Appendix A

Findings of Compliance with State and Local Plans, Policies and Regulations

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OAR 731-015-0065 COORDINATION PROCEDURES FOR ADOPTING FINAL FACILITY PLANS

OAR 731-015-0065 regulates the ODOT procedure for adopting facility plans. An IAMP is a facility plan. The procedure outlined in OAR 731-015-0065 requires that ODOT coordinate with DLCD and local government agencies during development of the plan, and provide a draft of the facility plan to affected cities, counties, and other agencies for comment. The facility plan must be consistent with statewide planning goals and local comprehensive plan policies, and findings of compatibility must be presented to the Oregon Transportation Commission for facility plan adoption.

Findings

731-015-0065 (1) The Glencoe Road IAMP was developed jointly by ODOT, the City of North Plains and Washington County, and included coordination with DLCD primarily through project team meetings. The final public meeting for the Glencoe Interchange was held on June 7, 2010 at the City of North Plains City Council meeting. At that time the Memorandum of Understanding between ODOT, the City of North Plains and Washington County was discussed and approved by the City. The MOU served as the agreement to develop the IAMP. In addition, a series of four public open houses were held from June 2006 to July 2008 to discuss the new Glencoe Road interchange and the IAMP.

731-015-0065 (2) A final draft of the IAMP has been provided to all affected government and other agencies, so that any potential conflicts with state or local plans will be jointly resolved. In September 2010 the final Draft of the IAMP was sent out to the City of North Plains, Washington County, DLCD and ODOT Departments including DOJ, Technical Services and Access Management Unit, and Transportation Development Division seeking their comments and input on any potential conflicts with state or local plans.

731-015-0065 (3) The Glencoe Road IAMP was developed jointly by ODOT, the City of North Plains and Washington County, and included coordination with DLCD primarily through project team meetings. At these meeting the agencies worked to resolve and eliminate conflicts with local comprehensive plans. There are no conflicts with the local comprehensive plans.

731-015-0065 (4) Findings of compliance with statewide planning goals and local comprehensive plans have been completed and are included here within.

731-015-0065 (5) Findings of compliance with statewide planning goals and local comprehensive plans will be included in materials for presentation to the Oregon Transportation Commission. Adoption of the IAMP, findings and final facility plan will take place in conformance with this provision.

731-015-0065 (6) The Oregon Transportation Commission will adopt these findings concurrent with adoption of the IAMP.

731-015-0065 (7) ODOT shall provide copies of the adopted IAMP and facility plan and findings to DLCD cities and county state and federal agencies who request copies.

*The US 26/Glencoe Road IAMP has adequately addressed OAR 731-015-0065 Coordination Procedures for Adopting Final Facility Plans***.**

OAR 734, DIVISION 51. HIGHWAY APPROACHES, ACCESS CONTROL, SPACING STANDARDS AND MEDIANS

OAR 734-051 governs the permitting, management, and standards of approaches to state highways to ensure safe and efficient operation of the state highways. OAR 734-051 policies address the following:

- How to bring existing and future approaches into compliance with access spacing standards, and ensure the safe and efficient operation of the highway;
- The purpose and components of an access management plan; and
- Requirements regarding mitigation, modification and closure of existing approaches as part of project development.

Section 734-051-0125, Access Management Spacing Standards for Approaches in an Interchange Area, establishes interchange management area access spacing standards. It also specifies elements that are to be included in IAMPs, such as short-, medium-, and long-range actions to improve and maintain safe and efficient roadway operations within the interchange area.

Findings
Be developed no later than the time the interchange is being developed or redeveloped-0155(7)(a.)

> *This plan was produced before and during the planning and design process for the US 26/Glencoe Road interchange reconstruction project. It is also being adopted in advance of final plans and construction.*

Identify opportunities to improve operations and safety in conjunction with roadway projects and property development or redevelopment and adopt strategies and development standards to capture those opportunities-0155(7)(b).

> *The land use controls and access management elements identified in this plan, and incorporated into the project design or identified for implementation with future property redevelopment or project development activities, will constitute significant operational and safety improvements.*

Include short and long-term actions to improve operations and safety in the interchange area -0155(7)(c).

> *Short and long-term actions to improve operations and safety in the interchange area have been identified. Short -term actions include that will help to prepare for the interchange reconstruction project. Long-term actions are designated in the City TSP for improvements to the local circulation network.*

Consider current and future traffic volumes and flows, roadway geometry, traffic control devices, current and planned land uses and zoning, and the location of all current and planned approaches -0155(7)(d).

A full analysis of existing and forecast (2030) operational, geometric, and safety conditions was conducted. Future land use development within the City of North Plains and the greater Washington County influence area was identified, as were all affected accesses. These elements led to the plan's transportation improvement project recommendations and detailed access management plan for the interchange study area.

Provide adequate assurance of the safe operation of the facility through the design traffic forecast period, typically 20 years-0155(7)(e).

The transportation recommendations were developed based on a long-term (2030) forecast traffic operations analysis. The improvement projects described in the IAMP will ensure the safe and efficient operation of the interchange through the planning horizon year.

Consider existing and proposed uses of all property in the interchange area consistent with its comprehensive plan designations and zoning -155(7)(f).

An analysis of the interchange influence area and its long-term development potential was included in the planning effort. This analysis resulted in recommendations for the interchange improvements to ensure the long-term function of the interchange area.

Be consistent with any applicable access management plan, corridor plan, or facility plan adopted by the OTC. -155(7)(g).

The US 26/Glencoe Road Interchange Area Management Plan is consistent with the 1999 OHP and consistent with the applicable access management polices, principles, and standards.

Include polices, 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. -155(7)(h).

The US 26/Glencoe Road Interchange Area Management Plan contains references to, and is consistent with the polices, operational standards, and access management standards of the City of North Plains, Washington County, and ODOT.

The US 26/Glencoe Road IAMP has adequately addressed OAR 734, Division 51. Highway Approaches, Access Control, Spacing Standards and Medians.

OAR 660 DIVISION 12 TRANSPORTATION PLANNING RULE (TPR)

The purpose of the TPR is "to implement Statewide Planning Goal 12 (Transportation) and promote the development of safe, convenient and economic transportation systems that are designed to reduce reliance on the automobile so that the air pollution, traffic and other livability problems faced by urban areas in other parts of the country might be avoided." A major purpose of the Transportation Planning Rule (TPR) is to promote more careful coordination of land use

and transportation planning, to assure that planned land uses are supported by and consistent with planned transportation facilities and improvements. The TPR references OAR 731, Division 15 for ODOT coordination procedures for adopting facility plans and plans for Class 1 and 3 projects.

This rule identifies transportation facilities, services and improvements which may be permitted on rural lands consistent with Goals 3, 4, 11, and 14 without a goal exception. These include replacement of an intersection with an interchange, channelization, and medians.

In addition TPR Section – 0065states, (5) For transportation uses or improvements listed in subsection (3)(d) to (g) and (o) of this rule within an exclusive farm use (EFU) or forest zone, a jurisdiction shall, in addition to demonstrating compliance with the requirements of ORS 215.296:

(a) Identify reasonable build design alternatives, such as alternative alignments, that are safe and can be constructed at a reasonable cost, not considering raw land costs, with available technology. The jurisdiction need not consider alternatives that are inconsistent with applicable standards or not approved by a registered professional engineer,
(b) Assess the effects of the identified alternatives on farm and forest practices, considering impacts to farm and forest lands, structures and facilities, considering the effects on traffic on the movement of farm and forest vehicles and equipment and considering the effects of access to parcels created on farm and forest lands; and
(c) Select from the identified alternatives, the one, or combination of identified alternatives that has the least impact on the lands in the immediate vicinity devoted to farm or forest use.

Findings

The IAMP calls for replacement of the existing interchange. A portion of the Interchange is in the City of North Plains and a portion is in rural Washington County. The Glencoe Road interchange IAMP was jointly developed by ODOT, North Plains and Washington County. The IAMP mandates continued coordination between the three agencies for management of the interchange area. Current and future land uses were considered in the design of the interchange in order to ensure its ability to support future traffic demands and retain the rural character of the area. The IAMP is intended to manage land uses around the interchange to avoid unplanned growth and development that may impact the function of the facility.

The IAMP relies on the City to ensure that development within the interchange area will not allow development that is not permitted in the adopted Comprehensive Plan and Zoning and Development Ordinance. The city's current and future adopted land uses were considered in the design of the interchange in order to ensure its ability to support future traffic demands of the area.

The IAMP relies on the County's Rural/Natural Plan to ensure that development will not adversely affect the surrounding agricultural and forest activities. This requires that plan amendments and zone changes within the IAMP study area must not result in a significant impact on the interchange facility.

This transportation use is authorized on rural lands without a goal exception under the TPR section 660-012-0065, Transportation Improvements on Rural Lands. The Glencoe Road interchange improvement is located in Washington County designated EFU Farm Use zone

which is an exclusive farm use zone, and RR-IND rural commercial zone. The preferred alternative concept must be consistent with the requirements of ORS 215.283 and 215.296.

The coordinated planning effort and public involvement ensures that the IAMP is consistent with the planned land use and transportation facilities in the North Plains area. Specifically, the preferred alternative interchange concept will not interfere with the rural agricultural and forest uses in the vicinity. The IAMP planned rural function and capacity of the interchange concept is designed to support the rural character and will not adversely affect the surrounding agricultural and forest activities.

The IAMP interchange concept was selected based on its ability to address 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. This concept was selected because it could be constructed at reasonable cost with current construction methods. Other alternatives would require more expensive construction options to build an interchange.

The IAMP interchange concept is located on designated EFU lands. In general, farm and forest impacts that may result from transportation projects in rural areas include parcel fragmentation, access and equipment maneuverability changes, removal of productive farm/forest land, and building displacement.

- *Fragmentation. The majority of the right-of-way acquisition will be a strip of land adjacent to the existing Glencoe Road for the purpose of adding a deceleration lane and paved shoulders. No parcel fragmentation will occur as a result of the proposed IAMP interchange concept.*
- *Access and Maneuverability. The IAMP interchange concept would not change the existing access to fields along Glencoe Road.. The concept will allow the surrounding farms to continue to access their fields for county roads. This will not result in any equipment maneuverability issues or significant out-of-direction travel for farm activities in the vicinity of the interchange. The IAMP interchange concept will not create farm parcels that can not be economically farmed.*
- *Removal of farm/forest land. The majority of the right-of-way acquisition will be a strip of land adjacent to the existing Glencoe Road for the purpose of adding a deceleration lane and paved shoulders. The equitation of the property will not significantly reduce the amount of farm/forest land therefore, there will be no significant change to farm practices or cost associated with the acquisition of the land.*

As such, the US 26/Glencoe Road IAMP has adequately addressed OAR 660 Division 12 Transportation Planning Rule (TPR).

OREGON STATEWIDE PLANNING GOALS AND GUIDELINES

Goal 1: Citizen Involvement

Requirement

Goal 1 requires the development of a citizen involvement program that is widespread, allows two-way communication, provides for citizen involvement through all planning phases, and is understandable, responsive, and funded.

Findings

Appendix F and G7 of the Volume 2 of US 26/Glencoe Road IAMP Technical Appendices contains a summary of the public involvement efforts that were undertaken as part of the JTA and IAMP project. The public involvement for the JTA project and the IAMP are based on the pervious interchange study and public out reach program for this work.

This information is available in Appendix G7. This effort included the following:

- *A series of four public open houses were held from June 2006 to July 2008 to discuss the new Glencoe Road interchange and the IAMP;*
- *Citizen Advisory Committee meetings held from June 2006 to July 2008 to obtain feedback on a variety of project deliverables, including the purpose and need, evaluation criteria, interchange design concepts and draft IAMP.;*
- *A newsletter sent out to individuals near the proposed project to provide information and notification of the public open house; and*
- *A project web site was available to provide project information and upcoming open houses.*
- *A selection of a preferred interchange concept by the Citizen Advisory Committee.*

Appendix F contains the information for the public involvement of the US 26/Glencoe Road IAMP and JTA project. The IAMP and JTA project was jointly developed by the city of North Plains, Washington County and ODOT. This includes City's Resolution No. 1561 approving the MOU for the JTA project and the County's MOU and Supplemental with ODOT. This information demonstrates consistency with Goal 1.

Goal 2: Land Use Planning

Requirement

This goal requires that a land use planning process and policy framework be established as a basis for all decisions and actions relating to the use of land. All local governments and state agencies involved in the land use action must coordinate with each other. With regard to the Glencoe Road IAMP, ODOT is required to coordinate with City of North Plains and Washington County, which has planning authority over the project area.

Findings

Preliminary tasks for the Glencoe Road IAMP included a thorough review and analysis of all relevant state, regional and local planning documents in order to establish a planning process and policy framework.

The following documents were reviewed:

- *Applicable Oregon Statewide Planning Goals;*
- *Oregon Administrative Rule 731, Division 15, Department of Transportation Coordination Rules;*
- *Oregon Transportation Plan (2006);*
- *Oregon Highway Plan (1999);*
- *Oregon Administrative Rule 734-051, Highway Approaches, Access Control, Spacing Standards and Medians;*
- *Washington County Comprehensive Plan and the Rural/Natural Resource Element (2006) ;*
- *Washington County Community Development Code; and*
- *Washington County 2020 Transportation Plan (2002)*
- *North Plains Comprehensive Plan Ordinance (2005)*
- *North Plains Zoning and Development Ordinance (2006)*

- *North Plains Transportation System Plan (2005)*

The Glencoe Road IAMP was prepared jointly by the City of North Plains, Washington County and ODOT and coordination between the three agencies took place routinely throughout the process. ODOT, North Plains and Washington County will continue to coordinate on development activity and land use actions within the interchange area. No land use actions are required by the City of North Plains or Washington County to reach consistency with the IAMP. An Article 7 permit will be required later into design of the interchange when greater detail in information is available. The IAMP relies on the land uses identified in the current (2006) County Comprehensive Plan.

No land use actions by local governments are required by this plan. This requirement is met through the technical analysis associated with the IAMP and discussed in the analysis of the existing conditions within the IAMP study area. The Existing Conditions of the City and County describes the land use and zoning conditions and historic growth patterns in the vicinity of the proposed interchange, and provides an inventory of existing transportation facilities and their relative functionality.

Section 2 of the IAMP describes expected future (2030) land use conditions within the IAMP study area and provides the future traffic analysis for 2008 and 2030 no-build conditions. This section provides a detailed description of the land use scenario that was used, including future household and employment growth and development patterns. The scenario was used for modeling the transportation network and determining where deficiencies may occur over time.

The analysis from Section 2 determined that improvements to the Glencoe Road interchange area were necessary in order to accommodate future traffic. No modifications to the Washington County land use planning program, including land use overlays, are proposed as part of this project. Appendix B includes a list of uses currently allowed in the zones within the Glencoe Road study area. Pursuant to Washington County's adopted and acknowledged Community Development Code, these uses will continue to be allowed on parcels near the intersection.

This information demonstrates consistency with Goal 2 for land use decisions made during the development of the IAMP.

Goal 3: Agricultural Lands

Requirements

Goal 3 is to preserve and maintain agricultural lands**.** Agricultural lands shall be preserved and maintained for farm use, consistent with existing and future needs for agricultural products, forest and open space and with the state's agricultural land use policy expressed in ORS 215.243 and 215.700.

Findings

The IAMP sought to avoid and minimize impacts to agricultural lands in the rural areas in Washington County. The improvements at the interchange include widening and lengthening turn lanes on the interchange ramps, rebuilding the existing structure to accommodate added turn lanes, add bicycle facilities, and add pedestrian facilities. An existing culvert will be replaced with a structure. No local improvements are required by the project.

Certain transportation improvements including channelization are conditionally allowed on rural lands under OAR 660-012-0065 without a goal exception Glencoe Road widening to the south of the interchange is not a realignment of the existing road as per the definition of realignment

provided in 660-012-0065 2(f)that indicates the existing centerline must move outside of existing ROW, which it does not. The Glencoe interchange rather is channelization as per the definition provided in 660-012 0065 (2)e. In general, farm impacts that may result from transportation projects in rural areas include parcel fragmentation, access and equipment maneuverability changes, removal of productive farm/forest land, and building displacement. The realignment of Glencoe Road did not result in any parcel fragmentation, new land parcels, access and equipment maneuverability changes, removal of productive farm/forest land, or building displacement. Washington County will adopt a Resolution and Order #10-106 supporting the IAMP on November 23, 2010.

As such, the US 26/Glencoe Road IAMP has adequately addressed Goal 3, Agricultural Lands.

Goal 5: Natural Resources, Scenic and Historic Areas, and Open Spaces

Requirements

Goal 4 is to protect natural resources and conserve scenic and historic areas and open spaces. Local governments shall adopt programs that will protect natural resources and conserve scenic, historic, and open space resources for present and future generations. These resources promote a healthy environment and natural landscape that contributes to Oregon's livability.

Findings

The IAMP sought to avoid and minimize impacts to natural resource lands in the rural areas in Washington County. Certain transportation improvements including channelization are conditionally allowed on rural lands under OAR 660-012-0065 without a goal exception Glencoe Road widening to the south of the interchange is not a realignment of the existing road as per the definition of realignment provided in 660-012-0065 2(f) that indicates the existing centerline must move outside of existing ROW, which it does not. The Glencoe interchange is channelization as per the definition provided in 660-012 0065 (2)e. The improvements will not adversely affect the natural resources, scenic and historic areas, and open spaces.

Wetlands were identified in the study area in low lying areas along an unnamed tributary to McKay Creek to the north of US 26. No impacts to these resources are anticipated. The only potential fishery resources in the study area would be the unnamed tributary to McKay Creek, no impacts are anticipated but for the positive impact of removing a culvert with a structure. Review of literature and field investigations indicate that habitat for threatened and endangered species does exist in the area, namely for Bald Eagle and Columbia White Tailed Deer, but those species are not likely to occur in the API. Impacts to habitat are not anticipated. Goal 5 resources were mapped in the existing conditions portion of the plan and designs were refined to avoid Goal 5 resources.

As such, the findings have adequately addressed Goal 5.

Goal 9: Economic Development

This goal requires that local comprehensive plans and policies contribute to a stable and healthy economy in all regions of the state.

Finding

The Glencoe Road IAMP provides a vital function in supporting local and regional economic development goals and plans. Local traffic, including commercial vehicles, must have safe and efficient access to the interstate. The intent of the IAMP is to protect the function of the interchange; proposed IAMP policy language illustrates the City's role in preserving capacity

and improving operations at the interchange. The IAMP was developed jointly with ODOT, city of North Plains and Washington County to ensure that transportation improvements will be available to support the planned employment uses in western Washington County and the City, consistent with the County and City's economic development goal.

US 26 in the interchange vicinity is a freight route as identified in the OHP. US 26 provides a critical link from the Oregon Coast to the Portland Metropolitan area, as well as connecting employment heavy lands in Washington County to the Ports, Central City and other industrial land. The planned improvements will lessen delay on US 26 by providing storage for vehicles that currently queue back onto the mainline of US 26 from the ramp terminals. This will not only free up lanes that currently have queues extending into them, but also provide relief from non-recurring congestion stemming from accidents in the interchange vicinity. Glencoe Road is designated as a County arterial street and a countywide through-truck route in the Transportation Plan. The facility serves important roles in rural Washington County and planning for improvements must accommodate balanced service for the various users.

Goal 10: Housing

Requirements

Goal 10 Housing is to provide for the housing needs of citizens of the state. Buildable lands for residential use shall be inventoried and plans shall encourage the availability of adequate numbers of needed housing units at price ranges and rent levels which are commensurate with the financial capabilities of Oregon households and allow for flexibility of housing location, type and density.

Findings

The IAMP traffic projections indicate the new interchange will operate at acceptable mobility levels in projected year of 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. The IAMP us relying on the County Comprehensive Plan and City of North Plains Comprehensive Plan for land uses, including residential uses. No land use actions are required to comply with this rule. The improvements identified are able to accommodate the planned residential growth in the area and still meet ODOT mobility standards.

This information demonstrates consistency with Goal 10, Housing.

Goal 11: Public Facilities and Services

Requirement

Cities and counties shall plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development. The goal requires that urban and rural development be "guided and supported by types and levels of urban and rural public facilities and services appropriate for, but limited to, the needs and requirements of the urban, urbanizable and rural areas to be served."

Findings

Transportation facilities are considered a primary type of public facility. The Glencoe Road IAMP documents the current and future transportation needs of the urban and rural areas in the vicinity of the Glencoe Road interchange. The IAMP will guide growth within the vicinity of the interchange to ensure that development takes place at a rate and density that is compatible with the capacity of the interchange. No modifications to the Washington County land use planning program, including land use overlays, are proposed as part of this project. Appendix B includes a list of uses currently allowed in the zones within the Glencoe Road study area. Pursuant to Washington County's adopted and acknowledged Community Development Code, these uses will continue to be allowed on parcels near the intersection.

In terms of other, non-transportation public facilities, the proposed improvements will not require changes to existing land use. No impact on public facilities is expected because no intensification of land use is created as a result of improvements recommended in the IAMP as existing land uses as identified in the City and County comprehensive plans are adopted in this IAMP so no change to land use will occur.

The findings demonstrate consistency with Goal 11 in developing the IAMP.

Goal 12: Transportation

Requirement

This goal requires cities, counties, metropolitan planning organizations, and ODOT to provide and encourage a "safe, convenient and economic transportation system." This is accomplished through development of Transportation System Plans based on inventories of local, regional and state transportation needs. Goal 12 is implemented through OAR 660, Division 12, also known as the Transportation Planning Rule (TPR). The TPR contains numerous requirements governing transportation planning and project development. (See the "OAR 660, Division 12" section of this document for findings of compliance with the TPR.)

Findings

US26 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.

No modifications to the Washington County land use planning program, including land use overlays, are proposed as part of this project. Appendix B includes a list of uses currently allowed in the zones within the Glencoe Road study area. Pursuant to Washington County's adopted and acknowledged Community Development Code, these uses will continue to be allowed on parcels near the intersection. See additional findings under OAR 660, Division 12 Transportation Planning Rule.

ODOT and Washington County found the IAMP would not require any land use actions, and that the plan and contents are consistent with the Washington County. 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 existing, adopted 2020 Transportation Plan policies and Statewide Planning Goals.

Washington County will incorporate Resolution and Order reference to the Glencoe Road IAMP into the technical appendix portion of the 2020 Transportation Plan. Washington County staff will present a proposal to this effect to the Board of County Commissioners at their Board meeting November 23, 2010.

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 identified the need to replace the interchange due to capacity, safety and operational issues present at the interchange. 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.

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 provides a street system within the Interchange management area that is adequate to accommodate the IAMP.

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

The findings demonstrate consistency with Goal 12 in developing the IAMP.

Goal 14: Urbanization, and OAR 660, DIVISIONS 14 AND 22

Requirement:

Goal 14, Urbanization, requires an orderly and efficient transition from rural to urban land use. This is accomplished through the establishment of Urban Growth Boundaries (UGBs). UGBs and unincorporated community boundaries separate urbanizable land from rural land. Land uses permitted within the urban areas are more urban in nature and higher intensity than in rural areas, which primarily include farm and forest uses. Goal 14 is important because it focuses development within relatively compact boundaries of the UGB and, to a lesser degree, in unincorporated communities. This compact development helps contain the costs of public facilities by reducing the need to expand facilities further out from existing services and population centers. The location, type, and intensity of future development within the management area will impact the function and operational life of the interchange.

Additionally, **ORS 197.298** establishes priorities for including land inside urban growth boundaries. The first (highest) priority for inclusion is land that is designated "urban reserve" land. The second priority is land adjacent to a UGB that is identified as "an exception area or non-

resource land." The third priority is land that is designated as "marginal land" pursuant to ORS 197.247. The final (lowest) priority is land that is designated for agriculture, forestry, or both.

Findings
The Glencoe Road interchange planning area does intersect with the City's Urban Growth Boundary which is formed on the south by US 26. The Metro UGB is located approximately 5 miles to the East and does not occur in the Interchange study area.

Rural land in the vicinity of the interchange is primarily Exclusive Farm Use (EFU) land, and therefore is the lowest priority for inclusion within a UGB. Existing residential, rural commercial and rural industrial land in the County south of the highway is limited to the type and intensity of development by the County zoning. County development policies and zoning code require that it maintains the rural characteristic of the surrounding rural area. The City of North Plains has determined that their UGB expansion will occur to the north of US 26 and not cross the Highway. This is to encourage a more compact type development on one side of the highway and not encourage development in the EFU land to the south.

This information demonstrates consistency with Goal 14, Urbanization.

Statewide Goals:

Goal 4 Forest Lands
Goal 6 Air, Water and Land Resources Quality
Goal 7 Areas Subject to Natural Hazards
Goal 8 Recreational Needs
Goal 13 Energy Conservation
Goal 15 Willamette River Greenway
Goal 16 Estuarine Resources
Goal 17 Coastal Shorelands
Goal 18 Beaches and Dunes
Goal 19 Ocean Resources

These goals were determined not to be applicable to the development of the IAMP. Goal 4 is not applicable because there is no impact to forest lands and forest lands are not located in the project area. Goal 6 not applicable because to changes to waste and discharge will occur from this plan, and environmental quality will not fall below accepted state or federal standards as a result of the plan. Flooding has occurred in the project area, however the plan for the area will have no impact on potential natural hazards, so Goal 7 is not applicable. Goal 8 is not applicable as no recreational facilities will be impacted and the plan results in no changes to recreation plans for the area. Goal 13 is not applicable as no changes will occur to density of land use nor will it encumber energy conservation efforts in the area of the plan. Goal 15 is not applicable because the Willamette River Greenway is not in or near the project area. Goals 16, 17, 18, 19 are not applicable because no estuarine resources, coastal shorelands, beaches or dunes or ocean resources exist in or near the project area.

OREGON TRANSPORTATION PLAN (2006)

The Oregon Transportation Plan (OTP) is the state's long-range multimodal transportation plan. The OTP is the overarching policy document among a series of plans that together form the state transportation system plan (TSP). This Plan supersedes the 1992 Oregon Transportation Plan.

An IAMP must be consistent with applicable OTP goals and policies. Findings of compatibility will be part of the basis for IAMP approval.

The most pertinent OTP goals and policies for interchange planning are as follows:

Policy 1.3 – Relationship of Interurban and Urban Mobility

It is the policy of the State of Oregon to provide intercity mobility through and near urban areas in a manner which minimizes adverse effects on urban land use and travel patterns and provides for efficient long distance travel.

Findings

The Glencoe Road IAMP plans for improved safety and intercity mobility on the US 26: Sunset Highway. There are no adverse effects on the urban land uses in the vicinity of the interchange and the facility will operate at levels consistent with the mobility standard for the 20-year planning horizon and beyond. The preferred concept does not require taking of any urban land uses in the plan area. The increase of vertical clearance under Glencoe Road structure will facilitate more efficient long distance travel.

The findings demonstrate no adverse effects with Policy 1.3 in developing the IAMP.

Policy 2.1 - Capacity and Operational Efficiency

It is the policy of the State of Oregon to manage the transportation system to improve its capacity and operational efficiency for the long term benefit of people and goods movement.

Findings

Through the planning process, certain improvements were identified to improve the capacity of the interchange and the operational efficiency of the interchange area. The current westbound off-ramp is not long enough to safely accommodate vehicle queues and causes unsafe backups onto US 26. The proposed improvements will lengthen the ramp to meet the demand and avoid future queues on US 26. The interchange is designed to accommodate the planned traffic volumes, from the City of North Plains and the larger regional vicinity, which includes the Cities of Hillsboro, Cornelius, and Forest Grove. In addition, bicycle/pedestrian travel will be accommodated on the existing two-lane Glencoe Road over-crossing. Include the long term management strategies of the interchange.

Policy 2.2 – Management of Assets

It is the policy of the State of Oregon to manage transportation assets to extend their life and reduce maintenance costs.

Findings

The stated purpose of the IAMP is to maximize the operational life of the Glencoe Road interchange, and, consequently, protect the State's investment in the facility. Specifically, the goal of the IAMP is to protect the function and operation of the interchange within the IAMP area. This includes providing safe and efficient connections between local streets and state highways.

This information demonstrates consistency with Policies 2.1 and 2.2 of the Oregon Transportation Plan.

Policy 3.1 – An Integrated and Efficient Freight System

It is the policy of the State of Oregon to promote an integrated, efficient and reliable freight system involving air, barges, pipelines, rail, ships and trucks to provide Oregon a competitive advantage by moving goods faster and more reliably to regional, national and international markets.

Findings
The Sunset Highway (US 26) serves as a primary connection between the Portland metro area and the Oregon Coast. The highway is designated as a Statewide Freight Route Highway in the Oregon Highway Plan. The Glencoe Road IAMP identifies safety improvements to address safety deficiencies in the interchange area. Lengthening of the west bound off ramp will accommodate trucks volumes, and provide greater deceleration distance for trucks exiting US 26 at Glencoe Rd. The plan notes the vertical clearance limitation as a problem on US 26 under Glencoe Rd which will be addressed through the design of the overpass. The increase to vertical clearance will open one of three vertical bottlenecks from the Portland metropolitan area to the Oregon Coast on US 26. The result of the plan will ensure the safety and efficiency of travel along Sunset Highway, particularly in the vicinity of the new interchange

This information demonstrates consistency with Policy 3.1.

Policy 7.4 - Environmental Justice

It is the policy of the State of Oregon to provide all Oregonians, regardless of race, culture or income, equal access to transportation decision-making so all Oregonians may fairly share in benefits and burdens and enjoy the same degree of protection from disproportionate adverse impacts.

Findings
Appendix G and H provides a summary of the public involvement efforts that took place during development of the IAMP. Various methods were used to gather public input about the interchange project and the management plan, including four public open houses, a series of Stakeholders Working Group meetings, web site, and a public review and comment period for the draft IAMP. Press releases to announce the open house were sent to all local newspapers.

Data and analysis were prepared with consideration of Executive Order (EO) 12898, EO 13166 and Title 6. According to early existing conditions information the study area does not contain disproportionate concentration of environmental justice populations, nor any notable environmental justice populations in the general vicinity of the study area. No clusters of low-income households exist in North Plains. Potential low income households have been identified in the study area, but will not be impacted by the project

Input from citizens was used to evaluate alternatives. These opportunities were provided equally to all, regardless of race, culture or income.

This information demonstrates consistency with Policy 7.4 - Environmental Justice.

OREGON HIGHWAY PLAN

The 1999 Oregon Highway Plan establishes policies and investment strategies for Oregon's state highway system over a 20-year period and refines the goals and policies found in the OTP. Policies in the OHP emphasize the efficient management of the highway system to increase safety and to extend highway capacity, partnerships with other agencies and local governments, and the

use of new techniques to improve road safety and capacity. These policies also link land use and transportation, set standards for highway performance and access management, and emphasize the relationship between state highways and local road, bicycle, pedestrian, transit, rail, and air systems.

The policies applicable to planning for the Glencoe Road interchange improvements are described below.

Goal 1: System Definition, the following policies are applicable:

Policy 1A: Highway Classification. This policy defines the function of state highways to serve different types of traffic that should be incorporated into and specified through IAMPs.

The state highway classification system includes five classifications: Interstate, Statewide, Regional, District, and Local Interest Roads. In addition, there are four special purpose categories that overlay the basic classifications: special land use areas, statewide freight route, scenic byways, and lifeline routes. US 26 is a Statewide Highway and is part of the National Highway System (NHS). The Policy 1A definition states: "Statewide Highways provide inter-urban and inter-regional mobility and provide connections to larger urban areas, ports, and major recreation areas that are not directly served by Interstate Highways. A secondary function is to provide connections for inter-urban and inter-regional trips. The management objective is to provide safe and efficient, high-speed continuous-flow operation."

Findings
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 proposed improvements meet mobility standards for highways of this classification and the plan adopts provisions to ensure that the interchange can continue to function for this purpose over the 2030 horizon planning period and complies with the design mobility standards for interchange ramps in. The plan will ensure safe and efficient, high-speed continuous-flow operation for US 26.

Policy 1B: Land Use and Transportation. This policy recognizes the need for coordination between state and local jurisdiction to provide safe and efficient transportation system consistent with adopted comprehensive plans.

Findings
ODOT has worked cooperatively the City of North Plains and Washington County to develop the US 26/Glencoe Road IAMP through the formation of the Project Development Team (PDT) and participation in local transportation/land use advisory groups. ODOT, North Plains, and Washington County also worked cooperatively to model anticipated land use conditions in the vicinity of the interchange to ensure planned improvements to the interchange support adopted long range land use plans and that the planed interchange improvements and local network improvements function at levels consistent with adopted Oregon Highway Plan mobility standards for the interchange. The land use and transportation at this location are in balance. As such, the US 26/Glencoe Road IAMP has adequately addressed Policy 1B.

Policy 1C: State Highway Freight System. This policy recognizes the need for the efficient movement of freight through the state. US 26 is a designated freight route.

Findings
The transportation improvement recommendations at the Glencoe Road interchange will better facilitate the safe and efficient movement of freight at the interchange ramp terminals. In addition, the interchange overpass will be constructed to improve vertical clearance, ensuring the US 26 at this location can accommodate all standard freight traffic. US 26 is classified as a Statewide Highway by the OHP and designated as an Expressway and Statewide Freight Route. As such, the US 26/Glencoe Road IAMP has adequately addressed Policy 1C.

Policy 1F: Highway Mobility Standards Access Management Policy. This policy addresses state highway performance expectations, providing guidance for managing access and traffic control systems related to interchanges.

Findings
The US 26/Glencoe Road IAMP demonstrates that the interchange will meet ODOT mobility standards through the 2030 horizon year. It also provides an access management plan that improves access management within the interchange influence area. Expectations for performance were discussed ad disclosed to local businesses ad interested parties that participated in the IAMP process. As such, the US 26/Glencoe Road IAMP has adequately addressed Policy 1F.

Policy 1G: Major Improvements. This policy requires maintaining performance and improving safety by improving efficiency and management before adding capacity. ODOT works with regional and local governments to address highway performance and safety.

Findings
ODOT has worked cooperatively the City of North Plains and Washington County to develop the US 26/Glencoe Road IAMP. The US 26/Glencoe Road IAMP provides measures to increase the safety and efficiency along Glencoe Road through improvements to the local circulation network and access management measures.

Action 1G.1lists four levels of priority: 1)protect the existing system, 2) improve efficiency and capacity of existing highway facilities, 3) add capacity to the existing system, 4) add new facility. The US 26Glencoe IAMP has identified a few measures under Priority 1, including purchasing access control to the south of the interchange, and to the north to the Highland intersection. The plan also adopts existing comprehensive plans as the base for the plan so future rezoning or comprehensive plan amendments will not negatively impacts operations. These measures were not sufficient to resolve the identified problems at the interchange so Priority 2 improvements were analyzed including widening and lengthening the westbound exit ramp, replacing the structure to accommodate additional storage, and providing better accommodations for bicycles and pedestrians all improve efficiency and capacity of existing highway facilities. Priority 3 and 4 improvements were not needed at this location.

The US 26/Glencoe Road IAMP has adequately addressed Policy 1G.

Goal 2: System Management, the following policies are applicable:

Policy 2B: Off-System Improvements. This policy recognizes that the state may provide financial assistance to local jurisdictions to make improvements to local transportation systems if the improvements would provide a cost-effective means of improving the operations of the state highway system.

Findings
As part of the US 26/Glencoe Road IAMP, ODOT has worked closely with the City of North Plains and Washington County to identify local circulation improvements that will improve the safety and efficiency of the US 26/Glencoe Road interchange. The primary safety issue was to reduce the west-bound off ramp vehicle queuing into US 26. Off-system improvements would not reduce the queuing problem on the west bound off ramp. After reviewing options for local street connectivity, local improvements were dropped from further consideration as they would not address the primary safety and operational deficiencies at the interchange.

The US 26/Glencoe Road IAMP has adequately addressed Policy 2B.

Policy 2D: Public Involvement. This policy ensures that there are sufficient opportunities for citizens, businesses, and local governments to provide input into improvement projects that affect the state highway system.

Findings
A Project Development Team (PDT) consisting of local government representatives and a Stakeholder Working Group (SWG) consisting of local citizens and business representatives were convened and met regularly with the project team on the development of the US 26/Glencoe Road IAMP. Summaries of the public meetings are provided in Appendix F and Appendix H1 of the Volume 2 of the US 26/Glencoe Road IAMP Technical Appendices.

This information is available in Appendix H1. This effort included the following:

- *A series of four public open houses were held from June 2006 to July 2008 to discuss the new Glencoe Road interchange and the IAMP;*
- *Citizen Advisory Committee meetings held from June 2006 to July 2008 to obtain feedback on a variety of project deliverables, including the purpose and need, evaluation criteria, interchange design concepts and draft IAMP.;*
- *A newsletter sent out to individuals near the proposed project to provide information and notification of the public open house; and*
- *A project web site was available to provide project information and upcoming open houses.*
- *A selection of a preferred interchange concept by the Citizen Advisory Committee.*

Appendix G contains the information for the public involvement of the US 26/Glencoe Road IAMP and JTA project. The IAMP and JTA project was jointly developed by the city of North Plains, Washington County and ODOT. This includes City's Resolution No. 1561 approving the MOU for the JTA project and the County's MOU and Supplemental with ODOT. This information demonstrates consistency with Goal 1.

The US 26/Glencoe Road IAMP has adequately addressed Policy 2D.

Policy 2F: Traffic Safety. This policy improves the safety of the highway system.

Findings

Two safety issues are addressed by the proposed improvement program. First, the planned improvements replace an aging and functionally deficient (geometrically and capacity) interchange structure that compromises highway safety by causing backups on the highway through lanes. Second, an access management plan was developed to reduce turning conflicts in the vicinity of the interchange and allow vehicles using or accessing the highway system to do so with fewer interruptions. The result of this plan will be safer facilities on and off US 26.

The US 26/Glencoe Road IAMP has adequately addressed Policy 2F.

Goal 3: Access Management, the following policies are applicable:
Policy 3A: (Classification and Spacing Standards) sets access spacing standards for driveways and approaches to the state highway system.

Policy 3C: Interchange Access Management Areas. This policy addresses management of grade-separated interchange areas to ensure safe and efficient operation between connecting roadways. Action items include developing interchange area management plans to protect the function of the interchange to provide safe and efficient operations between connecting roadways and to minimize the need for major improvements of existing interchanges. The local jurisdiction's role in access management is stated in Policy 3C as follows: "necessary supporting improvements, such as road networks, channelization, medians and access control in the interchange management area must be identified in the local comprehensive plan and committed with an identified funding source, or must be in place (Action 3C.2)."

Access management standards are detailed in Policy 3C and include the distance required between an interchange and approaches and intersections. The most stringent standards apply in interchange areas. Table 16 contains the minimum spacing standards applicable to the proposed US 26/Glencoe Road interchange. The spacing standards for this type of interchange are:

- 750 feet (230 m). Distance to the first urban approach on the right (where right in/right out access is allowed)
- 1,320 feet (400 m). The distance to the first major urban intersection or approach (where full access is allowed) or to the first rural approach on the right (where right in/right out access is allowed).
- 750 feet (230 m). The distance between the last right in/right out approach road and the start of the taper for the on-ramp.

Findings
The IAMP's Access Management Plan establishes a framework for access to public streets and existing and future driveways along Glencoe Road. The 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 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.

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. ODOT will acquire full access control north of the intersections to Highland Court. Highland Court and Pacific Street would remain as public streets with full access. Access management north of Highland Court on Glencoe Road will be the responsibility of the City of North Plains and Washington County. They will apply access

management per their standards and seeking driveway consolidations as new development occurs.

ODOT will acquire access control for the full 1320' to the south of the interchange. The southwest side of the interchange will also require a deviation from the standard to 600 feet to the first right-in/right-out access (Beach Road) in order to provide reasonable site access to an existing business at a location with relatively low traffic volumes.

