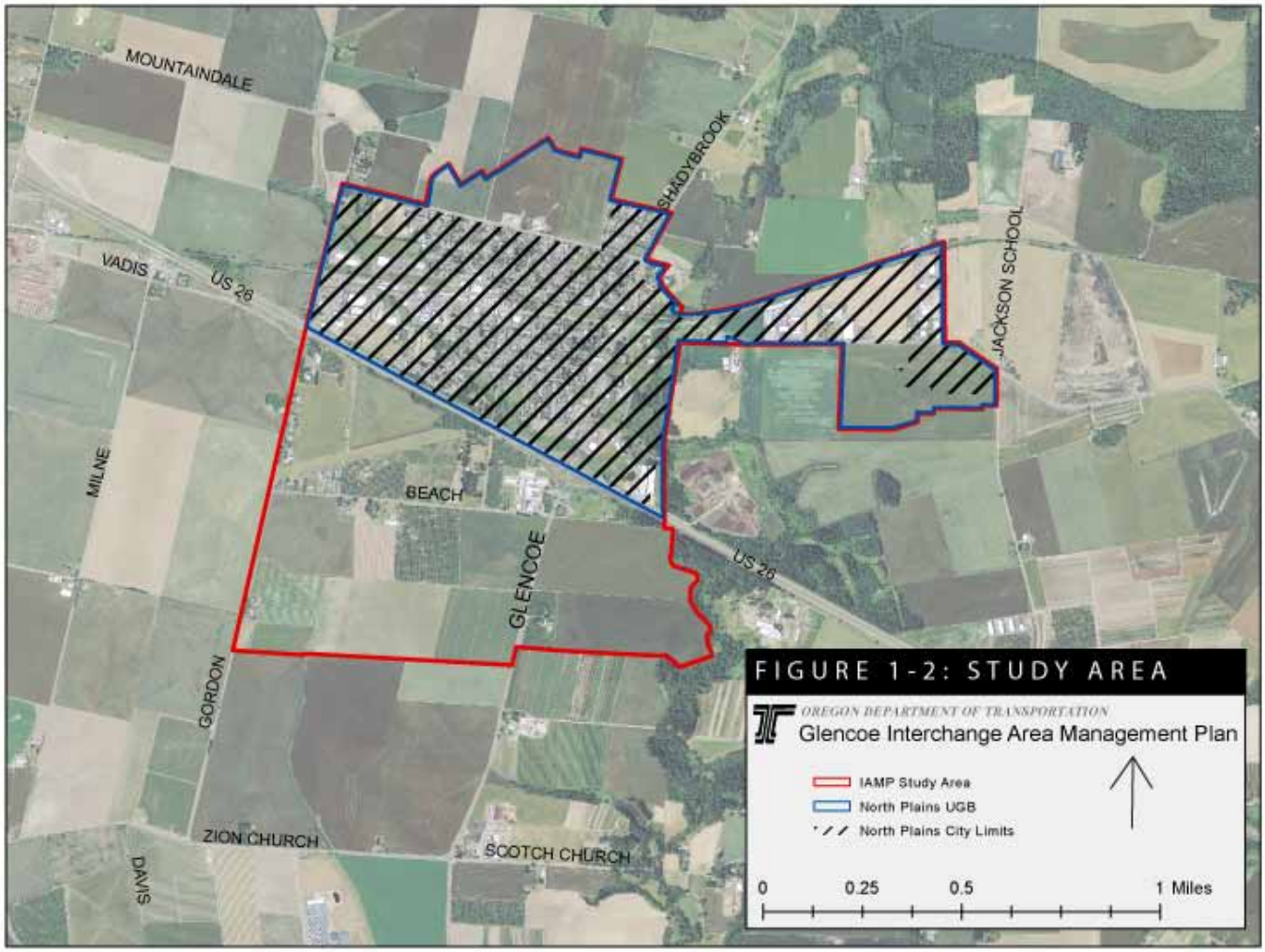
OAR 734-051-0155(7) requires an IAMP to comply with the following criteria, unless the plan documents why compliance with a criterion is not applicable:

1. Be developed no later than the time an interchange is designed or is being redesigned
2. Identify opportunities to improve operations and safety in conjunction with roadway projects and property development or redevelopment and adopt policies, provisions, and development standards to capture those opportunities
3. Include short and long-range actions to improve operations and safety within the designated study area
4. Consider current and future traffic volumes and flows, roadway geometry, traffic control devices, adopted land uses and zoning, and the location of all current and planned approaches
5. Provide adequate assurance of the safe operation of the facility through the design traffic forecast period, typically 20 years
6. Consider existing and proposed uses of all the property within the designated study area consistent with its comprehensive plan designations and zoning
7. Be consistent with any applicable Access Management Plan, corridor plan or other facility plan adopted by the Oregon Transportation Commission
8. Include policies, provisions, and standards from local comprehensive plans, transportation system plans, and land use and subdivision codes that are relied upon for consistency and that are relied upon to implement the Interchange Area Management Plan

1.6 GLENCOE ROAD IAMP STUDY AREA

The study area (Figure 1-2) for the US 26/Glencoe Road IAMP consists of the local and regional land use and transportation conditions affecting the US 26/Glencoe Road interchange. It was selected based on a review of the regional and local roadway network, land use patterns, and existing ODOT access management policies associated with major freeway interchange projects. As illustrated in, the study area is generally comprised of those land uses located within ½ mile of the existing Glencoe interchange south of Highway 26 and those land uses located within the City of North Plain's city limits.

It is recognized that the Glencoe interchange is a regional facility that is utilized by travelers in many other surrounding communities such as the cities of Hillsboro, Cornelius, Forest Grove, and portions of unincorporated Washington County. As such, these communities are assumed to be a part of the larger regional study area.



1.7 LAND USE

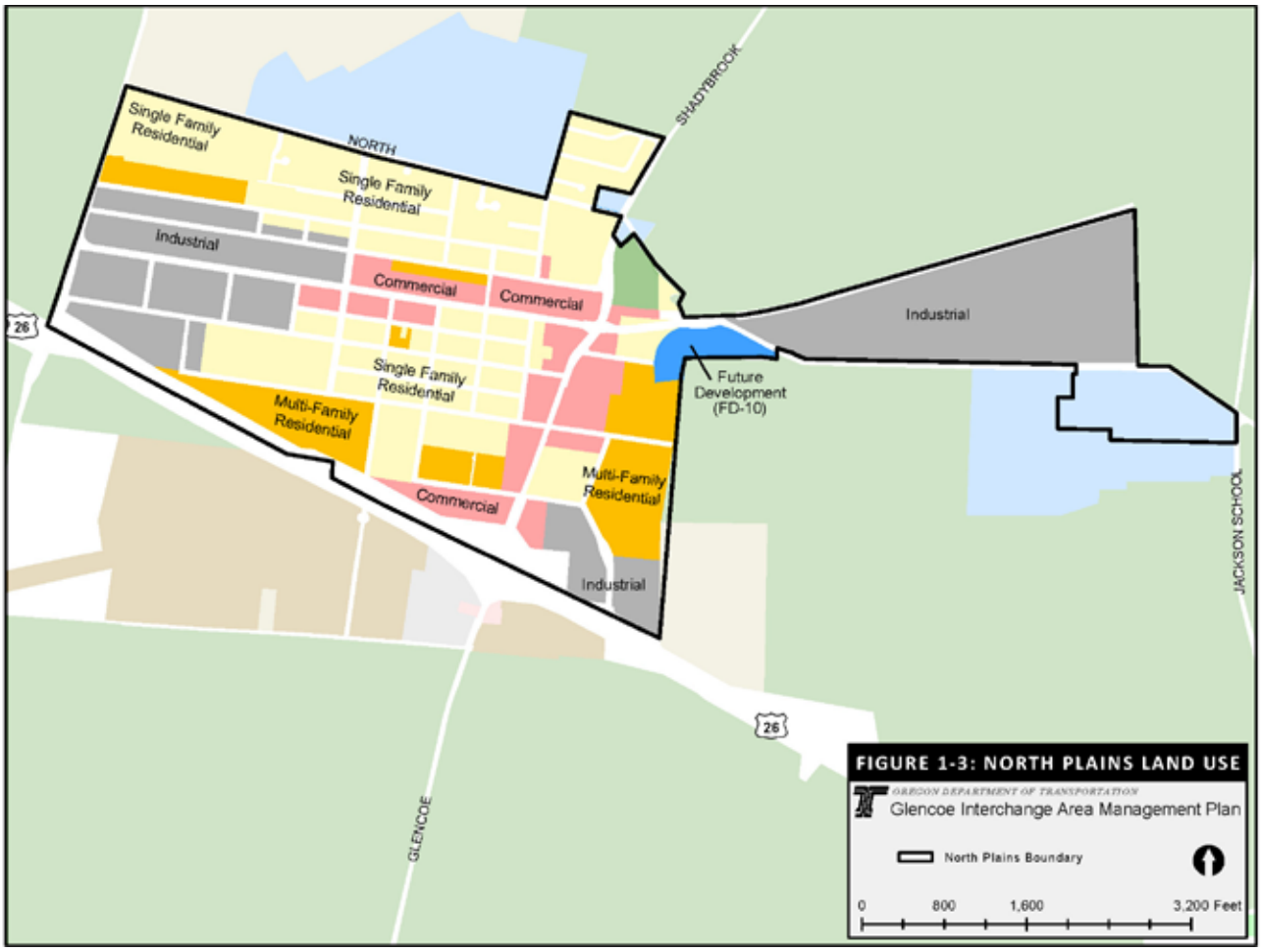
1.7.1 EXISTING NORTH PLAINS LAND USE CONDITIONS

The City of North Plains has a large amount of industrial land and a fair amount of commercial land in addition to its large base of residential development (Table 1-1). With this range of land uses, the city does not serve as a residential bedroom community for the Portland metropolitan area as small communities often do when they are located close to a metropolitan area (Figure 1-3).

Table 1-1: Land Use Designations and Acreage for Lots in the City of North Plain

Land Use Category	Number of Lots	Tax Assessor Acreage	Map Area Acreage
Commercial	92	37.11	47.50
Industrial	60	184.16	155.52
Residential	589	185.97	209.06
TOTAL	**741**	**407.24**	**412.08**

Source: Metro, 2006, City of North Plains zoning map (2005), and field visit (3/24/06)
a. Tax assessor acreage as reported in RLIS (Metro, 2006).
b. Area of tax lot calculated by measuring area of the tax lot polygon in geographic information system (GIS).



Land in the Glencoe Road corridor north of Sunset Highway is mostly commercially zoned, and land uses are primarily auto-oriented commercial uses. There are residential zones and uses on the north end of Glencoe Road near the city limits, including a subdivision on the west side of Glencoe Road that is under construction and vacant or redevelopable residential land just east of Glencoe Road. From this area south to the interchange, Glencoe Road is zoned commercial and there are several nonconforming residential uses interspersed with commercial uses in this part of the corridor.

Developed commercial uses are predominant along Glencoe Road north of Sunset Highway, and several of them take access within a quarter-mile of the interchange's westbound ramps. There are also opportunities for more commercial development here: seven commercial lots with acreage ranging from 0.25 acres to 1.75 acres are vacant and front Glencoe Road. One large vacant lot (5.8 acres) also fronts Glencoe Road north of Pacific Street and this is designated as the site for future retail development of North Plains Center.

The eastern half of the block circumscribed by Glencoe Road, 307th Avenue, Pacific Street, and Highland Court is zoned and either developed as residential or is vacant and available for residential development. The land south of Highland Court and adjacent to 307th Avenue is zoned and developed as industrial. There is also an unnamed tributary of McKay Creek and associated wetlands in this area. Environmental and residential constraints will need to be factors in the consideration of rerouting truck traffic from this industrial area.

Uses in the Glencoe Road corridor south of the interchange are a mixture of rural residential, agricultural, industrial, and commercial. There is also vacant land in this area. Developed industrial and commercial uses include a seed company at the corner of Glencoe Road and Beach Road and a gas station and market on the east side of Glencoe Road directly south of the interchange. Lots with frontage and access onto Glencoe Road between the interchange and Beach Road are all within a quarter-mile of the interchange's eastbound ramps.

Land north of and adjacent to Sunset Highway between the Glencoe Road Interchange and the Gordon Road overpass features a variety of open space and residential, commercial, and industrial uses. The open space is dedicated to the unnamed tributary of McKay Creek and its wetlands near the Glencoe Road Interchange. Residential uses, including a mobile home park, characterize the area midway between Glencoe Road and Gordon Road. Land uses adjacent to Gordon Road at the Sunset Highway overpass inside the city limits and UGB are basically industrial and related commercial (as well as two cell towers). All the other land around the overpass, on the north and south side, is in agricultural and rural residential use.

Uses in neighboring communities and facilities also have bearing on the existing traffic uses on Glencoe Road and the Glencoe Road Interchange. Hillsboro, Cornelius, and Forest Grove lie south of North Plains, and traffic heading to these cities uses the Glencoe Road Interchange. Pumpkin Ridge Golf Club, to the northwest of North Plains, draws traffic from the region and beyond. During large events, Pumpkin Ridge Golf Club event-goers are directed to use an interchange west of Glencoe Road; however, the Glencoe Road Interchange and surface streets of North Plains also provide access to Pumpkin Ridge.

1.7.2 EXISTING WASHINGTON COUNTY LAND USE CONDITIONS

Washington County has a large amount of exclusive farm use land with small swatches of agricultural forest and rural residential, industrial and commercial near the city limits of North Plains (Table 1-2). Specifically, adopted land use designations in the immediate vicinity of the US 26/Glencoe Rd Interchange include the following resource districts: Agriculture and Forest 5 acres minimum (AF-5), Agriculture and Forest 20 acres minimum (AF-20), Exclusive Farm Use (EFU), Rural Residential 5 acres minimum (RR-5), Rural Industrial (R-IND), Rural Commercial (R-COM) and Future Development 10 acres minimum (FD-10) (Figure 1-4). These designations are defined in the Washington County Community Development Code. Appendix B of the US 26/Glencoe Rd IAMP identifies permitted land uses in the land use districts surrounding the interchange.

Table 1-2: Land Use Designations and Acreage for Lots in Washington County

Land Use Category	Number of Lots	Tax Assessor Acreage	Map Area Acreage
AF-5	16	121.33	119.51
AF-20	7	165.62	160.96
EFU	144	5410.51	5520.42
RR-5	22	31.42	35.69
R-IND	8	79.22	78.76
R-COM	4	1.07	1.21
FD-10	9	146.82	154.24
TOTAL	**210**	**5955.99**	**6070.79**

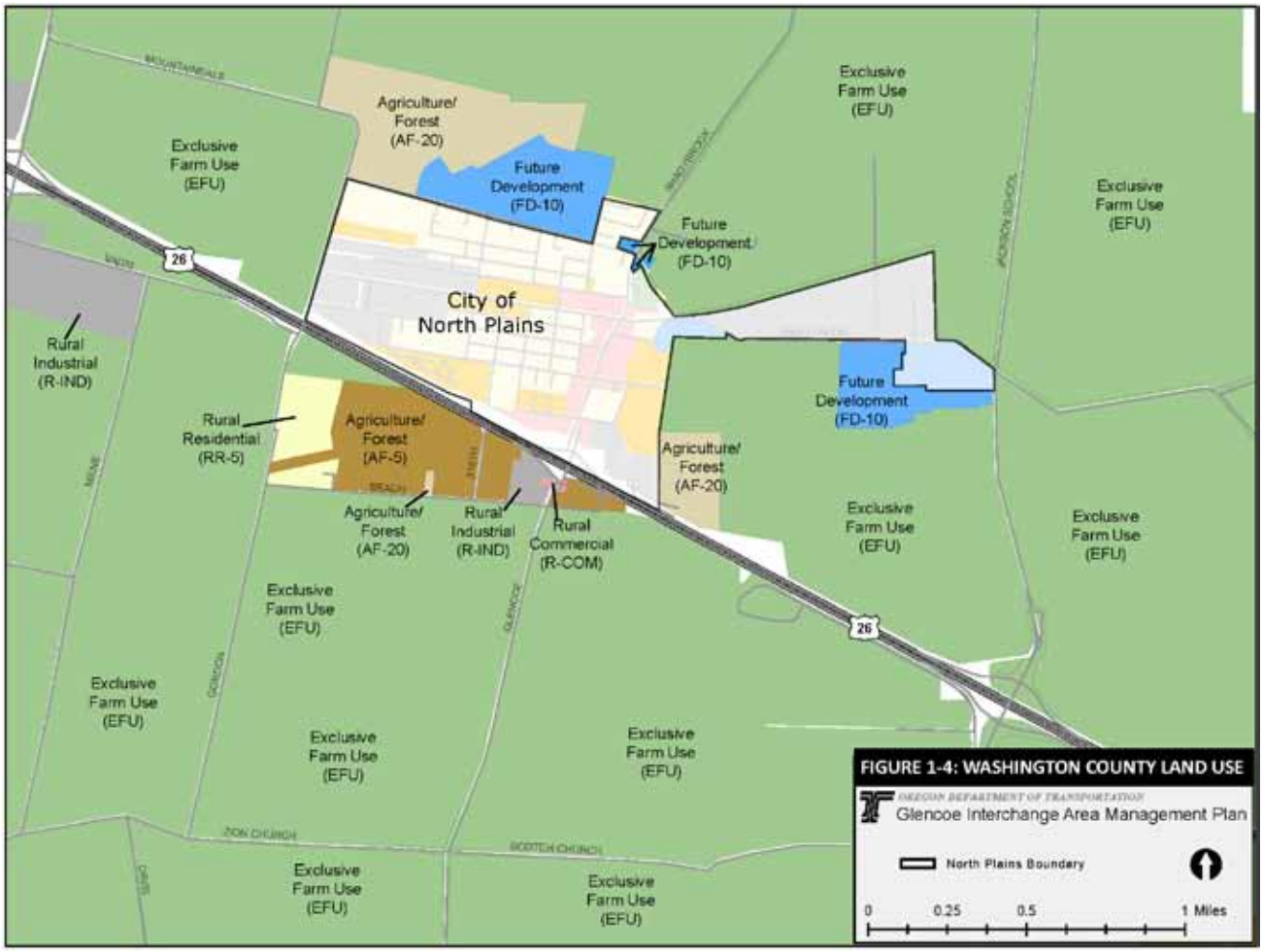
Source: Washington County,
a. Tax assessor acreage as reported in RLIS (Metro, 2010).
b. Area of tax lot calculated by measuring area of the tax lot polygon in geographic information system (GIS).

1.7.3 FUTURE NORTH PLAINS LAND USE CONDITIONS

Estimating future land use conditions in the City of North Plains relies heavily on assumptions and findings from the city's Comprehensive Plan and Zoning and Development Code. The planning horizon for the build-out of North Plains is assumed to be 2030.

Build-out will entail both infill and redevelopment within existing city limits. Based on the acreage of land zoned residential within the city's existing city limits and findings in the city's Comprehensive Plan, residential build-out will result in about 250 total acres of developed residential land and 1,600 dwelling units. This is roughly a twofold increase in developed residential land and more than a twofold increase in units over existing conditions.

Future conditions for commercial land are based on a ratio of existing commercial development to residential development. Within existing city limits, the commercial/residential ratio was applied to the amount of residential land projected to be developed at the end of the planning horizon. This yields about 10 more acres of commercially developed land than the existing 21 acres.



There was no need for additional industrial land based on the city's Comprehensive Plan and Zoning and Development Code. During the 20-year planning horizon, roughly, 15 acres of industrial land is needed given the projected growth rate of 0.73 acres annually. This need can be accommodated by the amount of vacant and underused industrial land within existing city boundaries.

1.7.4 FUTURE WASHINGTON COUNTY LAND USE CONDITIONS

Future land use conditions for the rural areas surrounding North Plains will be projected based on the allowable uses assumed in the Rural/Natural Resources Plan and the Community Development Code. The Rural/Natural Resource Plan Element specifically requires the County to recognize the need for rural development to support the rural character of the area. The County will ensure that development will not adversely affect the surrounding agricultural and forest activities.

1.7.5 EXISTING TRANSPORTATION CONDITIONS

Roadway Facilities

US 26 and NW Glencoe Road are the two primary regional facilities serving the interchange study area. The function of a major highway such as US 26 is to facilitate the efficient movement of people and goods through the area. Access to this type of highest order facility is typically only provided at major intersecting public roadways such as NW Glencoe Road.

NW Glencoe Road serves as a regional arterial that supports the urban and rural communities of Washington County and the City of North Plains. This roadway facility is supported by a network of secondary city and county arterials, collectors, and local streets whose functions are to balance the needs of regional and local mobility with

access to adjoining properties.

Within the study area, NW Beach Road, NW Highland Court, NW Pacific Street, NW Cottage Street, NW 307th Avenue and NW Commercial Street/NW West Union Road serve as secondary roadways and make up a larger system of collector and local street routes serving area residents, businesses, and farming/agricultural properties. A more detailed description of these facilities is provided below.

US 26 (Sunset Highway)
US 26 is a four-lane statewide highway that runs along the southern boundary of the City of North Plains. US 26 is a major east-west travel route within the State of Oregon, that within the western portion of the state, provides the primary means of access between the Portland metropolitan area and the northern Oregon Coast. US 26 is designated by the *1999 Oregon Highway Plan* as a *Statewide Highway*, a *Freight Route*, and is considered a part of the National Highway System. US 26 at the Glencoe Interchange is designated as an Expressway in the OHP.

Within the Glencoe interchange study area, US 26 consists of two travel lanes in each direction separated by a grass median. According to the *2004 Transportation Volume Tables* maintained by ODOT, the average daily traffic along US 26 is 36,700 vehicles to the east of the NW Glencoe Road interchange and 22,500 to the west of the interchange. Of this total, approximately 10-14 percent is made up of truck traffic as defined by the FHWA vehicle classification types.

NW Glencoe Road
NW Glencoe Road is the other major roadway within the Glencoe IAMP study area. NW Glencoe Road runs north-south through the City of North Plains and is owned and maintained by Washington County. NW Glencoe Road is classified by the *Washington County 2020 Transportation Plan* as an arterial through the study area up to the NW Commercial Street/NW West Union Road corridor and a collector north of that intersection.

The County also classifies NW Glencoe Road within the City limits as an Urban Bikeway and a Rural Bikeway outside of the City limits on the south side of US 26. The portion of NW Glencoe Road located south of US 26 is also considered to be a *Through-Truck Route* by Washington County.

The City of North Plains classifies NW Glencoe Road as an arterial for the entire length of the roadway inside the City. The portion north of US 26 is classified as a *Truck Route* in the City of North Plains' Transportation System Plan. NW Glencoe Road is primarily a two-lane roadway; however, it has been widened to three lanes along sections north of the interchange as part of development related frontage improvements. There are no bike lanes along Glencoe Road within the City and sidewalks are intermittent along improved roadway frontages.

According to recent traffic counts, average daily traffic volumes along Glencoe Road north of US 26 are approximately 9,500 vehicles per day. Of these totals, approximately 11.5 percent of the roadway volume consists of truck traffic. South of US 26, average daily traffic volumes are approximately 13,400 vehicles per day. Of these totals, approximately 10 percent of the roadway volume consists of truck traffic.

Other Secondary Roadways
In addition to US 26 and NW Glencoe Road, the Glencoe IAMP study area contains a number of local and collector street facilities that serve area residents and business establishments.

Table 1-3 summarizes the major characteristics of US 26, NW Glencoe Road, and the secondary transportation facilities in the study area.