The US 26/Glencoe Road IAMP was jointly developed by the City of North Plains, Washington County and ODOT to adequately addressed Policy 3C Access Management for the community and provides a plan for moving in the direction of improving the existing conditions for the community.

Goal 4: *Travel Alternatives*, the following policies are applicable:
Policy 4A: (Efficiency of Freight Movement). This policy emphasizes the need to maintain and improve the efficiency of freight movement on the state highway system. The Sunset Highway is a designated Freight Route.

Findings
The transportation improvement recommendations at the Glencoe Road interchange will better facilitate the safe and efficient movement of freight at the interchange ramp terminals. In addition, the interchange overpass will be constructed to improve vertical clearance to enhace freight mobility, ensuring the US 26 can accommodate freight traffic. As such, the US 26/Glencoe Road IAMP has adequately addressed Policy 4A.

Goal 5: Environmental and Scenic Resources, the following policies are applicable:
Policy 5B (Scenic Resources) This policy applies to all state highways and commits the State to using best management practices to protect and enhance scenic resources in all phases of highway project planning, development, construction and maintenance.

Findings
This policy was considered as part of the IAMP project, and will be implemented largely by complying with other state and local policies and regulations. Wetlands were identified in the study area in low lying areas along an unnamed tributary to McKay Creek to the north of US 26. No impacts to these resources are anticipated. The only potential fishery resources in the study area would be the unnamed tributary to McKay Creek, no impacts are anticipated but for the positive impact of removing a culvert with a structure. Review of literature and field investigations indicate that habitat for threatened and endangered species does exist in the area, namely for Bald Eagle and Columbia White Tailed Deer, but those species are not likely to occur in the API. Impacts to habitat are not anticipated. Goal 5 resources were mapped in the existing conditions portion of the plan and designs were refined to avoid Goal 5 resources.

LOCAL PLANS and POLICIES

City of North Plains Transportation Systems Plan

The City of North Plains Transportation Systems Plan (TSP) adopted by the City Council June 5, 2005. A twenty-year planning horizon (2000-2020) was chosen for the study to identify future demographic conditions from which future traffic forecasts were developed.

Chapter 3 of this report outlines the development of the North Plains TSP beginning with a review of relevant city, county, and state plans and policies. Chapter 5 discusses the development of a new set of design standards that will guide the direction of new facility construction (pedestrian, bicycle and auto) in the City of North Plains. Chapter 6 identifies the changes to the existing transportation facilities that need to occur in the City of North Plains in order to accommodate for the transportation needs in the future.

Chapter 3 Review of Plans and Policies

This chapter highlights the pervious studies that documented the need of a new Glencoe interchange. Specifically, 3.05.00 Sunset Highway Interchange Study which was completed by DKS Associates in August 1998 discussed the need for a new interchange, and presented three alternatives for the Glencoe Road interchange.

Findings

The City of North Plains acknowledged to need for a new interchange to replace the existing structure and incorporated the study into their TSP.

Chapter 5 Transportation System Alternatives

5.01.64 Glencoe Road Interchange - On April 6, 2004, the Oregon Freight Advisory Committee (FAC) submitted a report to the Oregon Transportation Commission with recommendations for high priority freight mobility projects on Oregon's highways and local roads. The Glencoe Road interchange at US 26 project is included in Tier 2 of the list of priorities from the FAC report. The City has included the original project for improvements at the Glencoe Road interchange under the Funding Chapter of the TSP. Until such a time as the funding for the new interchange becomes certain, the City will then modify the priority of funding projects included in Table 7-9 of Chapter 7.

Findings

The City of North Plains acknowledged the need for the new interchange and incorporated the alternative into the TSP.

Chapter 6 Transportation System Plan

The City of North Plains Transportation System Plan incorporates the preferred future transportation alternative and street functional classification standards. The Transportation System Plan includes plans for long range transportation capacity and non-capacity improvements for the arterial/collector street system.

6.01.00 Collector/Arterial Street Plan

The long range transportation plan for the City of North Plains collector/arterial street system are defined as those projects to be completed in a 20-year time frame. These projects encompass auto, pedestrian/bicyclist and public transportation modes. The long-term transportation improvements for the North Plains area collector/arterial street system include two categories of projects: capacity improvements and non-capacity improvements.

6.01.10 Capacity Improvements

Future roadway capacity deficiencies were identified on collector and arterial streets based upon traffic generated by future land development as identified in the North Plains Neighbor Study and subsequent task updates on the North Plains Comprehensive Plan. These improvements are defined in the "2020 Future Conditions Level of Service Summary" Table.

Findings

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 identified the need to replace the interchange. 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 IAMP future traffic analysis is consistent with the TSP which indicates an operational failure of Glencoe Road intersections within the 20-year planning horizon. This failure can be primarily attributed to an assumption of additional commercial and residential development on vacant or underutilized properties located along the east side of NW Glencoe Road. To improve these intersections, the TSP has included a long-term signalization project at the intersections.

This information demonstrates IAMP consistency with the City's TSP.

6.03.00 Bicycle/Pedestrian Plan

Future bicycle and sidewalk improvements identified in conjunction with roadway improvements are intended to provide bicyclists and pedestrians with a full accessibility in the City of North Plains collector/arterial street system.

6.03.10 Bicycle/Pedestrian Facilities Projects

1. Glencoe Road: Include bicycle lanes and sidewalks on both sides of the road. This would provide connectivity to the existing sidewalks and future growth to the east of Glencoe Road.

Findings

The IAMP primary project priorities and the Transportation Improvement Plan calls for improving pedestrian and bicycle connectivity across the new bridge structure over US 26.

This information demonstrates IAMP consistency with the City's TSP.

6.04.00 Truck Routes

Truck routes provide for the efficient movement of goods while at the same time maintaining neighborhood livability, public safety and minimizing maintenance costs of the roadway system. As improvements are made to the railroad trestle on Gordon Road, the City will be in a better position to designate a truck route to keep trucks out of the downtown area and other residential areas. Glencoe Road, West Union Road and Gordon Road will be part of a truck route within the City of North Plains.

The main objective is to focus on a design criteria suitable for trucks, such as maintaining 12-foot travel lanes, longer access spacing, 35 foot or larger curb returns and pavement design that accommodates a larger share of trucks.

Findings

ODOT has worked cooperatively the City of North Plains and Washington County to develop the US 26/Glencoe Road IAMP. The IAMP acknowledged that Glencoe Road was a freight route for the County and City. The transportation improvement recommendations at the Glencoe Road interchange will better facilitate the safe and efficient movement of freight at the interchange ramp terminals. In addition, the interchange overpass will be constructed to current clearance standards, ensuring the US 26 can accommodate all standard freight traffic. As such, the US 26/Glencoe Road IAMP has adequately addressed the City's truck route designation for Glencoe Road.

6.06.00 Policies/Land Use Regulations for Implementing the Transportation System Plan

The City of North Plains should participate with ODOT and Washington County in the development of their transportation system plans in order to provide for a coordinated and consistent policy and plan, especially for those transportation facilities that cross jurisdiction lines. In addition, as land outside the City of North Plains is developed, a coordinated transportation/land use plan will help ensure a transportation system that serves the need for all users.

Findings

ODOT has worked cooperatively the City of North Plains and Washington County to develop the US 26/Glencoe Road IAMP. The US 26/Glencoe Road IAMP provides measures to increase the safety and efficiency along Glencoe Road through improvements to the local circulation network. 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.

The US 26/Glencoe Road IAMP has adequately addressed Policies/Land Use Regulations for Implementing the Transportation System Plan.

North Plains Comprehensive Plan

ORD. 331 - Adopted: February 7, 2005

15.01.030 Vision Statement Introduction

The people of the City of North Plains have seen many changes in their community. They and have decided to create this Vision Statement as the foundational document.

15.02.010 Citizen Involvement

The opportunity for the active participation of the residents and landowners of an area in the preparation of a community's comprehensive plan is not just mandated by state law, but is also the only realistic means of assuring that the community's planning efforts will be worthwhile and meaningful endeavors.

Findings

As discussed in the Statewide Land Use Goals findings, the public involvement process included two open houses for public participation. In addition, telephone contacts were provided in meeting notices. Appendix G and H1 of the Volume 2 of US 26/Glencoe Road IAMP Technical Appendices contains a summary of the public involvement efforts that were undertaken as part of the JTA and IAMP project.

15.02.020 Land Use Planning

To insure an adequate supply of land for residential, commercial and industrial development purposes as well as land for uses related that provide for a complete community such as open space, institutional, public/private facility, community service, historic uses, the following categories have been developed for use in the comprehensive plan map, which will provide the basis for the City's zoning map

> **15.02.025 City Objectives and Policies:**
>
> **4. Objective:** The Comprehensive Plan shall be the basis for specific implementation measures which shall be consistent with and adequate to carry out the comprehensive plan.
>
> **A. Policies:**
>
> (1) Development proposals will be required to conform to the City's Zoning, Subdivision, and Design Review Ordinances.

Findings

The Glencoe Road IAMP was prepared jointly by the City of North Plains, Washington County and ODOT and coordination between the three agencies took place routinely throughout the process. The IAMP used the City's Comprehensive Plan and Zoning designations and requires to develop the future 2030 no-build traffic volumes and to develop the interchange concept.

This information demonstrates consistency of the development of the IAMP with the City's Land Use Objective and Policy.

15.02.101 Transportation

The Sunset Highway is the major regional route connecting North Plains with the Portland metropolitan area and suburbs. Residents utilize the private automobile almost exclusively as a means of getting to work or shopping,

> **15.02.105 CITY OBJECTIVES AND POLICIES**
> **1. Objective:** Provide a system of road and other forms of transportation which link each part of the community into a unified whole, and one which will safely, efficiently, and economically move traffic to and through the area in a manner that is consistent with the City's livability objectives when the City is fully urbanized.
> **A. Policies:**
> B. Street Classifications
> (1) Arterial: Design Criteria: Five-foot sidewalks, six-foot bike lanes, and two twelve-foot travel lanes with a twelve-foot median where applicable. In commercial areas sidewalks preferred from curb to property line. The following roads should be classified as Arterial in the City of North Plains:
> - • Glencoe Road

Findings

The Glencoe Road IAMP was prepared jointly by the City of North Plains, Washington County and ODOT and coordination between the three agencies took place routinely throughout the process. 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.

This information demonstrates consistency with the City's TSP Objective and policy for street classification.

North Plains Zoning and Development Ordinance

ORD. 347 - Adopted: February 6, 2006

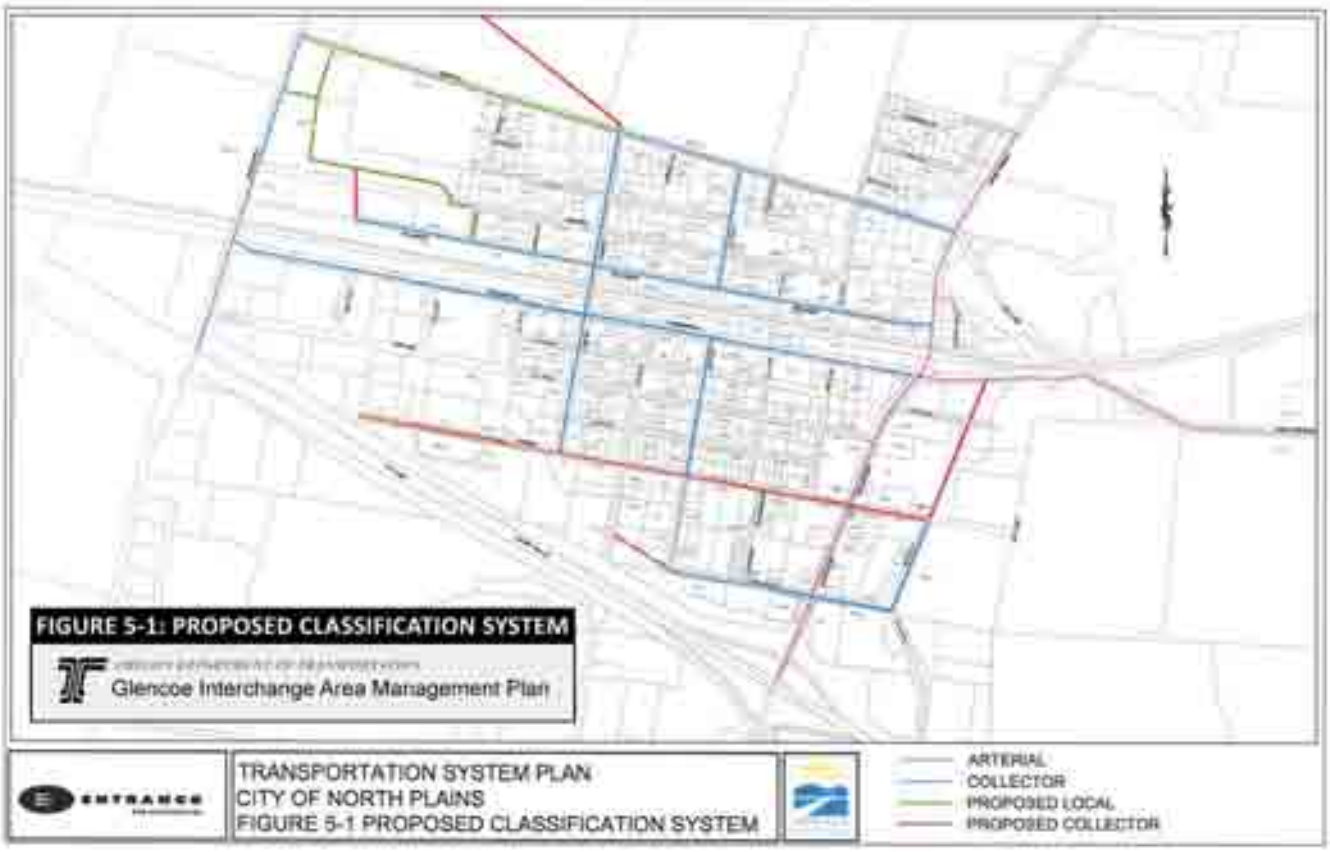
The City of North Plains participated in the development of the IAMP. North Plains' Comprehensive Plan, Zoning and Development Code and Transportation System Plan were used to develop and refine the IAMP future baseline traffic conditions analysis under a "no-build" scenario. This scenario illustrated 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.

Findings

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.



WASHINGTON COUNTY COMPREHENSIVE PLAN

The Washington County Comprehensive Plan is a collection of community plans, a transportation plan, and a rural/natural resource plan. The plans and ordinances describe the future development of rural and urban areas in the county. Washington County applies land use designations (zoning) throughout its jurisdiction to locate land uses where they are most appropriate for rural areas such as the Glencoe Road IAMP study area, farm and forests zones are the dominant designation to preserve the character of the land. The county's land use designations are enforced through the application of its Community Development Code.

The land use policies for the Staley's Junction 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 use decisions in the areas outside the established urban growth boundaries (UGB). Appendix C includes a discussion of the County's Policies for the Rural/Natural Resource Plan.

Rural/Natural Resource Plan

The Rural/Natural Resource Plan is a set of policies that protect natural resource land, provide rural residential land for housing, and provide rural commercial lands to support rural agricultural and forest activities. The plan designates land in the project area as Agriculture and Forest 5 acres minimum (AF-5), Agriculture and Forest 10 acres minimum (AF-10), Agriculture and Forest 20 acres minimum (AF-20), Rural Residential (RR-5), Rural Industrial (R-IND) and Rural Commercial (R-COM). These designations are defined in the Washington County Community Development Code.

The Rural/Natural Resource Plan has several policy statements for the plan designations in the study area. The policies describe the county's mission of protecting forest and agricultural lands, while recognizing the future needs for small-scale agricultural production and rural commercial development. The policies are as follows:

Policy 15, Exclusive Farm Lands: It is the policy of Washington County to conserve and maintain agricultural lands for farm uses consistent with existing and future needs for agricultural products, forest management and open space. Exceptions to this policy may be allowed pursuant to the provisions of LCDC Goal 2, OAR Chapter 660 Division 04, and the applicable plan amendment criteria in Policy 1.

Policy 17, Agriculture and Forest-20 Lands: It is the policy of Washington County to designate those lands as Agriculture and Forest-20 that were zoned AF-5 and AF-10 by the 1973 Comprehensive Framework Plan and for which a Goal 2 Exception has not been provided, and in doing so strive to retain small scale and part-time agriculture and forest production. Exceptions to this policy may be allowed pursuant to the provisions of LCDC Goal 2, OAR Chapter 660 Division 04, and the applicable plan amendment criteria in Policy 1. (Agriculture and Forest-20 Land includes the AF-20 zone.)

Policy 18, Rural Lands: It is the policy of Washington County to recognize existing development and provide lands which allow rural development in areas which are developed and/or committed to development of a rural character. (Rural lands include the AF-5, AF-10, R-IND and R-COM zones.)

Findings

The stated purpose of the Glencoe Road IAMP is to protect the function of the new interchange facility. Adoption of the IAMP by Washington County adopts policies that regulate land use and development within the vicinity of the interchange in order to ensure continued safety and efficiency at the Glencoe Road interchange. This project and the Washington County land use planning regulations are anticipated to be compatible. The policies clearly support and strive to retain small scale rural character to conserve and maintain agricultural activities and forest lands consistent with the existing and future needs for agricultural development, forest management and open space.

It is the County's policy to encourage retention of the rural character of the surrounding area. 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.

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.

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.

The County supports land uses in the vicinity of the Glencoe Road interchange consistent with the land use assumptions in the IAMP, and consistent with the stated function of the interchange as described in the IAMP.

Consistent with Policy 16, 17, and 18 the county supports continued land use designations in the immediate vicinity of Glencoe Road interchange to include resource districts (AF-20 and EFU) and exception areas (AF-200, AF-5, RR-5 and R-COM) resource uses of the land. A proposal to change the land use designations of resource land would require an exception to the Statewide Land Use Planning Goal 3 (Agricultural Lands) and Goal 4 (Forest Lands).

The County will provide notice to ODOT for any land use action proposed within the IAMP management area in compliance with existing provisions that would occur within 1000 feet of an ODOT facility.

WASHINGTON COUNTY 2020 TRANSPORTATION PLAN

The Washington County 2020 Transportation Plan establishes transportation policies, capital improvement projects, and transportation-related programs necessary to support growth. Attention is focused on urban commuting transportation issues as well as traffic, maintenance, and safety issues. The Transportation Plan links land use to transportation and reflects a commitment to efficient use of land and to a safe, cost-effective transportation system that serves all forms of travel. The Plan represents a balance between the need to maintain existing infrastructure and the need to keep pace with expected growth in the county. The Transportation Plan contains the accumulation of recommended system and service improvements and programs that will be needed to serve long-term growth to 2020.

The Washington County Transportation Plan includes five general policies and multiple, mode-specific policies to address county transportation needs. The plan outlines the classification of roadways in the county and identifies funding and implementation policies to define a plan for system improvements.

The Transportation Plan does not identify specific improvements for the Glencoe Road interchange area; however, several general principles of the policies are applicable. The Sunset Highway is a Principal Arterials under the Washington County Functional Classification System and also identified as existing through truck routes. Additionally, the highway is indicated as bicycle routes in the TSP. Hence, the facility serve important roles in rural Washington County and planning for improvements must accommodate balanced service for the various users.

Glencoe Road is designated as a County arterial street and a countywide through-truck routes in the Transportation Plan. The facility serve important roles in rural Washington County and planning for improvements must accommodate balanced service for the various users.

Freight Element

It is recognized that the transportation of freight is served primarily by truck traffic and that a network of through routes must be supported to accommodate truck traffic. The TSP emphasizes safety and cost-effectiveness of freight transportation. Specific strategies include coordinated planning, development, and maintenance with the private sector and other public agencies, and identification and correction of roadway design deficiencies that affect the safe and efficient movement of freight on the through-truck route system.

The Washington County TSP emphasizes transportation planning that includes coordination with other agencies and public involvement to achieve balanced goals, and periodic plan reviews to ensure that the TSP is updated to reflect changes in the transportation system and priorities.

Findings

The Glencoe Road IAMP was developed in response to safety and operational efficiency issues with the existing interchange. The existing structure lacked 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.

The new interchange will rectify the problem and providing safe traffic flow for the vehicles existing westbound off-ramp and crossing over the highway. The interchange project will result in better mobility at the junction, thereby improving freight movement.

The Glencoe Road IAMP was prepared jointly by Washington County and ODOT, and coordination between the two agencies took place routinely throughout the process. The IAMP and the interchange concepts were reviewed by both to ensure that they meet the objectives of all of the jurisdictions.

WASHINGTON COUNTY COMMUNITY DEVELOPMENT CODE

The Washington County Community Development Code (CDC) is a compilation of standards that regulate specific aspects of development and the development process. The code regulates land development activities in the unincorporated areas of Washington County.

As described above, Washington County's Rural/Natural Resource Plan and Community Development Code designate the areas in the Glencoe Road IAMP study area as AF-5, AF-10, AF-20, EFC, R-IND and RCOM. The county's descriptions of the intent and purpose of these zones are provided below, followed by the Code's administrative review procedures for public facility and transportation projects. The allowed uses in each zone are listed in Appendix 1.

Article III Land Use Districts

Agriculture and Forest:

The AF-5 and AF-10 Districts are intended to retain an area's rural character and conserve the natural resources while providing for rural residential use in areas so designated by the Comprehensive Plan. The AF-10 District is appropriate in rural lands with steep topographic

characteristics where there are limited public facilities and services. The intent of the Exclusive Agriculture and Forest AF-20 District is to provide an exclusive farm use zone within the County which recognizes that certain lands therein may be marginal. This AF-20 District is provided to meet Oregon statutory and administrative rule requirements.

The purpose of the agricultural and forestry districts are to promote agricultural and forest uses on small parcels in the rural area, while recognizing the need to retain the character and economic viability of agricultural and forest lands, as well as recognizing that existing parcelization and diverse ownerships and uses exist within the farm and forest area. Residents of rural residential tracts shall recognize that they will be subject to normal and accepted farming and forestry practices.
Exclusive Forest and Conservation District: The Exclusive Forest and Conservation District is intended to provide for forest uses and to provide for the continued use of lands for renewable forest resource production, retention of water resources, recreation, agriculture and other related or compatible uses, as set forth in Statewide Planning Goal 4, OAR 660-06 and ORS 215.

The purpose of this District is to encourage forestry as the dominant use of such lands, to conserve and manage efficiently the forest resources of the County and to prohibit uses of land which are not compatible with the management and development of forest resources, in order to minimize the potential for damage from fire, pollution, soil erosion and conflict caused by development. This District is suited for application to forest land as well as associated scenic lands, recreation land, wildlife habitat or other sensitive land forms or watershed areas.

The EFC District is provided to meet Oregon statutory requirements for forest lands. Uses permitted by the Forest Practices Act are not subject to the requirements of this Section.

Rural Commercial:
The intent and purpose of the Rural Commercial District is to implement the rural commercial policies of the Comprehensive Plan and to meet convenience goods and service needs of rural residents while protecting the historic character of rural centers and the agricultural or forestry character of the area. Rural Commercial centers shall be designed to be compatible with the surrounding environment and generally not to exceed five (5) acres.

Rural Industrial District:
The purpose of the district is to provide for the processing and manufacture of timber and forest related products, farm crops and produce, minerals and aggregates near the resources, and for the repair of mechanical equipment related to farm and forest uses. Rural Industrial Districts shall be designed to be compatible with the surrounding environment and generally not to exceed five (5) acres.

Findings:
The IAMP will not adversely affect the County's designated Article III Land Use District. The future land use and traffic projects for the IAMP were based on the assumed allowable uses in the Rural/Natural Resources and the Community Development Code.

Article V: Public Facilities and Services:
Article V of the CDC addresses public facilities and services, and access management requirements. The access management section of the article is not applicable to the construction of the interchange itself, but is applicable to land use development, subdivisions, and partitions.

The article states that all developments have legal access to a County or public road. However, an access permit must be obtained before access onto a County or public road is granted.

Article V lists access spacing standards for local streets, neighborhood routes, collectors, and arterials. The article provides specific access spacing standards for each functional roadway classification. The TSP classifies the Sunset and Nehalem highways as principal arterials. According to Article V, principal arterials must be designed and developed as limited access facilities. Access to a Principal Arterial is subject to approval by ODOT through the State's Access Management Policy and its implementing measures.
Article VII Public Transportation Facilities

Article VII of the CDC addresses the County's transportation facilities. The intent of this Article is to identify public transportation improvements that are subject to development review and establish the standards and procedures for such review. This Article applies to project development for the design, construction, operation, maintenance, repair and preservation of public transportation facilities including roadways and bridges, and transit, bicycle and pedestrian facilities authorized by the Washington County TSP. Article VII has four categories of public transportation improvement projects, Exempt Project and Categories A-C. Article VII identifies the replacement of an intersection with an interchange as a Category B project in the AF-5, AF-10, and R-COM Districts outside of a UGB and a Category C project in the AF20 and EFC Districts outside of a UGB. The replacement of an intersection with an interchange is an allowed use in all of the zones. Washington County defines Category B and Category C projects as follows:

Category B Projects:
Projects that involve land use criteria that are reasonably objective and generally require only limited discretion or judgment. Category B projects are assumed to be appropriate in the District. Decisions authorizing Category B projects are land use decisions.

Category C Projects:
Projects that involve land use criteria that require the exercise of a more significant level of discretion and judgment. Category C projects generally have more significant impacts or involve more complex land use issues. Decisions authorizing Category C projects are land use decisions.

Article VII specifies additional standards for the replacement of an intersection with an interchange in the AF-20, EFU, and EFC Districts (a Category C project). The project must identify reasonable design build alternatives that are safe and can be constructed at a reasonable cost, must assess the effects of the identified alternatives on farm and forest practices, and must select the identified alternative that has the least impact on farm and forest lands in the immediate vicinity. Additionally, the project must not force a significant change in accepted farm or forest practices or significantly increase the cost of accepted farm or forest practices on surrounding lands. The Staley's Junction IAMP project is anticipated to comply with these standards.

Washington County reviews and processes Category B projects in the same manner as Type II actions. Washington County requires a pre-application conference and public notice and comment period for a Type II review. The Planning Director will issue a decision on the application.

The replacement of an intersection with an interchange may be elevated by the Director of Community Development to a Category C project. Washington County reviews and processes Category C projects in the same manner as Type III actions. A public notice and comment period is also required for a Type III action. The Hearings Officer or Planning Commission will make a

final decision on a Type III action. However, if the application requires a quasi-judicial plan amendment, the Board of Commissioners will make a decision on the application. The Board of Commissioner's decision may be appealed. A Project Review Committee will act in a technical advisory capacity and review all public transportation improvement applications subject to Article VII.

Findings

The Article VI review process will be required for the construction of the interchange. The IAMP is a policy/planning document that does not require the submittal for an Article VII review. At the time the development of a final design of the interchange ODOT will be required to submit for the review. At the time the development of a final design of the interchange ODOT will be required to submit for the review.

In Washington County, proposals for the construction of transportation improvements are reviewed as a distinct type of development proposal separate from uses in the underlying land use district. Proposed public road improvement, such as the Staley's Junction interchange are reviewed under Article VII of the CDC.

- *Section 701.1 states that transportation improvements are permitted in each district and subject only to the standards in Article VII.*
- *Section 705-2 of the CDC lists different types of projects that are permitted as Category C projects when they are outside of the UGB. The proposed improvements are permitted by three project-type descriptors:*
- *Section 705-2.1.A identifies "Replacement of a public road or highway" as a permitted use.*

The ODOT will demonstrates consistency with the Article VI review process when the interchange design is developed and submitted to the County for review.

Appendix B

Existing and Future Land Use Conditions

US 26: Sunset Highway at Glencoe Road—Glencoe Road Interchange and Local Improvements: Land Use Affected Environment

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PROJECT NUMBER:	341373.03.04.01
DATE:	May 31, 2006

The purpose of this memorandum is to describe the current and potential future land uses in the City of North Plains, in the rural area directly south of the city and the Glencoe Road Interchange, and in other areas in the vicinity of the interchange that could affect interchange function and performance. In particular, the descriptions focus on the properties adjacent to Glencoe Road, from North Avenue south through town and across the interchange with Sunset Highway to the intersection at Beach Road.

Descriptions of land uses along Pacific Street, 307th Avenue, and Highland Court east of Glencoe Road also are provided, in the event that rerouting freight traffic in the area is considered. This area is combined with the properties adjacent to Glencoe Road to form what is referred to in this report as the Glencoe Road corridor. Figure 1 depicts the Glencoe Road corridor.

Additionally, the current and potential future land uses adjacent to Sunset Highway in North Plains between Glencoe Road and Gordon Road are described. See Figure 1 for an illustration of the properties that are included in the Sunset Highway corridor.

Existing land uses were recorded during a field visit to the City of North Plains on March 24, 2006. Observations from the field visit have been confirmed and supplemented by land use data from the Regional Land Information System (RLIS) developed by Metro (Metro, 2006). Zoning and Comprehensive Plan designations, the basis for discussion of potential future land uses, were provided by both RLIS and the city's zoning map found online.

Land Use

Existing Land Use

North Plains has a full range of land uses, including industrial, residential, and commercial. In this analysis, land uses in the city generally are described in relation to major transportation facilities.

Inside the city of North Plains, Glencoe Road runs north–south through the eastern part of the city, and it is lined predominantly by auto-oriented commercial uses. A few clusters of single-family residential uses and some vacant land also front the roadway through town, although development of vacant parcels and conversion of residences is supplanting these uses.

Agricultural uses and a small number of rural industrial and commercial uses are located adjacent to Glencoe Road south of the city across the Sunset Highway interchange. To the north of the city, Glencoe Road becomes Shadybrook Road. Glencoe Road also serves as an access route to the cities of Hillsboro, Cornelius, and Forest Grove. Agricultural uses are predominant along this route south from the interchange.

The Portland & Western (P & W) rail line is an important short line that is used to transport finished lumber products from a large mill complex in North Plains. The rail line runs east–west through the city, and the transportation corridor mainly abuts industrial uses. To the west of Glencoe Road, the rail line closely parallels Commercial Street and passes just north of the downtown center. The east end of the downtown has a mix of public agency, commercial, and residential uses, while the west end of the downtown transitions into the city's main industrial area.[1] East of Glencoe Road, Commercial Street becomes West Union Road, which is a major county arterial road that eventually becomes an urban arterial in the metropolitan areas east of North Plains. Along this corridor, West Union Road is lined by industrial and agricultural land and holding zones for possible future urban development.

North Avenue coincides with the city's current northern boundary, but it abuts a large 75-acre tract of agricultural land that is designated as a holding zone for future urban development (FD10). This land was approved for inclusion in the North Plains urban growth boundary (UGB) in October 2002. North Avenue itself is predominantly fronted by residential uses and that pattern is expected to continue.

Gordon Road runs north–south and coincides with the city's western boundary. Within the city, uses along Gordon Road are industrial or residential, and across the road on the west side, land is outside the UGB and in agricultural production. An unnamed tributary of McKay Creek crosses beneath Gordon Road north of Lenox Street, and wetlands associated with the stream are found on property on both sides of Gordon Road. Gordon Road runs north from the city limits and then curves west where it becomes Mountaindale Road. Mountaindale Road provides access to Pumpkin Ridge Golf Club, which occasionally holds major local and national golfing events. Gordon Road crosses Sunset Highway via an overpass and continues along a southerly alignment to Beach Street. Land uses between the overpass and Beach Road are either agricultural or rural residential.

Land Use Designations

Comprehensive Plan and zoning maps are shown in Figures 2 and 3. Zoning in North Plains follows the underlying Comprehensive Plan designations. Table 1 gives a general breakdown of land inside the city limits according to zoning districts.

[1] The homes found here are nonconforming uses in the highway commercial (C2) zone.

FIGURE 1
Lots in the Glencoe Road Corridor and Sunset Highway Corridor

Source: Metro, 2006 and City of North Plains zoning map (2005)

TABLE 1
Land Use Designations and Acreage for Lots in the City of North Plains

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).

Glencoe Road Corridor and Sunset Highway Corridor. The following sections describe land uses in greater detail and their relationship to general use categories for two subareas: the Glencoe Road corridor and the Sunset Highway corridor.

- Glencoe Road corridor—Glencoe Road from North Avenue to Beach Road, and Pacific Street, 307th Avenue, and Highland Court east of Glencoe Road
- Sunset Highway corridor—the north side of Sunset Highway from Glencoe Road to Gordon Road

Tables 2 and 3 provide an overview of the amount of land in different uses by zone in the Glencoe Road corridor and the Sunset Highway corridor, respectively. These corridors are featured in Figure 1. Detailed tables of lot-by-lot data for the Glencoe Road corridor—including tax lot ID, building and property value, zoning, and acreage—are included in this report as Attachment 1.

TABLE 2
Land Use Designations, Existing Land Uses, and Acreage for Lots in Glencoe Road Corridor

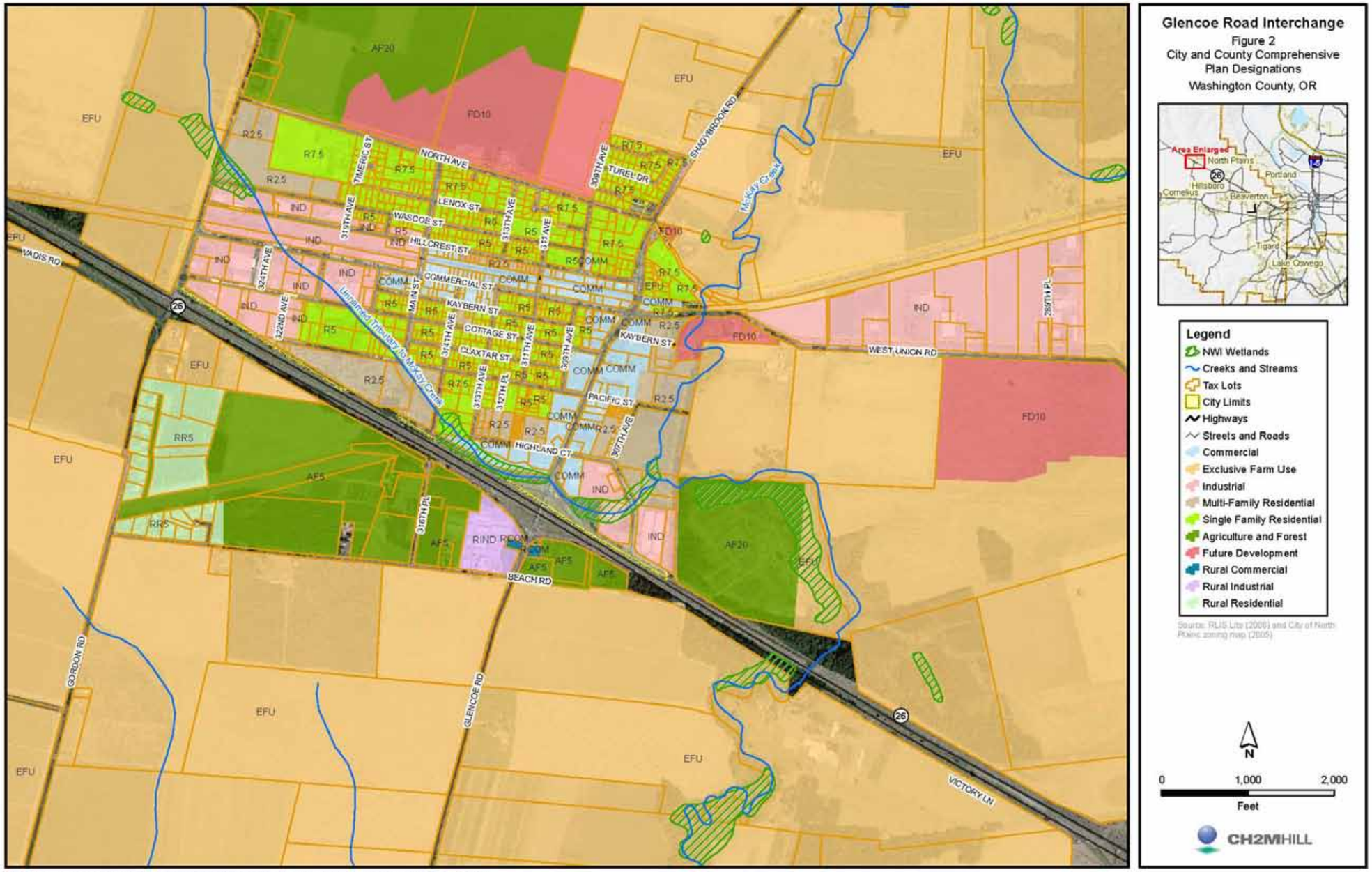
Land Use Category	Type of Use	Number of Lots	Tax Assessor Acreage[a]	Map Area Acreage[b]
Inside City of North Plains				
Residential		43	24.21	24.09
	Residential	*38*	*19.18*	*19.23*
	Vacant	*5*	*5.03*	*4.86*
Commercial		28	29.58	30.26
	Commercial [c]	*14*	*16.75*	*17.03*
	Residential	*7*	*6.02*	*6.45*
	Vacant	*7*	*6.81*	*6.79*
Industrial	*Industrial*	2	4.50	4.55
Subtotal		73	58.29	58.90

TABLE 2
Land Use Designations, Existing Land Uses, and Acreage for Lots in Glencoe Road Corridor

Land Use Category	Type of Use	Number of Lots	Tax Assessor Acreage[a]	Map Area Acreage[b]
Outside City of North Plains				
Future Development		5	2.39	2.22
	Industrial/Institutional	*1*	*1.23*	*1.21*
	Rural	*4*	*1.16*	*1.01*
Agricultural/Forestry		7	136.05	138.34
	Rural/Agricultural	*4*	*119.63*	*122.02*
	Commercial	*1*	*2.93*	*3.01*
	Vacant	*2*	*13.49*	*13.32*
Rural Commercial		3	1.01	1.11
	Commercial	*1*	*0.5*	*0.53*
	Vacant	*2*	*0.51*	*0.58*
Rural Industrial	*Industrial*	1	10.41	10.57
Subtotal		16	149.86	152.242
TOTAL		**89**	**208.15**	**211.14**

Source: Metro, 2006 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 GIS.
[c] This includes one lot that was vacant when viewed during the March 24, 2006, field visit, but was posted as the future site of the North Plains Center.

FIGURE 2
City and County Comprehensive Plan Designations



Source: Metro, 2006 and City of North Plains zoning map (2005)

FIGURE 3
City Zoning

Source: Metro, 2006 and City of North Plains zoning map (2005)

TABLE 3
Land Use Designations, Existing Land Uses, and Acreage for Lots in Sunset Highway Corridor

Land Use Category	Type of Use	Number of Lots	Tax Assessor Acreage[a]	Map Area Acreage[b]
INSIDE CITY OF NORTH PLAINS				
Residential		11	12.91	19.26
	Residential	*8*	*9.85*	*16.19*
	Public	*1*	*1.00*	*1.00*
	Vacant	*2*	*2.06*	*2.07*
Commercial		4	6.29	6.36
	Commercial	*2*	*2.28*	*2.30*
	Vacant	*2*	*4.01*	*4.06*
Industrial		9	15.08	14.24
	Industrial	*2*	*3.44*	*2.81*
	Commercial	*1*	*1.06*	*1.09*
	Vacant	*6*	*10.58*	*10.34*
Subtotal		24	34.28	39.86
OUTSIDE CITY OF NORTH PLAINS[c]				
Agricultural/Rural		1	4.26	4.31
Subtotal		1	4.26	4.31
Total		**25**	**38.54**	**44.17**

Source: Metro, 2006 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 GIS.
[c] This refers to a single lot that is outside the city limits but adjacent to Sunset Highway and Gordon Road.