Table 1-3: Existing Transportation Facilities and Roadway Designation

Roadway	Existing Roadway Functional Classification	Posted Speed (mph)	Side-walks	Bicycle Lanes?	Paved Width (ft)	On-Street Parking?
US 26- (Sunset Highway)	ODOT – Statewide Highway	55	No	No	24 EB 24 WB	No
NW Glencoe Rd	Washington County - Arterial[1] North Plains – Arterial	35	Partial	No	24-50	No
NW Beach Rd	Washington County – Local Rd	Not Posted	No	No	24	No
NW Highland Ct	City of North Plains - Collector	25	Partial	No	24-41	Yes
NW Pacific St	City of North Plains – Collector	25	Partial	No	24-41	Yes
NW Cottage St	City of North Plains – Local St	25	Partial	No	32	Yes
NW Commercial St	City of North Plains –Collector	25	No	No	24-50	No
NW 307th Ave	City of North Plains – Collector	25	No	No	24	No
NW West Union Rd	Washington County - Arterial	35	No	No	24	No

[1] NW Glencoe Road is classified as a collector north of NW West Union Road

Existing Intersection Operations

All operational analyses described in this report were performed in accordance with the procedures stated in the *2000 Highway Capacity Manual*. For the two US 26/Glencoe Road interchange ramp terminals, the operational standards are defined by the *1999 Oregon Highway Plan*. The document specifies that the interchange ramp terminals shall operate at a volume-to-capacity ratio of 0.85 or better during the weekday AM and PM peak periods. All other study intersections fall under the guidance of the *Washington County Motor Vehicle Performance Measures,* which state that the intersections should operate at a volume-to-capacity ratio of 0.90 or better during the weekday AM and PM peak hours.

Using the traffic volumes shown in Figures 1-5 and 1-6, the existing intersection operations at each of the study intersections were calculated and are summarized in Table 1-4. As shown in Table 1-4, all study intersections operate acceptably during the weekday AM and PM peak hours.

US 26 Ramp Terminals

Under the existing conditions, the two US 26/Glencoe Road ramp terminals meet ODOT's mobility standard of a volume-to-capacity ratio 0.85 or better during both the weekday AM and PM peak hours. Although the two intersections currently have sufficient capacity to accommodate the peak hour traffic demands, they can experience extensive vehicle queuing at times.

At the US 26 EB and WB ramps, NW Glencoe Road lacks separate northbound and southbound left turn lanes. This configuration forces some left-turning vehicles to make the left turn on to the US 26 EB and WB on-ramps during the permissive left-turn phase, which can then block the single-lane approach and result in vehicle queuing on the overpass structure.

The US 26 WB off-ramp at NW Glencoe Road is striped as a single lane with a short right-turn flare at the intersection with NW Glencoe Road. Due to the heavy westbound left-turn movement at the intersection during the weekday PM peak hour, the lack of a separate left-turn and right-turn lane on the off-ramp can lead to significant vehicle queues at times. Field observations have shown a typical average queue length of up to 10 vehicles on the WB off-ramp during the weekday PM peak period. As a result, right-turning vehicles tend to pass the queue on the shoulder.

NW Beach Road/NW Glencoe Road

It should be noted that the eastbound approach of the NW Beach Road/NW Glencoe Road intersection operates at a Level of Service "F" during the weekday PM peak hour as a result of the heavy through traffic on NW Glencoe Road. This heavy through volume on Glencoe Road typically results in periods of long delay for vehicles turning from NW Beach Road onto Glencoe Road. However, traffic volumes on NW Beach Road are generally light and the approach was found to have sufficient capacity.

Table 1-4: Existing Traffic Operations, Weekday AM and PM Peak Hours

Intersection	Traffic Control Type	Volume-to-Capacity Ratio[1]		Level of Service[1]	
		AM	PM	AM	PM
NW Commercial Street - West Union Road/ NW Glencoe Road	All-Way Stop	0.29	0.41	A	A
NW Cottage Street/NW Glencoe Road	Unsignalized	0.03	0.02	B	B
NW Pacific Street/NW Glencoe Road	Unsignalized	0.05	0.09	B	C
Chevron Driveway/NW Glencoe Road	Unsignalized	0.08	0.07	B	B
NW Highland Court/NW Glencoe Road	Unsignalized	0.27	0.31	C	C
Texaco Driveway/NW Glencoe Road	Unsignalized	0.02	0.01	B	B
US 26 WB Ramps/NW Glencoe Road	Signalized	0.55	0.64	B	B
US 26 EB Ramps/NW Glencoe Road	Signalized	0.68	0.69	B	A
NW Beach Road/NW Glencoe Road	Unsignalized	0.11	0.20	D	F

[1]Unsignalized Intersections: Represents the volume-to-capacity ratio and level of service for the critical minor street approach or approach lane.
All-Way Stop-Controlled Intersections: Represents the volume-to-capacity ratio and level of service for the entire intersection.
Signalized Intersections: Represents the volume-to-capacity ratio and level of service for the entire intersection.

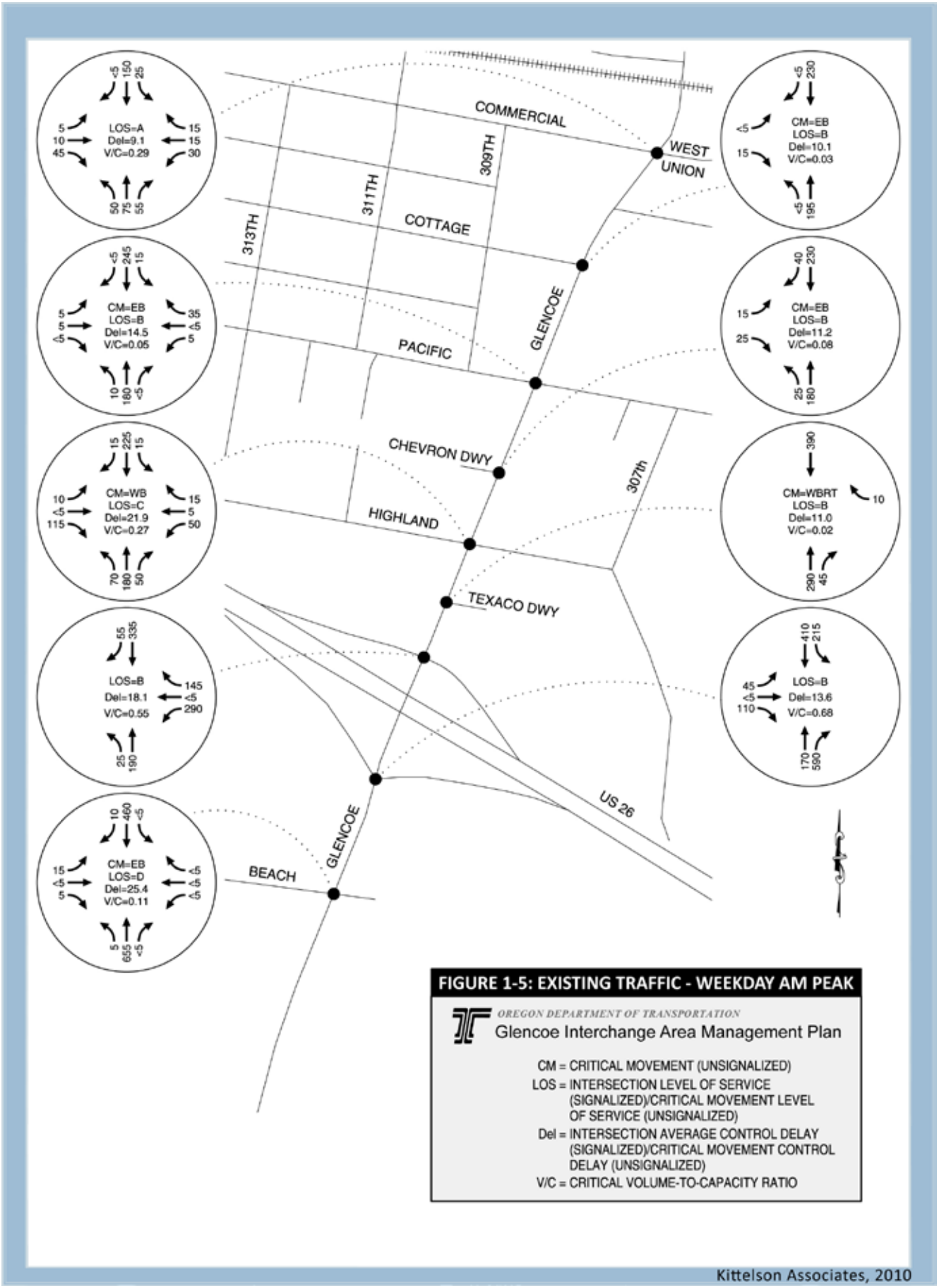


FIGURE 1-5: EXISTING TRAFFIC - WEEKDAY AM PEAK

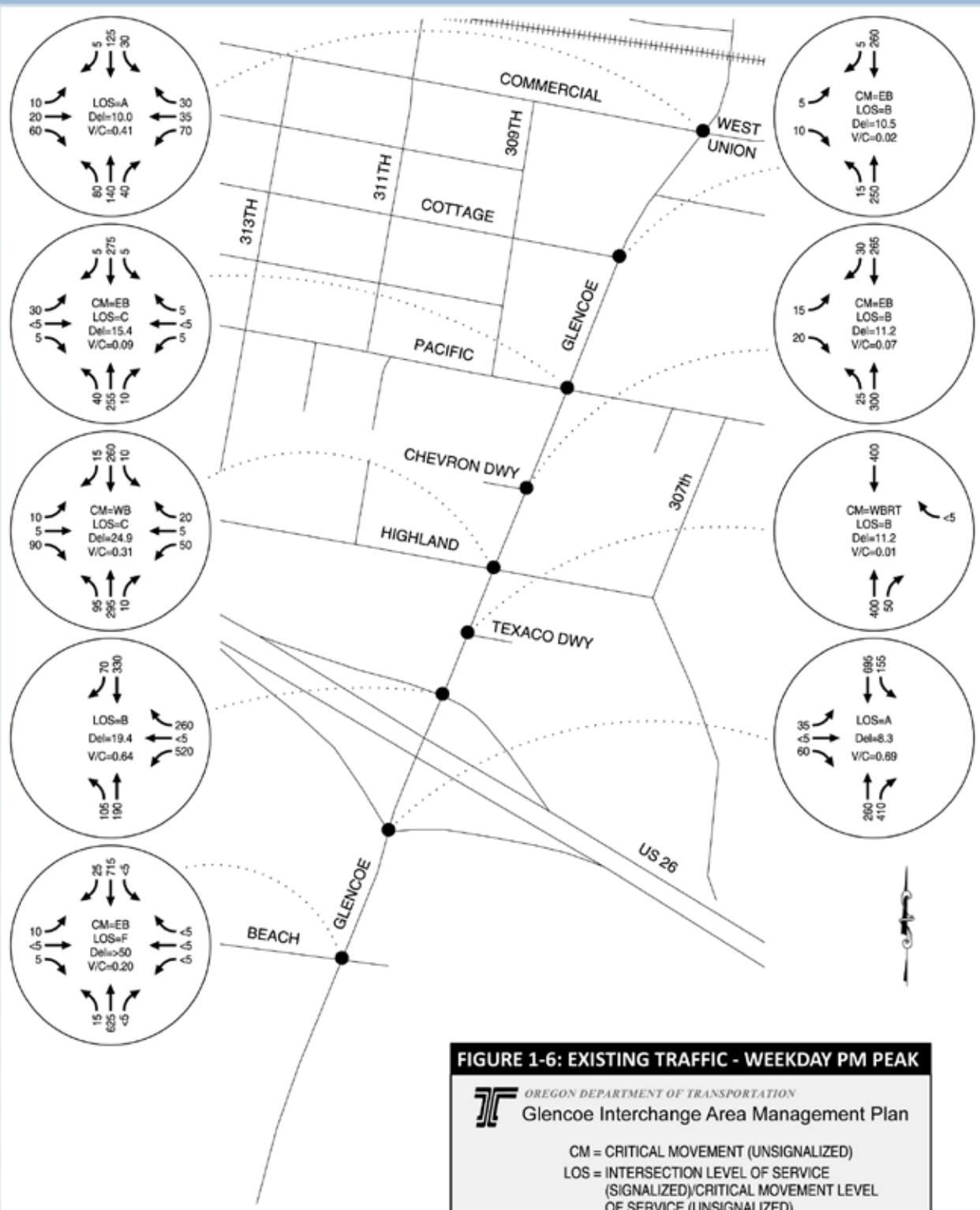


FIGURE 1-6: EXISTING TRAFFIC - WEEKDAY PM PEAK

OREGON DEPARTMENT OF TRANSPORTATION
Glencoe Interchange Area Management Plan

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

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SECTION 2

US 26/GLENCOE ROAD ALTERNATIVE ANALYSIS AND FUTURE TRAFFIC VOLUMES

2.1 ALTERNATIVES ANALYSIS

Development of the Glencoe IAMP included a transportation analysis that compared existing development with the adopted 2030 future land uses of full build-out in North Plains and regional growth. The difference between the North Plains existing and adopted planned growth and the regional growth was determined to be the amount of growth the new interchange would be required to accommodate.

2.2 FUTURE 2030 NO-BUILD TRAFFIC VOLUMES FORECAST METHODOLOGY

Year 2030 traffic volume forecasts for intersection turning movements and street segments were developed in order to analyze the effects of traffic growth on the Glencoe interchange and the supporting study area intersections that serve adjacent urban and rural land uses. For this assessment, two types of traffic growth were considered:

- Future traffic related to local growth in North Plains and surrounding rural Washington County.
- Future traffic related to regional growth in the larger study area vicinity which includes the Cities of Hillsboro, Cornelius, and Forest Grove, and unincorporated Washington County.

To account for local traffic growth in the City of North Plains through the year 2030, a cumulative analysis was utilized. This methodology is consistent with the methodology used in the development of the City's TSP and involves an assessment of traffic increases related to approved (in-process) developments, assumed infill developments, and future development based on the adopted land uses in the City of North Plains. To account for traffic growth in the larger regional vicinity, the Washington County Regional Transportation Planning Model was used to develop growth rates for those traffic movements that impact the Glencoe interchange and surrounding roadway network. A detailed explanation of the local and regional growth assessment areas is provided in Appendix "D" of *US 26/ Glencoe Road IAMP Volume II of II Technical Appendices*.

2.3 FUTURE NO-BUILD PEAK HOUR TRAFFIC VOLUMES

Future year 2030 weekday AM and PM peak hour traffic volumes were determined by adding the estimated new traffic volumes from the known in-process developments, assumed infill developments, and regional growth to existing counts to account for overall traffic growth. This is assumed to be the build-out conditions for 2030 for the land use and transportation of the area. The resulting 2030 forecast weekday AM and PM peak hour traffic volumes are shown in Figures 2-1 and 2-2.

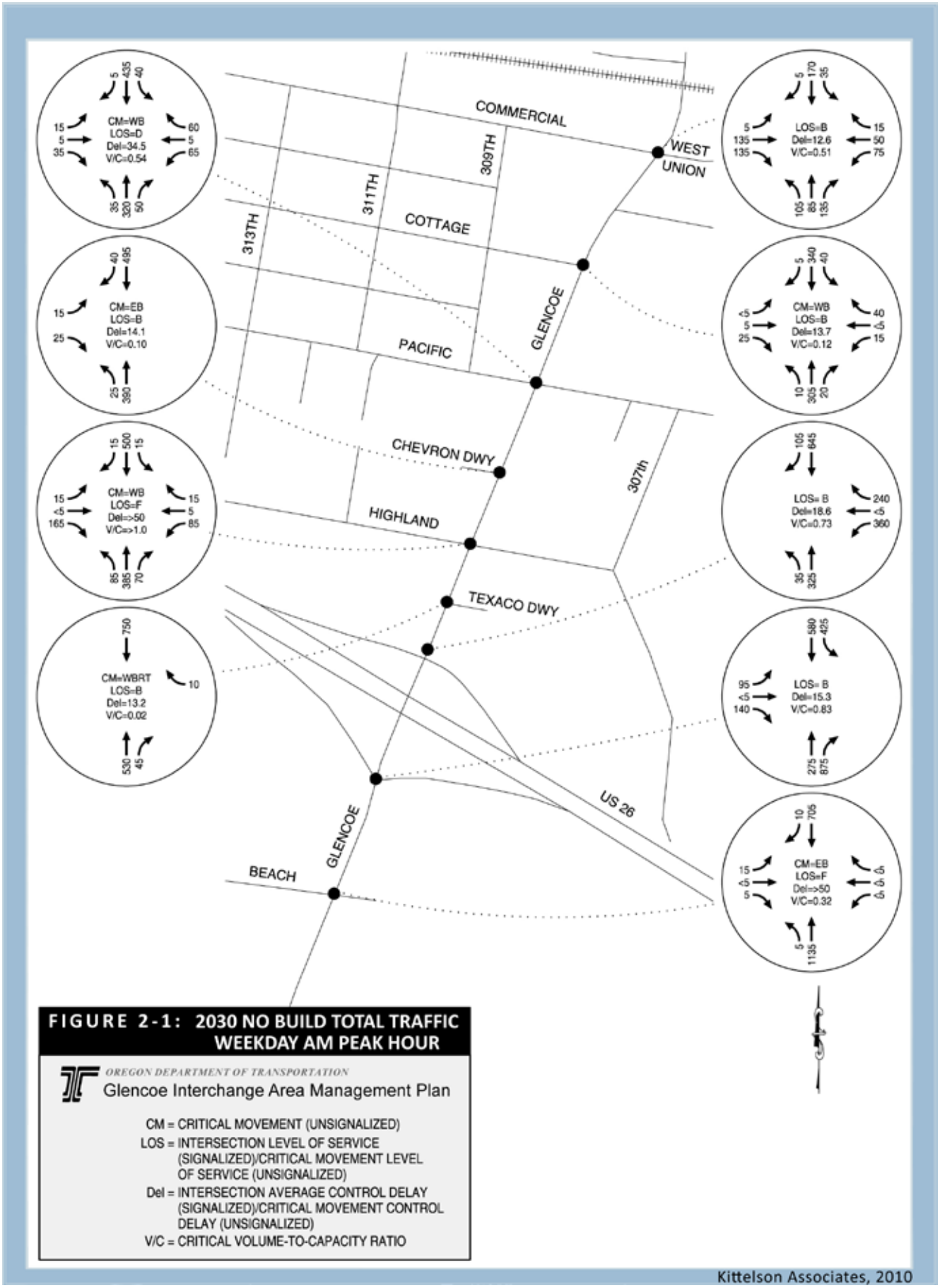

FIGURE 2-1: 2030 NO BUILD TOTAL TRAFFIC WEEKDAY AM PEAK HOUR

OREGON DEPARTMENT OF TRANSPORTATION
Glencoe Interchange Area Management Plan

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

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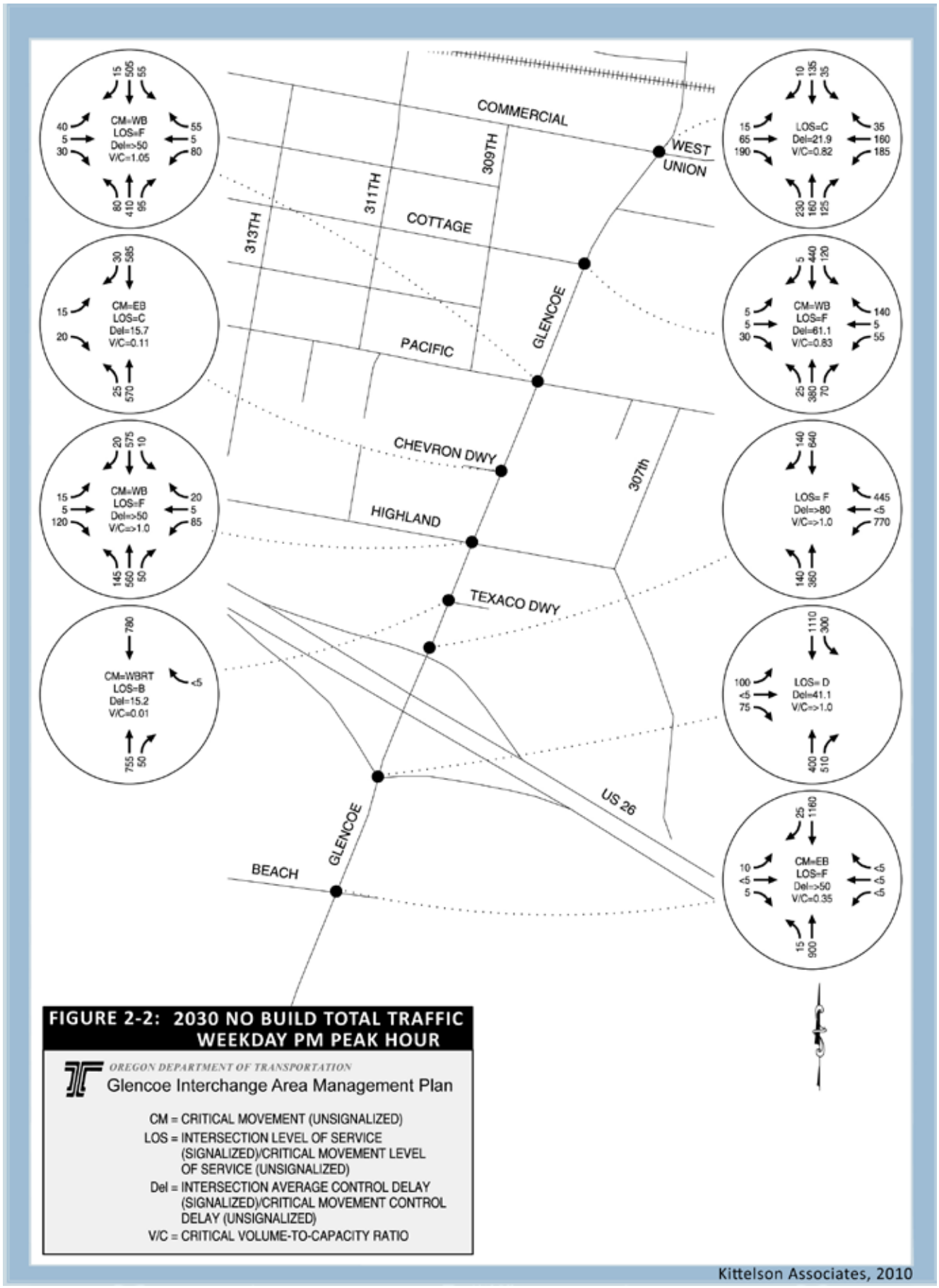

FIGURE 2-2: 2030 NO BUILD TOTAL TRAFFIC WEEKDAY PM PEAK HOUR

OREGON DEPARTMENT OF TRANSPORTATION
Glencoe Interchange Area Management Plan

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

2.4 NO-BUILD INTERSECTION OPERATIONS ANALYSIS

A traffic operations analysis was performed for the study intersections using the forecast traffic volumes shown in Figure 2-1 and 2-2. Table 2-1 summarizes the resulting traffic operations analysis for each of the study intersections. As shown in the table, by the year 2030, assuming no transportation improvements are made within the study area with the exception of the Glencoe Road widening project, the intersection volume-to-capacity ratios are forecast to exceed ODOT and Washington County operating standards at a number of study area intersections during both the weekday AM and PM peak hours. A detailed assessment of the future intersection operations is provided in Appendix "D" of *US 26/Glencoe Road IAMP Volume II of II Technical Appendices*.

NW Glencoe Road/NW Highland Court

The critical westbound side-street movement at the NW Glencoe Road/NW Highland Court intersection is forecast to operate above capacity during the weekday AM and PM peak hour. These operational results are consistent with the findings from the TSP which indicates an operational failure of this intersection within the 20-year planning horizon. This failure can be primarily attributed to future traffic growth along NW Glencoe Road and the assumption of additional residential and commercial development anticipated occurring within the area. As stated in the TSP, signalization and protected northbound and southbound left-turn movements have been previously recommended at this intersection. Given the close proximity of this intersection to the Glencoe interchange, the future mitigation measure will need be investigated in context with the interchange operations and the safety of the intersection.

US 26/Glencoe Road Ramp Terminals

Both the eastbound and westbound US 26/Glencoe Road ramp terminals are forecast to operate above capacity during both the weekday AM and PM peak hours. With the future traffic growth anticipated in the City of North Plains and the larger regional study area, the existing ramp terminal configurations are not equipped to accommodate large amounts of additional traffic growth. Due to the fact that none of the intersection approaches have separate left-turn lanes, the interchange ramps and Glencoe Road approach lanes will not be able to accommodate peak hour vehicle queues within the available storage areas. The configuration and design of the ramp terminal intersections will be a major focus of the interchange and access alternatives that will be developed as part of the Glencoe IAMP project development.