Residential Lands

Glencoe Road. According to city zoning and Comprehensive Plan designations, residential uses in the Glencoe Road corridor are concentrated at the very northern end of Glencoe Road (north of Commercial Street–West Union Road near the current city limits) and for the eastern half of the block east of Glencoe Road between Pacific Street and Highland Court. Residential development here includes a few flag lots, a subdivision on land zoned residential (R7.5) with access to Glencoe Road via a private road, and a site on the southeast corner of Glencoe Road and North Avenue that is platted for a subdivision that is under construction. A few blocks of vacant and redevelopable land that is zoned for residential use are located just east of Glencoe Road on West Union Road.

There are religious and community land uses situated within four blocks of Glencoe Road north of Commercial Street. St. Edward Catholic Church is sited on a lot at 313th Avenue and Wascoe Street, and a city park and community center is located at 311th and Hillcrest.

South of Commercial Street–West Union Road, Glencoe Road transitions to a highway commercial corridor. Within this corridor there are a few nonconforming residential uses interspersed with vacant lots and developed commercial uses on both sides of Glencoe Road. The land adjacent to Glencoe Road between Commercial Street–West Union Road and Pacific Street is regulated by the city's highway commercial (C2) zone. However, the area southwest of Glencoe Road and Pacific Avenue adjacent to the interchange falls under a residential zone (R10). There are several single-family homes, in varying conditions, that front Glencoe Road close to the interchange. These all fall within the C2 zone and are nonconforming.

South of the interchange, one single-family residential home on county land zoned agricultural/forestry (AF5) fronts Glencoe Road at Beach Road. Other lots zoned AF5 in this area are either vacant or in rural residential use.

Pacific Street, 307th Avenue, and Highland Court. The eastern half of the block of land circumscribed by Glencoe Road, 307th Avenue, Pacific Street, and Highland Court is zoned for residential use (R2.5) and is either vacant or developed with single-family residences. There is a small subdivision near the intersection of Pacific Street and Glencoe Road that accesses Pacific Street via a private road (Curtis). One large vacant residential lot (2.2 acres) fronts both Highland Court and 307th Avenue. There is also a very large residential lot (10.9 acres) located between 307th Avenue and the eastern city boundary that appears to have only one single-family home and the rest of the lot dedicated to orchards, a nonconforming use in the residential zone (R2.5).

One nonconforming residential use occurs in the commercial zone (C2) on the north side of Pacific Street, across from the small subdivision.

Sunset Highway. In the land adjacent to the north of Sunset Highway in the City of North Plains, residential uses are interspersed with commercial and industrial uses as well as vacant and resource land. One rural residence on farmland is located west of Gordon Road where it passes over Sunset Highway. Most single-family residences are found in a residential zone (R2.5) along 314th Avenue. Otherwise, residential uses in this corridor are concentrated in a mobile home park. In all, about 12 acres between five different tax lots belong to the mobile home park. One of the tax lots that fronts Pacific Street is vacant at the street front where the unnamed tributary to McKay Creek passes under the road.

Commercial Lands

Glencoe Road. Lots adjacent to Glencoe Road within the city limits are primarily zoned for commercial use. Commercial uses also are concentrated in downtown North Plains, on Commercial Street to the west of Glencoe Road. The northern end of the commercial zone on Glencoe Road is marked by three vacant commercial lots surrounding the intersection with Commercial Street–West Union Road. [2] The fourth corner is developed as a restaurant, the Old Hitchin' Post.

Commercial land on the east side of Glencoe Road between Kaybern Street and Pacific Street is a mixture of nonconforming single-family residences and small commercial uses. There is a large vacant lot (5.8 acres) fronting the east side of Glencoe Road that is planned for a commercial retail development called North Plains Center. This lot also has frontage in two places on Pacific Street. There is a corner lot auto-repair and U-Haul rental shop at the

[2] One of these lots, on the northeast corner, is a single 0.75-acre lot with split zoning (C2 and R10). This lot is for sale.

intersection of Glencoe Road and Pacific Street. On the west side of Glencoe Road is a combination of one nonconforming residential use, a bank, a small strip commercial center, a medical clinic, and approximately 1 acre of vacant land that is being marketed for lease. [3]

The block south of Pacific Street on the west side of Glencoe Road includes a large corner lot (1.7 acres) that is vacant, a Subway sandwich shop, and a Chevron gas station, market, and drive-through coffee kiosk. The east side of Glencoe Road on this block is a mixture of commercial and nonconforming residential uses. There is also one large vacant commercial lot (1.6 acres) on this block with frontage on both Glencoe Road and Highland Court.

The lots directly north of the Glencoe Road Interchange are zoned commercial and have access onto Glencoe Road within 600 feet of the interchange.[4] On the west side of Glencoe Road is a McDonald's fast food restaurant and a vacant lot adjacent to a stream and wetland that are, in turn, adjacent to the highway. A Union 76 gas-station and market are located on the east side; the market shares a wall with a sheet metal shop. These uses take access directly onto Glencoe Road but also have access along Highland Street.

An Arco gas station and market are currently the only commercial uses fronting Glencoe Road south of the interchange. The gas station and market are allowed uses in the rural commercial designation given to the site. The lot takes access on Glencoe Road less than 200 feet from the US 26 eastbound on-ramp.[5] Across from the gas station is a 0.5-acre lot that is being marketed for lease; this lot also is designated for rural commercial use.

Pacific Street, 307th Avenue, and Highland Court. Pacific Street and Highland Court both have land zoned commercial (C2) facing onto them. The commercial lot fronting Highland Court is the site of the Union 76 gas station, market, and sheet metal shop that also take access from Glencoe Road. Otherwise, the lots fronting Pacific Street between Glencoe Road and 307th Avenue are all zoned commercial. Only one of these lots is currently in commercial use (housing the auto-repair and U-Haul rental shop). The other two lots are vacant and in nonconforming residential use. The large vacant lot (1.6 acres) that fronts Glencoe Road on this block also has frontage on Highland Court.

Sunset Highway. There were two structures observed in this corridor associated with industrial uses or found within the city's industrial zones (M1 and M2). Both were offices, sited in converted houses, on lots with frontage on Gordon Road north of the Sunset Highway overpass.

Industrial Lands

Glencoe Road. Currently, there are no industrial uses or zoning in the lots immediately adjacent to Glencoe Road within the city limits of North Plains.[6] However, Glencoe Road carries industrial and truck traffic from industrial land in the southeast corner of the city fronting Highland Court and 307th Avenue. Annexation of industrial land along West Union Road on the east side of the city may increase the intensity of industrial use and truck traffic traveling to

[3] This vacant commercial land is not located on its own lot; it is part of one 2.8-acre tax lot divided between three uses: the commercial center, medical clinic, and vacant land, which is being actively marketed.

[4] In terms of Oregon Department of Transportation (ODOT) access management standards, midway between Pacific Street and Cottage on Glencoe Road is approximately 1,320 feet from the ramps on the north side of the interchange.

[5] South of the interchange, 1,320 feet from the ramps occurs well south of the intersection of Glencoe Road and Beach Road.

[6] One minor exception would be the light industrial use (a sheet metal shop) that shares a building with the Union 76 gas station market that fronts Glencoe Road between the interchange and Highland Court.

and from this area. Traffic from this area has a choice of accessing Sunset Highway using either Glencoe Road or by traveling east on West Union Road to the Old Jackson School Road interchange.

Although not within the Glencoe Road corridor, the greatest concentration of industrial uses is located in the center and western portion of the city (led by North Plains Forest Products, Inc.). The Glencoe Road Interchange provides the nearest access to Sunset Highway for these uses, and so Glencoe Road carries most of the truck and other traffic associated with these businesses.

Industrial land is also found south of the interchange. A lot zoned rural industrial is located adjacent to the eastbound off-ramp of the interchange with frontage on Glencoe Road and Beach Road. The lot is the site of Jewett-Cameron Seed Company, a feed and grain operation that is allowed in the underlying rural industrial zone. This seed company site surrounds a half-acre of vacant rural commercial land that fronts Glencoe Road and is currently for lease.

Pacific Street, 307th Avenue, and Highland Court. A large industrial lot (4.0 acres) fronting Highland Court east of Glencoe Road is the site of Valley Machine. There are more industrial zoning and developed uses located at the end of 307th Avenue south of Highland Court. However, these industrial uses are adjacent to residential zones, and the lots are constrained by the unnamed tributary to McKay Creek and its associated wetlands. Residential uses line 307th Avenue, Pacific Street, and Highland Court. These factors may prevent industrial uses in this area from intensifying.

Sunset Highway. Industrial uses have a strong presence in the corridor north of and adjacent to Sunset Highway in North Plains. Approximately 8 acres of land with frontage or access to Gordon Road are owned and operated by North Plains Forest Products, Inc., the largest industrial land use in the city. Three other lots in the industrial zones in this corridor are owned and operated by smaller companies: Hoss Paving and two unidentified businesses. The unidentified businesses are located on the northeast and southeast corners of Cottage Street (unimproved) and Gordon Road, and are based in offices converted from houses. The lot on the southeast corner is adjacent to the Gordon Road overpass and features two large cellular telephone towers.

Resource Lands

Glencoe Road. There is no land zoned or designated for agricultural use in the City of North Plains. Large parcels of exclusive farm use (EFU) land in agricultural production, however, are located directly north and south of the city along Glencoe Road.[7]

An unnamed tributary of McKay Creek flows into the city from the west. Wetlands associated with this stream that are part of the *National Wetlands Inventory* (NWI) are found in the following places in the vicinity of Glencoe Road:

- Adjacent to Sunset Highway between 314th Avenue and Glencoe Road
- Adjacent to Sunset Highway east of Glencoe Road and then extending northeast under 307th Avenue to the city's eastern boundary

Sunset Highway. The corridor north of Sunset Highway is characterized by agricultural and water resource lands. Land west of Gordon Road is designated for agricultural uses as part of

[7] To be accurate, Glencoe Road becomes Shadybrook Road north of North Avenue and outside city limits.

the EFU zone. The unnamed tributary of McKay Creek passes under Gordon Road and into the city north of Wascoe Street. NWI wetlands are located in the stream corridor directly east and west of Gordon Road. The stream enters property adjacent to Sunset Highway around Main Street. The stream and NWI wetlands are directly adjacent to Sunset Highway and the interchange between 314th Avenue and Glencoe Road.

Future Land Use Conditions

This section of the report explores potential future land use conditions for the City of North Plains. These projections are primarily based on land needs estimated for the city during its last periodic review, which assumed a 20-year planning horizon that translated to the year 2021. The 20-year horizon for planned improvements for the Glencoe Road Interchange and Glencoe Road in North Plains roughly corresponds with the years 2025-2030. Consequently, future land use conditions described below may underestimate conditions for 2025-2030 because they rely on data estimated for a time approximately 5 to 10 years earlier.

North Plains expanded its UGB in 2002 to ensure a 20-year land supply for primarily residential uses. According to the city's Comprehensive Plan, the two expansion areas—one to the north of the city and the other to the east—are planned to accommodate the types of uses on amounts of land specified in Table 4 below.[8]

TABLE 4
Planned Land Uses and Acreages in UGB Expansion Areas

East Expansion Area	
Streets, Parks, and Housing	38.1 acres
Commercial	3.9 acres
Institutional	5.4 acres
Elementary School	11.1 acres
Municipal Parks	11.4 acres
Exception Land not in Flood Plain	2.6 acres
Total East Expansion Area	*72.5 acres*
North Expansion Area	
Streets, Parks, Greenways, and Housing	52.3 acres
Commercial	3.9 acres
Institutional	7.1 acres
Municipal Parks	10.8 acres
Exception Land not in Flood Plain	2.4 acres
Total North Expansion Area	*76.5 acres*
Total North and East Expansion Areas	***149 acres***

Source: City of North Plains Comprehensive Plan, Section 15.02.144

[8] Table 4 is pulled directly from Section 15.02.144 of the Comprehensive Plan, which includes parks in two sets of its planned land uses.

(City of North Plains, 2004)

For future conditions, it has been assumed that all of the residential land inventory in North Plains and its UGB expansion areas will be developed by the end of the 20-year planning horizon. The number of residentially zoned acres and dwelling units that will result is presented in Table 5 below.

With regard to commercial land, the recent UGB expansion supported a small addition of land for commercial uses, just over 6 acres (Table 4). These uses are expected to be largely neighborhood-oriented commercial uses. For future conditions in the expansion areas, it is assumed that these commercial areas would be built out. For future conditions within the existing city limits, it is assumed that the current ratio of developed commercial area to residential area, a ratio of roughly 1:6, would be sustained into the future. [9] At that rate, over 10 additional acres of commercial land will be developed inside the city (Table 5).

There was no need for additional industrial land found during periodic review. Due to varying market and land value conditions, it is difficult to forecast the amount of industrial land that may be developed over the next 20 years. However, employment projections from recent studies can be used in estimating industrial land need for the 20-year planning horizon of this project.[10] When previous estimates of industrial land need are divided by the number of years in their planning horizon, the result is a constant growth rate of 0.73 acres annually. At that rate, roughly 15 acres of industrial land will be needed for development over the next 20 years. This can be accommodated by the amount of vacant and underutilized industrial land within existing city boundaries (Table 5).

Attachment 2 provides: (1) a review of vacant land by land use category, (2) the development intensity allowed in land use districts by the city's Development Code, and (3) allowed uses in each of the city's land use districts.

TABLE 5
Future Land Use Conditions

Residential		
Existing Conditions		
Acres of lots zoned residential[a]	City	185.97
Acres of lots developed as residential[a]	City	126.37
Dwelling units	City[b]	662
Future Conditions: Build-out		
Acres of lots zoned and developed as residential	City	185.97
	UGB expansion areas[c]	64.00

[9] This refers to lots currently developed as commercial and residential in commercial and residential zones respectively, not lots with nonconforming development.

[10] Alpha Community Development estimated employment growth based on a population projection of 4,000 residents in North Plains by 2021 (Comprehensive Plan, Section 15.02.160). Their determination of future industrial land needs relied on estimates prepared by Leland Consulting Group as part of the *North Plains Neighboring Cities Study* (1997). Land needs estimated for this study are based on employment projections by employment sector, a conversion factor of employees to building floor area, and then assumption of 0.3 FAR (floor area to site area ratio) for industrial site development.

TABLE 5
Future Land Use Conditions

	Total	*249.97*
Dwelling units	City existing units	662
	City Infill/redevelopment[d]	400
	UGB expansion areas	538
	Total	*1,600*
Commercial		
Existing conditions		
Acres of lots zoned commercial[a]	City	37.11
Acres of lots developed as commercial[a]	City	21.00
Ratio of lots developed as commercial/residential (21.00 acres/126.37 acres)	City	0.17
Future Conditions: Ratio of commercial to residential and UGB estimates		
Acres of lots zoned and developed as commercial	City[e]	31.61
	UGB expansion areas[f]	6.25
	Total	*37.86*
Industrial		
Existing Conditions		
Acres of lots zoned industrial[a]	City	184.16
Acres of lots developed as industrial[a]	City	64.57
Future Conditions: Constant growth rate derived from economic study estimates[g]		
Total acres of land needed 1995–2040		32.66
Number of acres needed per year (constant)		0.73
Total acres needed over 20-year planning horizon		*14.52*

[a] Assessor's acreage as reported in RLIS (Metro, 2006).
[b] Existing dwelling units per City of North Plains Comprehensive Plan, Section 15.02.165 (City of North Plains, 2004).
[c] Net residential acreage per City of North Plains Comprehensive Plan, Section 15.02.167 (summary table) (City of North Plains, 2004).
[d] According to Comprehensive Plan, Section 15.02.165, approximately 427 new infill and redevelopment units minus 28 units displaced for park land needs (City of North Plains, 2004).
[e] Total future acres zoned and developed as residential (build-out) in the city multiplied by ratio of existing developed commercial to residential.
[f] Net commercial acreage per City of North Plains Comprehensive Plan, Section 15.02.167 (Summary table) (City of North Plains, 2004).
[g] Based on findings from "Estimating Industrial/Commercial Land Needs in North Plains," a technical appendix to the *North Plains Neighboring Cities Study* (1997) prepared by Leland Consulting Group as part of a Transportation and Growth Management (TGM) grant.

Measure 37

Measure 37 claims present a challenge in estimating future land use conditions for the area around the Glencoe Road Interchange. Properties granted Measure 37 waivers are, in essence,

"unplanned." However, even if a Measure 37 waiver was granted, proposed development may not automatically be approved or be free of regulation. The property owner must still go through a development application process that requires health, safety, and site development standards for the proposed use are met. Public facility capacity issues may limit development. Further, the waiver is granted only to the property owner; the waiver does not apply if the owner were to sell the land.

Claims have been filed with Washington County for four rural or agricultural lots south of the Glencoe Road Interchange and either fronting Beach Road or Glencoe Road. A review of the claims is included in Table 6, and the lots themselves are highlighted in Figure 4.

FIGURE 4
Measure 37 Claims in the Glencoe Road Interchange Vicinity

Source: Metro, 2006 and Washington County, 2006b

Development in this area will increase traffic and demand on Gordon Road, Beach Road, Glencoe Road, and the Glencoe Road Interchange.

TABLE 6
Measure 37 Claims Within 1 Mile of Glencoe Road Interchange

Parcel	Plan Designation	Applicant	Request	Public Notice	Status	File Number	Date Submitted
1N3100000900	EFU	April J. Jossy	Build one dwelling	Comment closed	APPROVED Director Decision	37CL0260	06/21/05
1N3120001900	AF5	Robert D. Jossy	Rural Planned Develop-ment for 15 lots and 15 dwellings	Comment open Hearing scheduled	PENDING Board of County Commissioners Decision	37CL0259	06/21/05
1N3120001901	AF5	April J. Jossy	Rural Planned Develop-ment for eight lots and eight dwellings	Comment open Hearing scheduled	PENDING Board of County Commissioners Decision	37CL0261	06/21/05
1N3120002500	EFU	R&R Coussens Investments, Inc.	Minimum lot size to build residential or commercial enterprises		HOLD	37CL0222	6/02/05

Source: Washington County, 2006b

Summary

Existing 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. 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.

The Glencoe Road corridor, as defined in this analysis, includes property fronting Glencoe Road in the City of North Plains north of Sunset Highway; property on the block east of Glencoe Road and bordered by Pacific Street, 307th Avenue, and Highland Court; and property adjacent to Glencoe Road up to the intersection at Beach Road south of Sunset Highway.

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 planned as the site for the 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. Uses in this area may intensify with the approval of Measure 37 claims.

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-goes 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.

Future Land Use Conditions

Estimating future land use conditions in the City of North Plains in the years roughly 2025–2030 relies heavily on assumptions and findings from the city's last periodic review and UGB expansion. Because the planning horizon used for periodic review was 2021, the estimates made in this report may underestimate some of the future conditions.

Build-out is assumed for future residential conditions due to the 20-year residential land needs determined for the city's 2002 UGB expansion. Build-out will entail both infill and

redevelopment within existing city limits and development of residential land in the UGB expansion areas. Based on the acreage of land zoned residential within the city's existing city limits and findings in the city's Comprehensive Plan (City of North Plains, 2004), 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 both estimates made for the UGB expansion and a ratio of existing commercial development to residential development. Just over 6 net acres of commercial land are projected as needed in the UGB expansion areas, essentially to serve the new residential development in these areas. 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 determined during periodic review. However, a constant growth rate can be derived from industrial land needs studies on which findings from periodic review were based. Given that growth rate, roughly 15 acres of industrial land will be needed for development during the 20-year planning horizon for this project. This need can be accommodated by the amount of vacant and underused industrial land within existing city boundaries.

References

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City of North Plains. 2006. Zoning and Development Codes. http://www.northplains.org/city_documents/zoning_dev_codes/index.html.

Metro. 2006. *Regional Land Information System Lite* (RLIS). Mapping files on CD-ROM. Metro Data Resource Center.

Leland Consulting Group. 1997. *North Plains Neighboring Cities Study*.

Washington County. 2006a. Community Development Code. http://www.co.washington.or.us/deptmts/lut/LAND_DEV/CDC/comdev.htm.

Washington County. 2006b. Measure 37 Information. Land Use and Transportation (LUT) Department. http://www.co.washington.or.us/deptmts/lut/land_dev/37letter.htm.

Attachment 1

Tax Lot ID	Owner	Site Address	Land Value	Building Value	Tax Assessor Acres	Map Area Acres[1]	Land Use[2]	Zoning[3]	Land Use Inventory[4]
INSIDE CITY OF NORTH PLAINS									
From North Avenue to West Union Road–Commercial Street on Glencoe									
1N301DA00501	GONZALES JAMES NEIL		60370	0	0.22	0.22	VAC	C2	vacant
1N301DA00600	CUSTOM HOMES NORTHWEST, INC.		242200	0	1.73	1.64	VAC	R7.5	(vacant) platted, under const, curbs & storm catch basins in
1N301DA01600	SHISLER JONATHAN T & DENISE	10855 NW GLENCOE RD	103820	51710	0.24	0.23	SFR	R7.5	SFR
1N301DA01602	SAALFELD DONALD JOSEPH &	10895 NW GLENCOE RD	90650	152770	0.47	0.44	SFR	R7.5	SFR
1N301DA01800	FURROW VIRGINIA M	10785 NW GLENCOE RD	108300	116980	0.28	0.27	SFR	R7.5	SFR
1N301DA04500	VOLPP PAUL &	30550 NW OLD WEST	242860	123300	2.96	2.96	SFR	R7.5	
1N301DA04900	LONG GARY S		78410	0	0.75	0.75	VAC	C2/R7.5	vacant (for sale)
1N301DA05000	BERARD FAMILY TRUST		70000	0	0.23	0.24	VAC	C2	
1N301DA05300	REITSMA PETE & JANE LIVING TRUS	10821 NW MCKAY CREEK	97780	95790	0.15	0.15	SFR	R7.5	SFR (subdivision)
1N301DA05400	GADBAUGH BRIAN P & LEEANN M	10793 NW MCKAY CREEK	97780	99180	0.15	0.15	SFR	R7.5	SFR (subdivision)
1N301DA05500	STEWART SHERRI L	10759 NW MCKAY CREEK	97780	90890	0.15	0.15	SFR	R7.5	SFR (subdivision)
1N301DA05600	TRAYLOR DENNIS	10735 NW MCKAY CREEK	97780	104590	0.16	0.16	SFR	R7.5	SFR (subdivision)
1N301DA05700	DAVENPORT KREGG D & KERI A	10711 NW MCKAY CREEK	97780	83000	0.20	0.20	SFR	R7.5	SFR (subdivision)
1N301DA05800	ANDERSON MARK W/CYNTHIA L	10706 NW MCKAY CREEK	97780	100200	0.31	0.31	SFR	R7.5	SFR (subdivision)
1N301DA05900	JOHNSON GREG S & SHERI LEE	10730 NW MCKAY CREEK	97780	98570	0.24	0.24	SFR	R7.5	SFR (subdivision)
1N301DA06000	CAMPOS RAYMOND C & ANITA B	10754 NW MCKAY CREEK	97780	102990	0.19	0.19	SFR	R7.5	SFR (subdivision)
1N301DA06100	BELL SHERMAN I & CARLA ANN TRS	10778 NW MCKAY CREEK	97780	110130	0.25	0.25	SFR	R7.5	SFR (subdivision)
1N301DA06200	BRAL DAVID G &	10802 NW MCKAY CREEK	97780	102980	0.16	0.16	SFR	R7.5	SFR (subdivision)
1N301DA06300	VOILS DANNY J &	10826 NW MCKAY CREEK	97780	112900	0.22	0.21	SFR	R7.5	SFR (subdivision)
1N301DA06500	MCKAY CREEK ESTATES OWNERS OF		0	0	0.31	0.31	VAC	R7.5	
1N301DA06800	GLYNN TERRY F	10849 NW GLENCOE RD	75770	103100	0.22	0.21	SFR	R7.5	SFR (flag lot)
1N301DA06900	GORDON DAN C	10845 NW GLENCOE RD	75180	103220	0.21	0.20	SFR	R7.5	SFR (flag lot)
1N301DA07000	GOEHRING GENE & DANA	10825 NW GLENCOE RD	73420	99720	0.18	0.18	SFR	R7.5	SFR
From Commercial Street–West Union Road to Pacific Street on Glencoe Road									
1N301DA03200	LUTTRELL FARMS, INC.	10565 NW GLENCOE RD	141790	498170	0.00	0.77	COM	C2	Old Hitchin' Post restaurant
1N301DA03902	BIZON LEASING COMPANY		116430	0	0.99	0.98	VAC	C2	vacant
1N301DA03903	LUTTRELL FARMS, INC.		29790	9480	0.19	0.18	COM	C2	(vacant) restaurant landscaping
1N301DD00100	LAMORDDEN LLOYD E & JANE ANN	10500 NW GLENCOE RD	198860	38866	1.80	1.74	SFR	C2	SFR (old farmstead), nonconforming

Tax Lot ID	Owner	Site Address	Land Value	Building Value	Tax Assessor Acres	Map Area Acres[1]	Land Use[2]	Zoning[3]	Land Use Inventory[4]
1N301DD00101	EGGIMAN MICHAEL &	10450 NW GLENCOE RD	134250	93010	1.00	0.98	SFR	C2	SFR (building at back of lot), nonconforming
1N301DD00201	DYE INVESTMENT CO., LLC	10240 NW GLENCOE RD	98800	41980	0.36	0.34	COM	C2	Auto repair/yard, U-haul rental
1N301DD00300	WEIL JAY M	30825 NW COTTAGE ST	101670	48600	0.00	0.43	SFR	C2	SFR, nonconforming
1N301DD00301	FARMERS AND MERCHANTS BANK	10505 NW GLENCOE RD	112510	199750	0.41	0.39	COM	C2	West Coast Bank
1N301DD00600	NORTH PLAINS PROPERTIES, LLC	10355 NW GLENCOE RD	508230	1689620	2.78	2.78	COM	C2	North-lot strip commercial center, mid-lot vacant (for lease), south-lot medical clinic
From Pacific Street to Glencoe Road Interchange									
1N301DC04500	GJG, INC.	10185 NW GLENCOE RD	224580	0	1.78	1.76	VAC	C2	vacant
1N301DC06200	WESTLAND & SONS, LLC	10175 NW GLENCOE RD	181430	306150	0.49	0.49	COM	C2	Subway
1N301DC06300	CLARK RONALD L & MARCILE LINDA	10025 NW GLENCOE RD	88790	0	0.32	0.33	COM	C2	(vacant) gas station landscaping
1N301DC06400	IN.GRACE, LLC	10025 NW GLENCOE RD	380140	1075920	1.37	1.35	COM	C2	Chevron gas station and market
1N301DD00701	CASE ROBERT & JACQUELINE	30780 NW PACIFIC ST	73180	0	0.30	0.30	VAC	C2	vacant
1N301DD00702	ZHANG GUO RON & HU CHU	10190 NW GLENCOE RD	60980	123530	0.20	0.21	COM	C2	King Torta Mexican restaurant
1N301DD00703	JAMES WILLIAM	10170 NW GLENCOE RD	95630	276620	0.49	0.48	COM	C2	Glencoe Oil & Lube (building toward front of
1N301DD00900	STADELMAN WILLIAM A & KELLEY S	10150 NW GLENCOE RD	154670	164770	0.51	0.51	COM	C2	SFR (deteriorating), nonconforming
1N301DD01000	KIM CHIN BAE &	10120 NW GLENCOE RD	105520	46230	0.36	0.39	SFR	C2	SFR, nonconforming
1N301DD01100	LAMORDDEN LLOYD E & JANE ANN T	10080 NW GLENCOE RD	191510	70460	1.61	1.66	SFR	C2	vacant
1N301DD01200	GREGORY CHRISTOPHER SCOTT/KA	10030 NW GLENCOE RD	71890	26720	0.46	0.49	SFR	C2	SFR, nonconforming
1N301DD02300	NORTH PLAINS CENTER, LLC	30745 NW PACIFIC ST	1502970	54160	5.85	5.72	COM	C2	vacant (North Plains Center)
1N3120000200	MARTIN SHEET METAL, INC.	9880 NW GLENCOE RD	833090	1075650	2.50	2.16	COM	C2	76 gas station and market/shared wall with sheet metal shop
1N3120000300	MARTIN SHEET METAL, INC.	9950 NW GLENCOE RD	13070	0	0.20	0.19	VAC	C2	vacant
1N312AB00300	GALAWAY W VERN		61800	0	3.09	3.12	VAC	C2	vacant (wetland)

Tax Lot ID	Owner	Site Address	Land Value	Building Value	Tax Assessor Acres	Map Area Acres[1]	Land Use[2]	Zoning[3]	Land Use Inventory[4]
1N312AB00400	MCDONALD'S REAL ESTATE CO.	9975 NW GLENCOE RD	554510	578420	1.28	1.30	COM	C2	McDonald's fast food restaurant
Eastern half of block between Glencoe Road, 307th Avenue, Pacific Street, and Highland Court									
1N301DD01400	LAMORDDEN LLOYD E & JANE ANN T	10005 NW 307TH AVE	101140	12410	0.20	0.19	SFR	R2.5	SFR
1N301DD01500	TANKERSLEY PATRICIA E	30715 NW HIGHLAND CT	95770	45170	0.17	0.16	SFR	R2.5	SFR
1N301DD01800	MATTHEWS ROBERT P	10035 NW 307TH AVE	92190	35780	0.14	0.13	SFR	R2.5	SFR
1N301DD01900	LAMORDDEN LLOYD E & JANE ANN TR		308620	0	2.21	2.13	VAC	R2.5	vacant
1N301DD02000	MACIAS NORA O &	10085 NW 307TH AVE	93080	37460	0.15	0.15	SFR	R2.5	SFR
1N301DD02100	GRIFFITHS ROBERT D & MICHELLE L	10115 NW 307TH AVE	89500	19520	0.12	0.12	SFR	R2.5	SFR
1N301DD02200	EGGIMAN RANDY D & LORI R	30695 NW PACIFIC ST	134250	112930	0.79	0.77	SFR	C2	SFR (building toward front of lot), nonconforming
1N301DD02400	BENALLY JERRISON	10215 NW CURTIS ST	89500	85970	0.06	0.06	SFR	R2.5	SFR (subdivision)
1N301DD02500	MARTINEZ ANA MARIA	10205 NW CURTIS ST	89500	85970	0.06	0.06	SFR	R2.5	SFR (subdivision)
1N301DD02600	DUNN LEON & NICOLE		89500	85970	0.06	0.06	SFR	R2.5	SFR (subdivision)
1N301DD02700	HESTER WILLIAM J & ROBIN C	10185 SW CURTIS ST	89500	85970	0.06	0.06	SFR	R2.5	SFR (subdivision)
1N301DD02800	CADIZ MICHAEL &	10155 NW CURTIS ST	89500	85970	0.06	0.06	SFR	R2.5	SFR (subdivision)
1N301DD02900	FINEGAN KENNETH P &	10145 NW CURTIS ST	89500	85970	0.06	0.06	SFR	R2.5	SFR (subdivision)
1N301DD03000	LUCAS WILLIAM J	10150 NW CURTIS ST	89500	89490	0.06	0.06	SFR	R2.5	SFR (subdivision)
1N301DD03100	GAONA MARTIN & IRMALINDA	10135 NW 307TH AV	89500	89490	0.06	0.06	SFR	R2.5	SFR
1N301DD03200	BHUIYAN RAFIQUL I &	10165 NW 307TH AV	89500	84690	0.06	0.06	SFR	R2.5	SFR
1N301DD03300	HOFFMAN KATHERINE A	10180 NW CURTIS ST	89500	84690	0.06	0.06	SFR	R2.5	SFR (subdivision)
1N301DD03400	ARMSTRONG LISA A	30750 NW PACIFIC ST	89500	86190	0.07	0.07	SFR	R2.5	SFR
1N301DD03500	ALLEMAN DAVID & TONYA	30740 NW PACIFIC ST	89500	86190	0.06	0.06	SFR	R2.5	SFR
1N301DD03600	HECKENBERG SANDRA J	30730 NW PACIFIC ST	89500	86190	0.06	0.06	SFR	R2.5	SFR
1N301DD03700	SPRINGER STACEY M	30720 NW PACIFIC ST	89500	86190	0.06	0.06	SFR	R2.5	SFR
1N301DD03800	PACIFIC STATION OWNERS OF		0	0	0.03	0.03	VAC	R2.5	
1N3120000102	SPIERING ANTHONY E REV TRUST	30800 NW HIGHLAND CT	404280	275140	4.00	4.08	IND	M1	Valley Machine
1N3120000105	USHER INDUSTRIES, LLC	9865 NW 307TH AVE	113360	171520	0.50	0.47	IND	M1	
1N301DD01601	COLE BARTLETT F BYPASS TRUST	9960 NW 307TH AVE	972570	26730	10.81	11.00	SFR	R2.5	SFR, with orchards (filberts?)
OUTSIDE CITY OF NORTH PLAINS *North of North Avenue and along Old West Union Road*									
1N301AD06100	PORTLAND GENERAL		0	0	1.23	1.21	IND	FD10	sub-station
1N301DA00100	WALTER DONALD C TRUST	30565 NW OLD WEST	81050	44300	0.31	0.26	RUR	FD10	Village Blacksmith Shop & Walter Farm (1890)

Tax Lot ID	Owner	Site Address	Land Value	Building Value	Tax Assessor Acres	Map Area Acres[1]	Land Use[2]	Zoning[3]	Land Use Inventory[4]
1N301DA00200	WALTER DONALD C TRUST	30585 NW OLD WEST	82810	51780	0.34	0.27	RUR	FD10	Village Blacksmith Shop & Walter Farm (1890)
1N301DA00300	WALTER DONALD C TRUST		19930	500	0.17	0.09	RUR	FD10	Village Blacksmith Shop & Walter Farm (1890)
1N301DA00400	HAPPEL MARVIN L & SANDRA L	30590 NW OLD WEST	66250	82430	0.34	0.39	RUR	FD10	(developed)
Glencoe Road South of Glencoe Road Interchange									
1N3120000701	GRISHAM GLENN AND EVELYN	31515 NW BEACH RD	140000	99110	0.97	0.90	RUR	AF5	
1N3120000702	JOSSY ROBERT D		0	0	8.73	8.53	VAC	AF5	SFR
1N3120000703	JEWETT-CAMERON LUMBER CORP.		112070	106000	2.93	3.01	COM	AF5	
1N3120000900	F I C, LLC	9565 NW GLENCOE RD	127500	0	0.47	0.53	RUR	RCOM	vacant, 0.5 acre for lease
1N3120000903	JEWETT-CAMERON LUMBER CORP.	31345 NW BEACH ROAD	405450	1091620	10.41	10.57	IND	RIND	Jewett Camer Seed Company (Duyck family)
1N3120001000	ATLANTIC RICHFIELD COMPANY		12790	0	0.04	0.05	VAC	RCOM	vacant
1N3120001001	BP WEST COAST PRODUCTS, LLC	9560 NW GLENCOE RD	185130	522820	0.50	0.53	COM	RCOM	Arco gas station and market
1N3120001100	COLLINS GARY W		410160	0	4.76	4.79	VAC	AF5	
1N3120001101	COLLINS GARY W	9480 NW GLENCOE RD	132800	51800	0.00	1.94	RUR	AF5	SFR
1N3120001700	R & R COUSSENS, INC.		0	0	80.25	80.28	AGR	EFU	agriculture
1N3120001800	R & R COUSSENS, INC.		0	0	38.41	38.91	AGR	EFU	agriculture
					208.15	211.15	**Total acreage**		

[1] From calculations in GIS
[2] From RLIS Lite 2006
[3] From RLIS Lite 2006 and City of North Plains zoning map (2005)
[4] From field visit 3/24/06

Attachment 2

Residential Lands

Residential lots in the City of North Plains have the potential for redevelopment if the lot dimensions are double the minimum lot dimensions required in that zoning district. Table A2-1 presents the minimum lot sizes, widths, and depths for the three residential zones found in the city.

TABLE A2-1
Minimum Lot Dimensions in Residential Zones

Residential Zone	Type of Use	Minimum Lot Size[a]	Minimum Average Lot Width[a]	Minimum Lot Depth[a]
R2.5	Detached single family residence (SFR)	4,000 square feet (sf)	40 feet (ft)	80 ft
	Duplex, triplex, and attached SFR	2,500 sf per unit	25 ft	
	Multi family residences (MFR)	10,000 sf	40 ft	
	All other uses	4,000 sf	40 ft	
R5	Detached SFR	5,000 sf	40 ft	
	SFR in a Planned Unit Development	4,000 sf	40 ft	
	Duplex, triplex, and attached SFR	2,500 sf per unit	25 ft	
	All other uses	5,000 sf	40 ft	
R7.5	All uses	7,500 sf	60 ft	

Source: City of North Plains, 2006
[a] Minimum lot dimension requirements are subject to adjustments through exceptions or variance procedures.

Vacant residential land is found in Glencoe Road corridor (including the block between Glencoe Road, 307th Avenue, Pacific Street, and Highland Court) in the following locations:

- Vacant and redevelopable[11] residentially zoned land in two lots just east of Glencoe Road on West Union Road
- Another large residential lot (2.2 acres) that fronts both Highland Court and 307th Avenue

Table A2-2 presents the uses that are allowed in the city's three residential land use districts.

[11] This land is made of a portion of one lot that is split zoned commercial (C2) and residential (R7.5) on the north side of West Union Road and one lot zoned R2.5 on the south side of West Union Road. The lot on the south side of West Union Road is referred to as redevelopable because one home sits on 2.3 acres of land.

TABLE A2-2
Allowed and Conditional Uses in Residential Zones

Residential Zone	Allowed Uses	Conditional Uses
R7.5 Single Family Residential Chapter 16.06	1. Single family dwelling, detached, including manufactured homes subject to the provisions of Chapter 16.24 Manufactured Homes. 2. Planned Unit Development, subject to the provisions of Chapter 16.21 Planned Unit Development. 3. Accessory structures and accessory dwellings, subject to the provisions of Chapter 16.36. 4. Residential homes. 5. Home occupations with no nonresident employees or home occupation related traffic coming to the property on which the home occupation is located.	1. Church. 2. Governmental structure or use, including a public park, playground, fire station, library, or museum. 3. Hospital, sanitarium, nursing home, or convalescent home. 4. School: nursery, elementary, junior high, senior high, college, or university. 5. Day care facility, licensed by the State of Oregon. 6. Utility Substation or pumping station with no equipment storage. 7. Home occupation with employees other than residents of the property or with business related traffic coming to the property, subject to compliance with Chapter 16.23 Home Occupations and Chapter 16.51 Conditional Use Permit. 8. Public or private nonprofit social service or recreational facility.
R5 Single Family Residential Chapter 16.07	1. Single family dwelling, detached, including manufactured homes subject to the provisions of Chapter 16.24 Manufactured Homes. 2. Two family dwelling (duplex), and attached single family dwellings with a maximum of four consecutively attached units, subject to the provisions of Chapter 16.28. 3. Manufactured home park, subject to the provisions of Chapter 16.22 and Chapter 16.24 Manufactured Homes. 4. Planned Unit Development, subject to the provisions of Chapter 16.21. 5. Accessory structures and accessory dwellings, subject to the provisions of Chapter 16.36. 6. Residential homes. 7. Home occupations with no nonresident employees or home-occupation related traffic coming to the property on which the home occupation is located.	1. Church. 2. Governmental structure or use, including a public park, playground, fire station, library, or museum. 3. Hospital, sanitarium, nursing home, or convalescent home. 4. School: nursery, elementary, junior high, senior high, college, or university. 5. Day care facility, licensed by the State of Oregon. 6. Utility substation or pumping station with no equipment storage. 7. Home occupation with employees other than residents of the property or with business related traffic coming to the property, subject to compliance with Chapter 16.23 and Chapter 16.51. 8. Public or private nonprofit social service or recreational facility. 9. Triplexes, subject to the provisions of Chapter 16.28.