Table 2-1: 2030 No-Build Traffic, Weekday AM and PM Peak Hours

Intersection	Traffic Control Type	Weekday AM Peak Hour Volume-to-Capacity Ratio[1]		Weekday PM Peak Hour Volume-to-Capacity Ratio[1]	
		Existing	Future	Existing	Future
NW Commercial Street -West Union Road/ NW Glencoe Road	All-Way Stop	0.29	0.51	0.41	0.82
NW Cottage Street/NW Glencoe Road	Unsignalized	WB = 0.03	WB = 0.11	WB = 0.02	WB = 0.83
NW Pacific Street/NW Glencoe Road	Unsignalized	WB = 0.05	WB = 0.54	WB = 0.09	WB = 1.05
Chevron Driveway/NW Glencoe Road	Unsignalized	EB = 0.08	EB = 0.10	EB = 0.07	EB = 0.11
NW Highland Court/NW Glencoe Road	Unsignalized	WB = 0.27	WB = 1.37	WB = 0.31	WB = 2.35
Texaco Driveway/NW Glencoe Road	Unsignalized	WB = 0.02	WB = 0.02	WB = 0.01	WB = 0.01
US 26 WB Ramps/NW Glencoe Road	Signalized	0.55	0.73	0.64	1.30
US 26 EB Ramps/NW Glencoe Road	Signalized	0.68	0.83	0.69	1.04
NW Beach Road/NW Glencoe Road	Unsignalized	EB = 0.11	EB = 0.32	EB = 0.20	EB = 0.35

[1]Unsignalized Intersections: Represents the volume-to-capacity ratio for the critical minor street approach or approach lane.
All-Way Stop-Controlled Intersections: Represents the volume-to-capacity ratio for the entire intersection.
Signalized Intersections: Represents the volume-to-capacity ratio for the entire intersection.

The Highway 26 interchange ramp terminals are required to operate at a volume-to-capacity ratio of 0.85 or better during the weekday AM and PM peak periods. The critical side-street movements at all other study intersections should operate at a volume-to-capacity ratio of 0.90 or better during the weekday AM and PM peak hours.

EB = critical eastbound approach
WB = critical westbound approach

2.5 INTERCHANGE CONCEPT DEVELOPMENT

The JTA purpose for the development of an interchange concept is to increase vehicular capacity and safety of the westbound off-ramp to the southbound Glencoe Road traffic movement to the Hillsboro, Forest Grove and Cornelius areas. The JTA project is to eliminate back up of traffic on the off-ramp onto US 26. The cost of the interchange project is to be with the allocated funding of the JTA budget.

The JTA priorities for the interchange concept:

- Increase interchange vehicular capacity to meet the needs for existing and future land use consistent with the adopted North Plains comprehensive plan, zoning and development code to the extent possible,
- Improve the primary traffic movement of westbound to southbound Glencoe Road, secondary movement of northbound to the eastbound US 26 on ramp,
- Consider and evaluate freight mobility and vertical clearance on US 26,
- Maintain or improve safety at the interchange.

A tight diamond interchange concept emerged from the collaboration between the City of North Plains, and Washington County as the preferred interchange concept. The tight diamond concept consists of a four-lane bridge with two southbound lanes, one northbound lane and a left turn lane. The westbound off-ramp would require a double left turn to the two southbound lanes on the bridge. This ramp would accommodate the heavy traffic demand at the PM peak hour.

The interchange concept was modeled for future 2030 build-out land use/traffic conditions. Table 2-2 indicates the volume-to-capacity ratio for the east and west ramp terminal would meet the Oregon Highway Plan Table 6 design standards for maximum volume-to-capacity ratios for peak hour operating conditions.

Table 2-2: Maximum Volume-to-Capacity Ratio Outside of Metro

Highway Category	Unincorporated Community	Rural
OHP Freight Route Statewide Highway[1]	0.70	0.70

[1]source: 1999 OHP, Table 6

A traffic operations analysis was preformed for the interchange concept using the forecast traffic volumes in Figure 2-3 and 2-4. The forecast traffic volumes for 2030 year is based on the approved (in-process) developments, assumed infill developments, and future development based on the planned land uses in the North Plains UGB. To account for traffic growth in the larger regional vicinity, the Washington County Regional Transportation Planning Model was used to develop growth rates for those traffic movements that impact the Glencoe interchange and surrounding roadway network. A detailed explanation of the local and regional growth assessment areas is provided in Appendix "C" of the *US 26/Glencoe Road IAMP Technical Appendix*.

Table 2-3: Interchange Concept Operational Analysis

Terminal	2030 Volume-to-Capacity Ratio
WB Terminal in side the City of North Plains	
Weekday AM Peak Hour	0.42
Weekday PM Peak Hour	0.59
EB Terminal in the rural area of Washington County	
Weekday AM Peak Hour	0.68
Weekday PM Peak Hour	0.44

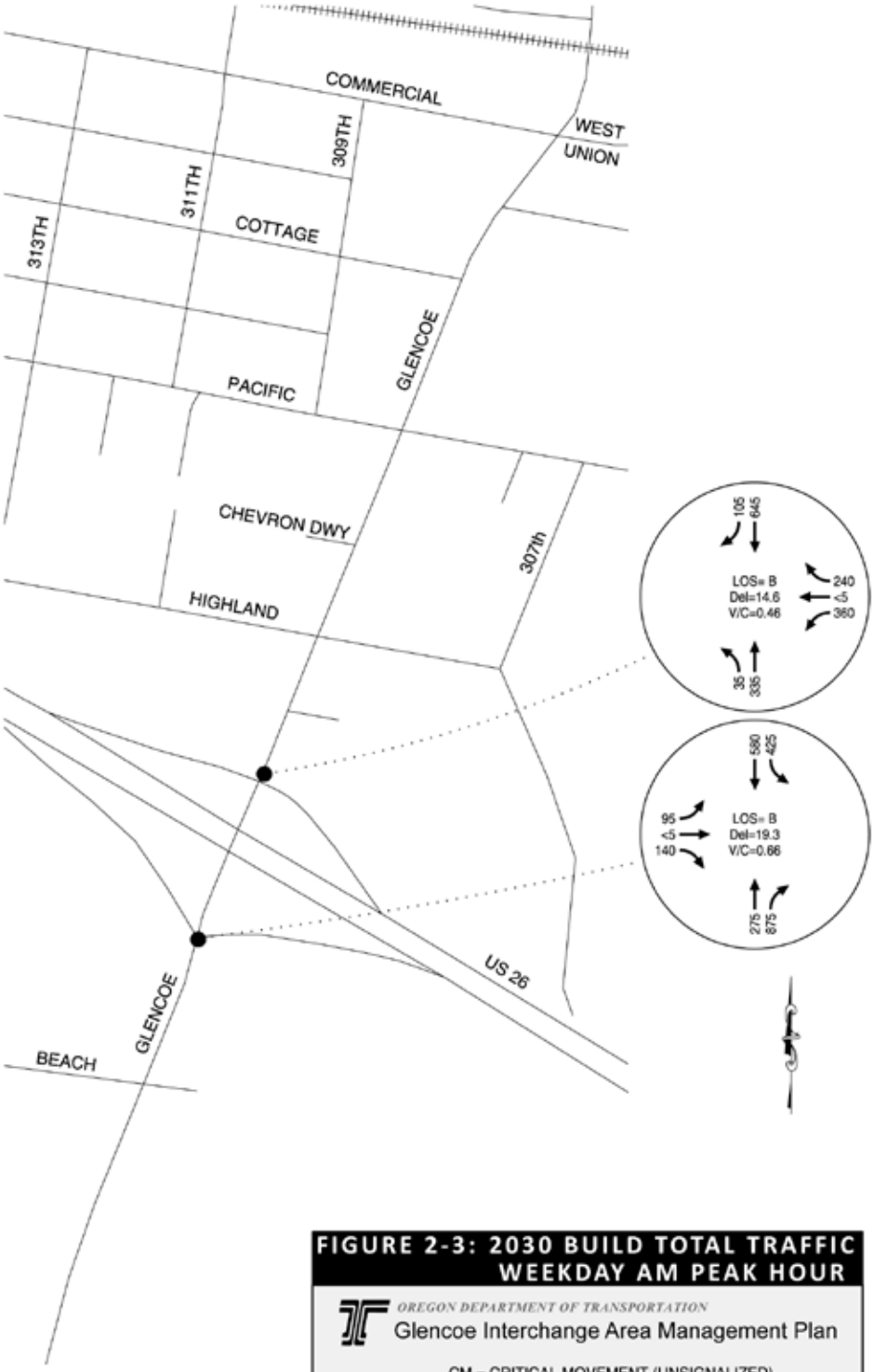

FIGURE 2-3: 2030 BUILD TOTAL TRAFFIC WEEKDAY AM PEAK HOUR

OREGON DEPARTMENT OF TRANSPORTATION
Glencoe Interchange Area Management Plan

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

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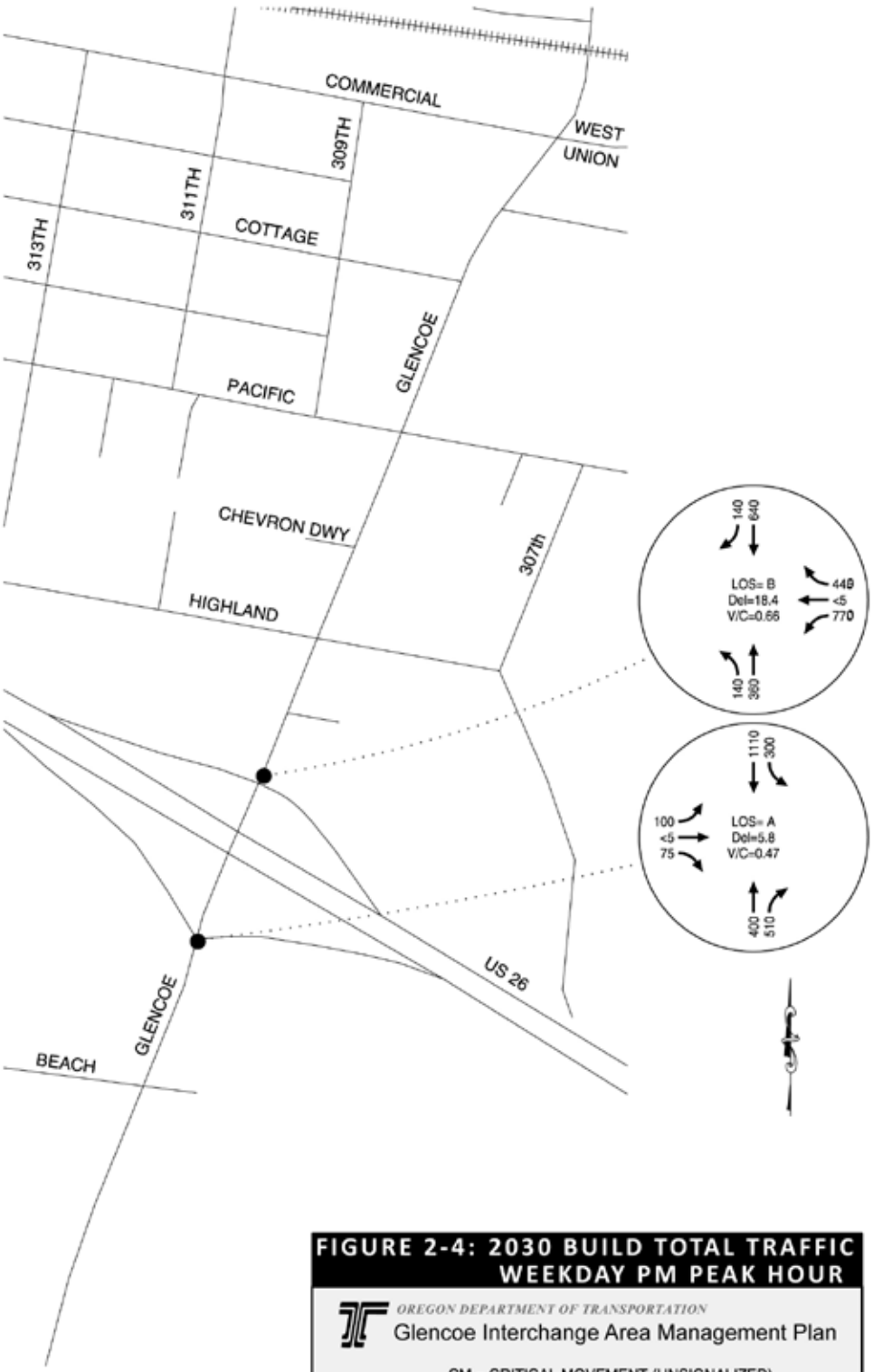

FIGURE 2-4: 2030 BUILD TOTAL TRAFFIC WEEKDAY PM PEAK HOUR

OREGON DEPARTMENT OF TRANSPORTATION
Glencoe Interchange Area Management Plan

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

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SECTION 3

US 26/GLENCOE ROAD INTERCHANGE AREA MANAGEMENT PLAN

3.1 INTERCHANGE AREA MANAGEMENT PLAN

The IAMP consists of an interchange function statement, land use assumptions, and a circulation and access management plan.

3.1.1 INTERCHANGE FUNCTION AND CLASSIFICATION

US 26 is a major east-west travel route within the State of Oregon that within the western portion of the state provides the primary means of access between the Portland metropolitan area and the northern Oregon coast. US 26 is classified as a Statewide Highway by the OHP and designated as an Expressway and Statewide Freight Route. Glencoe Road runs north-south and connects the City of Hillsboro to the US 26 corridor and the City of North Plains. Glencoe Road is a Washington County classified Arterial that is also classified as a Through-Truck Route and Urban/Rural Bikeway.

The primary function of the US 26/Glencoe Road interchange is to facilitate statewide inter-urban and inter-regional travel to/from the US 26 corridor. A secondary function is to provide north-south connectivity across US 26 for the City of North Plains and the surrounding rural land uses. The US 26/Glencoe Road interchange is not intended to serve increased retail or highway-oriented traveler services other than what is currently provided for by existing Washington County and North Plains Development Codes.

3.1.2 LAND USE ASSUMPTIONS

ODOT is relying on the City of North Plains Comprehensive Plan and Transportation System Plan, and Washington County with its related zoning code language (see Appendix B) to implement the land use and local circulation plan in the interchange management area.

3.1.3 CIRCULATION IMPROVEMENTS PLAN

The Glencoe Road interchange will be constructed in an urban area, making it difficult to meet ODOT access management standards. The overall goal of the circulation and access management plan is to provide for safe and efficient operations in the interchange area by balancing access management spacing standards while supporting the planned uses, pedestrian connectivity, and local street functions in the Washington County and North Plains Plans.

3.1.4 TRANSPORTATION IMPROVEMENT PROJECTS

The US 26/Glencoe Road IAMP transportation improvement projects include those improvements that are most likely to be funded and implemented. These projects include the Washington County MSTIP pavement preservation of Glencoe Road from Highland Court to West Union Road and possible ancillary improvements to Glencoe Road (curb, sidewalk and bike lane), and the Oregon Jobs Transportation Act project for the reconstruction of the interchange. Table 3-1 along with Figures 3-1 and 3-2 provide a detailed description and illustration of these specific transportation improvement projects, the estimated costs to complete the projects, and funding sources.

Table 3-1 Transportation Improvement Plan Summary

Improvement Referenced on Figure 2-1	Improvement Description	Implementation Threshold	Estimated Cost[1]	Potential Funding Sources[2]
1 Glencoe Road / Highland Court to Pacific Street pavement preservation	Pavement preservation of Glencoe Road north of Highland Court to West Union Road. Glencoe Road will be built to a typical county arterial standard which will be a 3-lane road with center turn lane and one lane in each direction. County access management standards will be applied. Sidewalks, and bike lanes shall be constructed as part of the project as necessary.	County MTIP funds	$4,000,000	MSTIP
2 Reconstruct US 26 / Glencoe Road Interchange	Construct a new US 26/Glencoe Road interchange. This improvement will include the following: a. Construct a new 4-lane interchange bridge (two southbound through lanes, left-turn lane, and one northbound through lane) and including bicycle and pedestrian accommodations. b. Reconstruct the eastbound and westbound US 26 on and off ramps. See projects #3 & #4 for details on the interchange ramp terminals. c. North of US 26, construct a raised median from the westbound ramp terminal to Highland Court. d. Realign and widen Glencoe Road south of US 26 in order to accommodate the necessary realignment, widening, and lane transitions	Job Transportation Act funding	$32,000,000	JTA
3 New Westbound Ramp Terminal	Provide a northbound left-turn lane on Glencoe Road for the westbound US 26 on-ramp. Provide dual westbound left-turn lanes and a separate right-turn lane from the westbound off-ramp onto Glencoe Road. Signalize the intersection with protective left-turn phasing.	As part of the US 26/ Glencoe Road interchange reconstruction project	Cost included as part of Project #2	JTA
4 New Eastbound Ramp Terminal	Provide a northbound right-turn deceleration lane on Glencoe Road for the eastbound US 26 on-ramp. Provide a southbound left-turn lane on Glencoe Road for the eastbound US 26 on-ramp. Signalize the intersection with protected left-turn phasing.	As part of the US 26/ Glencoe Road interchange reconstruction project	Cost included as part of Project #2	JTA

[1] The reported project costs are conceptual level planning estimates that are reflective of 2009 dollars.
[2] Street Fund = North Plains fund that consists of revenue from the State Highway Tax, County Gas Tax and other miscellaneous revenue.
SDC = System Development Charge
LID = Local Improvement District
MSTIP = Washington County Major Street Transportation Improvement Program

JTA – ODOT Job Transportation Act
STIP – ODOT Statewide Transportation Improvement Program

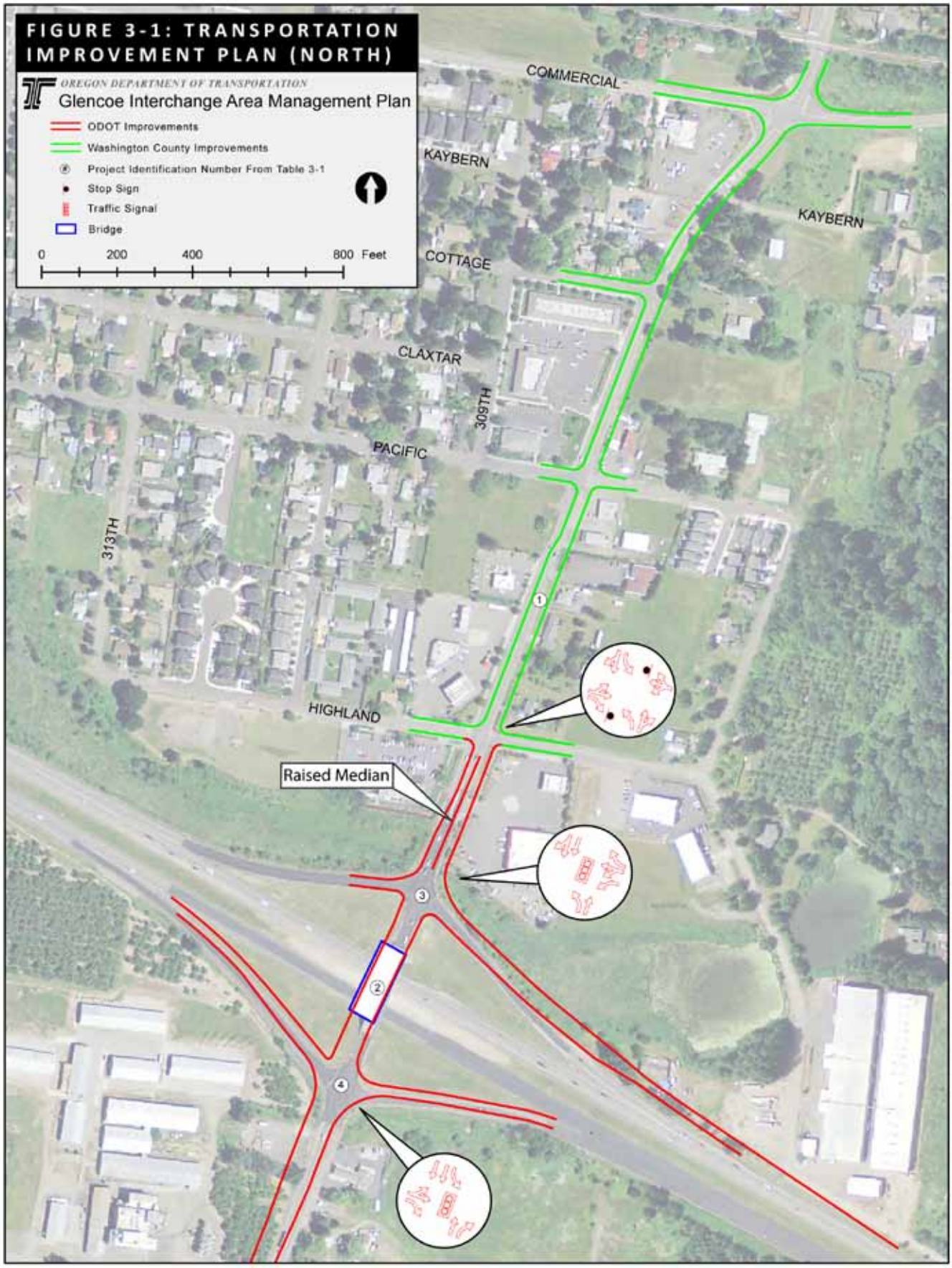
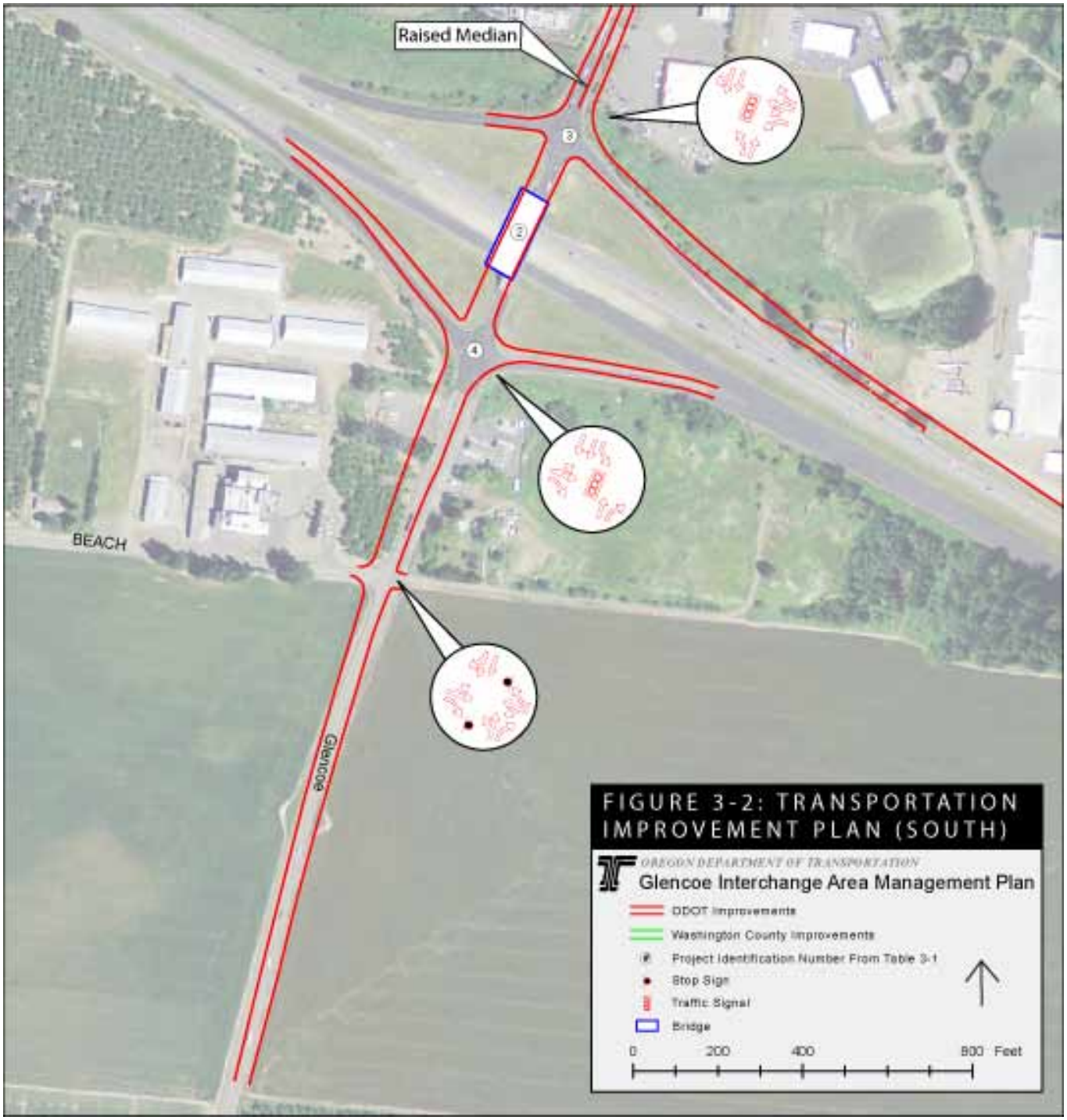