TABLE A2-2
Allowed and Conditional Uses in Residential Zones

Residential Zone	Allowed Uses	Conditional Uses
R2.5 Multi Family Residential Chapter 16.08	1. Single family dwelling, detached, including manufactured homes subject to the provisions of Chapter 16.24 Manufactured Homes. 2. Two family dwelling (duplex), triplexes, and attached single family dwellings with a maximum of four consecutively attached units, subject to the provisions of Chapter 16.28. 3. Multi-family dwelling to a maximum density of 24 dwelling units per gross acre, subject to the provisions of Section 16.43.040 Multi-Family Dwelling(s). 4. Manufactured home park subject to the provisions of Chapter 16.22 and Chapter 16.24. 5. Planned Unit Development, subject to the provisions of Chapter 16.21 Planned Unit Development. 6. Accessory structures and accessory dwellings, subject to the provisions of Chapter 16.36. 7. Residential Homes and Residential Facilities. 8. Home occupations with no nonresident employees or home occupation related traffic coming to the property on which the home occupation is located. 9. Condominium subject to the provisions of Section 16.43.040 Multi-Family Dwelling(s).	1. Church. 2. Governmental structure or use, including a public park, playground, fire station, library, or museum. 3. Hospital, sanitarium, nursing home, or convalescent home. 4. School: nursery, elementary, junior high, senior high, college, or university. 5. Day care facility, licensed by the State of Oregon. 6. Utility substation or pumping station with no equipment storage. 7. Home occupation with employees other than residents of the property or with business related traffic coming to the property, subject to compliance with Chapter 16.23 and Chapter 16.51. 8. Public or private nonprofit social service or recreational facility.

Commercial Lands

Commercial lots in the City of North Plains may also have the potential for redevelopment if the dimensions are double the minimum lot dimensions required in that zoning district. Minimum lot sizes and widths for the two commercial zones found in the city are included in Table A2-3.

TABLE A2-3
Minimum Lot Dimensions in Commercial Zones

Residential Zone	Minimum Lot Size[a]	Minimum Lot Width[a]
C1 General Commercial	2,500 sf	25 ft
C2 Highway Commercial	5,000 sf	50 ft (at the street line)

Source: City of North Plains, 2006

[a] Minimum lot dimension requirements are subject to adjustments through exceptions or planned unit development procedures.

There are areas of vacant land zoned commercial (C2) along Glencoe Road, not counting lots zoned commercial but developed with nonconforming single-family residences, that may eventually be redeveloped for commercial uses. These nonconforming uses are noted in the detailed table included as Attachment 1.

- Vacant commercial lots ranging from 0.25 to 1 acres are on three corners of the intersection of West Union Road–Commercial Street and Glencoe Road.
- One large, full-block lot (2.8 acres) lies between Cottage Street and Pacific Street on the west side of Glencoe Road, whose northern third is developed as a small strip commercial center and southern third as a medical center. The middle third of the lot (approximately 0.9 acres) is vacant and for lease.
- On the east side of Glencoe Road between Cottage Street and Pacific Street, vacant commercial land (5.8 acres) is planned for a future retail center, North Plains Center.
- A large vacant commercial lot (1.76 acres) is on the southwest corner of Glencoe Road and Pacific Street, directly north of the Subway sandwich shop.
- One large commercial lot (1.6 acres) is across from the Chevron station, with frontage on Glencoe Road and Highland Court.

Vacant commercial land is also found around the block between Glencoe Road, 307th Avenue, Pacific Street, and Highland Court. One vacant lot is situated on the south side of Pacific Street between a Mexican restaurant on the corner of Glencoe Road and Pacific Street and residential uses that extend to 307th Avenue. Another vacant lot is a large lot (5.8 acres) that is slated for development as the North Plains Center and has frontage both on Glencoe Road and Pacific Street.

Vacant land in the Sunset Highway corridor in North Plains was observed in the commercial zone west of the Glencoe Road Interchange. The large commercial lot (3.12 acres) nearest the highway is vacant but appears to be dedicated to the unnamed tributary of McKay Creek and its associated wetlands. A 1-acre commercial lot fronting Pacific Street adjacent to Sunset Highway is vacant. The lot is cleared and metered and has a concrete pad and driveway available for development.

Table A2-4 presents the uses that are allowed in the city's two commercial land use districts.

TABLE A2-4
Allowed and Conditional Uses in Commercial Zones

Commercial Zone	Allowed Uses	Conditional Uses
C1 General Commercial Chapter 16.09	1. Amusement enterprise, including pool hall, bowling alley, dance hall, skating rink, or theater. The amusement enterprise shall be wholly enclosed within a building. 2. Bakery, for retail sale on the premises only. 3. Bank or other financial institution. 4. Barber or beauty shop. 5. Bicycle sales, service, or repair. 6. Blueprinting, photostating, printing, lithography, or other reproduction process.	1. Church. 2. Day care facility, licensed by State of Oregon. 3. Hospital, sanitarium, rest home, nursing home, or convalescent home.

TABLE A2-4
Allowed and Conditional Uses in Commercial Zones

Commercial Zone	Allowed Uses	Conditional Uses
	7. Business machine sales, service or repair. 8. Catering establishment. 9. Club or lodge hall. 10. Floor covering sales and service 11. Hotel, boarding house, or lodging house. 12. Laundry or cleaning establishment. 13. Locksmith or gunsmith. 14. Magazine or newspaper distribution agency. 15. Medical or dental office or clinic. 16. Mortuary. 17. Office, business or professional. 18. Parking lot or garage. 19. Pawn shop. 20. Planned Unit Development subject to provisions of **Chapter 16.21.** 21. Post office, city hall, fire station, or other similar institution. 22. Residential Uses as follows: Multi-family dwellings or condominiums when developed as part of a mixed use development and live/work townhouses. Residential development developed pursuant to this section shall occupy no more than 25 percent of the front building elevation on the ground floor. 23. Restaurant, without drive-in service. 24. Retail store or shop, except those first listed in the C2 zone. 25. Scientific or professional instrument sales or repair. 26. Small household, recreational, radio, television, or business equipment rental or repair. 27. Studio, including music, art, dancing, photography, or health. 28. Watch or clock repair. 29. Residential uses including multi-family, condominiums, or attached single family dwellings with a maximum of two consecutively attached units, subject to Chapter 16.28 Supplemental Standards for Special Uses when developed in conjunction with a commercial development as part of a mixed use development. Residential development developed pursuant to this Section shall occupy no more than 25 percent of the total street frontage on the ground floor.	4. Public or private nonprofit social service or recreational facility. 5. School: nursery, primary, elementary, junior or senior high, college, or university. 6. Utility substation or pumping station with no equipment storage.
C2 Highway Commercial Chapter 16.10	1. A use permitted in the C-1 District, See **Chapter 16.09.020.** Except that residential uses such as multi-family dwellings or condominiums or mixed use development and live/work townhouses shall not be permitted. 2. Automobile, light truck, or motorcycle sales, service, repair, rental, and storage. 3. Automobile laundry	1. Cabinet, carpentry, or woodworking shop. 2. Utility substation or pumping station.

TABLE A2-4
Allowed and Conditional Uses in Commercial Zones

Commercial Zone	Allowed Uses	Conditional Uses
	4. Bus depot.	
	5. Business college.	
	6. Collection centers for recyclables, not including solid waste transfer stations and materials recovery processing plants.	
	7. Drive-in restaurant.	
	8. Franchise disposal service vehicle storage and repair.	
	9. Lumber yard, retail sales.	
	10. Marine craft sales, service, repair, or supplies.	
	11. Mortuary	
	12. Motel.	
	13. Nursery or greenhouse.	
	14. Service station.	
	15. Taxidermy shop	
	16. Tire shop.	
	17. Veterinarian's office or animal hospital.	

Industrial Lands

Industrial land in the City of North Plains with potential for land division and development must meet the minimum lot dimensions required in that zoning district. Table A2-5 provides the minimum lot sizes and widths for the two industrial zones found in the city.

TABLE A2-5
Minimum Lot Dimensions in Industrial Zones

Residential Zone	Minimum Lot Size[a]	Minimum Lot Width[a]
M1 Light Industrial	5,000 sf	50 ft (at the front building line)
M2 General Industrial	5,000 sf	50 ft (at the front building line)

Source: City of North Plains, 2006
[a] Minimum lot dimension requirements are subject to adjustments through exceptions or planned unit development procedures.

Metro's RLIS reports that the land owned and operated by North Plains Forest Products, Inc., in this corridor as vacant, but at least partial development was observed from Gordon Road. Otherwise it was hard to surmise how much of this industrial land is currently vacant because access to the land from Gordon Road to Cottage Street is presently unimproved and blocked off.

Table A2-6 presents the uses that are allowed in the city's two industrial land use districts.

TABLE A2-6
Allowed and Conditional Uses in Industrial Zones

Industrial Zone	Allowed Uses	Conditional Uses
M1 Light Industrial Chapter 16.11	1. Electronic manufacture, assembly, and sales. 2. Freight depot and trucking establishment. 3. Frozen food lockers. 4. Governmental uses such as a post office. 5. Machine shop. 6. Machinery, farm equipment, logging equipment, or implement sales. 7. Planned unit development subject to the provisions of **Chapter 16.21.** 8. Private and public utilities (electricity, gas, water, telephone service and maintenance facilities). 9. Sheet metal shop. 10. Truck assembly, service, rental, repair, and storage. 11. Warehousing and storage establishment. 12. Welding shop. 13. Laboratories and research facilities. 14. Office for executive, administrative, and professional uses related to the sale or service of industrial products. 15. Manufacturing, storage, and processing except canneries, sawmills, grain elevators, and meat packing plants.	1. Bulk oil sales, wholesale or retail. 2. Cabinet shop. 3. Clothing manufacture. 4. Feed and seed store.
M2 General Industrial Chapter 16.12	1. Collection centers for recyclables, not including solid waste transfer stations and materials. 2. Electronic manufacture, assembly, and sales. 3. Franchise disposal service vehicle storage and repair 4. Freight depot and trucking establishment. 5. Frozen food lockers. 6. Governmental uses such as a post office. 7. Machine shop. 8. Machinery, farm equipment, logging equipment, or implement sales. 9. Manufacturing, processing or storage uses. 10. Planned unit development subject to the provisions of **Chapter 16.24.** 11. Private and public utilities (electricity, gas, water, telephone service and maintenance facilities). 12. Sheet metal shop. 13. Truck assembly, service, rental, repair, and storage. 14. Warehousing and storage establishment. 15. Welding shop.	1. Auction yard, excluding livestock. 2. Bulk oil sales, wholesale or retail. 3. Cabinet shop. 4. Cannery. 5. Clothing manufacture. 6. Concrete and asphalt crushing 7. Dirt sifting for topsoils 8. Feed and seed store. 9. Grain elevator. 10. Meat packing establishment. 11. Saw mill.

Resource Lands

Land designated for rural use, resource use, or conservation is found outside the city limits of North Plains but in close proximity. Development of this land must meet the following minimum lot size requirements (Table A2-7).

TABLE A2-7
Minimum Lot Sizes on Resource Lands

Resource Land Designation	Minimum Lot Size
EFU Exclusive Farm Use	80 acres[a] (Type II Land Divisions)
AF20 Agriculture and Forest	80 acres (Type II Land Divisions)
AF5 Agriculture and Forest	5 acres[b]
RR5 Rural Residential	5 acres[b]
RCOM Rural Commercial	20,000 sf (if community water source available) 2 acres (if community water source unavailable)
RIND Rural Industrial	5 acres

Source: Washington County, 2006a

[a] Per Oregon Revised Statute 215.780 and Washington County Development Code Section 340-7.

[b] Except for lots of record and new lots or parcels created through the land division process of Article VI, which may be varied by 20 percent provided there is no increase in lot density.

It was difficult to determine during a field visit whether rural or agriculturally designated land was vacant. One rural commercial site along Glencoe Road south of the interchange is vacant, and the site is posted with an advertisement for a half-acre for lease.

Within city limits, a large commercial lot (3.12 acres) adjacent to the highway and interchange is vacant but is the site of a stream and associated wetlands. It appears that the site has undergone some revegetation and restoration.

Attachment 3

Washington County Policies

Comprehensive Plan

Overview

The Washington County Comprehensive Plan is a collection of community plans, a transportation plan, and a rural/natural resource plan. The plans and ordinances describe the future development of rural and urban areas in the county.

Washington County applies land use designations (zoning) throughout its jurisdiction to locate land uses where they are most appropriate for rural areas such as the US 26 / Glencoe Rd. IAMP study area, exclusive farm use land is the dominant designation to preserve the character of the land. In addition, there are small swatches of agricultural forest and rural residential, industrial and commercial near the city limits of North Plains. The county's land use designations are enforced through the application of its Community Development Code.

Applicable Provisions

The Rural/Natural Resource Plan, Community Development Code, and Transportation Plan are the provisions of the Comprehensive Plan that are applicable to the US 26 / Glencoe Rd. IAMP. The plans and ordinances are described separately below.

Rural/Natural Resource Plan

The Rural/Natural Resource Plan is a set of policies that protect natural resource land, provide rural residential land for housing, and provide rural commercial lands to support rural agricultural and forest activities. The plan designates land in the project area as 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 A3-1). These designations are defined in the Washington County Community Development Code.

The Rural/Natural Resource Plan has several policy statements for the plan designations in the study area. The policies describe the county's mission of protecting forest and agricultural lands, while recognizing the future needs for small-scale agricultural production and rural commercial development. In addition, the policies support the transition from rural land to urban development within the established Urban Growth Boundary as the region continues to develop. The policies are as follows:

> POLICY 15, EXCLUSIVE FARM LANDS: It is the policy of Washington County to conserve and maintain agricultural lands for farm use, consistent with existing and future needs for agricultural products, forest management and open space. Exceptions to this policy may be allowed pursuant to the provisions of LCDC Goal 2, OAR Chapter 660 Division 04, and the applicable plan amendment criteria in Policy 1. (*Exclusive Farm Lands include the EFU zone.*)
>
> POLICY 17, AGRICULTURE AND FOREST-20 LAND: It is the policy of Washington County to designate those lands as Agriculture and Forest-20 that were zoned AF-5 and AF-10 by the

1973 Comprehensive Framework Plan and for which a Goal 2 Exception has not been provided, and in doing so strive to retain small scale and part-time agriculture and forest production. Exceptions to this policy may be allowed pursuant to the provisions of LCDC Goal 2, OAR Chapter 660 Division 04, and the applicable plan amendment criteria in Policy 1. (*Agriculture and Forest-20 Land includes the AF-20 zone.)*

POLICY 18, RURAL LANDS: It is the policy of Washington County to recognize existing development and provide lands which allow rural development in areas which are developed and/or committed to development of a rural character. (*Rural lands include the AF-5, R-IND and R-COM zones.*)

POLICY 19, RURAL RESIDENTIAL DEVELOPMENT: It is the policy of Washington County to allow rural housing in rural areas. (*Rural residential development includes the AF-5 and RR-5 zones.*)

POLICY 27, URBANIZATION: It is the policy of Washington County to provide for Urban uses within established Urban Growth Boundaries.

POLICY 41, URBAN GROWTH BOUNDARY EXPANSIONS: It is the policy of Washington County to ensure an efficient and effective transition of rural land to urban development when an Urban Growth Boundary (UGB) is expanded. (*Urban Growth Boundary Expansions include the FD-10 zone.*)

The plan has a transportation element. The transportation element of the plan is an enabling policy for the development and implementation of the TSP policies.

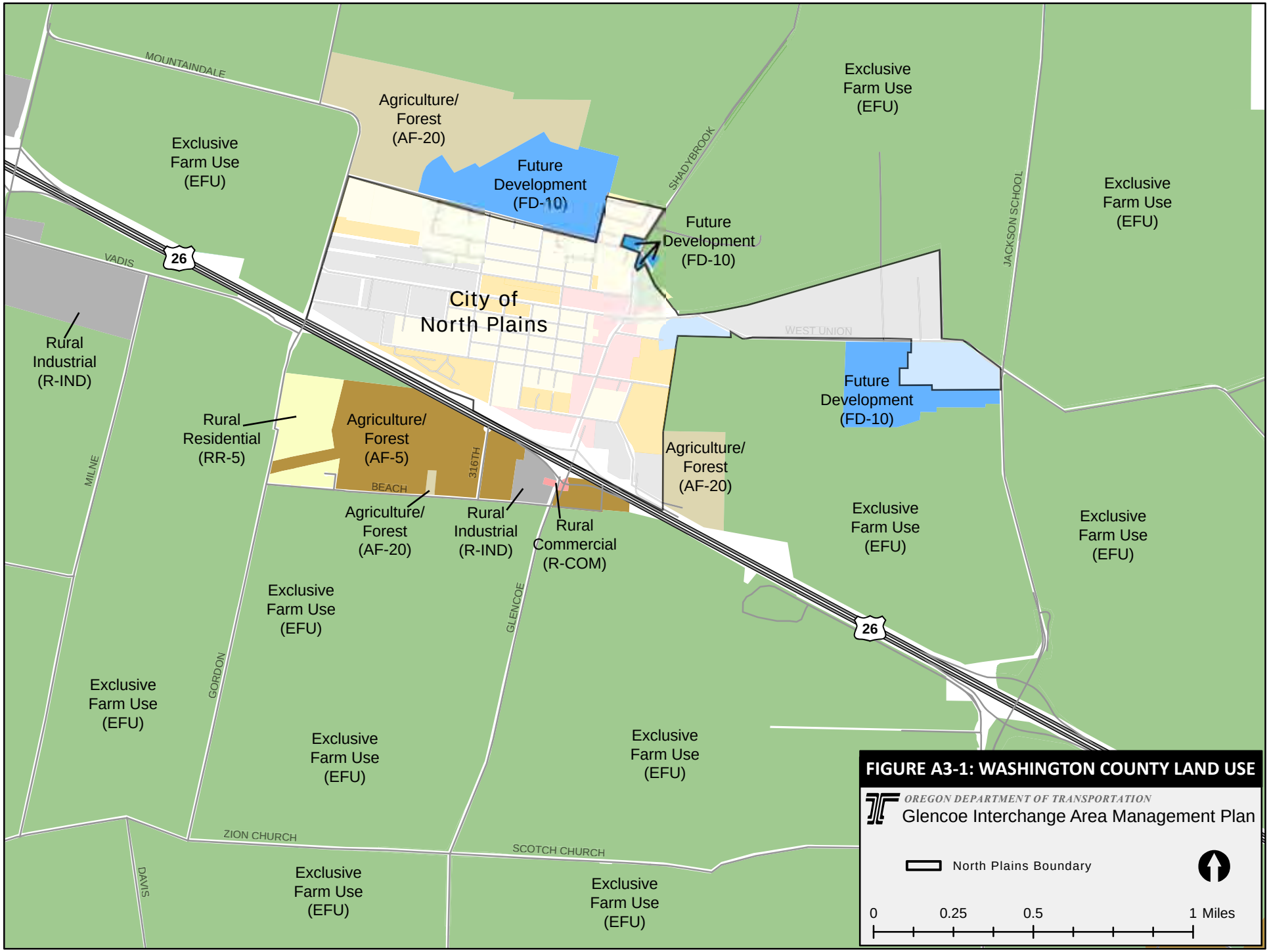

FIGURE A3-1: WASHINGTON COUNTY LAND USE

Transportation System Plan

Overview

The Washington County 2020 Transportation Plan establishes transportation policies, capital improvement projects, and transportation-related programs necessary to support growth. Attention is focused on urban commuting transportation issues as well as traffic, maintenance, and safety issues. The Transportation Plan links land use to transportation and reflects a commitment to efficient use of land and to a safe, cost-effective transportation system that serves all forms of travel. The Plan represents a balance between the need to maintain existing infrastructure and the need to keep pace with expected growth in the county. The Transportation Plan contains the accumulation of recommended system and service improvements and programs that will be needed to serve long-term growth to 2020.

Applicable Provisions

The Washington County TSP includes five general policies and multiple, mode-specific policies to address county transportation needs. The plan outlines the classification of roadways in the county and identifies funding and implementation policies to define a plan for system improvements.

The TSP does not identify specific improvements for the US26 / Glencoe Rd. area; however, several general principles of the policies are applicable. The Sunset highway is a Principal Arterial under the Washington County Functional Classification System and is also identified as an existing through truck route. Additionally, Glencoe Rd. is indicated as a bicycle route in the TSP with the segment north of US26 classified as an urban bikeway and the segment south of US26 classified as a rural bikeway. Hence, both facilities serve important roles in rural Washington County, and planning for improvements must accommodate balanced service for the various users.

Freight Element. It is recognized that the transportation of freight is served primarily by truck traffic and that a network of through routes must be supported to accommodate truck traffic. The TSP emphasizes safety and cost-effectiveness of freight transportation. Specific strategies include coordinated planning, development, and maintenance with the private sector and other public agencies, and identification and correction of roadway design deficiencies that affect the safe and efficient movement of freight on the through-truck route system.

Bicycles. The TSP emphasizes bicycling as a mode choice and sets forth strategies to enhance its safety and convenience. The plan focuses primarily on the urban area; however, it provides for strategic location of bicycle facilities in rural areas. In general, the locations are limited to most arterials and some collectors. In the US 26 / Glencoe Rd. area, roadway shoulders should be designed to serve bicyclists and improvements should be compatible with existing and planned off-street trails. The TSP identifies Glencoe Rd. as an urban bikeway north of US26 and as a rural bikeway south of US26.

The Washington County TSP emphasizes transportation planning that includes coordination with other agencies and public involvement to achieve balanced goals, and periodic plan reviews to ensure that the TSP is updated to reflect changes in the transportation system and priorities.

Community Development Code

Overview

The Washington County Community Development Code is a compilation of standards that regulate specific aspects of development and the development process. The code regulates land development activities in the unincorporated areas of Washington County.

Applicable Provisions

Article III: Land Use Districts

As described above, Washington County's Rural/Natural Resource Plan and Community Development Code designate the areas in the US 26 / Glencoe Rd. IAMP study area as AF-5, AF-20, EFU, RR-5, R-IND, R-COM, and FD-10 (Figure 1). The county's descriptions of the intent and purpose of these zones are provided below, followed by the Code's administrative review procedures for public facility and transportation projects. The allowed uses in each zone are listed in Appendix 1.

> Agriculture and Forest: The AF-5 District is intended to retain an area's rural character and conserve the natural resources while providing for rural residential use in areas so designated by the Comprehensive Plan. The intent of the Exclusive Agriculture and Forest AF-20 District is to provide an exclusive farm use zone within the County which recognizes that certain lands therein may be marginal. In addition, the purpose of the AF-20 District is to allow EFU uses and parcels, and through the provisions of Section 425, to provide a process and criteria for identifying marginal lands within the District. In addition, Section 3448 provides for special uses for lands so identified. This AF-20 District is provided to meet Oregon statutory and administrative rule requirements.
>
> The purpose of the agricultural and forestry districts are to promote agricultural and forest uses on small parcels in the rural area, while recognizing the need to retain the character and economic viability of agricultural and forest lands, as well as recognizing that existing parcelization and diverse ownerships and uses exist within the farm and forest area. Residents of rural residential tracts shall recognize that they will be subject to normal and accepted farming and forestry practices.
>
> 344 AGRICULTURE AND FOREST DISTRICT (AF-20)
>
> 344 – 4.3 Required Findings:
>
> The proposed use will not:
>
> A. Force a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use; nor
>
> B. Significantly increase the cost of accepted farm or forest practices on surrounding lands devoted to farm or forest use. An applicant may demonstrate that these standards for approval

will be satisfied through the imposition of conditions. Any conditions so imposed shall be clear and objective.

344 – 5.3 Required Findings:

A. The proposed use is compatible with farm uses described in Oregon Revised Statutes, Chapter 215;

B. The proposed use does not interfere seriously with "accepted farming practices" as defined in ORS 215.203(2)(c) on adjacent lands devoted to farm use;

C. The proposed use does not materially alter the stability of the overall land use pattern of the area; and

D. The proposed use will not:
(1) Force a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use; or
(2) Significantly increase the cost of accepted farm or forest practices on surrounding lands devoted to farm or forest use.

An applicant may demonstrate that these standards for approval will be satisfied through the imposition of conditions. Any conditions so imposed shall be clear and objective.

348 AGRICULTURE AND FOREST DISTRICT (AF-5)

348 - 4.2 Required Findings:

A. The requested use is compatible with the surrounding uses or may be made more compatible through conditions of approval.

B. The proposed use does not interfere seriously with "accepted farming practices" as defined in ORS 215.203(2)(c) or forestry uses on adjacent lands devoted to farm or forest use.

C. The applicant has signed and recorded in the Deed and Mortgage Records of the County a waiver of the right to remonstrate against customarily accepted farming practices.

Exclusive Farm Use: The intent of the Exclusive Farm Use District is to preserve and maintain commercial agricultural land within the County. The purpose of the Exclusive Farm Use District is to preserve and maintain agricultural lands for farm use consistent with existing and future needs for agricultural products, forests and open spaces; to conserve and protect scenic resources; to maintain and improve the quality of the air, water and land resources of the County and to establish criteria and standards for farm use and related supportive uses which are deemed appropriate. This EFU District is provided to meet the Oregon statutory and administrative rule requirements.

340 EXCLUSIVE FARM USE DISTRICT (EFU)

340 – 4.3 Required Findings

The proposed use will not:

A. Force a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use; nor

B. Significantly increase the cost of accepted farm or forest practices on surrounding lands devoted to farm or forest use.

An applicant may demonstrate that these standards for approval will be satisfied through the imposition of conditions. Any conditions so imposed shall be clear and objective.

340 – 5.3 Required Findings

A. The proposed use is compatible with farm uses described in Oregon Revised Statutes, Chapter 215;

B. The proposed use does not interfere seriously with "accepted farming practices" as defined in ORS 215.203(2)(c) on adjacent lands devoted to farm use;

C. The proposed use does not materially alter the stability of the overall land use pattern of the area; and

D. The proposed use will not:

(1) Force a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use; or

(2) Significantly increase the cost of accepted farm or forest practices on surrounding lands devoted to farm or forest use.

An applicant may demonstrate that these standards for approval will be satisfied through the imposition of conditions. Any conditions so imposed shall be clear and objective.

Rural Residential: The intent of the Rural Residential District is to recognize rural areas which qualify for an exception to LCDC Goals 3 and 4 and which have been committed or developed for suburban residential use with minimum farm and forest uses and to provide for rural residential uses.

350 RURAL RESIDENTIAL FIVE ACRE MINIMUM DISTRICT (RR-5)

350 – 4.2 Required Findings:

A. The requested use is compatible with the surrounding uses or may be made more compatible through conditions of approval;

B. The proposed use does not interfere seriously with accepted farming practices as defined in ORS 215.203(2)(c) or forestry uses on adjacent lands devoted to farm or forest use; and

C. The applicant has signed and recorded in the Deed Records of the County a waiver of the right to remonstrate against customarily accepted farm or forestry practices as a condition of approval.

Rural Industrial: The Rural Industrial District is intended to provide areas for industrial uses outside the Urban Growth Boundary where an exception to Goals 3 or 4 has been taken and where a full range of urban services will not be required. The purpose of the district is to provide for the processing and manufacture of timber and forest related products, farm crops and produce, minerals and aggregates near the resources, and for the repair of mechanical equipment related to farm and forest uses.

354 RURAL INDUSTRIAL DISTRICT (R-IND)

354 – 3.2 Required Findings:

A. That the proposed use will support the needs of the rural residents and agricultural and forest uses;

B. That the proposed use meets the criteria of being small in size, rural in character and that it does not require urban services; and

C. That the proposed use is limited to basic convenience and service needs of the rural and natural resource community and will not cause adverse impacts on surrounding farm and forest activities.

354 – 4.2 Required Findings:

A. That the proposed use will support the needs of the rural residents and agricultural and forest uses;

B. That the proposed use meets the criteria of being small in size, rural in character and that it does not require urban services;

C. That the proposed use is limited to basic convenience and service needs of the rural and natural resource community and will not cause adverse impacts on surrounding farm and forest activities; and

D. That the applicant has signed and recorded in the Deed Records of the County, a waiver of the right to remonstrate against customarily accepted farm or forestry practices.

Rural Commercial: The intent and purpose of the Rural Co mmercial District is t o implement the rural commercial policies of the Compr ehensive Plan and to meet convenience goods and service needs of rural residents while pr otecting the historic character of rural centers and the

agricultural or forestry character of the area. Rural Commercial centers shall be designed to be compatible with the surrounding environment and generally not to exceed five (5) acres.

352 RURAL COMMERCIAL DISTRICT (R-COM)

352 - 3.2 Required Findings:

A. That the proposed use will support the needs of the rural residents and agricultural and forest uses;

B. That the proposed use meets the criteria of being small in size, rural in character and that it does not require urban services; and

C. That the proposed use is limited to basic convenience and service needs of the rural and natural resource community and will not cause adverse impacts on surrounding farm and forest activities.

352 - 4.2 Required Findings:

A. That the proposed use will support the needs of the rural residents and agricultural and forest uses;

B. That the proposed use meets the criteria of being small in size, rural in character and that it does not require urban services;

C. That the proposed use is limited to basic convenience and service needs of the rural and natural resource community without adverse impact on surrounding farm and forest activities; and

D. That the applicant has signed and recorded in the Deed Records of the County, a waiver of the right to remonstrate against customarily accepted farm or forestry practices.

Future Development: The FD10 District applies to the unincorporated portions of some city active planning areas where these cities are the only available source of urban services. The FD10 District is in limited agricultural, forest, or residential use. The FD10 District recognizes the desirability of encouraging and retaining limited interim uses until a need for more intensive urban land use activities develops and such lands are annexed to a city.

309 FUTURE DEVELOPMENT 10 ACRE DISTRICT (FD-10)

Does not have required findings

Attachment 4

Zone	Permitted through a Type I Procedure	Permitted through a Type II Procedure	Permitted through a Type III Procedure
Agriculture and Forest District - 5 acres minimum (AF-5)	• Accessory Uses and Structures – Section 430-1 • Conservation Areas and Structures (public and private) for the conservation of water, soil, open space, forest, or wildlife resources (exempt from waiver) • Detached dwelling unit (one), on a lot of record or legally created lot • Home occupation – Section 430-63.1 • Property line adjustment – Section 610-1.1 • Parks – Section 430-95 • Temporary Use – Sections 430-135.1.C. (6) and (7); 430-135.1 H. • Alternation, restoration, or replacement of a lawfully established dwelling on a lot or parcel upon which two (2) or more lawful dwellings exist. In the case of replacement, the existing dwelling shall be removed, demolished, or converted to an accessory structure, pursuant to Section 430-8.1. For required standards see Section 430-8.1. • Boarding or training of horses for profit, not to exceed a total of fourteen (14) horse stalls (includes stalls for the owner's horses) – Section 430-21 • Co-located antennas, excluding those antennas exempt pursuant to Sections 430-109.1 and 201-2 – Section 430-109.3 • Facility 2 communication towers to a maximum height of one-hundred (100) feet, excluding those towers exempt pursuant to Sections 430-109.1 and 201-2 – Section 430-109.4	• Family day care provider – Section 430-53.6 • Home occupation – Section 430-63.2 • Parks – Section 430-97 • Public Utility - (except commercial facilities for the purpose of generating power for public use by sale) - Section 430-105.3 through 430-105.7 • Co-located antennas, not otherwise allowed through a Type I Procedure – Section 430-109 • Stockpiling of aggregate, sand and gravel for road maintenance purposes - Section 430-132 • Temporary Use - Section 430-135.2 A. and B • Day Care Facility - Section 430-53.2 I • Alteration, restoration or replacement of a lawfully established dwelling on a lot or parcel upon which two (2) or more lawful dwellings exist that is not permitted through a Type I procedure. For required standards see Section 430-8.2. • Boarding or training of horses for profit with fifteen (15) or more horse stalls (includes stalls for the owner's horses) - Section 430-21	• Airport, including associated hangar, maintenance and service facilities - Section 430-7 • Campground - Section 430-25 • Cemetery - Section 430-27 • Church - Section 430-29 • Contractor's Establishment – Section 430-34 • Day Care Facility - Section 430-53.2 • Golf Course - Section 430-50 • Heliport - Section 430-59 • Housing for Seasonal Farm and Forest Labor - Section 430-67 • Hunting and Fishing Preserve (including a trout farm) Section 430-69 • Kennel - Section 430-73 • Operation for Exploration of Geothermal Resources as defined in ORS 522.005 • Private Club - Section 430-99 • Public Building, limited to Governmental Structures, community buildings and museums, which serve the local area - Section 430-103 • Schools - Section 430-121 • Shooting Clubs - Section 430-125 • Utility Facility (Commercial) for the generation of power for sale for public use and transmission towers over two-hundred (200) feet in height - Section 430-141 • Veterinary or Animal Hospital • Winery - May include accessory tasting room and incidental sales - Section 430-

Zone	Permitted through a Type I Procedure	Permitted through a Type II Procedure	Permitted through a Type III Procedure
			145.2 • Emergency Response/Safety Training Center - Section 430-44 • Facility 3 and 4 communication towers, to a maximum height of one-hundred (100) feet - Section 430-109 • Home Occupation - Section 430-63.3 • Broadcast Towers a maximum height of one hundred (100) feet - Section 430-109
Agriculture and Forest District - 20 acres minimum (AF-20)	• Accessory Uses and Structures - Section 430-1 • Alteration, restoration or replacement of a lawfully established dwelling. In the case of replacement, the existing dwelling shall be removed, demolished, or converted to an accessory structure, pursuant to Section 430-8.1. A waiver of the right to remonstrate against commonly accepted farm or forest practices shall be recorded for this use. For required standards see Sections 430-8.1 and 8.3. • Property Line Adjustment - Section 610-1.1 • Co-located antennas, excluding those antennas regulated by Section 430-109.11 or otherwise exempt pursuant to Sections 430-109.1 and 201-2 – Section 430-109.3	*Permitted Uses which are exempt from Section 344-4.3:* • Accessory dwellings customarily provided in conjunction with farm use – Section 430-37.2 D. A waiver of the right to remonstrate against commonly accepted farm or forest practices shall be recorded for this use. • Alteration, restoration or replacement of a lawfully established dwelling not permitted through a Type I procedure. A waiver of the right to remonstrate against commonly accepted farm or forest practices shall be recorded for this use. For required standards see Section 430-8.2 and 8.3. • Dwelling Unit(s) occupied by a relative of the farm operator or farm operator's spouse who assists or will assist with the management of the farming. A waiver of the right to remonstrate against commonly accepted farm or forest practices shall be recorded for this use. For required standards see Section 430-37.2 C. • Facility for the processing of farm crops located on a farm operation that provides at least one-quarter (¼) of the crops	*Uses which may be allowed, but are not subject to Section 344-5.3:* • Armed forces reserve center, including an armory or National Guard support facility, if the center is within one-half mile of a community college. • Churches and Cemeteries in Conjunction with Churches - Section 430-29. This use is exempt from Section 344-5.3. This use is not permitted on high-value farmland, and shall not be approved on land within three (3) miles of an urban growth boundary unless an exception is approved pursuant to ORS 197.732 and OAR 660, Division 4. • Kennels for breeding, kenneling and training of greyhounds for racing - Section 430-73. This use is not permitted on high-value farmland. • Nonfarm Detached Dwelling Unit. For required standards see Section 430-85. • Operations for the exploration of minerals as defined by ORS 517.750. *Uses which may be allowed subject to Section 344-5.3:*

Zone	Permitted through a Type I Procedure	Permitted through a Type II Procedure	Permitted through a Type III Procedure
		processed at the facility. The building established for the processing facility shall not exceed ten-thousand (10,000) square feet of floor area exclusive of the floor area designated for preparation, storage or other farm use or devote more than ten-thousand (10,000) square feet to processing activities within another building supporting farm uses. A processing facility shall comply with all applicable siting standards but the standards shall not be applied in a manner that prohibits the siting of the processing facility. Any division or property line adjustment proposes to separate a processing facility from the farm operation on which it is located is prohibited. • Life Estate in an Existing Dwelling as provided in ORS, Ch. 215.213(8), to allow a second farm dwelling subject to standards. • Minor betterment of existing public roads and highway related facilities, such as maintenance yards, weigh stations and rest areas, within right-of-way existing as of July 1, 1987, and contiguous public-owned property utilized to support the operation and maintenance of public roads and highways. • One Detached Dwelling Unit not provided in conjunction with farm use on a site up to three (3) acres. This use is not permitted on high-value farmland. A waiver of the right to remonstrate against commonly accepted farm or forest practices shall be recorded for this use. For required standards see Section 430-85.3 (Nonfarm Dwelling).	• Airport (personal use only) including associated hangar, maintenance and service facilities - Section 430-7. • Campground - Section 430-25. This use is not permitted on high-value farmland, and shall not be approved on land within three (3) miles of an urban growth boundary unless an exception is approved pursuant to ORS 197.732 and OAR 660, Division 4. • Composting facilities for which a permit has been granted by the Department of Environmental Quality under ORS 429.245 and OAR 340-96-020. This use is not permitted on high-value farmland. Composting facilities shall be limited to the composting operations and facilities defined by the Environmental Quality Commission under OAR 340-096-0024 (1), (2) or (3). Buildings and facilities used in conjunction with the composting operation shall only be those required for the operation of the subject facility. Onsite sales shall be limited to bulk loads of at least one (1) unit (7.5 cubic yards) in size that are transported in one (1) vehicle. • Firearms training facility as provided in ORS 197.770. • Golf Course - Section 430-50. This use is not permitted on high-value farmland. • Hunting and Fishing Preserves - Section 430-69. This use is not permitted on high-value farmland. • Living History Museum - Section 430-74. • Kennels, except the breeding, kenneling

Zone	Permitted through a Type I Procedure	Permitted through a Type II Procedure	Permitted through a Type III Procedure
		• Operations for the exploration of geothermal resources as defined by ORS 522.005 and for the exploration of oil and gas as defined by ORS 520.005 within a flood plain or drainage hazard area or an area identified in the Rural Natural Resource Plan as a significant natural resource. • Operations for the production of geothermal resources as defined by ORS 522.005 and oil and gas as defined by ORS 520.005, including the placement and operation of compressors, separators and other customary production equipment for an individual well adjacent to the wellhead. • Property Line Adjustment - See Section 610-1.1 for required standards. • Broadcast and Communication towers less than two-hundred (200) feet in height that are utility facilities necessary for public service - Section 430-109.11. • Co-located antennas, not otherwise allowed through a Type I Procedure - Section 430-109.11. • A replacement dwelling to be used in conjunction with farm use if the existing dwelling is listed on the National Register of Historic Places. For the purpose of this Section, replacement means to provide one additional dwelling. A waiver of the right to remonstrate against commonly accepted farm or forest practices shall be recorded for this use. • Site for the takeoff and landing of model aircraft, including such buildings or facilities	and training of greyhounds for racing - Section 430-73. This use is not permitted on high-value farmland. • Operations conducted for: (1) Mining and processing of geothermal resources as defined by ORS 522.005 and oil and gas as defined by ORS 520.005, not otherwise permitted under Section 344-4.1 H; (2) Mining, crushing or stockpiling of aggregate and other mineral and subsurface resources subject to standards. (3) Processing, as defined by ORS 517.750, of aggregate into asphalt or Portland cement, except processing of aggregate into asphalt cement when located within two (2) miles of a planted vineyard. “Planted vineyard” means one or more vineyards totaling forty (40) acres or more that are planted as of the date the application for batching and blending (processing) is filed. Asphalt batch plants approved on or before October 3, 1989, or a subsequent renewal of an existing approval, are exempted from this limitation and may be located within two (2) miles of a vineyard; and (4) Processing of other mineral resources and other subsurface resources. • Public Building - limited to community centers owned and operated by a governmental agency or nonprofit community organization - Section 430-103. • Solid Waste Disposal Site - Section 430-127.2. This use is not permitted on high-value farmland. • Utility facility (commercial) for the generation

Zone	Permitted through a Type I Procedure	Permitted through a Type II Procedure	Permitted through a Type III Procedure
		as may reasonably be necessary. Buildings or facilities shall not be more than five-hundred (500) square feet in floor area or placed on a permanent foundation unless the building or facility preexisted the use approved under this requirement. The site shall not include an aggregate surface or hard surface area unless the surface pre-existed the use approved under this requirement. For the purpose of this requirement, "model aircraft" means a small-scale version of an airplane, glide, helicopter, dirigible or balloon that is used or intended to be used for flight and is controlled by radio, lines or design by a person on the ground. • Schools - Elementary and Nursery only, including all buildings essential for school operation. For required standards see Section 430-121. This use is not permitted on high-value farmland, and shall not be approved on land within three (3) miles of an urban growth boundary unless an exception is approved pursuant to ORS 197.732 and OAR 660, Division 4. • Land application of reclaimed water, agricultural or industrial process water or biosolids – See ORS 215.246, 215.247, 215.249 and 215.251 for requirements. • Temporary Use - Section 430-135.1 H. A facility is necessary if it must be situated in an agricultural zone in order for the service to be provided. • Utility facilities necessary for public service, including wetland waste treatment systems.	of power for sale for public use - Section 430-141. • Broadcast and Communication towers greater than two-hundred (200) feet in height - Section 430-109. • Transmission towers over two-hundred (200) feet in height.