FIGURE 3-1: TRANSPORTATION IMPROVEMENT PLAN (NORTH)
OREGON DEPARTMENT OF TRANSPORTATION
Glencoe Interchange Area Management Plan
ODOT Improvements
Washington County Improvements
Project Identification Number From Table 3-1
Stop Sign
Traffic Signal
Bridge
0
200
400
800 Feet
COMMERCIAL
KAYBERN
KAYBERN
COTTAGE
CLAXTAR
309TH
PACIFIC
313TH
HIGHLAND
Raised Median
1
2
3
4



3.2 ACCESS MANAGEMENT PLAN

ODOT's adopted access management policy in the 1999 Oregon Highway Plan stipulates that the desired distance between an interchange ramp terminal and the first full movement approach (public or private) on the crossroad should be 1,320 feet (¼ mile). Within this spacing, the plan also stipulates that the desired distance between an interchange ramp terminal and the first right-in/right-out driveway in urban areas is 750 feet and rural areas is 1,320 feet. It is the intent of this Access Management Plan to move in the direction of these desired spacing standards using land use proceedings and public road improvement projects to achieve the systematic modification, consolidation, or closure of access movements into driveways that are within the US 26/Glencoe Road IAMP management area, consistent with state policy.

This Access Management Plan establishes a policy and regulatory framework for access to public streets and existing

and future driveways along Glencoe Road. This Access Management Plan was jointly developed by the City of North Plains, Washington County and ODOT. The plan was developed to address the two distinctive characteristic of Glencoe Road. The northern section of Glencoe is within urban growth boundary of the City of North Plains and the southern section is in rural Washington County. Therefore, this plan seeks to maintain the character of the road in the urban and rural areas and access control to the south past Beach Road.

The plan, as documented in Figures 3-3 and 3-4, shall be applied by ODOT, the City of North Plains, and Washington County in future land use decisions involving the properties located within the interchange management area. It was a joint decision of ODOT, the City and Washington County to maintain the existing street spacing of the urban area on Glencoe Road. The intersections of Highland Court and Pacific Street would remain as public streets. Access Management north of Highland Court on Glencoe Road will be the responsibility of the City of North Plains and Washington County. As part of the reconstruction of the US 26/Glencoe Road interchange, ODOT will purchase access control along Glencoe Road from the westbound ramp terminal to Highland Court on the north side.

3.2.1 CITY OF NORTH PLAINS

The following detailed provisions are applicable to access decisions made as part of capital improvements projects such as the reconstruction of the US 26/Glencoe Road interchange or future land use decisions along the Glencoe Road study corridor. *Section 5.05.30 Access Management* of the City's TSP will be used to apply street design standards for an arterial street.

Section 15.02.105 of the City Comprehensive Plan contains the City's Objectives and Policies for Street Design Standards will be applied to the future design of Glencoe Road. The street classification of Glencoe Road is arterial. The street Design Criteria for Glencoe Road is:

- Five-foot sidewalks,
- Six-foot bike lanes, and
- Two twelve-foot travel lanes with a twelve-foot median where applicable.

In commercial areas sidewalks are preferred from curb to property line.

The Glencoe Road/Highland Court intersection will be a full access intersection. At the time of widening to Glencoe Road or as part of significant redevelopment opportunities within the City of North Plains, ODOT will require a traffic study to determine if access management restrictions are necessary at the intersection to maintain safety and operations of the interchange ramp terminals. Signalization of the Glencoe Road/Highland Court intersection will not be allowed given the close proximity of the interchange ramp terminals.

ODOT shall purchase access rights along Glencoe Road from the west bound off ramp north to Highland Court and will maintain restrict access control.

3.2.2 WASHINGTON COUNTY

In the rural section of Glencoe Road from the east bound on-ramp south, the access management plan seeks to maintain the rural character of the road. Following discussions with the County and public it was agreed to allow the existing Beach Road to remain within the access management area. 1,320 feet is the ODOT required distance before the first access point in a rural setting. Beach Road would be allowed to remain as is at the time of the reconstruction of the interchange.

The following detailed provisions are applicable to access decisions made as part of capital improvements projects such as the reconstruction of the US 26/Glencoe Road interchange or future land use decisions along the Glencoe Road study corridor:

- From the eastbound ramp terminal to a point located 1,320 feet to the south ODOT shall purchase access rights along Glencoe Road.
- Reservations of access and permits may be provided for existing land uses consistent with these provisions.

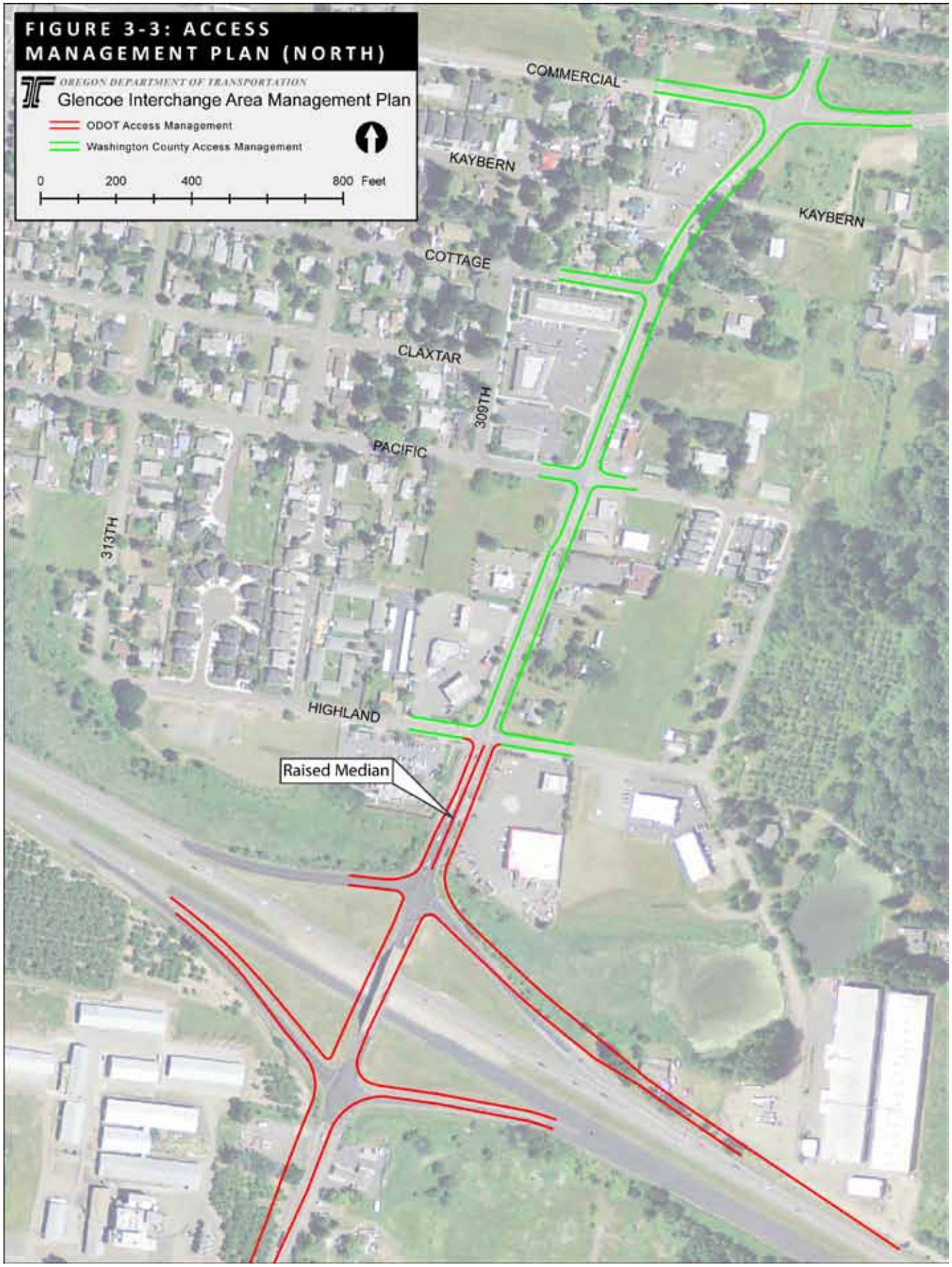
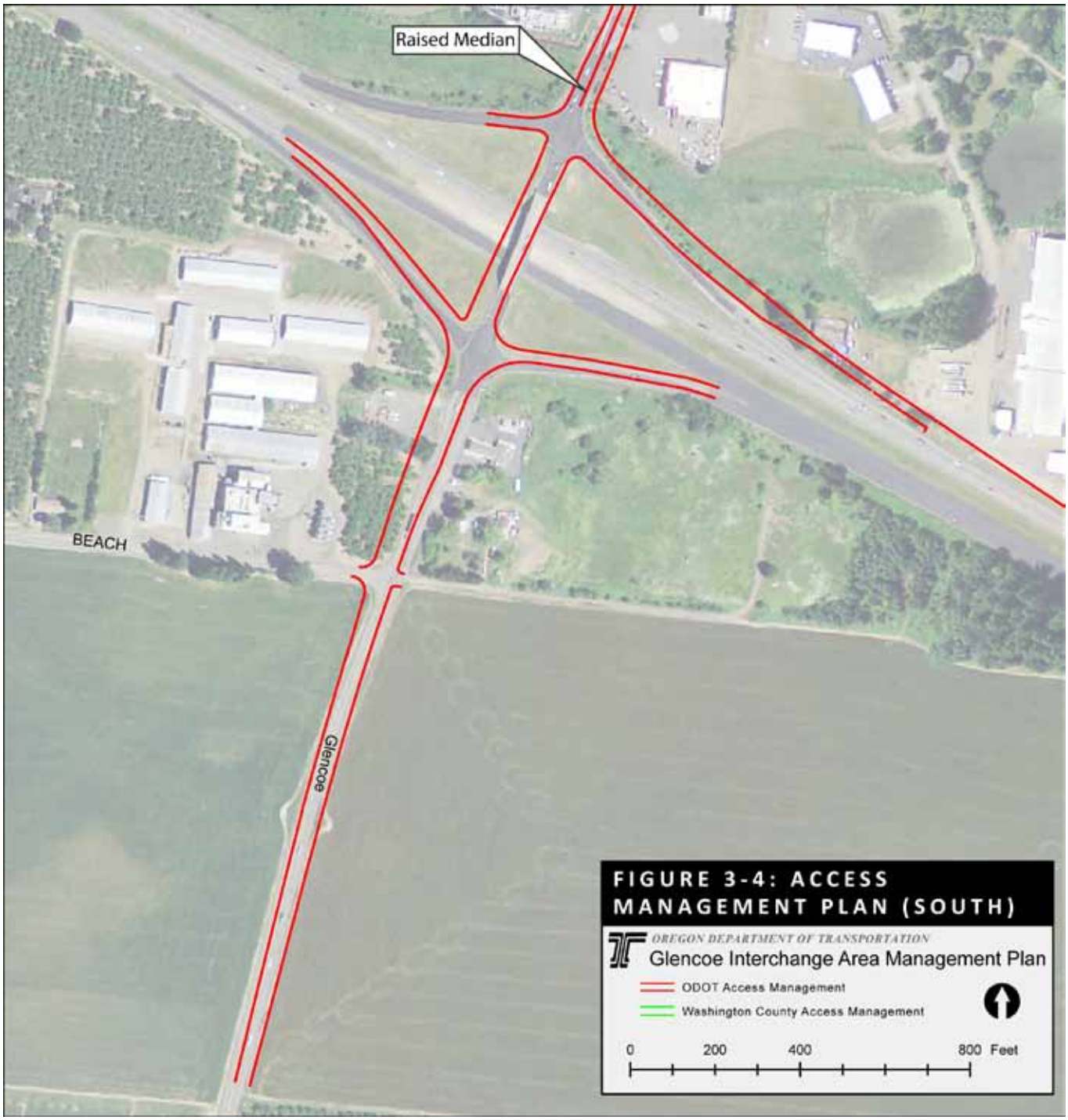