Zone	Permitted through a Type I Procedure	Permitted through a Type II Procedure	Permitted through a Type III Procedure
		Utility facilities necessary for public service do not include: 1) commercial facilities for the purpose of generating power for public use by sale, 2) transmissions towers over two-hundred (200) feet in height, 3) receiving and transmitting antennas, broadcast and communication towers listed under J. and K. above and under Section 344-5.2 M. below, 4) utility facilities exempt pursuant to Section 201-2, and 5) utility facilities listed under S. below. A facility is necessary if it must be situated in an agricultural district in order for the service to be provided. For required standards, see Sections 430-105.3 through 430-105.7. Application findings must demonstrate compliance with ORS 215.275 (Utility facilities necessary for public service). • Utility facilities (except water and sewer facilities) - The placement of utility facilities overhead and in the subsurface of public roads and highways along the public right-of-way when in a flood plain or drainage hazard area. • Winery - Section 430-145.1. U. Fire service facilities providing rural fire protection services. *Permitted Uses which are subject to Section 344-4.3:* • Commercial Activities in Conjunction with Farm Use not including the processing of farm crops as described in Section 344-4.1 C. - Section 430-33. • Primary Dwelling Unit in conjunction with	

Zone	Permitted through a Type I Procedure	Permitted through a Type II Procedure	Permitted through a Type III Procedure
		farm use - Section 430-37.2 A. A waiver of the right to remonstrate against commonly accepted farm or forest practices shall be recorded for this use. • Primary Dwelling Unit in conjunction with the propagation or harvesting of a forest product - Section 430-37.2 B. This use is not permitted on high-value farmland. A waiver of the right to remonstrate against commonly accepted farm or forest practices shall be recorded for this use. • Dwelling Unit in conjunction with a wildlife habitat conservation and management plan pursuant to ORS 215.804 subject to standards • Forest Products, Primary Processing - Section 430-47. F. Home Occupation - Section 430-63. Applications to renew a home occupation do not have to address Section 344-4.3 if that section was addressed in a prior application. A home occupation on high-value farmland shall be operated in the dwelling or other buildings normally associated with uses permitted in the district. A home occupation shall not unreasonably interfere with other uses permitted on surrounding land in the EFU, EFC and AF-20 Districts. • Improvement of public road and highway related facilities such as maintenance yards, weigh stations and rest areas, where additional property or right-of-way is required but not resulting in the creation of new land parcels.	

Zone	Permitted through a Type I Procedure	Permitted through a Type II Procedure	Permitted through a Type III Procedure
		• Onsite filming and activities accessory to onsite filming for more than forty-five (45) days - See ORS 215.306 for standards. • Operations for the extraction and bottling of water. • Parking log trucks [no more than seven (7) log trucks] - See ORS 215.311 for standards. • Parks - Section 430-97. Private parks are not permitted on high-value farmland. Public parks include only the uses specified under OAR 660-034-0035 or OAR 660-034-0040, if applicable. • Propagation, cultivation, maintenance and harvesting of aquatic or insect species. Insect species shall not include any species under quarantine by the State Department of Agriculture or the United States Department of Agriculture. • Residential home as defined in Section 106-179, in an existing dwelling. This use is exempt from Section 430-53 (Group Care Facilities). A waiver of the right to remonstrate against commonly accepted farm or forest practices shall be recorded for this use. • Room and board arrangements, including a bed and breakfast facility, for a maximum of five (5) unrelated persons in an existing dwelling. A waiver of the right to remonstrate against commonly accepted farm or forest practices shall be recorded for this use. • Solid Waste Disposal Site - Section 430-	

Zone	Permitted through a Type I Procedure	Permitted through a Type II Procedure	Permitted through a Type III Procedure
		127.1. This use is not permitted on high-value farmland. • Stockpiling of aggregate, sand and gravel for road maintenance purposes. For required standards see Section 430-132. • Temporary Use - Section 430-135.2 A. Applications to renew a temporary use do not have to address Section 344-4.3 if that section was addressed in a prior application. A waiver of the right to remonstrate against commonly accepted farm or forest practices shall be recorded for this use. • State or Regional Park uses listed in a County-approved Master Plan. See Section 383, State and Regional Park Overlay District. • Community centers - owned by a governmental agency or a nonprofit community organization and operated primarily by and for residents of the local rural community. • A landscaping contracting business, as defined in ORS 671.520, or a business providing landscape architecture services, as described in ORS 671.318, if the business is pursued in conjunction with the growing and marketing of nursery stock on the land that constitutes the primary farm use.	
Exclusive Farm Use (EFU)	• Accessory Uses and Structures – Section 430-1. • Alteration, restoration or replacement of a lawfully established dwelling. In the case of replacement, the existing dwelling shall	*Permitted Uses which are exempt from Section 340 - 4.3:* • Accessory dwellings customarily provided in conjunction with farm use – Section 430 - 37.2 D. A waiver of the right to	*Uses which may be allowed but are not subject to Section 340 - 5.3:* • Armed forces reserve center, including an armory or National Guard support facility, if the center is within one-half (½) mile of a

Zone	Permitted through a Type I Procedure	Permitted through a Type II Procedure	Permitted through a Type III Procedure
	be removed or demolished. A waiver of the right to remonstrate against commonly accepted farm or forest practices shall be recorded for this use. For required standards see Sections 430 - 8.1, 8.3, and 8.4. • Deferred replacement permit – Section 430 - 8.4. • Property Line Adjustment - Section 610 - 1.1. • Co-located antennas, excluding those antennas regulated by Section 430 - 109.11 or otherwise exempt pursuant to Sections 430 - 109.1 and 201 - 2 – Section 430 - 109.3.	remonstrate against commonly accepted farm or forest practices shall be recorded for this use. • Alteration, restoration or replacement of a lawfully established dwelling not permitted through a Type I procedure. A waiver of the right to remonstrate against commonly accepted farm or forest practices shall be recorded for this use. For required standards see Sections 430 - 8.2, 8.3, and 8.4. • Dwelling Unit(s) occupied by a relative of the farm operator or farm operator's spouse who assists or will assist with the management of the farming. A waiver of the right to remonstrate against commonly accepted farm or forest practices shall be recorded for this use. For required standards see Section 430 - 37.2 C. • Facility for the processing of farm crops or the production of biofuel, as defined in ORS 315.141, located on a farm operation that provides at least one-quarter of the crops processed at the facility. The building established for the processing facility shall not exceed ten-thousand (10,000) square feet of floor area exclusive of the floor area designated for preparation, storage or other farm use or devote more than ten-thousand (10,000) square feet to processing activities within another building supporting farm uses. A processing facility shall comply with all applicable siting standards but the standards shall not be applied in a manner	community college. • Churches and Cemeteries in Conjunction with Churches - Section 430-29. This use is not permitted on high-value • farmland, and shall not be approved on land within three (3) miles of an urban growth boundary unless an exception is approved pursuant to ORS 197.732 and OAR 660, Division 4. • Kennels for breeding, kenneling and training of greyhounds for racing - Section 430-73. This use is not permitted on high-value farmland. • Nonfarm Detached Dwelling Unit. For required standards see Section 430-85. • Operations for the exploration for minerals as defined by ORS 517.750. *Uses which may be allowed, but are not subject to Section 340-5.3:* • Airport (personal use only) including associated hangar, maintenance and service facilities – Section 430-7. • Campground – Section 430-25. This use is not permitted on high-value farmland, and shall not be approved on land within three (3) miles of an urban growth boundary unless an exception is approved pursuant to ORS 197.732 and OAR 660, Division 4. • Composting facilities for which a permit has been granted by the Department of Environmental Quality under ORS 429.245 and OAR 340-96-020. This use is

Zone	Permitted through a Type I Procedure	Permitted through a Type II Procedure	Permitted through a Type III Procedure
		that prohibits the siting of the processing facility. Any division or property line adjustment proposing to separate a processing facility from the farm operation on which it is located is prohibited. • Life Estate in an Existing Dwelling as provided in ORS, Ch. 215.213(8). • Minor betterment of existing public roads and highway related facilities, such as maintenance yards, weigh stations and rest areas, within right-of-way existing as of July 1, 1987, and contiguous publicly owned property utilized to support the operation and maintenance of public roads and highways. • One Detached Dwelling Unit not provided in conjunction with farm use on a site up to three (3) acres. This use is not permitted on high-value farmland. A waiver of the right to remonstrate against commonly accepted farm or forest practices shall be recorded for this use. For required standards see Section 430 - 85.3 (Non-farm Dwelling). • Operations for the exploration of geothermal resources as defined by ORS 522.005 and for the exploration of oil and gas as defined by ORS 520.005 within a flood plain or drainage hazard area or an area identified in the Rural Natural Resource Plan as a significant natural resource. • Operations for the production of geothermal resources as defined by ORS	not permitted on high-value farmland. Composting facilities shall be limited to the composting operations and facilities defined by the Environmental Quality • Commission under OAR 340-096-0024(1), (2) or (3). Buildings and facilities used in conjunction with the composting operation shall only be those required for the operation of the subject facility. Onsite sales shall be limited to bulk loads of at least one (1) unit (7.5 cubic yards) in size that are transported in one (1) vehicle. • Firearms training facility as provided in ORS 197.770. • Golf Course – Section 430-50. This use is not permitted on high-value farmland. • Hunting and Fishing Preserves –Section 430-69. This use is not permitted on high-value farmland. • Living History Museum – Section 430-74. • Kennels, except the breeding, kenneling and training of greyhounds for racing – Section 430-73. This use is not permitted on high-value farmland. • Operations conducted for: Mining and processing of geothermal resources as defined by ORS 522.005 and oil and gas as defined by ORS 520.005, not otherwise permitted under Section 340-4.1. H; (2) Mining, crushing or stockpiling of aggregate and other mineral and subsurface resources subject to the following: (a) A Development Permit is required for mining more than one-

Zone	Permitted through a Type I Procedure	Permitted through a Type II Procedure	Permitted through a Type III Procedure
		522.005 and oil and gas as defined by ORS 520.005, including the placement and operation of compressors, separators and other customary production equipment for an individual well adjacent to the wellhead. • Property Line Adjustment. See Section 610 - 1.1 for required standards. • Broadcast and Communication Towers less than two-hundred (200) feet in height that are utility facilities necessary for public service - Section 430 - 109.11. • Co-located antennas, not otherwise allowed through a Type I Procedure - Section 430 - 109.11. • A replacement dwelling to be used in conjunction with farm use if the existing dwelling is listed on the National Register of Historic Places. For the purpose of this Section, replacement means to provide one additional dwelling. A waiver of the right to remonstrate against commonly accepted farm or forest practices shall be recorded for this use. Site for the takeoff and landing of model aircraft, including such buildings as may reasonably be necessary. Buildings or facilities shall not be more than five-hundred (500) square feet in floor area or placed on a permanent foundation unless the building or facility preexisted the use approved under this requirement. The site shall not include an aggregate surface or hard surface area unless the surface preexisted the use approved under this requirement.	thousand (1,000) cubic yards of material or excavation preparatory to mining of a surface area of more than one (1) acre; (b) A Development Permit for mining of aggregate shall be issued only for a site included on the mineral and aggregate inventory in the Rural Natural Resource Plan which has been acknowledged by the Land Conservation and Development Commission; and (c) For the purposes of this Section, “mining” includes all or any part of the process of mining by the removal of overburden and the extraction of natural mineral deposits thereby exposed by any method including open-pit mining operations, auger mining operations, processing, surface impacts of underground mining, production of surface mining refuse and the construction of adjacent or offsite borrow pits except those constructed for use as access roads. “Mining” does not include excavations of sand, gravel, clay, rock or other similar materials conducted by a landowner or tenant on the landowner or tenant’s property for the primary purpose of reconstruction or maintenance of access roads and excavation or grading operations conducted in the process of farming or cemetery operations, onsite road construction or other onsite construction or non-surface impacts of underground mines; (3) Processing, as defined by ORS 517.750, of aggregate into asphalt or portland cement except

Zone	Permitted through a Type I Procedure	Permitted through a Type II Procedure	Permitted through a Type III Procedure
		For the purpose of this requirement, "model aircraft" means a small-scale version of an airplane, glide, helicopter, dirigible or balloon that is used or intended to be used for flight and is controlled by radio, lines or design by a person on the ground. • Schools Elementary and Nursery only, including all buildings essential for school operation. For required standards see Section 430 - 121. This use is not permitted on high-value farmland, and shall not be approved on land within three (3) miles of an urban growth boundary unless an exception is approved pursuant to ORS 197.732 and OAR 660, Division 4. • Land application of reclaimed water, agricultural or industrial process water or biosolids – See ORS 215.246, 215.247, 215.249 and 215.251 for requirements. • Temporary Use Section 430 - 135.1 H. A facility is necessary if it must be situated in an agricultural zone in order for the service to be provided. • Utility facilities necessary for public service, including wetland waste treatment systems. Utility facilities necessary for public service do not include: 1) commercial facilities for the purpose of generating power for public use by sale, 2) transmissions towers over two-hundred (200) feet in height, 3) receiving and transmitting antennas, broadcast and communication towers listed under J. and K. above and under Section 340 - 5.2 M.	processing of aggregate into asphalt cement when located within two (2) miles of a planted vineyard. "Planted vineyard" means one or more vineyards totaling forty (40) acres or more that are planted as of the date the application for batching and blending (processing) is filed. Asphalt batch plants approved on or before October 3, 1989, or a subsequent renewal of an existing approval, are exempted from this limitation and may be located within two (2) miles of a vineyard; and (4) Processing of other mineral resources and other subsurface resources. • Public Building – limited to community centers owned and operated by a governmental agency or nonprofit community organization – Section 430-103. • Solid Waste Disposal Site - Section • 430-127.2. This use is not permitted on high-value farmland. • Utility Facility (commercial) for the generation of power for sale for public use – Section 430-141. • Broadcast and Communication Towers greater than two-hundred • (200) feet in height – Section 430-109. • Transmission towers over two-hundred (200) feet in height.

Zone	Permitted through a Type I Procedure	Permitted through a Type II Procedure	Permitted through a Type III Procedure
		below, 4) utility facilities exempt pursuant to Section 201-2, and 5) utility facilities listed under S. below. A facility is necessary if it must be situated in an agricultural district in order for the service to be provided. For required standards, see Sections 430-105.3 through 430-105.7. Application findings must demonstrate compliance with ORS 215.275 and OAR 660-33 (Utility facilities necessary for public service). • Utility facilities (except water and sewer facilities) - The placement of utility facilities overhead and in the subsurface of public roads and highways along the public right-of-way when in a flood plain or drainage hazard area. • Winery – Section 430-145.1. • Fire service facilities providing rural fire protection services. • Unless exempt under 201-2, importing fill material as a customarily accepted farming practice or for a use allowed in the district – Section 410. *Permitted Uses which are subject to Section 340 - 4.3:* • Commercial Activities in Conjunction with Farm Use, including the processing of farm crops into biofuel not permitted under ORS 215.203(2)(b)(L) or as described in Section 340-4.1 D. – Section 430-33. • Primary Dwelling Unit in conjunction with farm use – Section 430-37.2 A. A waiver of the right to remonstrate against	

Zone	Permitted through a Type I Procedure	Permitted through a Type II Procedure	Permitted through a Type III Procedure
		commonly accepted farm or forest practices shall be recorded for this use. • Primary Dwelling Unit in conjunction with the propagation or harvesting of a forest product Section 430-37.2 B. This use is not permitted on high-value farmland. A waiver of the right to remonstrate against commonly accepted farm or forest practices shall be recorded for this use. • Location of a dwelling on wildlife habitat land pursuant to ORS 215.799. • Forest Products, Primary Processing – Section 430-47. • Home Occupation – Section 430-63. Applications to renew a home occupation do not have to address Section 340-4.3 if that section was addressed in a prior application. A home occupation on high-value farmland shall be operated in the dwelling or other buildings normally associated with uses permitted in the district. A home occupation shall not unreasonably interfere with other uses permitted on surrounding land in the EFU, EFC and AF20 Districts. • Improvement of public road and highway related facilities such as maintenance yards, weigh stations and rest areas, where additional property or right-of-way is required but not resulting in the creation of new land parcels. • Onsite filming and activities accessory to onsite filming for more than forty-five (45) days See ORS 215.306 for standards.	

Zone	Permitted through a Type I Procedure	Permitted through a Type II Procedure	Permitted through a Type III Procedure
		• Operations for the extraction and bottling of water. • Parking log trucks [no more than seven (7) log trucks] See ORS 215.311 for standards. • Parks Section 430-97. Private parks are not permitted on high-value farmland. Public parks include only the uses specified under OAR 660-034-0035 or OAR 660-034-0040, if applicable. Propagation, cultivation, maintenance and harvesting of aquatic species that are not under the jurisdiction of the State Fish and Wildlife Commission or insect species. Insect species shall not include any species under quarantine by the State Department of Agriculture or the United States Department of Agriculture. • Residential home as defined in Section 106-179, in an existing dwelling. This use is exempt from Section 430-53 (Group Care Facilities). A waiver of the right to remonstrate against commonly accepted farm or forest practices shall be recorded for this use. • Room and board arrangements, including a bed and breakfast facility, for a maximum of five (5) unrelated persons in an existing dwelling. A waiver of the right to remonstrate against commonly accepted farm or forest practices shall be recorded for this use. • Solid Waste Disposal Site – Section 430-127.1. This use is not permitted on high-	

Zone	Permitted through a Type I Procedure	Permitted through a Type II Procedure	Permitted through a Type III Procedure
		value farmland. • Temporary Use – Section 430-135.2 A. Applications to renew a temporary use do not have to address Section 340-4.3 if that section was addressed in a prior application. A waiver of the right to remonstrate against commonly accepted farm or forest practices shall be recorded for this use. • State or Regional Park uses listed in a County approved Master Plan. See Section 383, State and Regional Park Overlay District. The county may rely on findings addressing Section 340-4.3 provided at the time of Master Plan approval as evidence of compliance with ORS 215.296. • Community centers – owned by a governmental agency or a nonprofit community organization and operated primarily by and for residents of the local rural community. • A landscaping contracting business, as defined in ORS 671.520, or a business providing landscape architecture services, as described in ORS 671.318, if the business is pursued in conjunction with the growing and marketing of nursery stock on the land that constitutes the primary farm use.	
Rural Residential (RR-5)	• Accessory Uses and Structures - Section 430-1. • Detached Dwelling unit (one) on a legally created lot or parcel.	• Family Day Care Provider – Section 430-53.6. • Home Occupation – Section 430-63.2. • Parks – Section 430-97.	• Airport, including associated hangar, maintenance and service facilities - Section 430-7. • Cemetery – Section 430-27.

Zone	Permitted through a Type I Procedure	Permitted through a Type II Procedure	Permitted through a Type III Procedure
	• Home Occupation – Section 430-63.1. • Property Line Adjustment – Section 610-1.1. • Parks – Section 430-97. • Temporary Use – Sections 430-135.1 C. (6) and (7); Section 430-135.1 H. • Alteration, restoration or replacement of a lawfully established dwelling on a lot or parcel upon which two (2) or more lawful dwellings exist. In the case of replacement, the existing dwelling shall be removed, demolished, or converted to an accessory structure, pursuant to Section 430-8.1. For required standards see Section 430-8.1. • Boarding or training of horses for profit, not to exceed a total of eight (8) horse stalls (includes stalls for owner's horses) - Section 430-21. • Co-located antennas, excluding those antennas exempt pursuant to Sections 430-109.1 and 201-2 – Section 430-109.3. • Facility 2 communication towers to a maximum height of one-hundred (100) feet, excluding those towers exempt pursuant to Sections 430-109.1 and 201-2 – Section 430-109.4.	• Public Utility (except commercial facilities for the purpose of generating power for public use by sale) - Section 430-105.3 through 430-105.7. • Co-located antennas, not otherwise allowed through a Type I Procedure – Section 430-109. • Temporary Use – Section 430-135.2 A. • Day Care Facility – Section 430-53.2 I. • Alteration, restoration or replacement of a lawfully established dwelling on a lot or parcel upon which two (2) or more lawful dwellings exist that is not permitted through a Type I procedure. For required standards see Section 430-8.2. • Boarding or training of horses for profit with nine (9) or more horse stalls (includes stalls for the owner's horses) – Section 430-31.	• Church – Section 430-29. • Golf Course, Country Club – Section 430-50. • Day Care Facility – Section 430-53.2. • Heliport - Section 430-59. • Kennel – Section 430-73. • Operation for Exploration of Geothermal Resources as defined by ORS 522.005. • Public Buildings, limited to governmental structures, community buildings and museums, which serve the local area - Section 430-103. • Public Utility – Section 430-105. • Facility 3 and 4 communication towers, to a maximum height of one-hundred (100) feet – Section 430-109. • School - Section 430-121. • Special Recreation Use – Section 430-131. • Storage Area for Recreation Vehicles (Community) Camper, Travel Trailer, Mobile Home, Boat – Section 430-133. • Veterinary or Animal Hospital. Winery – May include accessory tasting room and incidental sales – Section 430-145.2. • Broadcast Towers a maximum height of one-hundred (100) feet – Section 430-109.
Rural Industrial (R-IND)	• Accessory Uses and Structures – Section 430-1, and (A) Restaurant or cafeteria facilities for employees within an existing structure; and (B) Caretaker or dormitory residence in conjunction with a permitted	• Ambulance Service - Section 430-9.1 • Contractor's Establishment – Section 430-34. These uses are exempt from Section 354-3.2.	• Auto Wrecking Yard - Section 430-15. • Heavy Industrial Uses – Section 430-57. • Solid Waste Transfer Station - Section 430-129.

Zone	Permitted through a Type I Procedure	Permitted through a Type II Procedure	Permitted through a Type III Procedure
	use provided: (1) The residence has an approved sanitary sewage disposal system; and (2) There shall be only one (1) dwelling structure on the site. • Temporary Uses – Sections 430-135.1 A. and C. (5); 430-135.1 H. • Forest Products - Temporary, portable facility for primary processing, not including structures, as defined by Section 106-205. See Section 430-47 for required standards. • Facility 3 and 4 Communication Towers that: (A) Do not exceed a maximum height of seventy-five (75) feet; and (B) Are located on a lot or parcel of which less than fifty (50) percent of the perimeter abuts a residential district as defined by Section 430-109. For the purpose of this subsection, lots or parcels that are separated from the proposed site by an existing or dedicated public or private street or right-of-way shall be considered as abutting the perimeter of the proposed site –Section 430-109. • Co-located antennas, excluding those antennas exempt pursuant to Sections 430-109.1 and 201-2 – Section 430-109.3. • Facility 2 Communication Towers, excluding those towers exempt pursuant to Sections 430-109.1 and 201-2, that: (A) Do not exceed a maximum height of seventy-five (75) feet; and (B) Are located on a lot or parcel of which more than fifty (50) percent of the perimeter abuts a	• Farm or forest related equipment, machinery and truck repair, including associated service parts facilities. These uses are exempt from Section 354-3.2. • Manufacturing of tile, pottery and ceramics, including storage and wholesale distribution. • Public Building, limited to governmental structures, community buildings and museums, which serve the local area Section 430-103. • Public Utility – Facilities necessary for public service (except commercial facilities for the purpose of generating power for public use by sale) – Section 430-105.3 through 430-105.7. • Primary processing, packaging, treatment, bulk storage and wholesale distribution of any of the products produced from the following: (1) Manufacture and processing of mineral and aggregate materials (includes batch plant); (2) Production, processing, assembling, packaging, treatment of farm crops or forest products; and (3) These uses are exempt from Section 354-3.2. • Communication Towers greater than seventy-five (75) feet and up to two-hundred (200) feet in height – Section 430-109. • Recycling Center – Section 430-115. • Restaurant or cafeteria facilities for employees in a new building when in conjunction with a permitted use.	• Special Recreational Use – Section 430-131. • Utility Facility (commercial) for the generation of power for sale for public use, and transmission towers over two-hundred (200) feet in height. • Communication Towers greater than two-hundred (200) feet in height – Section 430-109. • Broadcast Towers – Section 430-109.

Zone	Permitted through a Type I Procedure	Permitted through a Type II Procedure	Permitted through a Type III Procedure
	residential district. Notwithstanding, Facility 2 communication towers may be located on a lot or parcel of which less than fifty (50) percent of the perimeter abuts a residential district. For the purpose of this subsection, lots or parcels that are separated from the proposed site by an existing or dedicated public or private street or right-of-way shall be considered as abutting the perimeter of the proposed site – Section 430-109.4.	• Sawmills and lumber manufacturing, which are exempt from Section 354-3.2. For required standards see Section 430-119. • A second caretaker's residence in conjunction with a permitted use provided: (1) The residence has an approved sanitary sewage disposal system; and (2) The applicant demonstrates a need for the second dwelling for such things as security or maintenance. • Stockpiling of aggregate, sand and gravel for road maintenance purposes – Section 430-132. • Temporary Use - Section 430-135.2 A. This use is exempt from Section 354-3.2. • A Type I or Type II Home Occupation in a nonconforming residence as an interim temporary use subject to the standards of Section 430-63.1 Type I Home Occupation or Section 430-63.2 Type II Home Occupation. This use is exempt from Section 354-3.2. • Veterinarian or Animal Hospital. • Winery, including an accessory tasting room and incidental sales - Section 430-145.2. • Logscaling and Weigh Stations. • Uses Accessory and Incidental to an Allowed Use: (1) Garages for storage and maintenance of motor vehicles used by the principal use; (2) Storage of motor fuels and lubricating oils for vehicles used by the principal use; (3) Maintenance and	

Zone	Permitted through a Type I Procedure	Permitted through a Type II Procedure	Permitted through a Type III Procedure
		utility shops for equipment used by the principal use; (4) Central heating, air conditioning and refrigeration plants; (5) Water storage, drainage and treatment facilities; (6) Fire protection facilities; (7) Buildings for storage of documents, records, testing and research equipment, experimental models and other personal property related to the principal use; (8) Clinics, lounges and recreational facilities for employees; (9) Day care facilities primarily for employees; (10) Electrical substations; and (11) Administrative Offices. • Co-located antennas, not otherwise allowed through a Type I Procedure – Section 430-109. • Bulk storage and wholesale distribution and sales (excludes retail sales) of farm crops or forest products. These uses are exempt from Section 354-3.2.	
Rural Commercial District (R-COM)	• Accessory Uses and Structures - Section 430-1. 352-2.2 • Bus Shelters - Section 430-23. • Residential use in conjunction with a permitted commercial use provided: A. The residence is situated on the principal lot; B. The residence has an approved sanitary sewage disposal system; and C. There is only one (1) dwelling structure per lot. • Temporary Uses - Section 430-135.1 A., B., C. (4 and 5), D., E,. F., and H. • Facility 3 and 4 Communication Towers	• Ambulance Service - Section 430-9. • Auto Repair within an enclosed building. • Bus and Train Terminals. • Church – Section 430-29. • Commercial Recreation Facilities such as indoor theaters, bowling alleys, indoor skating rinks or similar uses when: (1) The use is conducted wholly within a fully enclosed building; and (2) Yards are no less than fifty (50) feet from any abutting residential, agriculture and forest, or natural resource district boundaries.	• Special Recreation Uses - Section 430-131. • Communications Towers greater than two-hundred (200) feet in height - Section 430-109. • Broadcast Towers – Section 430-109.

Zone	Permitted through a Type I Procedure	Permitted through a Type II Procedure	Permitted through a Type III Procedure
	that: A. Do not exceed a maximum height of seventy-five (75) feet; and B. Are located on a lot or parcel of which less than fifty (50) percent of the perimeter abuts a residential district. For the purpose of this subsection, lots or parcels that are separated from the proposed site by an existing or dedicated public or private street or right-of-way shall be considered as abutting the perimeter of the proposed site- Section 430-109. • Co-located antennas, excluding those antennas exempt pursuant to Sections 430-109.1 and 201-2 – Section 430-109.3. • Facility 2 Communication Towers, excluding those towers exempt pursuant to Sections 430-109.1 and 201-2, that: A. Do not exceed a maximum height of seventy-five (75) feet; and B. Are located on a lot or parcel of which more than fifty (50) percent of the perimeter abuts a residential district. Notwithstanding, Facility 2 communication towers may be located on a lot or parcel of which less than fifty (50) percent of the perimeter abuts a residential district. For the purpose of this subsection, lots or parcels that are separated from the proposed site by an existing or dedicated public or private street or right-of-way shall be considered as abutting the perimeter of the proposed site - Section 430-109.4.	• Contractor's establishment for such things as installation of drain tiles, logging contractor, farming contractor and similar uses – Section 430-34. • Eating and Drinking Establishments. • Fabrication, Processing and Repair Facilities, appropriate for the rural community and which serve the rural/natural resource population base. These uses are exempt from Section 352-3.2. • Farm or forest related equipment, machinery or truck repair, including associated service parts facilities, within an enclosed building. These uses are exempt from Section 352-3.2. • Farm or forest implement and equipment sales when the sales area is fenced or a landscaped buffer is provided. These uses are exempt from Section 352-3.2. • Institutional uses, including institutions for human care, educational, social institutions including but not limited to grange hall, community center, public buildings and service institutions, serving the local area, when the application includes: (1) A total site plan indicating any proposed buildings, parking, landscaping and future phased development; and (2) A schedule for development. • Lumber Yard, provided there is: (1) A site obscuring fence no higher than eight (8) feet; or (2) A Type #3 landscape buffer approved through Development Review. (3) This use is exempt from Section 352-3.2.	

Zone	Permitted through a Type I Procedure	Permitted through a Type II Procedure	Permitted through a Type III Procedure
		• Offices. • Open air businesses, except as provided for by Section 430-135.1 B. (1) and (2), for the sale of farm or forest products for such uses as plant material, produce and firewood. These uses are exempt from Section 352-3.2. • Personal Service Establishment. • Public Building, limited to governmental structures, community buildings and museums, serving the local area - Section 430-103. • Public Utility - Facilities necessary for public service (except commercial facilities for the purpose of generating power for public use by sale) - Section 430-105.3 through 430-105.7. • Private Club - Section 430-99. • Radio Station. • Recycling Center - Section 430-115. • Sale of merchandise in an enclosed building. • Service Station and/or Car Wash - Section 430-123. • Temporary Use - Section 430-135.2 A. This use is exempt from Section 352-3.2. • A Type I or Type II Home Occupation in a nonconforming residence as an interim temporary use subject to the standards of Section 430-63.1 - Type I Home Occupation or Section 430-63.2 - Type II Home Occupation. This use is exempt from Section 352-3.2.	

Zone	Permitted through a Type I Procedure	Permitted through a Type II Procedure	Permitted through a Type III Procedure
		• Veterinarian or Animal Hospital. Z. Winery, including a tasting room and sales - Section 430-145.2. • Communication Towers greater than seventy-five (75) feet and up to two-hundred (200) feet in height - Section 430-109. • Uses Accessory and Incidental to an Allowed Use: (1) Garages for storage and maintenance of motor vehicles used by the principal use. (2) Storage of motor fuels and lubricating oils for vehicles used by the principal use. (3) Maintenance and utility shops for equipment used by the principal use. (4) Central heating, air conditioning and refrigeration plants. (5) Water storage, drainage and treatment facilities. (6) Buildings for storage of documents, records, testing and research equipment, experimental models and other personal property related to the principal use. (7) Day care facilities primarily for employees. (8) Electrical substations. • Co-located antennas, not otherwise allowed through a Type I Procedure – Section 430-109.	
Future Development – 10 acres minimum (FD-10)	• Accessory Uses and Structures – Section 430-1. • Any Type II or III use, expansion of an existing use or change of use which meets all of the following: (A) Is exempt from application of the Public Facility Standards under Section 501-2; (B) Is not in an "Area of Special Concern" as designated on the applicable Community Plan map; (C) Is on	• Home Occupation - Section 430-63.2. • Parks – Section 430-97. • Construction of a local street not in conjunction with a development application or within existing right-of-way. • Temporary Use – Section 430-135.2 A. • Co-located antennas, not otherwise allowed through a Type I Procedure – Section 430-109.	• Cemetery – Section 430-27. • Church – Section 430-29. • Commercial Chicken or Rabbit Raising. • Commercial Greenhouse. • Commercial Equestrian Uses, including Training Tracks, Riding Arenas and Stables (See Boarding of Horses – Section 430-21).

Zone	Permitted through a Type I Procedure	Permitted through a Type II Procedure	Permitted through a Type III Procedure
	an existing lot; (D) Does not amend any previous approval or previous condition of approval; (E) Is in compliance with all applicable standards of this Code; and (F) Is not a telecommunication facility. • Bus Shelter – Section 430-23. • Detached Dwelling Unit (one) only in areas designated for residential use by the applicable city – Section 430-37.1. • Home Occupation – Section 430-63.1. • Parks – Section 430-97. • Public and Private Conservation areas and structures for the conservation of water, soil, open space, forest or wildlife resources. • Temporary Use – Section 430-135.1. • Manufactured Home – Section 430-76. • Co-located antennas, excluding those antennas exempt pursuant to Sections 430-109.1 and 201-2 - Section 430-109.3. • Facility 2 communication towers to a maximum height of one-hundred (100) feet, excluding those towers exempt pursuant to Sections 430-109.1 and 201-2 – Section 430-109.4.	• Day Care Facility - 430-53.2 I. • Tree removal in areas identified in the applicable Community Plan as Significant Natural Resources, subject to Section 407-3.	• Contractor's Establishment. • Day Care Facility – Section 430-53.2. • Public Building – Section 430-103. • Public Utility – Section 430-105. • Facility 3 and 4 communication towers, to a maximum height of one-hundred (100) feet – Section 430-109. • Broadcast Towers a maximum height of on- hundred (100) feet –Section 430-109.

Appendix C

Existing Traffic Conditions

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TECHNICAL MEMORANDUM

Glencoe Interchange Area Management Plan
Technical Memorandum #1
Existing Transportation Inventory

Date: May 8, 2006 **Project** #: 7191

To: PMT / SWG Committees

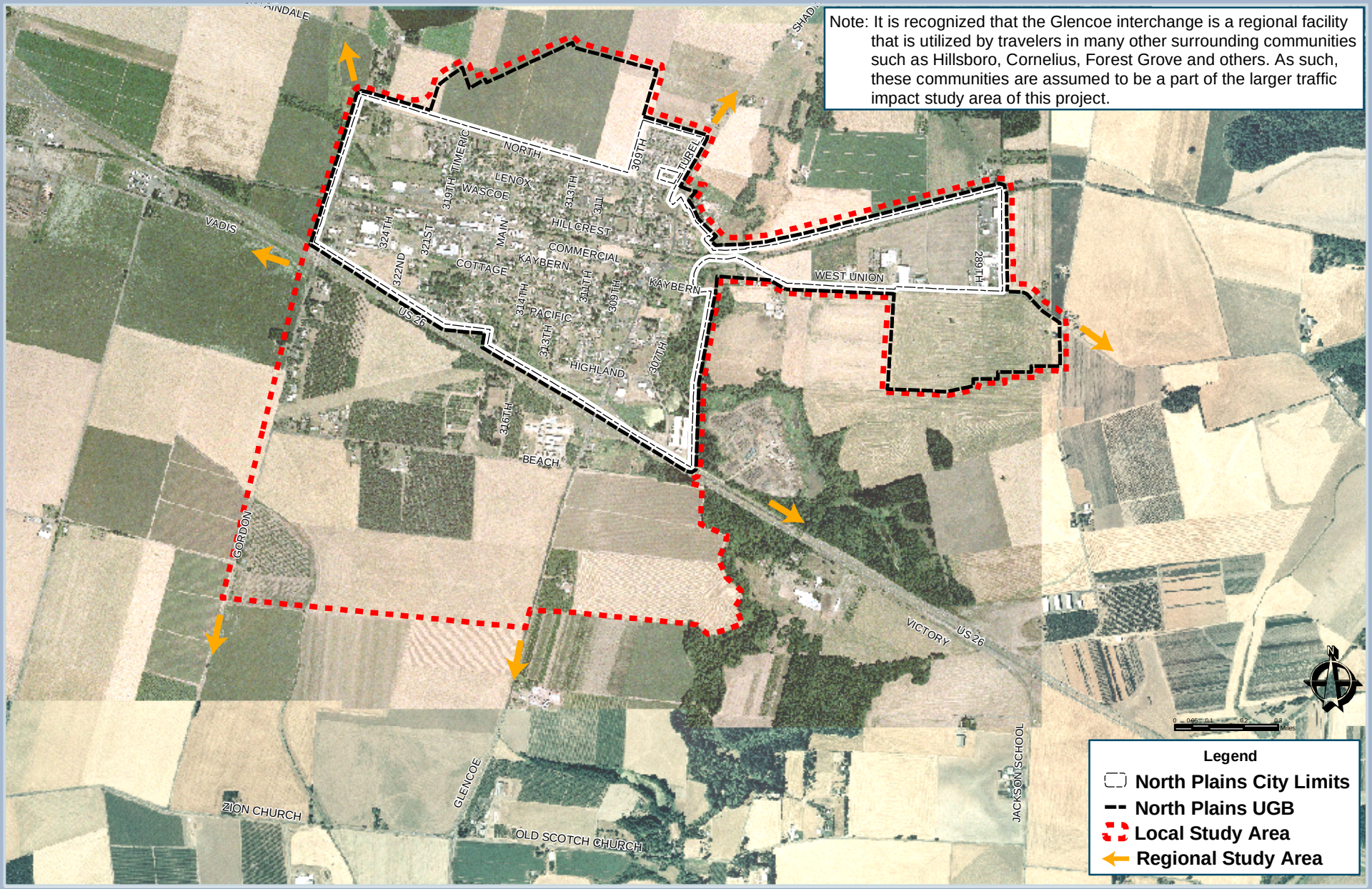
From: Matt Hughart, AICP, Andrew Ooms, Marc Butorac, P.E., P.T.O.E.

cc: Glencoe IAMP Project Team

This technical memorandum is one of a series of memorandums that are being prepared to support the development of the Glencoe Interchange Area Management Plan (IAMP) and the accompanying environmental analysis. This memorandum is an inventory (geometric and operational) of existing transportation conditions located within the vicinity of the Glencoe Road interchange and along the supporting City of North Plains/Washington County transportation system.