FIGURE 3-3: ACCESS MANAGEMENT PLAN (NORTH)
OREGON DEPARTMENT OF TRANSPORTATION
Glencoe Interchange Area Management Plan
ODOT Access Management
Washington County Access Management
0
200
400
800 Feet
COMMERCIAL
KAYBERN
KAYBERN
COTTAGE
CLAXTAR
309TH
PACIFIC
313TH
HIGHLAND
Raised Median


Raised Median
BEACH
Glencoe
FIGURE 3-4: ACCESS MANAGEMENT PLAN (SOUTH)
OREGON DEPARTMENT OF TRANSPORTATION
Glencoe Interchange Area Management Plan
ODOT Access Management
Washington County Access Management
0
200
400
800 Feet

4.1 IAMP IMPLEMENTATION

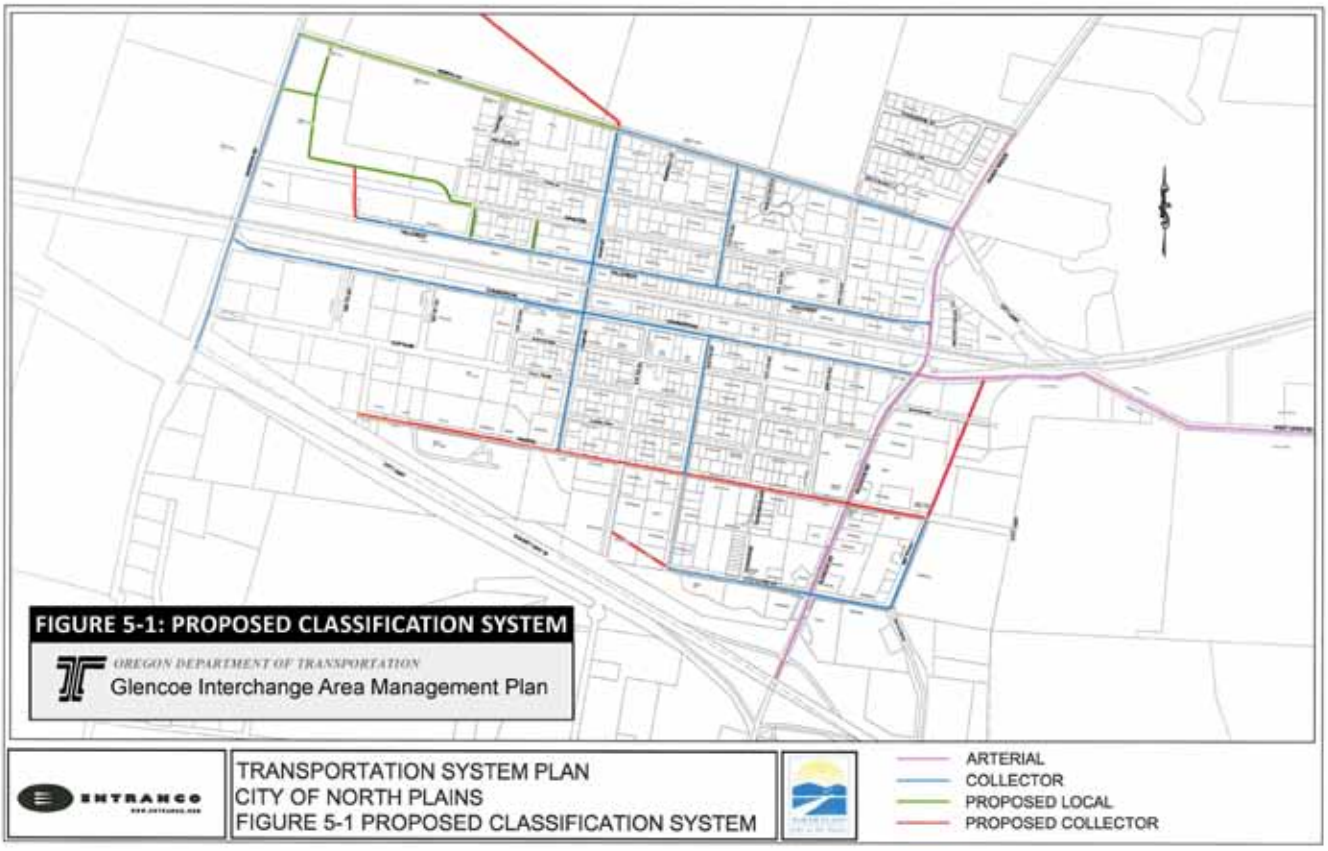
Implementation of the US 26/Glencoe Road IAMP will occur at several levels of government. First and foremost, the US 26/Glencoe Road IAMP will be adopted as an amendment to the Oregon Highway Plan by Oregon Transportation Commission. As such, the plan then will guide future interchange improvements that are funded through the Oregon State Transportation Improvement Program (STIP).

4.1.1 CITY OF NORTH PLAINS

The City of North Plains participated in the development of the IAMP. North Plains' Comprehensive Plan, Zoning and Development Code and Transportation System Plan were used to develop and refine the IAMP future baseline traffic conditions analysis under a "no-build" scenario. This scenario illustrated how the existing Glencoe interchange and supporting study area roadways and intersections will operate upon an assumption of future local and regional traffic growth through the year 2030 and no improvements to the transportation network beyond those currently identified in the adopted City of North Plains Transportation System Plans.

The future deficiencies in the traffic forecast of the City TSP and the IAMP identified the need to replace the interchange, add turning lanes and transition from two-way stop control to all-way stop control and installing a traffic signal or a roundabout. The city and its UGB areas the TSP assumed the need of a new interchange to accommodate future expansion and growth. The TSP assumed the interchange is an unfunded need.

The OAR 734-051-0155, requires local jurisdictions to amend their Transportation System Plans (TSPs) to include relevant elements of the IAMP is not necessary, because the City's TSP assumed the interchange improvements and the policies and zoning ordinances are consistent with the IAMP. The City of North Plains TSP proposed Classification System (Figure 5-1) provides a street system adequate to accommodate the IAMP.



The IAMP will be implemented per the adopted City Comprehensive Plan, Zoning and Development Code and Transportation System Plan.

4.1.2 WASHINGTON COUNTY

The IAMP and the Washington County Comprehensive Plan land use planning regulations are consistent. ODOT has collaborated with Washington County during the development of the IAMP, and Washington County will incorporate references to the Glencoe Road IAMP into the non-regulatory portion of the 2020 Transportation Plan. Specifically, the county will add references to the Technical Appendix of its adopted 2020 Transportation Plan.
The right-in/right-out restriction at the intersection of Beach Road and Glencoe Road is an operational decision that is permitted outright and is not a land use decision or action. Based on review of the draft IAMP, Washington County did not find that its implementation would require any land use decisions. Washington County and ODOT will coordinate on any potential plan amendments to the properties surrounding the interchange and any potential reclassification of Beach Road, consistent with the existing adopted 2020 Transportation Plan policies and Statewide Planning Goals.

ODOT is relying on the following policies and development codes to ensure that the land uses within the IAMP area will remain rural. The land use policies for the Glencoe Road interchange area are contained in the Rural/Natural Resource element of the Washington County Comprehensive Plan. The Rural/Natural Resource element provides the framework for guiding future land use decisions in the areas outside the established urban growth boundaries (UGB). Appendix B includes a discussion of the County's Policies for the Rural/Natural Resource Plan. The Rural/Natural Resource Plan Element specifically requires the County to recognize the need for rural development to support the rural character of the area. The County will ensure that development will not adversely affect the surrounding agricultural and forest activities.

Adopted land use designations in the immediate vicinity of the US 26/Glencoe Rd Interchange include the following resource districts: Agriculture and Forest 5 acres minimum (AF-5), Agriculture and Forest 20 acres minimum (AF-20), Exclusive Farm Use (EFU), Rural Residential 5 acres minimum (RR-5), Rural Industrial (R-IND), Rural Commercial (R-COM) and Future Development 10 acres minimum (FD-10) (Figure 1-4). These designations are defined in the Washington County Community Development Code. Appendix B of the US 26/Glencoe Rd IAMP identifies permitted land uses in the land use districts surrounding the interchange.

While the surrounding land use districts permit a wide variety of potential land uses, some of which could have higher trip generation rates, the districts of the IAMP are within a rural area and urban uses are not allowed. Therefore, all potential land uses must support the rural character and will not adversely affect the surrounding agricultural and forest activities.

Washington County Community Development Code (CDC) provisions that apply to surrounding rural (i.e., non-resource) lands require that land uses with greater impacts be 'compatible' with surrounding uses (CDC 346-4.2, 348-4.2) and that uses be scaled for rural residents, agricultural and forest uses (CDC 352-3.2 and 4.2). These existing Code provisions will ensure that future uses are consistent with the planned function and capacity of the proposed interchange improvements.

The uses allowed in the AF-20 and EFU resource districts are based on statutorily allowed uses on farmland (ORS 215.213 (1) and (2)) and uses permitted under Oregon Administrative Rules for farm lands (OAR 660, Division 33) and forest lands (OAR 660 Division 6). The statutory and administrative rule provisions are designed to protect rural resource lands from development that would interfere with farm and/or forest uses. The provisions provide certainty and, because they limit potential development, help ensure that future development is consistent with the planned function and capacity of the proposed interchange.

No modifications to the Washington County land use planning program, including land use overlays, are proposed as part of this project.

4.2 FUTURE LAND USE AND TRANSPORTATION PLAN AMENDMENTS

To ensure that the IAMP remains dynamic and responsive to changes to adopted land use and transportation plans, the City of North Plains, Washington County, and ODOT should review future work programs for updating local TSPs to:

- Coordinate planning activities per the Transportation Planning Rule (OAR 660-012).
- Review comprehensive plan policies and related implementing regulations for consistency with the

IAMP.

The OHP Policy 1F: Highway Mobility Standards identifies the state highway mobility performance expectations for future amendments to local transportation plans, comprehensive plans and land use regulations pursuant to the Transportation Planning Rule (OAR 660-12-060). The OHP states that in order to avoid traffic queues on freeway off-ramps backing onto the freeway, the maximum volume-to-capacity ratio at the ramp terminals of the interchange ramps shall be smaller than the volume-to-capacity ratio for the crossroad. There the OHP states that the volume-to-capacity ratio for future local amendments at the Glencoe Road and the interchange ramps shall be less then 0.85 volume-to-capacity ratios.

ODOT will make future access decisions as properties with frontage on Glencoe Road, consistent with this plan and OAR 734-051. ODOT and the City of North Plains and Washington County will coordinate with each other through their respective access permitting, building permitting, and land use processes for accesses that fall within their respective jurisdictions. Affected property and business owners that are redeveloping will be required to apply for access permits on Glencoe Road within ODOT's jurisdiction (in accordance with OAR 734-051). Opportunities to move in the direction of access spacing standards will be explored where practical.