EXISTING CONDITIONS STUDY AREA

The existing conditions study area was selected based on a review of the surrounding roadway network, land use patterns, and existing ODOT access management policies associated with major freeway interchange projects. From these sources, the existing conditions study area centers on the existing US 26/Glencoe Road interchange and includes all roadway infrastructure located within 1,320 feet of the eastbound and westbound US 26 / Glencoe Road interchange ramp terminals. This distance corresponds to the ¼-mile spacing standard outlined in the Oregon Administrative Rules (OAR) 734-051 Division 51 rules (Reference 1) for interchange ramps. In addition to the ¼-mile access spacing standard, the study area has been extended along Glencoe Road up to the NW Commercial Street-NW West Union Road corridor to account for a Washington County roadway improvement project that will involve the widening of Glencoe Road to a full three-lane cross section with sidewalks and bicycle lanes. How surrounding communities such as Hillsboro, Cornelius, and Forest Grove use the NW Glencoe Road interchange will also be considered. From these general parameters, Figure 1-1 illustrates the existing conditions study area boundary.



Glencoe Road IAMP
Study Area Boundary

Figure 1-1

EXISTING TRANSPORTATION INVENTORY

The existing transportation inventory provides a detailed description of all transportation facilities and travel modes within the study area. In addition, the inventory identifies the current operational, traffic control, and geometric characteristics of roadways and other transportation facilities. A detailed description of these facilities is provided in the following sections.

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* (Reference 2) as a *Statewide Highway*, a *Freight Route*, and is considered a part of the National Highway System.

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* (Reference 3) 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 (Reference 4).

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 (Reference 5). 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

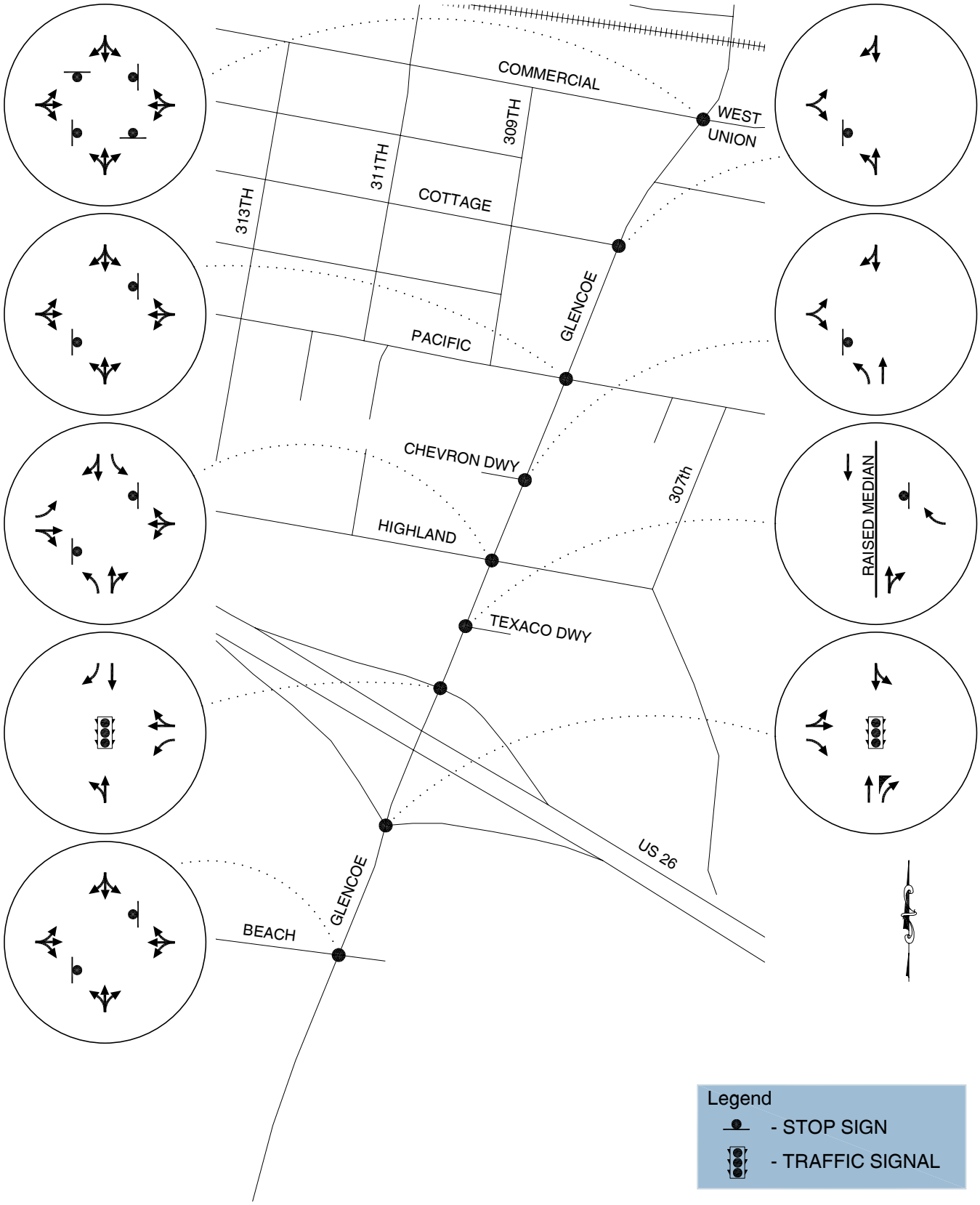
In addition to US 26 and NW Glencoe Road, the Glencoe IAMP study area contains a number of local and collector street facilities that serve area residents and business establishments. These roadways include NW Beach Road, NW Highland Court, NW Pacific Street, NW Cottage Street, NW Commercial Street-NW West Union Road, and NW Gordon Road. NW West Union Road is classified by Washington County as an arterial. The City of North Plains considers NW Commercial Street, NW Pacific Street, NW Highland Court, and NW 307th Avenue to be collector streets, while NW Cottage Street is classified as a local street. NW Beach Road is an unclassified County road.

Table 1-1 summarizes the major characteristics of US 26, NW Glencoe Road, and the secondary transportation facilities in the study area, while Figure 1-2 illustrates the existing lane configurations and traffic control devices at the respective key study area intersections.

Table 1-1
Existing Transportation Facilities and Roadway Designations

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



Glencoe Road IAMP

Existing Lane Configuration and Traffic Control Devices

Figure 1-2

Pedestrian and Bicycle Facilities

There are currently no bicycle lanes located along any of the Glencoe IAMP study area roadways. Sidewalks have been installed along portions of NW Glencoe Road associated with recent development projects; however this network is discontinuous and sporadic. There is a sub-standard sidewalk facility located on the east side of the Glencoe Road overpass. Field observations revealed low levels of pedestrian and bicycle activity. This low level of activity is likely attributed to a lack of pedestrian and bicycle facilities along the study area roadways and the predominance of commercial uses that cater to highway travelers.

Public Transportation Facilities

There are currently no transit routes that serve the City of North Plains or the major roadway facilities that run within the Glencoe IAMP study area. Demand response and special needs transportation services in the North Plains area are operated by Ride Connection. This service is currently available for qualifying residents in the Glencoe IAMP study area.

Railroad Facilities

The Portland & Western (P&W) rail line is an east-west short-line that runs parallel along the north side of NW Commercial Street. This rail line serves rail traffic between Portland and Hillsboro/Forest Grove.

EXISTING TRAFFIC VOLUMES AND PEAK HOUR OPERATIONS

As part of this study effort, manual intersection turning movement counts were conducted at each major intersection and driveway access along the NW Glencoe Road corridor from NW Beach Road to NW Commercial Street-NW West Union Road. These counts were conducted on mid-week days in November 2005. *Appendix A contains the traffic count summary data sheets.* A description of the data as it was utilized for the purposes of this report is summarized in the following sections.

System Peak Hour Intersection Volumes

From the manual intersection turning movement counts conducted in November 2005, weekday morning (7:00 a.m. – 9:00 a.m.) and evening (4:00 p.m. – 6:00 p.m.) peak hour traffic volumes were summarized for the purposes of evaluating the existing traffic operations at the key study intersections. Using the peak period count data, the system peak hour was determined across all study intersections. The weekday morning system peak hour was found to occur from 6:45 a.m. to 7:45 a.m. and the weekday evening system peak hour was found to occur from 4:45 p.m. to 5:45 p.m.

Seasonal Adjustments

It is recognized that major highways serving tourist and recreation destinations in Oregon are prone to a traffic volume fluctuations due to the effects of seasonal variation. Typically, the summer months experience higher traffic volumes due to additional traffic from recreational enthusiasts and vacationers while the winter months tend to experience the lowest traffic volumes. Using the methodology outlined by ODOT's Transportation Planning Analysis Unit

and through consultation with ODOT Region 1 staff, a seasonal adjustment factor of 1.09 was calculated for the interchange ramp terminals and those intersections/driveways along the Glencoe Road corridor that serve freeway oriented commercial establishments. Using this adjustment factor, the weekday a.m. and p.m. intersection turning movement counts were adjusted to represent the 30th highest hour yearly volume or the design volume.

After accounting for the seasonal variation in traffic, the turning movement counts from the weekday a.m. and p.m. peak hours were summarized and rounded to the nearest five vehicles per hour as shown in Figures 1-3 and 1-4.

Existing Intersection Operations

All operational analyses described in this report were performed in accordance with the procedures stated in the *2000 Highway Capacity Manual* (Reference 6). For the two Highway 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 a.m. and p.m. 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 a.m. and p.m. peak hours.

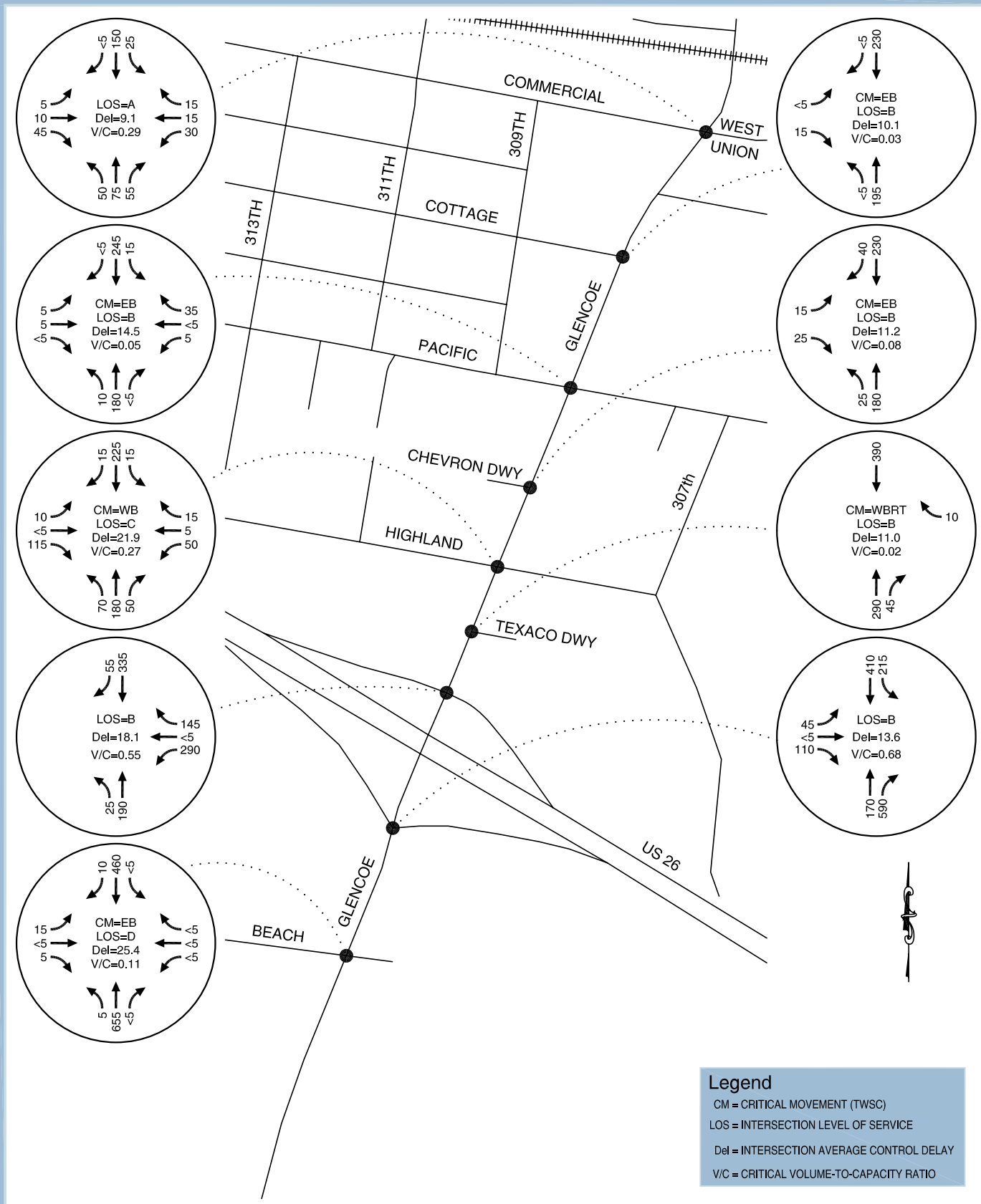
Using the traffic volumes shown in Figures 1-3 and 1-4, the existing intersection operations at each of the study intersections were calculated and are summarized in Table 1-2. *Appendix "B" contains the existing intersection operations summary sheets.* As shown in Table 1-2, all study intersections operate acceptably during the weekday a.m. and p.m. 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 a.m. and p.m. 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.

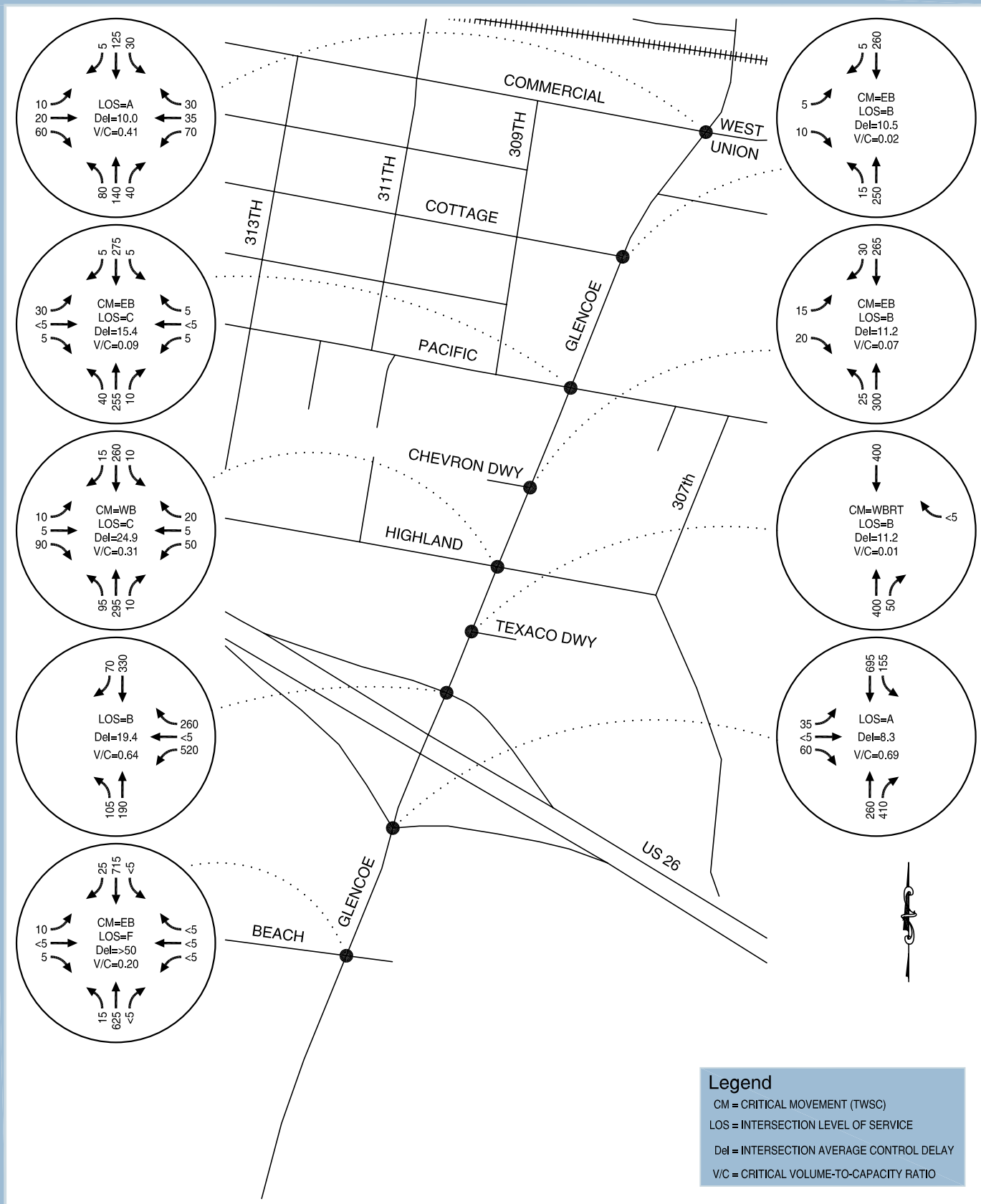
The US 26 WB off-ramp at NW Glencoe Road is striped as a single lane with a short right-turn flare at the intersection with NW Glencoe Road. Due to the heavy westbound left-turn movement at the intersection during the weekday p.m. peak hour, the lack of a separate left-turn and right-turn lane on the 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 p.m. peak period. As a result, right-turning vehicles tend to pass the queue on the shoulder.



Glencoe Road IAMP

Existing Traffic Conditions
Weekday AM Peak Hour

Figure 1-3



Glencoe Road IAMP

Existing Traffic Conditions
Weekday PM Peak Hour

Figure 1-4

Table 1-2
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.

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 p.m. 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.

TRAFFIC SAFETY

The crash histories at the respective study intersections were reviewed in an effort to identify potential intersection safety issues. Crash records were obtained from ODOT for the five-year period from January 1, 2000 through December 31, 2004. A summary of the crash data is provided in Table 1-4 that includes the severity and type of crashes over a five-year analysis period. It should be noted that there are no records of any crashes occurring at several of the study intersections. Reasons for this lack of data might be that the property damage limit was not exceeded or that the motorists did not report some crashes.

Table 1-3
Study Intersection Crash Histories (2000-2004)

Intersection / Roadway Segment	Number of Crashes	Collision Type				Severity	
		Turning	Rear-End	Angle	Other	Property Damage Only	Personal Injury
NW Commercial Street-West Union Road/ NW Glencoe Road	1	0	0	1	0	1	0
NW Cottage Street/ NW Glencoe Road	0	0	0	0	0	0	0
NW Pacific Street/ NW Glencoe Road	2	0	2	0	0	0	2
Chevron Driveway/ NW Glencoe Road	0	0	0	0	0	0	0
NW Highland Court/ NW Glencoe Road	1	1	0	0	0	1	0
Texaco Driveway/ NW Glencoe Road	2	0	2	0	0	2	0
US 26 WB Ramps/ NW Glencoe Road	18	13	3	0	2	13	5
US 26 EB Ramps/ NW Glencoe Road	9	5	4	0	0	6	3
NW Beach Road/ NW Glencoe Road	8	0	6	0	2	4	4

As illustrated in Table 1-4, the patterns amongst the crashes were evaluated to determine if there are any operational or geometric deficiencies that contribute to the crash patterns. The US 26 Ramps/NW Glencoe Road intersection experienced a significant number of turning movement collisions. Of the 13 turning crashes at the intersection, 7 involved the northbound left-turn movement, which during the data collection period was a permissive movement.

In 2005, northbound protective-permissive left turn phasing was added to the traffic signal at the US 26 WB Ramps/NW Glencoe Road intersection. In addition, the US 26 EB Ramps/NW Glencoe Road intersection was signalized. Both of these improvements are anticipated to reduce some collision types at these intersections; however, the crash data from 2005 has not yet been compiled.

Crash rates for intersections are often expressed in crashes per million entering vehicles (MEV) for evaluation purposes. Generally, a crash rate higher than 1.0 crashes/MEV indicates the need for further investigation at the intersection. These calculations are presented in Table 1-5 and show that all of the study intersections have relatively low crash rates.

In addition to this safety assessment, the latest Washington County Safety Priority Index System (SPIS) was reviewed to determine if any of the study intersections ranked among the highest accident locations in the County. Based on this review, none of the study intersections are included on the Washington County SPIS list.

Table 1-4
Study Intersection Crash Rate

Intersection	Number of Crashes	Crashes Per Year	Peak Hour TEV	MEV / Year	Crashes / MEV	>1 Crash/MEV
NW Commercial Street-West Union Avenue/ NW Glencoe Road	1	0.2	700	2.59	0.08	No
NW Cottage Street/ NW Glencoe Road	0	0.0	590	2.15	0.00	No
NW Pacific Street/ NW Glencoe Road	2	0.4	895	3.27	0.12	No
Chevron Driveway/ NW Glencoe Road	0	0.0	710	2.59	0.00	No
NW Highland Court/ NW Glencoe Road	1	0.2	915	3.34	0.06	No
Texaco Driveway/ NW Glencoe Road	2	0.4	895	3.27	0.12	No
US 26 WB Ramps/ NW Glencoe Road	18	3.6	1580	5.77	0.62	No
US 26 EB Ramps/ NW Glencoe Road	9	1.8	1740	6.35	0.28	No
NW Beach Road/ NW Glencoe Road	8	1.6	1520	5.55	0.29	No

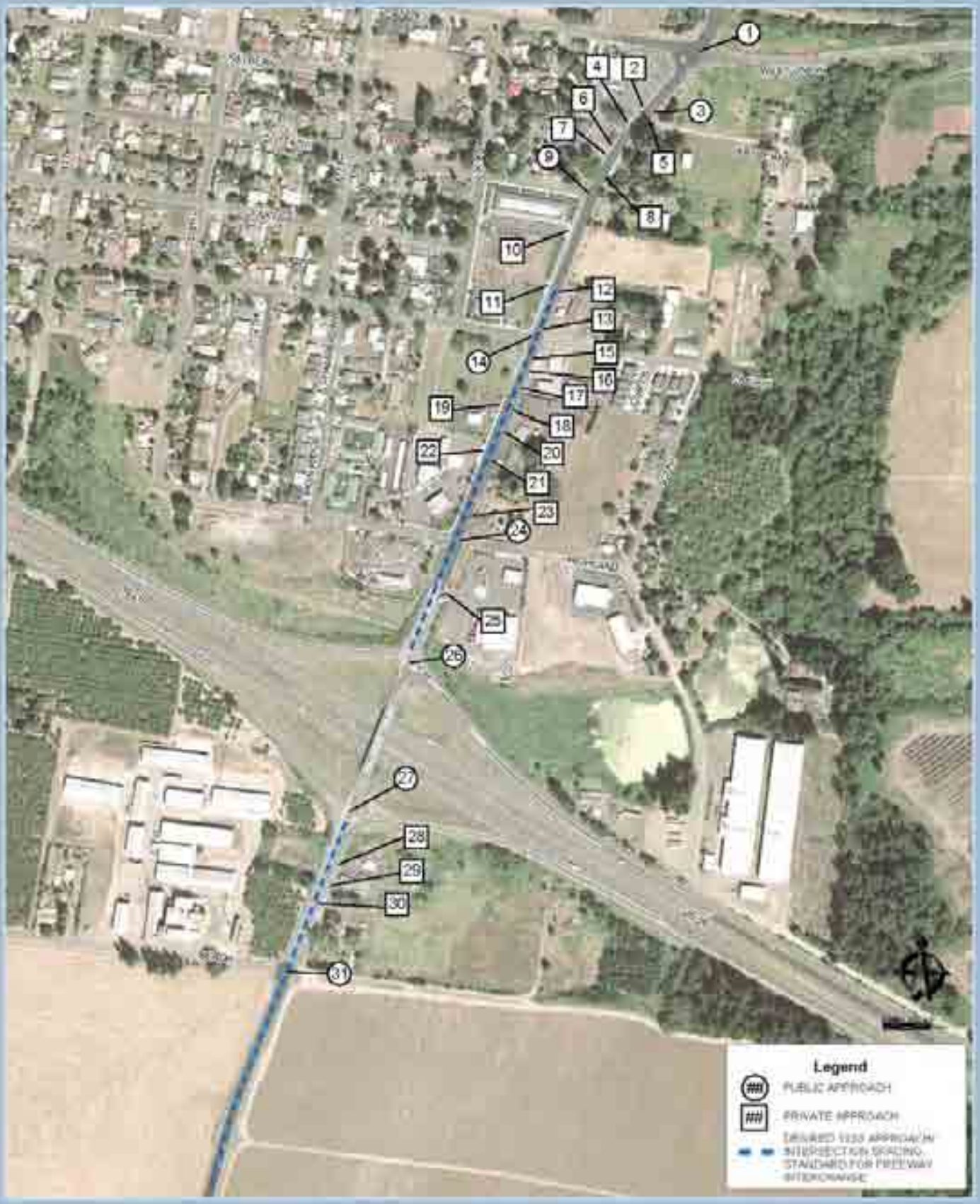
TEV = Total Entering Vehicles
MEV = Million Entering Vehicles

EXISTING ROADWAY ACCESS CONDITIONS

To gain an understanding of the existing access conditions along the Glencoe Road study corridor, an access inventory was prepared. Figure 1-5 shows the existing public and private roadway approaches to the existing Glencoe Road alignment within the Glencoe IAMP study area. As illustrated in Figure 1-6, Glencoe Road currently has thirty-one different public/private points of access between NW Beach Road and NW Commercial-NW West Union Road. Table 1-5 provides detailed information regarding each public or private access along the roadway.

As described in OAR 734-051, the desired distance between an interchange ramp terminal and the first major point of access (public or private) is 1,320 feet, or ¼ mile. Figure 1-5 illustrates that the access points north of US 26 along Glencoe Road (#10 though #26) fall within this desired minimum freeway interchange access spacing distance. South of US 26, approaches #27 through #31 fall within the same minimum freeway interchange spacing distance.

Under the rules stipulated in the Division 51 access management policy, a major highway improvement or the redevelopment of the land parcels that are served by these approaches may become subject to the 1,320 foot spacing guidelines.



GLENCOE RD

Glencoe Road IAMP

Existing Glencoe Road Public/Private Access Locations

Figure 1-5

Table 1-5
Glencoe Road Public/Private Approach Inventory

Approach Type	Figure 1-5 Access Number	Intersection Name	Property Owner/Business Name	Serves (Tax Map) & Lot Number	Side of Street
Public	1	NW Glencoe Road / NW Commercial Street-NW West Union Road	Public Street	N/A	Both
Private	2	NW Glencoe Road / Private Driveway	The Old Hichen Post	(1N 30W 1DA) #3200, 3903	West
Public	3	NW Glencoe Road / NW Kaybern Street	Public Street	N/A	East
Private	4	NW Glencoe Road / Private Driveway	West Coast Bank	(1N 30W 1DD) #301	West
Private	5	NW Glencoe Road / Private Driveway	Private Owner	(1N 30W 1DD) #100	East
Private	6	NW Glencoe Road / Private Driveway	West Coast Bank	(1N 30W 1DD) #301	West
Private	7	NW Glencoe Road / Private Driveway	Private Owner	(1N 30W 1DD) #300	West
Private	8	NW Glencoe Road / Private Driveway	Private Owner	(1N 30W 1DD) #101	East
Public	9	NW Glencoe Road / NW Cottage Street	Public Street	N/A	West
Private	10	NW Glencoe Road / Private Driveway	Shopping Center	(1N 30W 1DD) #600	West
Private	11	NW Glencoe Road / Private Driveway	North Plains Medical Center	(1N 30W 1DD) #600	West
Private	12	NW Glencoe Road / Private Driveway	Tom's Import Auto Service	(1N 30W 1DD) #201	East
Private	13	NW Glencoe Road / Private Driveway	Tom's Import Auto Service	(1N 30W 1DD) #201	East
Public	14	NW Glencoe Road / NW Pacific Street	Public Street	N/A	Both
Private	15	NW Glencoe Road / Private Driveway	King Torta Restaurant	(1N 30W 1DD) #702	East
Private	16	NW Glencoe Road / Private Driveway	Glencoe Oil and Lube	(1N 30W 1DD) #703	East
Private	17	NW Glencoe Road / Private Driveway	Glencoe Oil and Lube	(1N 30W 1DD) #703	East
Private	18	NW Glencoe Road / Private Driveway	Heritage Art Studio	(1N 30W 1DD) #900	East
Private	19	NW Glencoe Road / Private Driveway	Subway Restaurant	(1N 30W 1DC) #6200	West
Private	20	NW Glencoe Road / Private Driveway	Private Owner	(1N 30W 1DD) #1000	East
Private	21	NW Glencoe Road / Private Driveway	Private Owner	(1N 30W 1DD) #1100	East
Private	22	NW Glencoe Road / Private Driveway	Chevron/Espresso	(1N 30W 1DC) #6300, #6400	West
Private	23	NW Glencoe Road / Private Driveway	Private Owner	(1N 30W 1DD) #1200	East

Approach Type	Figure 1-5 Access Number	Intersection Name	Property Owner/Business Name	Serves (Tax Map) & Lot Number	Side of Street
Public	24	NW Glencoe Road / NW Highland Court	Public Street	N/A	Both
Private	25	NW Glencoe Road / Private Driveway	Texaco/76/Espresso and More/Pumpkin Ridge Hair Design	(1N 31W 20) #200	East
Public	26	NW Glencoe Road / US 26 WB On-Off Ramp	Oregon, Dept of Transportation	N/A	Both
Public	27	NW Glencoe Road / US 26 EB On-Off Ramp	Oregon, Dept of Transportation	N/A	Both
Private	28	NW Glencoe Road / Private Driveway	ARCO AM/PM	(1N 31W 20) #1001	East
Private	29	NW Glencoe Road / Private Driveway	ARCO AM/PM	(1N 31W 20) #1001	East
Private	30	NW Glencoe Road / Private Driveway	Private Owner	(1N 31W 20) #1101	East
Public	31	NW Glencoe Road / NW Beach Road	Public Roadway	N/A	West

OVERVIEW OF EXISTING GLENCOE INTERCHANGE DEFICIENCIES

Deck Width

The existing NW Glencoe Road bridge overpass is not sufficient as it lacks 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’-6”.

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.

Access within Interchange Influence Area

Ideally, there should be no public or private points of access within the influence area (1,320 feet) mile of an interchange ramp terminal. There are currently 22 public and private approaches along NW Glencoe Road that are located within the influence area of the interchange.

REFERENCES

1. Oregon Department of Transportation. *Division 51: Highway Approaches, Access Control, Spacing Standards and Medians*. Oregon Administrative Rules 734-051. 2000.

2. Oregon Department of Transportation. *1999 Oregon Highway Plan*. 1999.

3. Oregon Department of Transportation. *2004 Transportation Volume Tables*. http://egov.oregon.gov/ODOT/TD/TDATA/tsm/docs/TVTPages/2004tvt82-88.pdf

4. United States Department of Transportation – Federal Highway Administration. *Traffic Monitoring Guide*. May 2001. http://www.fhwa.dot.gov/ohim/tmguide/

5. Entranco, Inc. *Transportation System Plan – City of North Plains.* 2004

6. Transportation Research Board. *2000 Highway Capacity Manual - HCM 2000*. 2000.

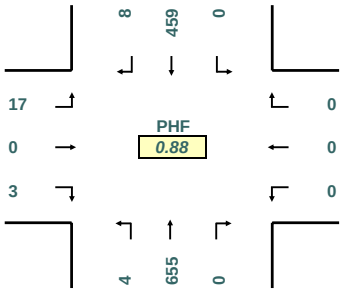
Appendix A

Traffic Count Data

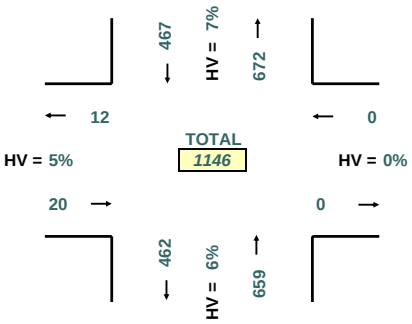
INTERSECTION:	*Glencoe--/Beach--*	**START TIME:**	*6:00 AM*
PROJECT ID#:		**END TIME:**	*9:00 AM*
QC JOB #:	*10127510*	**DATE:**	*11/16/2005*

QUALITY COUNTS
16285 SW 85th Avenue, Ste. 105
Tigard, OR 97224
Phone: 503-620-4242
Fax: 503 620-4545
email: jrw@qualitycounts.net
www.qualitycounts.net

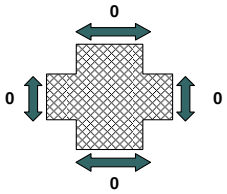
PEAK HOUR TURNING MOVEMENTS



PEAK HOUR LINK VOLUMES



PEAK HOUR PED CROSSING VOLUMES



PEAK HOUR: 6:45 AM TO 7:45 AM

PEAK 15 MINUTES: 7:30 AM TO 7:45 AM

5-MINUTE COUNT PERIOD BEGINNING AT	*Glencoe--* (Southbound)			*Beach--* (Westbound)			*Glencoe--* (Northbound)			*Beach--* (Eastbound)			Crosswalk Usage (Peds By Approach)				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
6:00 AM	0	15	0	0	0	0	0	39	0	0	0	0	0	0	0	0	54	0
6:05 AM	0	20	0	0	0	0	0	44	0	0	0	1	0	0	0	0	65	0
6:10 AM	0	24	0	0	0	0	0	39	1	0	0	1	0	0	0	0	65	0
6:15 AM	1	18	0	0	0	0	0	74	0	0	0	1	0	0	0	0	94	0
6:20 AM	0	23	0	0	0	0	0	73	1	0	0	0	0	0	0	0	97	0
6:25 AM	0	22	0	0	0	0	0	58	0	0	0	3	0	0	0	0	83	0
6:30 AM	0	23	0	0	0	0	0	65	0	0	0	0	0	0	0	0	88	0
6:35 AM	0	40	0	0	0	0	0	55	0	0	0	1	0	0	0	0	96	0
6:40 AM	0	35	0	0	0	0	0	55	0	1	0	2	0	0	0	0	93	0
6:45 AM	0	42	0	0	0	0	0	79	0	0	0	1	0	0	0	0	122	0
6:50 AM	1	40	0	0	0	0	0	55	0	0	0	1	0	0	0	0	97	0
6:55 AM	0	26	0	0	0	0	0	51	2	0	0	3	0	0	0	0	82	0
7:00 AM	0	30	0	0	0	0	0	50	1	0	0	2	0	0	0	0	83	0
7:05 AM	0	25	0	0	0	0	0	51	0	0	0	2	0	0	0	0	78	0
7:10 AM	2	40	0	0	0	0	0	44	0	0	0	1	0	0	0	0	87	0
7:15 AM	2	36	0	0	0	0	0	61	0	0	0	1	0	0	0	0	100	0
7:20 AM	0	35	0	0	0	0	0	36	0	1	0	1	0	0	0	0	73	0
7:25 AM	2	45	0	0	0	0	0	48	0	0	0	2	0	0	0	0	97	0
7:30 AM	1	45	0	0	0	0	0	54	0	0	0	2	0	0	0	0	102	0
7:35 AM	0	44	0	0	0	0	0	58	1	1	0	0	0	0	0	0	104	0
7:40 AM	0	51	0	0	0	0	0	68	0	1	0	1	0	0	0	0	121	0
7:45 AM	1	40	0	0	0	0	0	52	0	0	0	1	0	0	0	0	94	0
7:50 AM	0	37	0	0	0	0	0	52	0	2	0	2	0	0	0	0	93	0
7:55 AM	3	27	0	0	0	0	0	53	1	0	0	1	0	0	0	0	85	0
8:00 AM	1	29	0	0	0	0	0	42	0	0	0	1	0	0	0	0	73	0
8:05 AM	1	33	0	0	0	0	0	40	0	0	0	1	0	0	0	0	75	0
8:10 AM	1	32	0	0	0	0	0	33	0	1	0	0	0	0	0	0	67	0
8:15 AM	0	32	0	0	0	0	0	44	0	0	0	1	0	0	0	0	77	0
8:20 AM	2	29	0	0	0	0	0	41	1	0	0	1	0	0	0	0	74	0
8:25 AM	1	32	0	0	0	0	0	44	2	2	0	2	0	0	0	0	83	0
8:30 AM	0	30	0	0	0	0	0	34	0	0	0	0	0	0	0	0	64	0
8:35 AM	1	34	0	0	0	0	0	44	0	3	0	1	0	0	0	0	83	0
8:40 AM	1	38	0	0	0	0	0	34	0	0	0	0	0	0	0	0	73	0
8:45 AM	0	51	0	0	0	0	0	39	1	0	0	1	0	0	0	0	92	0
8:50 AM	2	34	0	0	0	0	0	27	1	0	0	0	0	0	0	0	64	0
8:55 AM	0	37	0	0	0	0	0	23	0	0	0	2	0	0	0	0	62	0

HOURLY TOTALS	Southbound			Westbound			Northbound			Eastbound			Pedestrians By Approach				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	West	East	North	South	Veh	Peds
6:00 AM	2	328	0	0	0	0	0	687	4	1	0	14	0	0	0	0	1036	0
6:15 AM	4	364	0	0	0	0	0	710	4	1	0	17	0	0	0	0	1100	0
6:30 AM	7	417	0	0	0	0	0	650	3	2	0	17	0	0	0	0	1096	0
6:45 AM	8	459	0	0	0	0	0	655	4	3	0	17	0	0	0	0	1146	0
7:00 AM	11	455	0	0	0	0	0	627	3	5	0	16	0	0	0	0	1117	0
7:15 AM	12	454	0	0	0	0	0	597	2	6	0	13	0	0	0	0	1084	0
7:30 AM	11	431	0	0	0	0	0	581	5	7	0	13	0	0	0	0	1048	0
7:45 AM	12	393	0	0	0	0	0	513	4	8	0	11	0	0	0	0	941	0
8:00 AM	10	411	0	0	0	0	0	445	5	6	0	10	0	0	0	0	887	0

Version 3.1

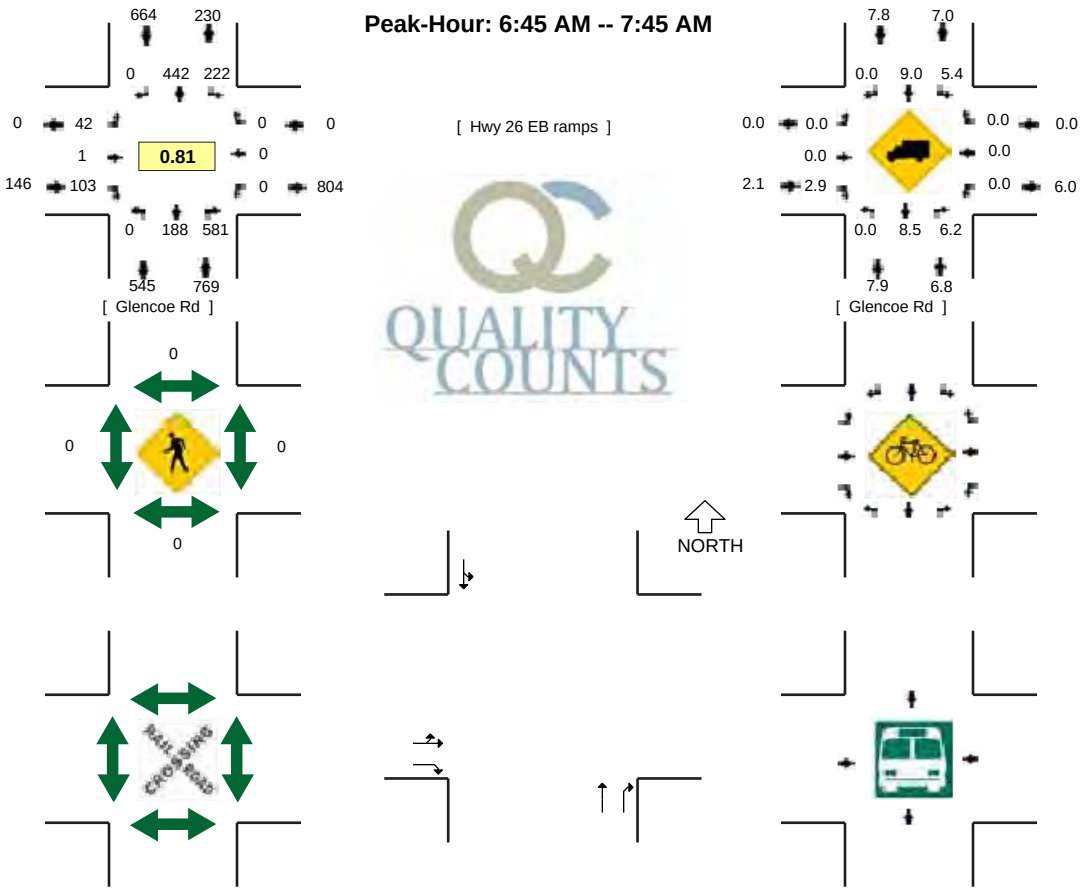
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--Hwy 26 EB ramps
WEATHER:

QC JOB #: 10127611
DATE: 11/16/2005

Peak-Hour: 6:45 AM -- 7:45 AM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				Hwy 26 EB ramps (Eastbound)				Hwy 26 EB ramps (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:15 AM	0	12	78		9	17	0		0	0	2		0	0	0		118	
6:20 AM	0	20	52		25	19	0		3	0	1		0	0	0		120	
6:25 AM	0	11	70		14	20	0		5	0	4		0	0	0		124	
6:30 AM	0	11	38		21	24	0		3	0	3		0	0	0		100	
6:35 AM	0	17	54		16	38	0		4	0	13		0	0	0		142	
6:40 AM	0	15	59		17	28	0		2	0	8		0	0	0		129	
6:45 AM	0	24	64		26	37	0		5	0	12		0	0	0		168	
6:50 AM	0	10	43		18	27	0		1	0	9		0	0	0		108	
6:55 AM	0	26	50		15	25	0		5	0	10		0	0	0		131	1405
7:00 AM	0	10	47		14	27	0		3	0	2		0	0	0		103	1427
7:05 AM	0	16	50		19	27	0		2	0	3		0	0	0		117	1453
7:10 AM	0	14	35		12	35	0		4	0	7		0	0	0		107	1467
7:15 AM	0	17	47		14	35	0		6	0	4		0	0	0		123	1472
7:20 AM	0	5	34		24	39	0		3	0	10		0	0	0		115	1467
7:25 AM	0	13	39		20	41	0		3	0	6		0	0	0		122	1465
7:30 AM	0	22	56		20	47	0		1	1	12		0	0	0		159	1524
7:35 AM	0	20	63		20	39	0		5	0	12		0	0	0		159	1541
7:40 AM	0	11	53		20	63	0		4	0	16		0	0	0		167	1579
7:45 AM	0	18	47		25	32	0		6	0	6		0	0	0		134	1545
7:50 AM	0	17	29		9	36	0		1	0	7		0	0	0		99	1536
7:55 AM	0	20	36		14	30	0		3	0	8		0	0	0		111	1516
8:00 AM	0	16	34		10	25	0		2	0	6		0	0	0		93	1506
8:05 AM	0	15	38		11	33	0		1	0	10		0	0	0		108	1497
8:10 AM	0	11	27		19	26	0		3	0	7		0	0	0		93	1483

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	212	688		240	596	0		40	4	160		0	0	0		1940
Heavy Trucks	0	4	40		12	52	0		0	0	0		0	0	0		108
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

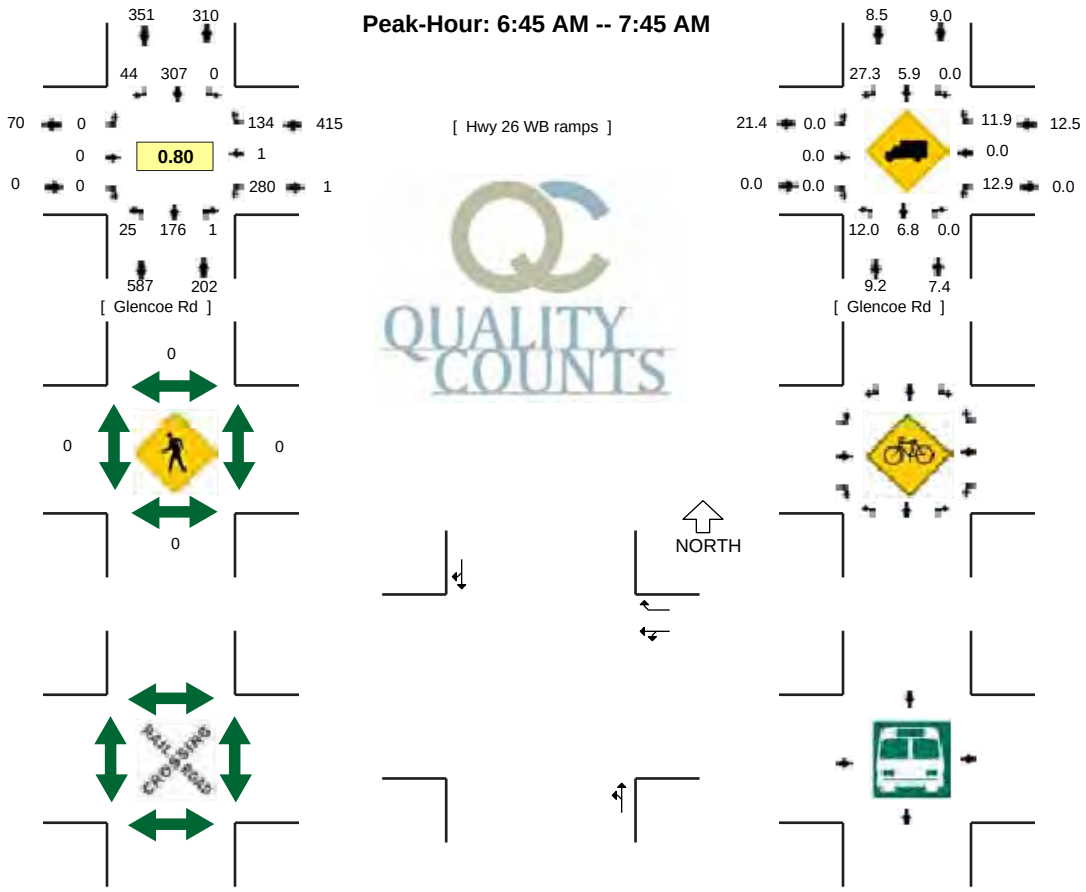
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--Hwy 26 WB ramps
WEATHER:

QC JOB #: 10127612
DATE: 11/16/2005

Peak-Hour: 6:45 AM -- 7:45 AM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				Hwy 26 WB ramps (Eastbound)				Hwy 26 WB ramps (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:15 AM	1	15	0		0	15	1		0	0	0		10	0	9		51	
6:20 AM	1	14	0		0	23	4		0	0	0		13	1	14		70	
6:25 AM	0	14	0		0	13	4		0	0	0		19	0	15		65	
6:30 AM	0	15	0		0	23	11		0	0	0		18	0	15		82	
6:35 AM	5	8	0		0	27	12		0	0	0		21	0	16		89	
6:40 AM	1	20	0		0	23	2		0	0	0		19	0	10		75	
6:45 AM	2	24	0		0	30	4		0	0	0		27	1	9		97	
6:50 AM	1	10	0		0	19	3		0	0	0		16	0	12		61	
6:55 AM	1	20	0		0	18	1		0	0	0		12	0	12		64	795
7:00 AM	0	13	0		0	19	4		0	0	0		16	0	4		56	805
7:05 AM	2	9	0		0	20	5		0	0	0		19	0	11		66	824
7:10 AM	6	12	0		0	24	2		0	0	0		21	0	10		75	851
7:15 AM	1	20	0		0	21	5		0	0	0		25	0	9		81	881
7:20 AM	1	9	0		0	29	1		0	0	0		23	0	14		77	888
7:25 AM	2	10	0		0	34	4		0	0	0		27	0	10		87	910
7:30 AM	2	14	1		0	29	2		0	0	0		33	0	21		102	930
7:35 AM	4	21	0		0	31	6		0	0	0		26	0	10		98	939
7:40 AM	3	14	0		0	33	7		0	0	0		35	0	12		104	968
7:45 AM	4	14	0		0	30	6		0	0	0		19	0	9		82	953
7:50 AM	3	11	0		0	16	5		0	0	0		27	3	16		81	973
7:55 AM	3	15	0		0	24	7		0	0	0		15	0	10		74	983
8:00 AM	3	15	0		0	22	3		0	0	0		13	0	13		69	996
8:05 AM	4	9	0		0	23	4		0	0	0		16	0	6		62	992
8:10 AM	4	15	0		0	24	4		0	0	0		15	0	7		69	986

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	36	196	4		0	372	60		0	0	0		376	0	172		1216
Heavy Trucks	4	4	0		0	16	12		0	0	0		48	0	28		112
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

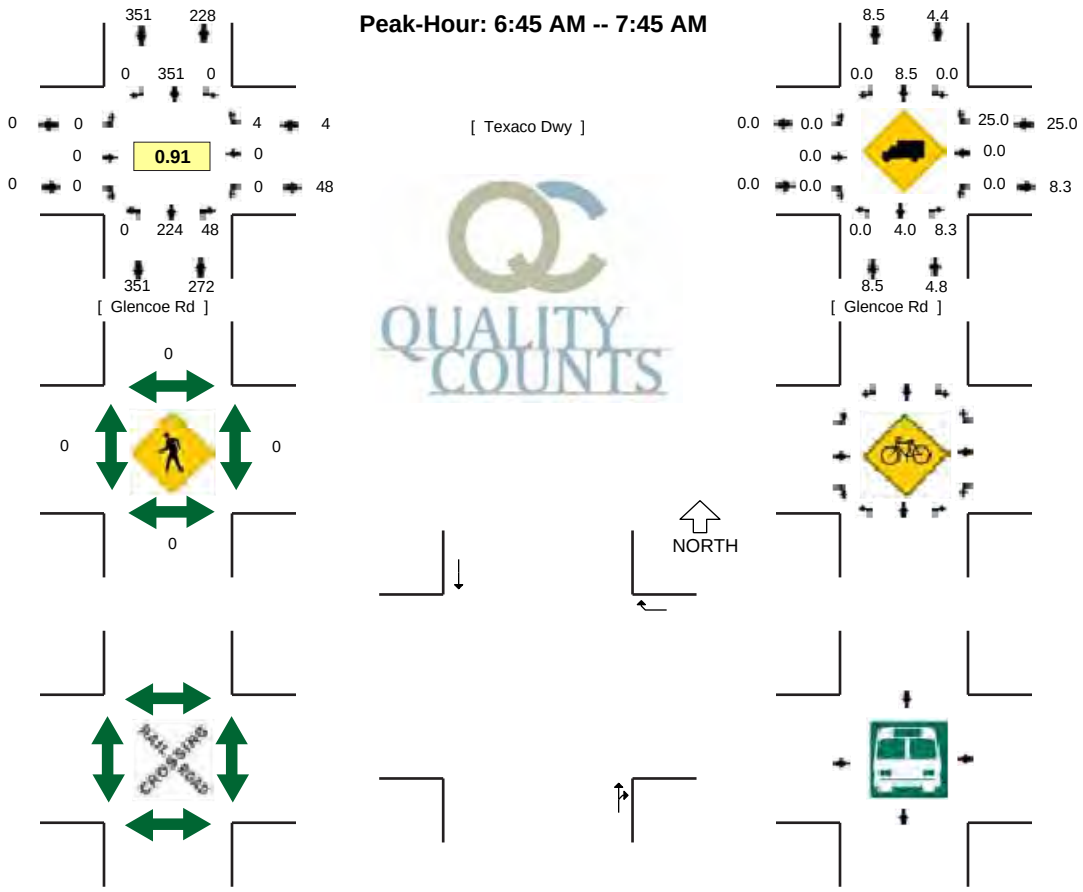
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--Texaco Dwy
WEATHER:

QC JOB #: 10127613
DATE: 11/16/2005

Peak-Hour: 6:45 AM -- 7:45 AM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				Texaco Dwy (Eastbound)				Texaco Dwy (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:15 AM	0	21	1		0	16	0		0	0	0		0	0	0		38	
6:20 AM	0	2	2		0	27	0		0	0	0		0	0	0		31	
6:25 AM	0	1	5		0	17	0		0	0	0		0	0	0		23	
6:30 AM	0	2	2		0	34	0		0	0	0		0	0	2		40	
6:35 AM	0	0	2		0	39	0		0	0	0		0	0	0		41	
6:40 AM	0	28	2		0	25	0		0	0	0		0	0	0		55	
6:45 AM	0	28	1		0	34	0		0	0	0		0	0	0		63	
6:50 AM	0	27	2		0	22	0		0	0	0		0	0	1		52	
6:55 AM	0	28	6		0	19	0		0	0	0		0	0	0		53	502
7:00 AM	0	14	4		0	23	0		0	0	0		0	0	0		41	511
7:05 AM	0	15	6		0	25	0		0	0	0		0	0	1		47	517
7:10 AM	0	14	8		0	26	0		0	0	0		0	0	1		49	533
7:15 AM	0	28	5		0	26	0		0	0	0		0	0	0		59	554
7:20 AM	0	18	2		0	30	0		0	0	0		0	0	1		51	574
7:25 AM	0	23	0		0	38	0		0	0	0		0	0	0		61	612
7:30 AM	0	27	3		0	31	0		0	0	0		0	0	0		61	633
7:35 AM	0	2	4		0	37	0		0	0	0		0	0	0		43	635
7:40 AM	0	0	7		0	40	0		0	0	0		0	0	0		47	627
7:45 AM	0	2	4		0	36	0		0	0	0		0	0	0		42	606
7:50 AM	0	2	5		0	21	0		0	0	0		0	0	0		28	582
7:55 AM	0	21	4		0	31	0		0	0	0		0	0	0		56	585
8:00 AM	0	29	2		0	25	0		0	0	0		0	0	1		57	601
8:05 AM	0	14	2		0	27	0		0	0	0		0	0	0		43	597
8:10 AM	0	12	6		0	28	0		0	0	0		0	0	0		46	594

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	272	20		0	396	0		0	0	0		0	0	4		692
Heavy Trucks	0	4	4		0	32	0		0	0	0		0	0	0		40
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

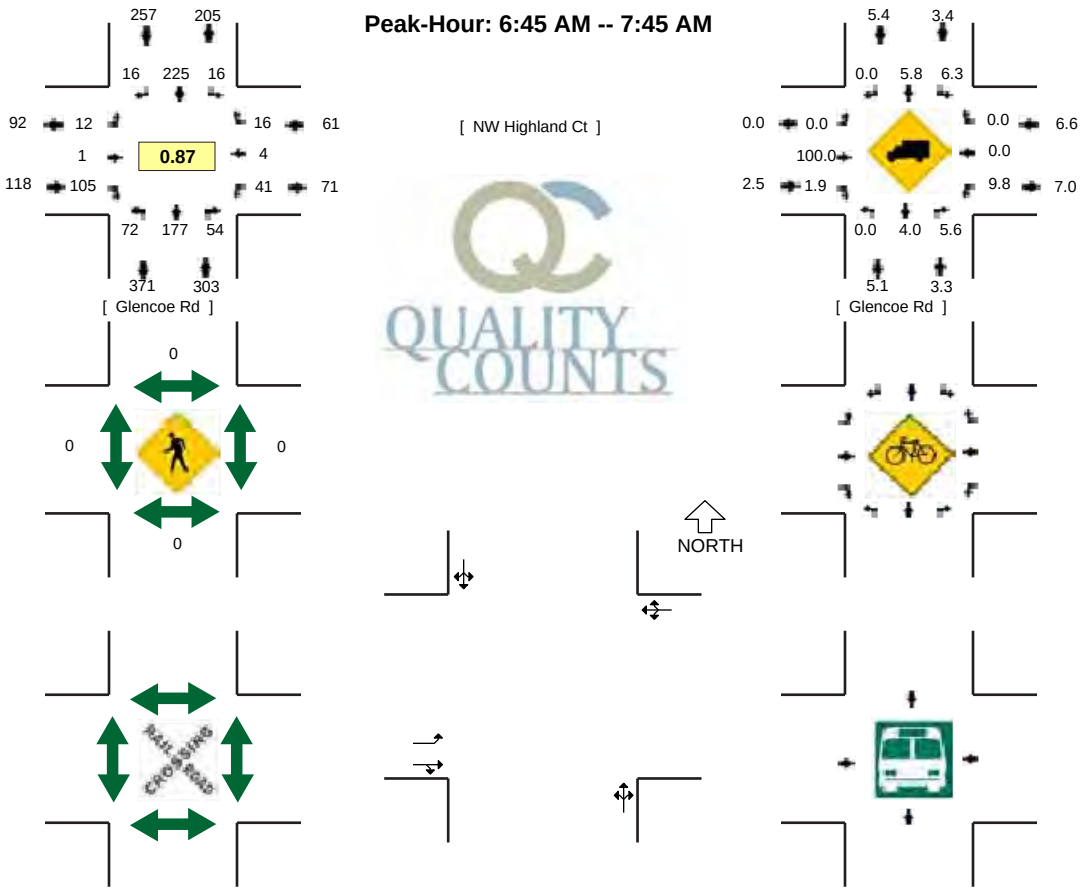
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--NW Highland Ct
WEATHER:

QC JOB #: 10127614
DATE: 11/16/2005

Peak-Hour: 6:45 AM -- 7:45 AM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				NW Highland Ct (Eastbound)				NW Highland Ct (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:15 AM	7	12	3		1	14	0		1	0	5		1	0	0		44	
6:20 AM	8	14	5		1	15	1		1	0	13		1	0	1		60	
6:25 AM	8	14	10		3	8	0		2	0	10		1	0	1		57	
6:30 AM	9	17	6		6	16	3		1	0	21		3	0	4		86	
6:35 AM	5	12	4		1	19	1		2	1	8		12	0	1		66	
6:40 AM	3	19	8		1	9	1		1	0	8		8	0	1		59	
6:45 AM	5	18	6		1	23	1		1	0	10		3	1	1		70	
6:50 AM	8	16	4		2	19	1		1	0	5		2	0	1		59	
6:55 AM	10	14	10		0	10	0		0	0	5		4	0	2		55	671
7:00 AM	8	6	4		1	16	0		2	0	9		3	0	0		49	683
7:05 AM	5	9	6		0	18	0		2	0	11		3	1	2		57	697
7:10 AM	7	8	6		4	17	1		0	0	11		3	1	2		60	722
7:15 AM	7	20	6		0	10	2		0	1	6		3	0	3		58	736
7:20 AM	3	15	1		2	19	4		0	0	10		6	0	2		62	738
7:25 AM	6	17	0		0	20	2		0	0	6		4	0	2		57	738
7:30 AM	4	24	2		3	24	1		3	0	10		2	0	0		73	725
7:35 AM	8	18	4		2	23	1		3	0	9		4	0	1		73	732
7:40 AM	1	12	5		1	26	3		0	0	13		4	1	0		66	739
7:45 AM	9	11	7		0	22	2		0	1	6		2	0	4		64	733
7:50 AM	9	16	7		4	12	3		4	0	7		3	0	2		67	741
7:55 AM	4	16	5		1	13	2		4	2	17		4	0	0		68	754
8:00 AM	8	21	1		4	15	1		1	0	11		3	0	2		67	772
8:05 AM	1	12	3		1	19	2		0	0	10		2	0	0		50	765
8:10 AM	4	8	6		2	14	0		0	0	7		7	0	0		48	753

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	52	216	44		24	292	20		24	0	128		40	4	4		848
Heavy Trucks	0	4	0		4	12	0		0	0	4		4	0	0		28
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

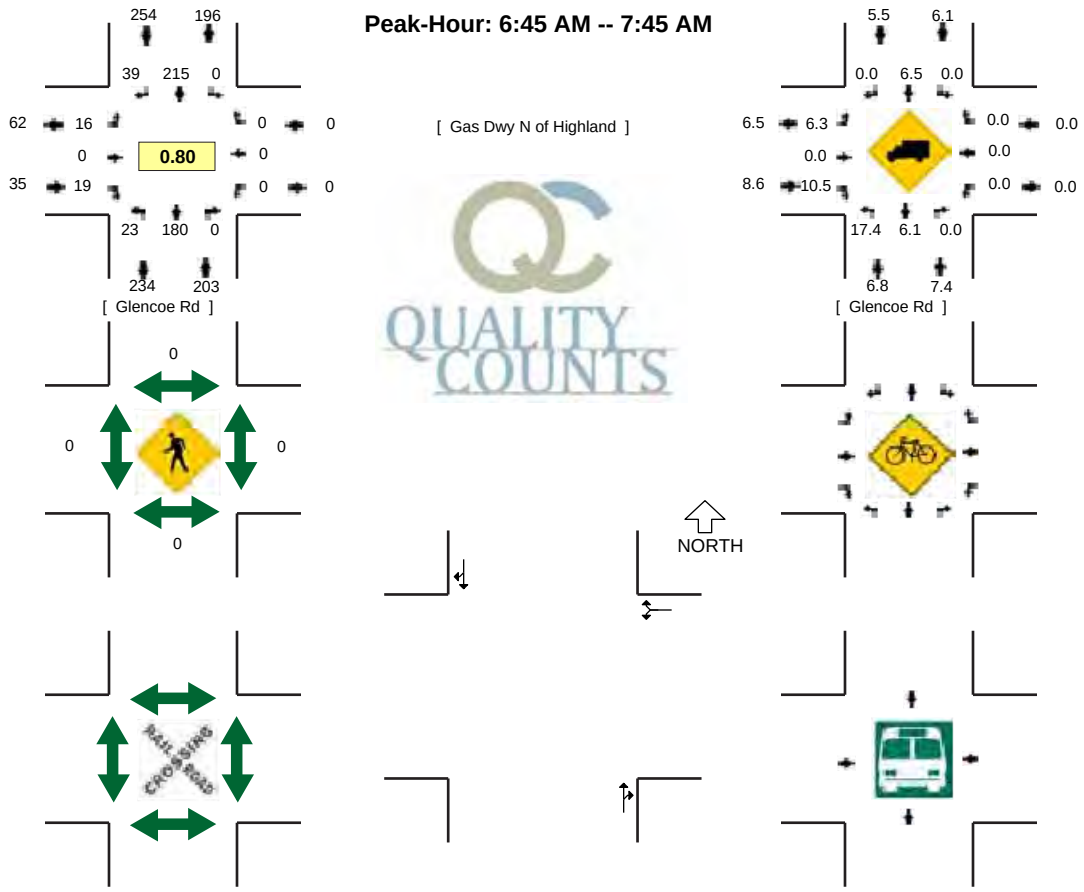
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--Gas Dwy N of Highland
WEATHER:

QC JOB #: 10127615
DATE: 11/16/2005

Peak-Hour: 6:45 AM -- 7:45 AM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				Gas Dwy N of Highland (Eastbound)				Gas Dwy N of Highland (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:15 AM	1	17	0		0	0	6		0	0	2		0	0	0		26	
6:20 AM	5	9	0		0	15	4		0	0	2		0	0	0		35	
6:25 AM	6	7	0		0	6	5		1	0	0		0	0	0		25	
6:30 AM	6	3	0		0	26	1		0	0	2		0	0	0		38	
6:35 AM	1	27	0		0	18	4		5	0	1		0	0	0		56	
6:40 AM	1	26	0		0	3	4		3	0	0		0	0	0		37	
6:45 AM	2	17	0		0	0	4		2	0	1		0	0	0		26	
6:50 AM	1	14	0		0	23	1		2	0	2		0	0	0		43	
6:55 AM	2	19	0		0	9	3		2	0	2		0	0	0		37	431
7:00 AM	1	8	0		0	16	3		1	0	2		0	0	0		31	421
7:05 AM	1	12	0		0	17	3		1	0	2		0	0	0		36	419
7:10 AM	1	7	0		0	24	0		0	0	2		0	0	0		34	424
7:15 AM	2	23	0		0	9	3		3	0	0		0	0	0		40	438
7:20 AM	0	23	0		0	23	4		0	0	2		0	0	0		52	455
7:25 AM	3	11	0		0	22	3		0	0	3		0	0	0		42	472
7:30 AM	3	23	0		0	24	6		2	0	2		0	0	0		60	494
7:35 AM	3	14	0		0	23	4		0	0	1		0	0	0		45	483
7:40 AM	4	9	0		0	25	5		3	0	0		0	0	0		46	492
7:45 AM	1	17	0		0	24	1		2	0	1		0	0	0		46	512
7:50 AM	2	22	0		0	14	6		2	0	1		0	0	0		47	516
7:55 AM	1	22	0		0	13	4		2	0	1		0	0	0		43	522
8:00 AM	2	21	0		0	16	4		1	0	0		0	0	0		44	535
8:05 AM	4	5	0		0	18	6		0	0	1		0	0	0		34	533
8:10 AM	0	16	0		0	16	1		2	0	1		0	0	0		36	535

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	24	228	0		0	276	52		8	0	28		0	0	0		616
Heavy Trucks	4	12	0		0	8	0		0	0	0		0	0	0		24
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

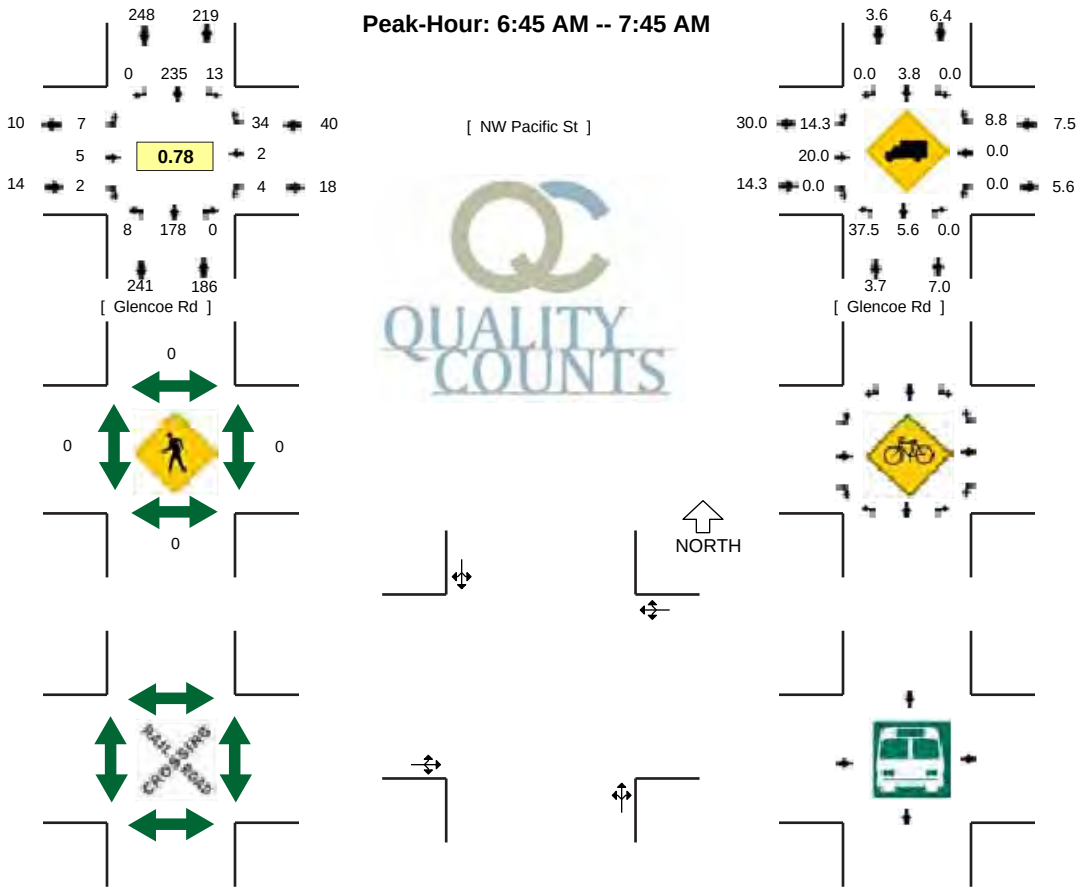
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--NW Pacific St
WEATHER:

QC JOB #: 10127616
DATE: 11/16/2005

Peak-Hour: 6:45 AM -- 7:45 AM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				NW Pacific St (Eastbound)				NW Pacific St (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:15 AM	0	17	0		0	8	0		0	0	0		0	0	3		28	
6:20 AM	0	14	0		0	12	0		0	0	0		0	0	6		32	
6:25 AM	0	12	0		1	8	0		0	0	0		0	0	2		23	
6:30 AM	0	9	0		0	20	0		0	0	0		0	0	2		31	
6:35 AM	1	22	0		0	21	0		0	0	0		0	0	2		46	
6:40 AM	0	22	0		0	15	0		0	0	0		0	0	4		41	
6:45 AM	0	16	0		0	20	0		0	0	0		1	0	8		45	
6:50 AM	0	13	0		0	15	0		1	0	0		1	0	4		34	
6:55 AM	1	18	0		0	15	0		0	0	0		1	0	2		37	398
7:00 AM	0	8	0		2	12	0		2	0	0		0	0	2		26	391
7:05 AM	1	11	0		0	19	0		1	0	0		1	0	1		34	399
7:10 AM	0	8	0		0	17	0		0	0	0		0	0	2		27	404
7:15 AM	2	20	0		0	12	0		0	1	0		0	1	4		40	416
7:20 AM	1	22	0		11	23	0		1	1	1		0	1	3		64	448
7:25 AM	2	12	0		0	19	0		1	0	1		0	0	3		38	463
7:30 AM	1	23	0		0	25	0		0	2	0		0	0	3		54	486
7:35 AM	0	17	0		0	30	0		1	1	0		0	0	1		50	490
7:40 AM	0	10	0		0	28	0		0	0	0		0	0	1		39	488
7:45 AM	0	16	0		1	27	0		0	0	0		0	0	2		46	489
7:50 AM	2	20	0		0	23	0		1	0	0		0	0	2		48	503
7:55 AM	2	19	0		0	17	0		0	0	0		0	0	1		39	505
8:00 AM	2	20	0		2	17	0		0	0	4		0	1	1		47	526
8:05 AM	1	8	0		0	19	1		0	0	3		1	0	0		33	525
8:10 AM	0	14	0		1	17	0		0	0	2		0	0	0		34	532

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	16	228	0		44	268	0		8	12	8		0	4	36		624
Heavy Trucks	4	12	0		0	4	0		0	4	0		0	0	8		32
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

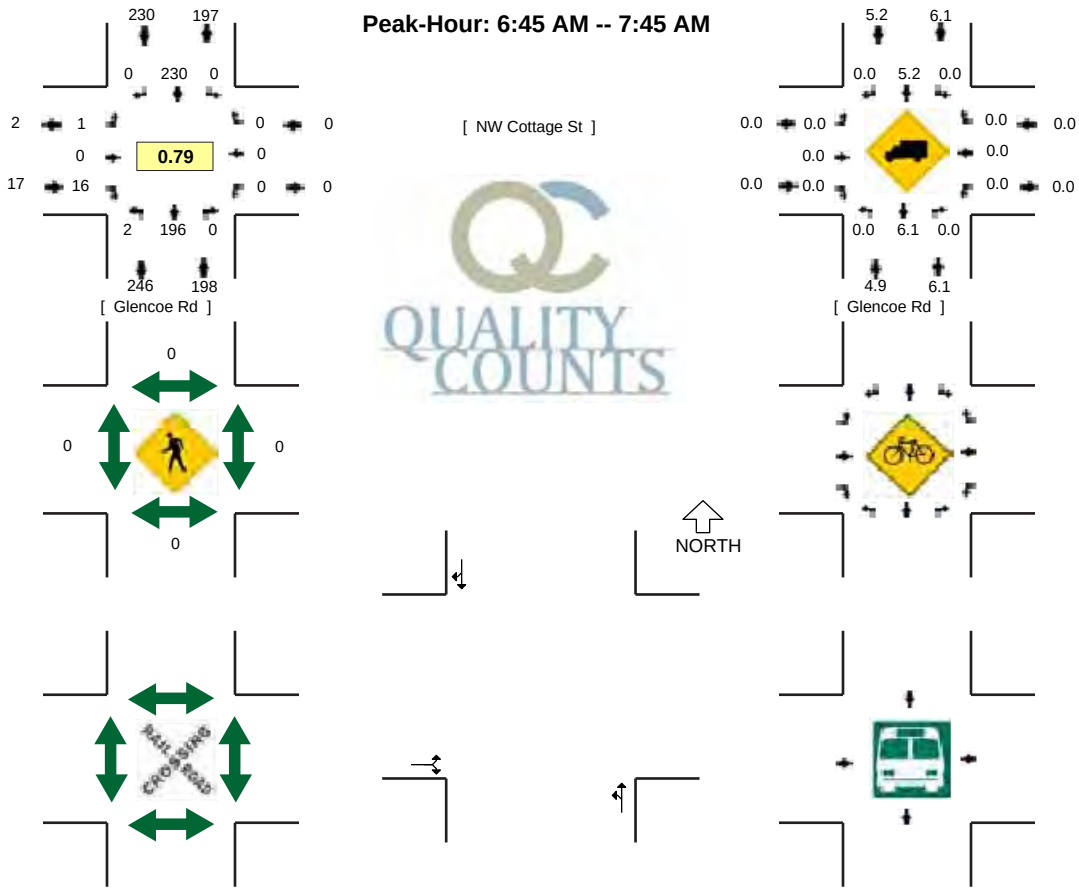
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--NW Cottage St
WEATHER:

QC JOB #: 10127617
DATE: 11/16/2005

Peak-Hour: 6:45 AM -- 7:45 AM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				NW Cottage St (Eastbound)				NW Cottage St (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:15 AM	0	12	0		0	21	0		0	0	1		0	0	0		34	
6:20 AM	0	11	0		0	11	0		0	0	1		0	0	0		23	
6:25 AM	0	9	0		0	13	0		0	0	3		0	0	0		25	
6:30 AM	1	10	0		0	15	0		0	0	0		0	0	0		26	
6:35 AM	0	21	0		0	15	0		0	0	2		0	0	0		38	
6:40 AM	0	25	0		0	14	0		0	0	1		0	0	0		40	
6:45 AM	0	21	0		0	20	0		0	0	1		0	0	0		42	
6:50 AM	0	19	0		0	15	0		0	0	0		0	0	0		34	
6:55 AM	0	20	0		0	14	0		0	0	0		0	0	0		34	368
7:00 AM	0	8	0		0	14	0		0	0	2		0	0	0		24	363
7:05 AM	0	12	0		0	17	0		0	0	0		0	0	0		29	368
7:10 AM	1	6	0		0	17	0		0	0	0		0	0	0		24	373
7:15 AM	0	21	0		0	15	0		1	0	2		0	0	0		39	378
7:20 AM	0	18	0		0	17	0		0	0	3		0	0	0		38	393
7:25 AM	0	18	0		0	22	0		0	0	0		0	0	0		40	408
7:30 AM	0	24	0		0	21	0		0	0	6		0	0	0		51	433
7:35 AM	1	17	0		0	27	0		0	0	1		0	0	0		46	441
7:40 AM	0	12	0		0	31	0		0	0	1		0	0	0		44	445
7:45 AM	1	14	0		0	18	0		0	0	2		0	0	0		35	438
7:50 AM	0	22	0		0	24	0		1	0	1		0	0	0		48	452
7:55 AM	1	18	0		0	17	0		0	0	0		0	0	0		36	454
8:00 AM	1	19	0		0	21	0		0	0	1		0	0	0		42	472
8:05 AM	0	7	0		0	16	0		0	0	2		0	0	0		25	468
8:10 AM	0	10	0		0	16	0		0	0	1		0	0	0		27	471

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	212	0		0	316	0		0	0	32		0	0	0		564
Heavy Trucks	0	16	0		0	16	0		0	0	0		0	0	0		32
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

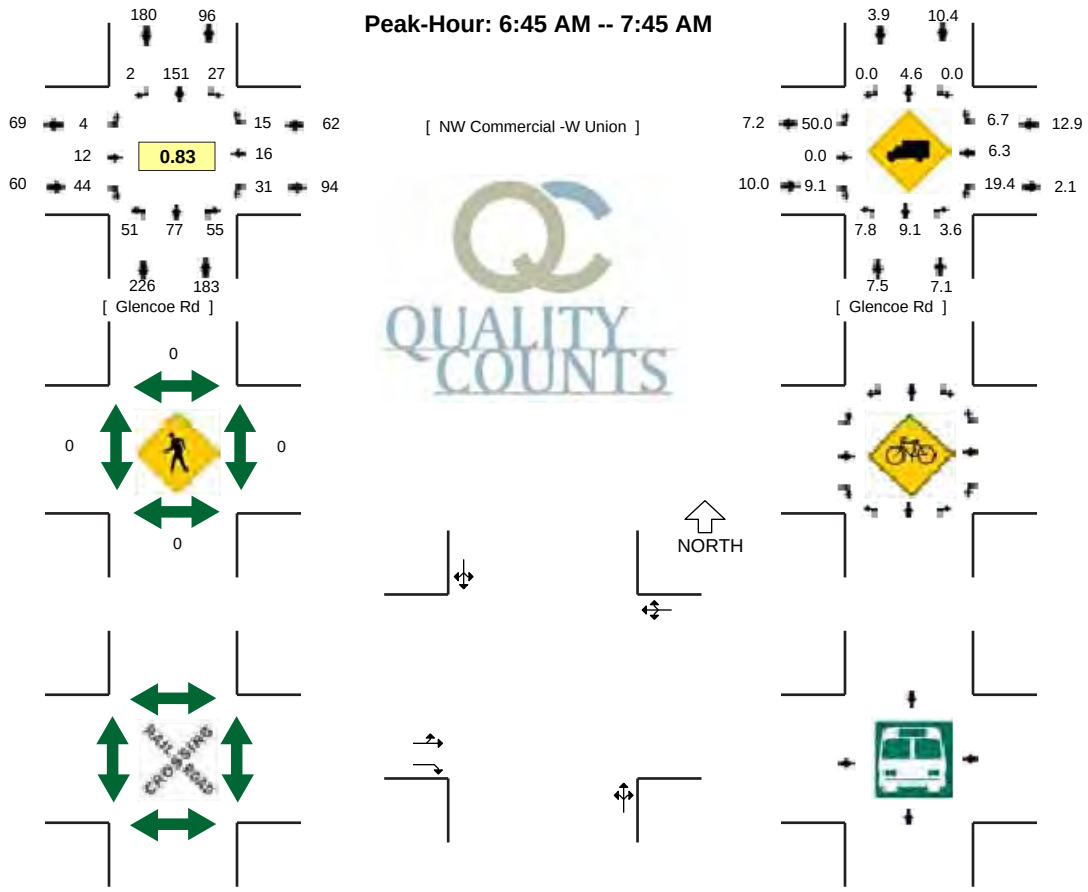
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--NW Commercial -W Union
WEATHER:

QC JOB #: 10127618
DATE: 11/16/2005

Peak-Hour: 6:45 AM -- 7:45 AM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				NW Commercial -W Union (Eastbound)				NW Commercial -W Union (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:15 AM	2	2	5		0	12	0		0	0	5		2	1	0		29	
6:20 AM	6	2	4		2	7	1		0	0	3		1	0	0		26	
6:25 AM	6	2	3		0	7	1		0	2	2		4	0	0		27	
6:30 AM	2	5	3		1	5	0		0	1	9		1	1	0		28	
6:35 AM	13	4	4		2	8	0		1	1	5		0	2	0		40	
6:40 AM	10	5	8		3	4	0		0	2	4		4	0	1		41	
6:45 AM	8	3	8		3	12	0		0	1	7		1	3	0		46	
6:50 AM	5	7	6		1	11	0		1	0	4		0	1	0		36	
6:55 AM	7	5	8		3	7	0		0	1	5		2	1	0		39	385
7:00 AM	1	4	3		2	7	0		1	0	2		6	0	4		30	387
7:05 AM	2	9	1		3	8	1		0	1	5		3	0	1		34	397
7:10 AM	1	5	0		1	13	0		1	0	2		2	0	1		26	402
7:15 AM	4	8	6		2	12	0		0	2	0		2	3	3		42	415
7:20 AM	4	3	4		1	13	0		1	2	2		2	3	1		36	425
7:25 AM	9	9	2		2	14	0		0	1	5		5	2	2		51	449
7:30 AM	3	12	6		2	19	0		0	0	3		0	1	2		48	469
7:35 AM	6	4	5		3	18	1		0	2	2		4	2	0		47	476
7:40 AM	1	8	6		4	17	0		0	2	7		4	0	1		50	485
7:45 AM	0	6	4		5	8	0		0	0	4		6	2	0		35	474
7:50 AM	2	12	7		1	12	0		0	0	5		4	1	1		45	483
7:55 AM	7	7	5		2	9	0		0	2	1		4	4	1		42	486
8:00 AM	6	2	3		0	2	3		6	7	5		1	14	0		49	505
8:05 AM	2	3	1		0	3	4		2	5	4		0	9	1		34	505
8:10 AM	1	0	0		0	4	7		0	6	2		2	7	0		29	508

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	72	100	52		28	204	4		0	12	40		36	20	16		584
Heavy Trucks	4	4	4		0	12	0		0	0	0		4	0	0		28
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

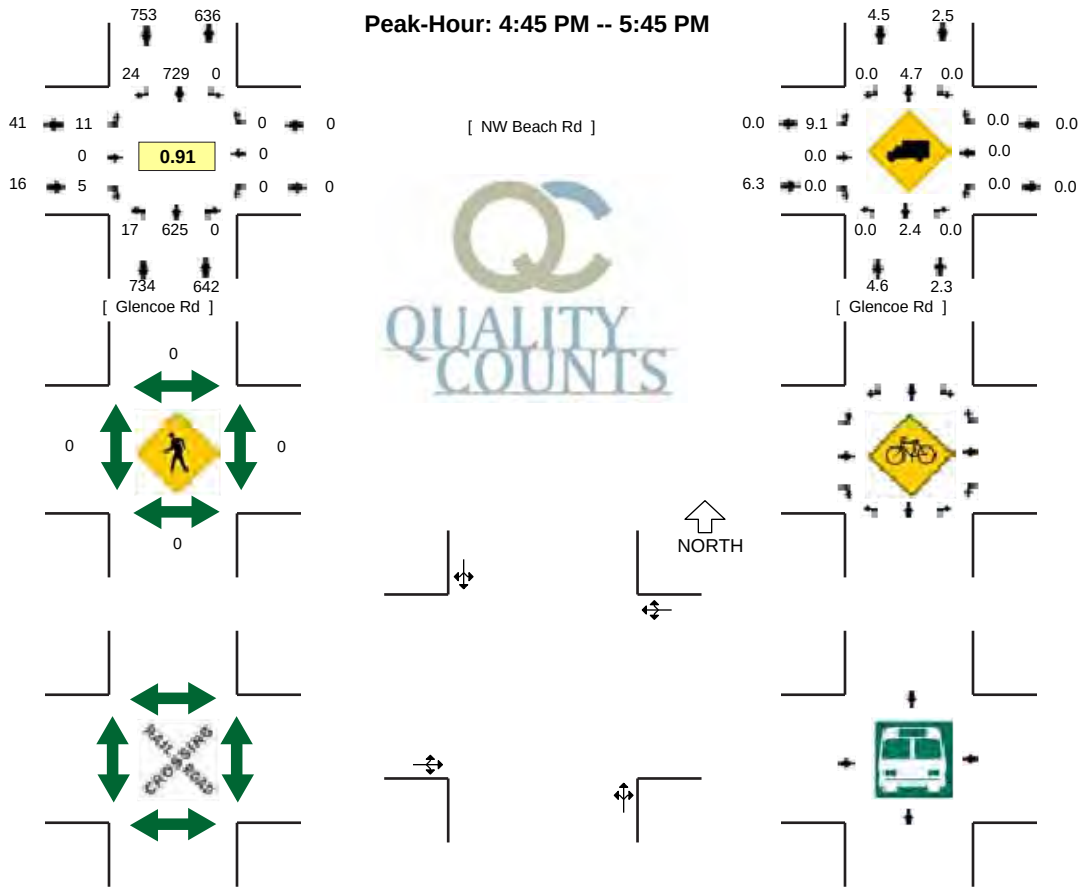
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--NW Beach Rd
WEATHER:

QC JOB #: 10127601
DATE: 11/16/2005

Peak-Hour: 4:45 PM -- 5:45 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				NW Beach Rd (Eastbound)				NW Beach Rd (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	51	0		0	45	1		2	0	0		0	0	0		99	
4:05 PM	1	50	0		0	55	1		0	0	1		0	0	0		108	
4:10 PM	0	44	0		0	61	1		0	0	0		0	0	0		106	
4:15 PM	1	35	0		0	72	2		0	0	0		0	0	0		110	
4:20 PM	0	46	0		0	71	6		0	0	0		0	0	0		123	
4:25 PM	0	43	0		0	51	2		1	0	2		0	0	0		99	
4:30 PM	1	43	0		0	46	8		1	0	0		0	0	0		99	
4:35 PM	0	37	0		1	57	1		0	0	2		0	0	0		98	
4:40 PM	1	31	0		0	67	0		0	0	1		0	0	0		100	
4:45 PM	12	41	0		0	84	1		2	0	0		0	0	0		140	
4:50 PM	0	46	0		0	66	2		0	0	1		0	0	0		115	
4:55 PM	1	61	0		0	62	3		1	0	1		0	0	0		129	1326
5:00 PM	0	40	0		0	54	4		0	0	0		0	0	0		98	1325
5:05 PM	1	49	0		0	59	1		3	0	1		0	0	0		114	1331
5:10 PM	0	44	0		0	66	2		2	0	1		0	0	0		115	1340
5:15 PM	1	55	0		0	50	3		1	0	0		0	0	0		110	1340
5:20 PM	0	82	0		0	66	1		0	0	0		0	0	0		149	1366
5:25 PM	1	62	0		0	60	3		2	0	0		0	0	0		128	1395
5:30 PM	1	51	0		0	52	0		0	0	0		0	0	0		104	1400
5:35 PM	0	54	0		0	50	1		0	0	0		0	0	0		105	1407
5:40 PM	0	40	0		0	60	3		0	0	1		0	0	0		104	1411
5:45 PM	1	37	0		0	51	2		1	0	3		0	0	0		95	1366
5:50 PM	0	45	0		0	46	2		0	0	1		0	0	0		94	1345
5:55 PM	0	40	0		0	52	0		0	0	0		0	0	0		92	1308

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	8	796	0		0	704	28		12	0	0		0	0	0		1548
Heavy Trucks	0	24	0		0	36	0		0	0	0		0	0	0		60
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

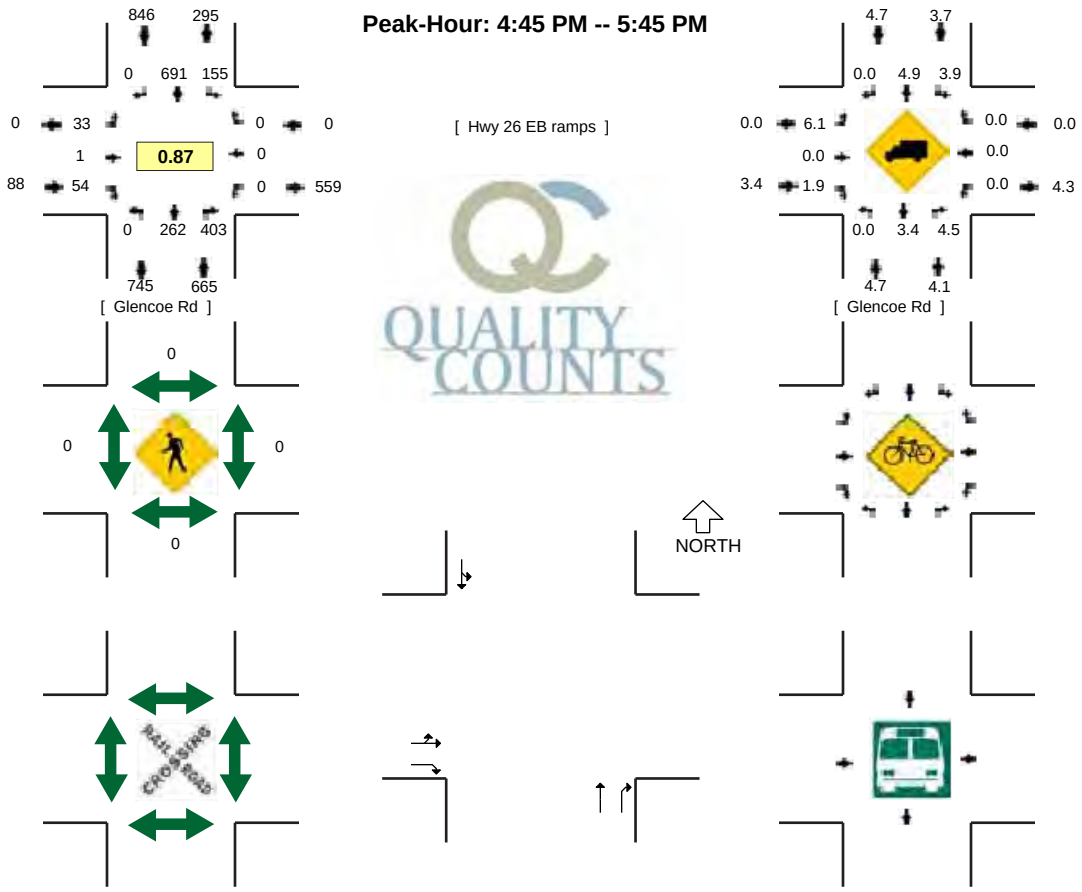
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--Hwy 26 EB ramps
WEATHER:

QC JOB #: 10127602
DATE: 11/16/2005

Peak-Hour: 4:45 PM -- 5:45 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				Hwy 26 EB ramps (Eastbound)				Hwy 26 EB ramps (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	23	29		16	50	0		2	0	3		0	0	0		123	
4:05 PM	0	16	29		15	39	0		6	0	4		0	0	0		109	
4:10 PM	0	22	23		14	70	0		2	0	4		0	0	0		135	
4:15 PM	0	15	20		18	72	0		4	0	6		0	0	0		135	
4:20 PM	0	20	23		11	56	0		3	0	7		0	0	0		120	
4:25 PM	0	14	35		14	57	0		3	0	2		0	0	0		125	
4:30 PM	0	21	31		6	46	0		1	0	5		0	0	0		110	
4:35 PM	0	6	27		14	48	0		2	0	5		0	0	0		102	
4:40 PM	0	18	18		12	73	0		5	0	6		0	0	0		132	
4:45 PM	0	22	16		13	70	0		3	0	9		0	0	0		133	
4:50 PM	0	26	31		14	53	0		2	0	3		0	0	0		129	
4:55 PM	0	28	37		13	64	0		3	0	2		0	0	0		147	1500
5:00 PM	0	20	24		13	58	0		3	0	2		0	0	0		120	1497
5:05 PM	0	18	31		8	57	0		3	0	7		0	0	0		124	1512
5:10 PM	0	21	28		10	60	0		4	0	4		0	0	0		127	1504
5:15 PM	0	23	41		15	57	0		2	0	2		0	0	0		140	1509
5:20 PM	0	32	45		11	66	0		4	0	9		0	0	0		167	1556
5:25 PM	0	24	51		19	53	0		2	0	5		0	0	0		154	1585
5:30 PM	0	20	39		13	51	0		3	0	4		0	0	0		130	1605
5:35 PM	0	11	36		7	52	0		3	1	3		0	0	0		113	1616
5:40 PM	0	17	24		19	50	0		1	0	4		0	0	0		115	1599
5:45 PM	0	14	20		6	42	0		2	0	6		0	0	0		90	1556
5:50 PM	0	19	26		11	48	0		5	0	3		0	0	0		112	1539
5:55 PM	0	21	19		14	48	0		1	0	3		0	0	0		106	1498

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	316	548		180	704	0		32	0	64		0	0	0		1844
Heavy Trucks	0	4	20		8	28	0		0	0	0		0	0	0		60
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

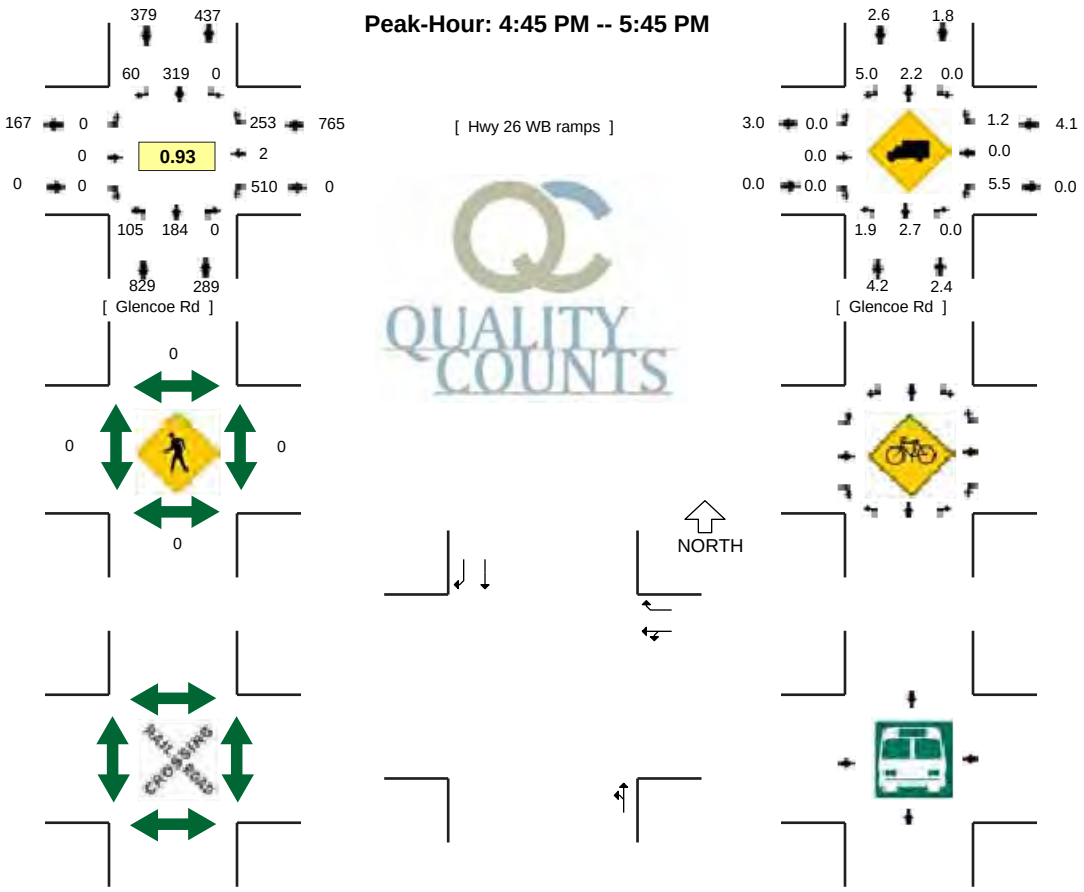
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--Hwy 26 WB ramps
WEATHER:

QC JOB #: 10127603
DATE: 11/16/2005

Peak-Hour: 4:45 PM -- 5:45 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				Hwy 26 WB ramps (Eastbound)				Hwy 26 WB ramps (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	8	16	0		0	27	2		0	0	0		39	0	18		110	
4:05 PM	10	15	0		0	22	0		0	0	0		34	0	22		103	
4:10 PM	8	13	0		0	34	1		0	0	0		46	0	20		122	
4:15 PM	3	21	0		0	39	0		0	0	0		43	0	20		126	
4:20 PM	8	12	0		0	27	0		0	0	0		44	0	14		105	
4:25 PM	4	10	0		0	30	0		0	0	0		39	0	20		103	
4:30 PM	5	12	0		0	19	1		0	0	0		36	0	18		91	
4:35 PM	1	9	0		0	22	3		0	0	0		42	0	19		96	
4:40 PM	4	15	0		0	34	4		0	0	0		47	0	20		124	
4:45 PM	9	20	0		0	23	1		0	0	0		51	0	19		123	
4:50 PM	7	20	0		0	23	2		0	0	0		43	2	20		117	
4:55 PM	7	20	0		0	25	3		0	0	0		49	0	28		132	1352
5:00 PM	7	13	0		0	29	4		0	0	0		43	0	12		108	1350
5:05 PM	8	16	0		0	25	4		0	0	0		40	0	26		119	1366
5:10 PM	12	14	0		0	24	4		0	0	0		46	0	22		122	1366
5:15 PM	12	12	0		0	31	8		0	0	0		40	0	21		124	1364
5:20 PM	13	14	0		0	28	7		0	0	0		51	0	22		135	1394
5:25 PM	10	18	0		0	37	5		0	0	0		37	0	21		128	1419
5:30 PM	10	10	0		0	22	14		0	0	0		33	0	23		112	1440
5:35 PM	5	15	0		0	24	7		0	0	0		41	0	23		115	1459
5:40 PM	5	12	0		0	28	1		0	0	0		36	0	16		98	1433
5:45 PM	2	18	0		0	20	9		0	0	0		28	0	21		98	1408
5:50 PM	7	18	0		0	17	9		0	0	0		41	0	14		106	1397
5:55 PM	6	14	0		0	26	5		0	0	0		33	0	22		106	1371

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	140	176	0		0	384	80		0	0	0		512	0	256		1548
Heavy Trucks	4	0	0		0	8	0		0	0	0		24	0	0		36
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

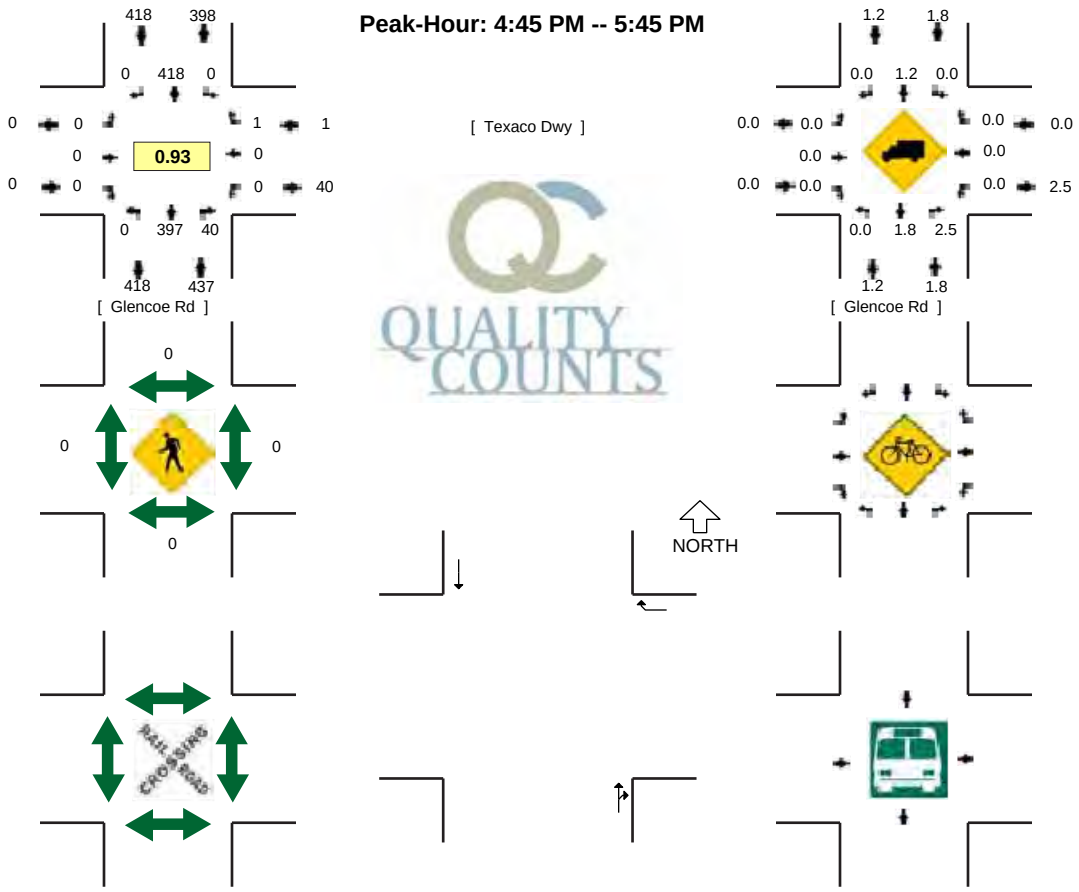
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--Texaco Dwy
WEATHER:

QC JOB #: 10127604
DATE: 11/16/2005

Peak-Hour: 4:45 PM -- 5:45 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				Texaco Dwy (Eastbound)				Texaco Dwy (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	31	3		0	31	0		0	0	0		0	0	0		65	
4:05 PM	0	32	5		0	35	0		0	0	0		0	0	0		72	
4:10 PM	0	28	5		0	47	0		0	0	0		0	0	0		80	
4:15 PM	0	38	3		0	43	0		0	0	0		0	0	0		84	
4:20 PM	0	22	4		0	29	0		0	0	0		0	0	0		55	
4:25 PM	0	28	2		0	42	0		0	0	0		0	0	0		72	
4:30 PM	0	26	4		0	28	0		0	0	0		0	0	0		58	
4:35 PM	0	22	6		0	30	0		0	0	0		0	0	0		58	
4:40 PM	0	32	3		0	41	0		0	0	0		0	0	0		76	
4:45 PM	0	39	0		0	32	0		0	0	0		0	0	0		71	
4:50 PM	0	37	3		0	36	0		0	0	0		0	0	0		76	
4:55 PM	0	44	4		0	28	0		0	0	0		0	0	0		76	843
5:00 PM	0	23	2		0	38	0		0	0	0		0	0	0		63	841
5:05 PM	0	38	4		0	35	0		0	0	0		0	0	0		77	846
5:10 PM	0	29	7		0	32	0		0	0	0		0	0	1		69	835
5:15 PM	0	29	4		0	43	0		0	0	0		0	0	0		76	827
5:20 PM	0	31	5		0	37	0		0	0	0		0	0	0		73	845
5:25 PM	0	37	2		0	43	0		0	0	0		0	0	0		82	855
5:30 PM	0	29	4		0	29	0		0	0	0		0	0	0		62	859
5:35 PM	0	36	2		0	36	0		0	0	0		0	0	0		74	875
5:40 PM	0	25	3		0	29	0		0	0	0		0	0	0		57	856
5:45 PM	0	36	3		0	25	0		0	0	0		0	0	0		64	849
5:50 PM	0	31	1		0	28	0		0	0	0		0	0	1		61	834
5:55 PM	0	34	2		0	30	0		0	0	0		0	0	0		66	824

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	388	44		0	492	0		0	0	0		0	0	0		924
Heavy Trucks	0	0	0		0	4	0		0	0	0		0	0	0		4
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

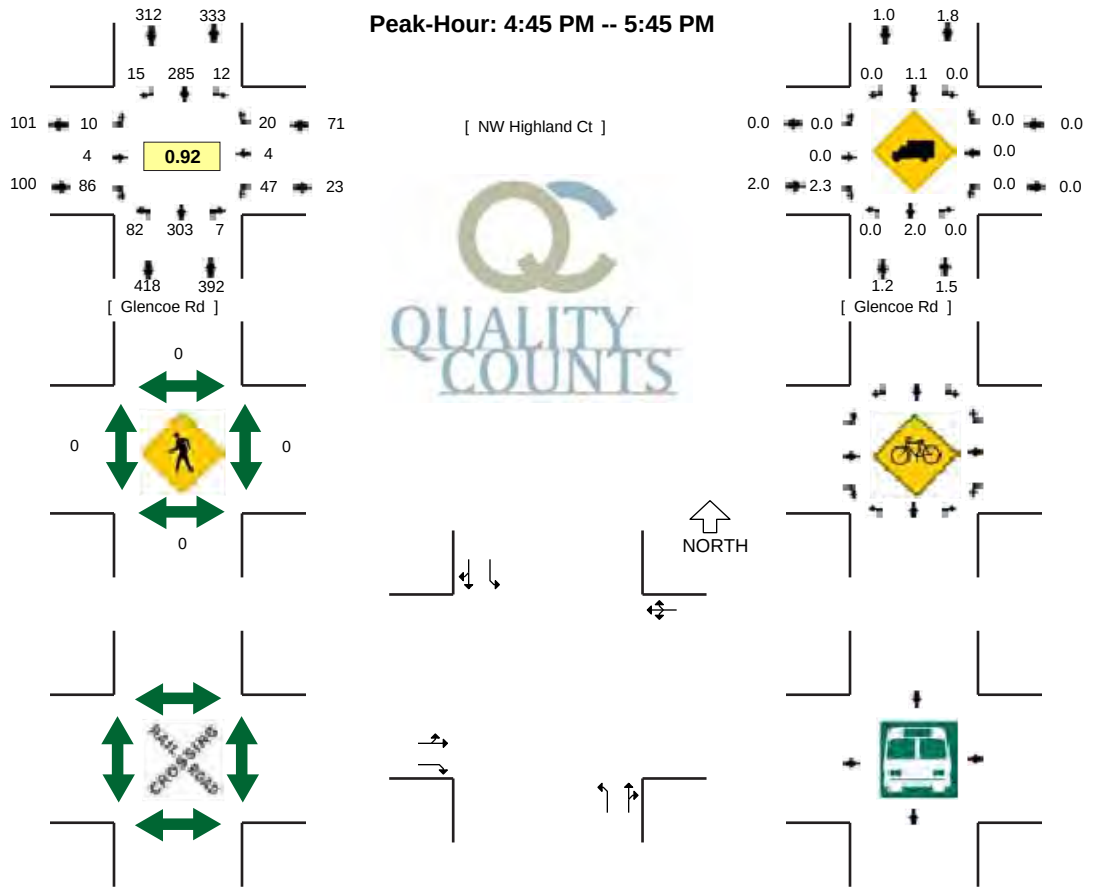
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--NW Highland Ct
WEATHER:

QC JOB #: 10127605
DATE: 11/16/2005

Peak-Hour: 4:45 PM -- 5:45 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				NW Highland Ct (Eastbound)				NW Highland Ct (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	8	24	1		1	18	1		1	0	9		4	0	4		71	
4:05 PM	7	23	1		0	23	3		2	0	10		2	0	4		75	
4:10 PM	8	19	2		4	27	4		2	0	12		8	0	1		87	
4:15 PM	7	30	1		1	24	0		0	1	9		10	0	3		86	
4:20 PM	3	21	0		2	16	0		2	0	8		5	0	2		59	
4:25 PM	6	19	2		4	23	1		0	0	10		9	0	2		76	
4:30 PM	6	22	0		1	16	2		0	0	6		6	0	1		60	
4:35 PM	6	16	0		2	21	1		1	1	7		2	0	6		63	
4:40 PM	5	24	1		0	27	1		0	0	8		6	1	3		76	
4:45 PM	9	30	0		0	23	1		0	0	6		3	0	0		72	
4:50 PM	11	24	1		1	28	0		1	0	6		2	0	0		74	
4:55 PM	6	38	0		1	20	1		1	0	6		2	0	2		77	876
5:00 PM	5	20	0		1	24	3		0	0	8		6	1	2		70	875
5:05 PM	9	28	0		1	25	1		2	1	10		0	1	2		80	880
5:10 PM	7	21	1		1	18	1		1	1	8		6	0	2		67	860
5:15 PM	4	22	1		1	24	1		0	1	12		7	0	2		75	849
5:20 PM	7	26	1		1	24	0		2	0	8		5	0	2		76	866
5:25 PM	8	28	0		3	31	1		0	1	6		6	0	2		86	876
5:30 PM	4	20	3		1	17	2		0	0	9		3	1	1		61	877
5:35 PM	8	26	0		1	27	1		1	0	5		4	1	3		77	891
5:40 PM	4	20	0		0	24	3		2	0	2		3	0	2		60	875
5:45 PM	11	24	1		0	15	1		1	0	5		5	0	1		64	867
5:50 PM	6	28	0		0	13	1		2	0	13		2	0	1		66	859
5:55 PM	5	28	0		2	22	1		2	0	8		0	1	0		69	851

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	76	304	8		20	316	8		8	8	104		72	0	24		948
Heavy Trucks	0	0	0		0	0	0		0	0	4		0	0	0		4
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

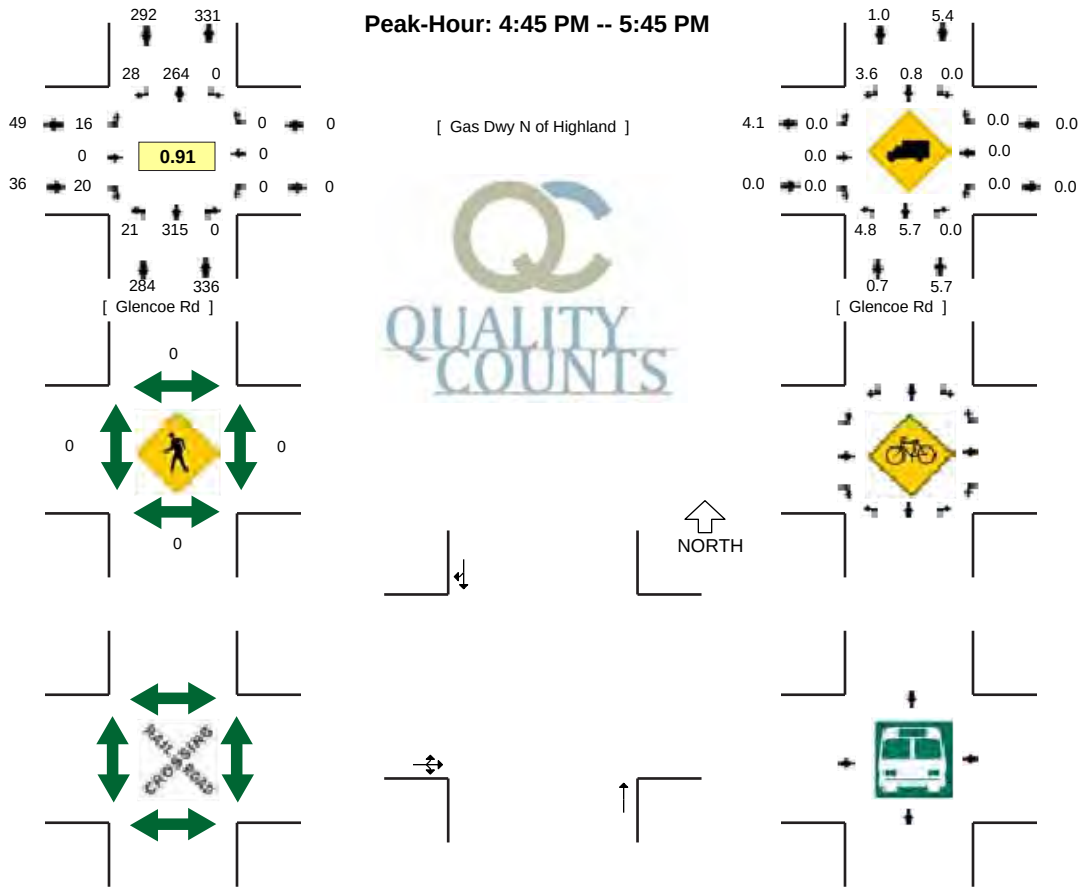
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--Gas Dwy N of Highland
WEATHER:

QC JOB #: 10127606
DATE: 11/16/2005

Peak-Hour: 4:45 PM -- 5:45 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				Gas Dwy N of Highland (Eastbound)				Gas Dwy N of Highland (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	36	0		0	15	5		2	0	0		0	0	0		59	
4:05 PM	1	32	0		0	22	3		2	0	1		0	0	0		61	
4:10 PM	1	30	0		0	29	4		2	0	2		0	0	0		68	
4:15 PM	6	21	0		0	23	2		2	0	0		0	0	0		54	
4:20 PM	3	16	0		0	12	4		0	0	2		0	0	0		37	
4:25 PM	1	23	0		0	23	1		1	0	4		0	0	0		53	
4:30 PM	4	21	0		0	17	2		2	0	0		0	0	0		46	
4:35 PM	0	23	0		0	22	2		1	0	0		0	0	0		48	
4:40 PM	3	13	0		0	25	0		1	0	3		0	0	0		45	
4:45 PM	1	30	0		0	21	2		1	0	1		0	0	0		56	
4:50 PM	2	23	0		0	25	1		2	0	3		0	0	0		56	
4:55 PM	4	41	0		0	19	2		3	0	1		0	0	0		70	653
5:00 PM	3	22	0		0	23	3		2	0	2		0	0	0		55	649
5:05 PM	3	24	0		0	24	3		2	0	0		0	0	0		56	644
5:10 PM	0	25	0		0	16	2		1	0	2		0	0	0		46	622
5:15 PM	2	24	0		0	23	2		0	0	1		0	0	0		52	620
5:20 PM	1	33	0		0	22	2		2	0	1		0	0	0		61	644
5:25 PM	1	31	0		0	27	4		0	0	4		0	0	0		67	658
5:30 PM	1	22	0		0	16	2		1	0	2		0	0	0		44	656
5:35 PM	0	28	0		0	25	2		1	0	2		0	0	0		58	666
5:40 PM	3	12	0		0	23	3		1	0	1		0	0	0		43	664
5:45 PM	0	25	0		0	13	2		1	0	1		0	0	0		42	650
5:50 PM	0	31	0		0	13	0		0	0	1		0	0	0		45	639
5:55 PM	2	27	0		0	23	2		0	0	0		0	0	0		54	623

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	28	376	0		0	260	20		24	0	20		0	0	0		728
Heavy Trucks	4	28	0		0	4	0		0	0	0		0	0	0		36
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

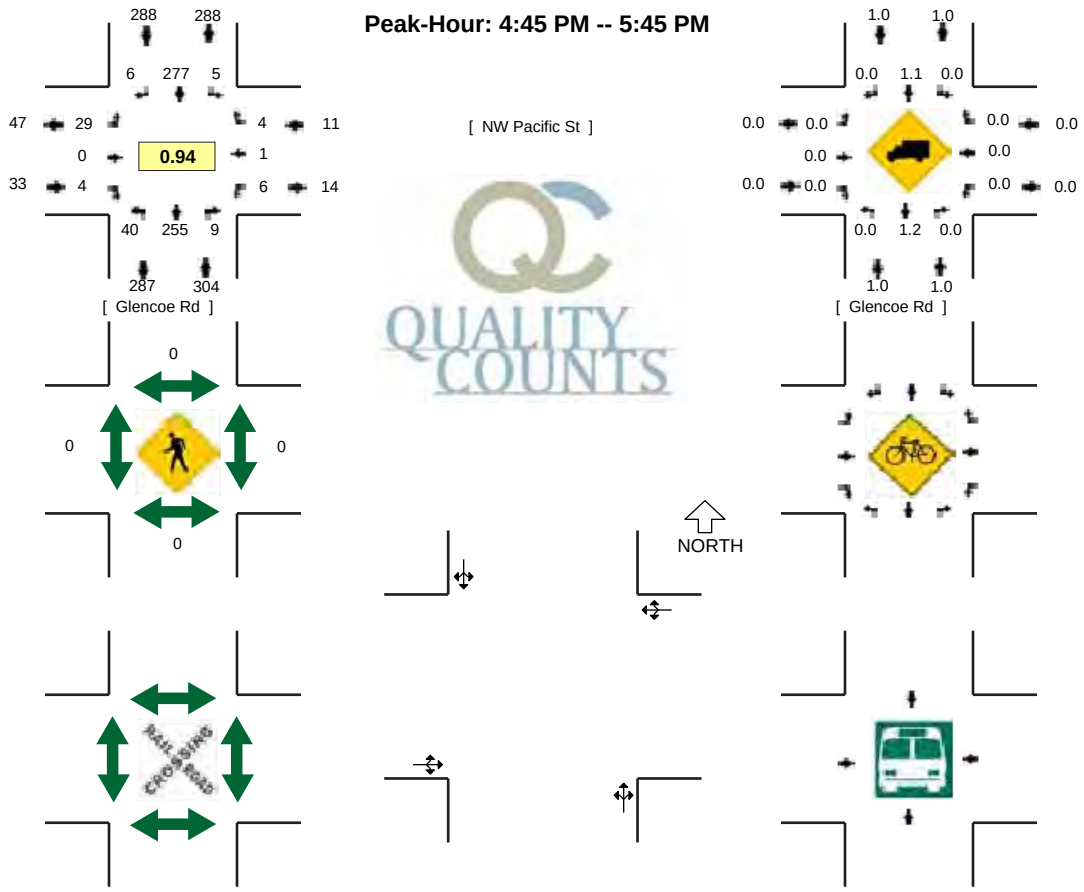
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--NW Pacific St
WEATHER:

QC JOB #: 10127607
DATE: 11/16/2005

Peak-Hour: 4:45 PM -- 5:45 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				NW Pacific St (Eastbound)				NW Pacific St (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	32	0		0	28	1		0	0	0		0	0	0		62	
4:05 PM	2	27	0		0	28	0		4	0	0		0	0	1		62	
4:10 PM	1	26	0		0	34	0		2	0	0		0	0	2		65	
4:15 PM	1	21	1		2	26	0		1	0	0		0	0	0		52	
4:20 PM	0	19	0		1	15	1		1	0	0		0	0	0		37	
4:25 PM	2	20	0		0	20	0		4	0	0		0	0	0		46	
4:30 PM	6	15	0		0	20	0		3	0	1		1	1	2		49	
4:35 PM	5	14	2		0	23	0		2	0	0		0	0	0		46	
4:40 PM	0	14	0		0	22	1		3	0	0		0	0	0		40	
4:45 PM	3	26	0		1	21	1		3	0	0		0	0	1		56	
4:50 PM	2	18	1		0	24	0		1	0	0		3	0	0		49	
4:55 PM	7	31	1		0	20	1		1	0	0		0	1	0		62	626
5:00 PM	3	17	1		0	25	0		3	0	1		0	0	0		50	614
5:05 PM	3	20	0		0	29	0		1	0	2		0	0	1		56	608
5:10 PM	3	20	0		0	21	0		4	0	1		0	0	1		50	593
5:15 PM	4	22	0		0	18	1		3	0	0		0	0	0		48	589
5:20 PM	4	25	1		0	26	1		1	0	0		0	0	0		58	610
5:25 PM	3	28	1		0	28	0		3	0	0		0	0	0		63	627
5:30 PM	2	17	2		1	18	0		2	0	0		0	0	0		42	620
5:35 PM	4	20	2		0	27	0		5	0	0		0	0	0		58	632
5:40 PM	2	11	0		3	20	2		2	0	0		3	0	1		44	636
5:45 PM	3	19	1		0	12	0		2	0	0		0	0	1		38	618
5:50 PM	4	27	0		0	10	1		3	0	0		0	0	1		46	615
5:55 PM	4	25	0		0	21	0		4	0	0		1	0	0		55	608

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	44	300	8		0	288	8		28	0	0		0	0	0		676
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

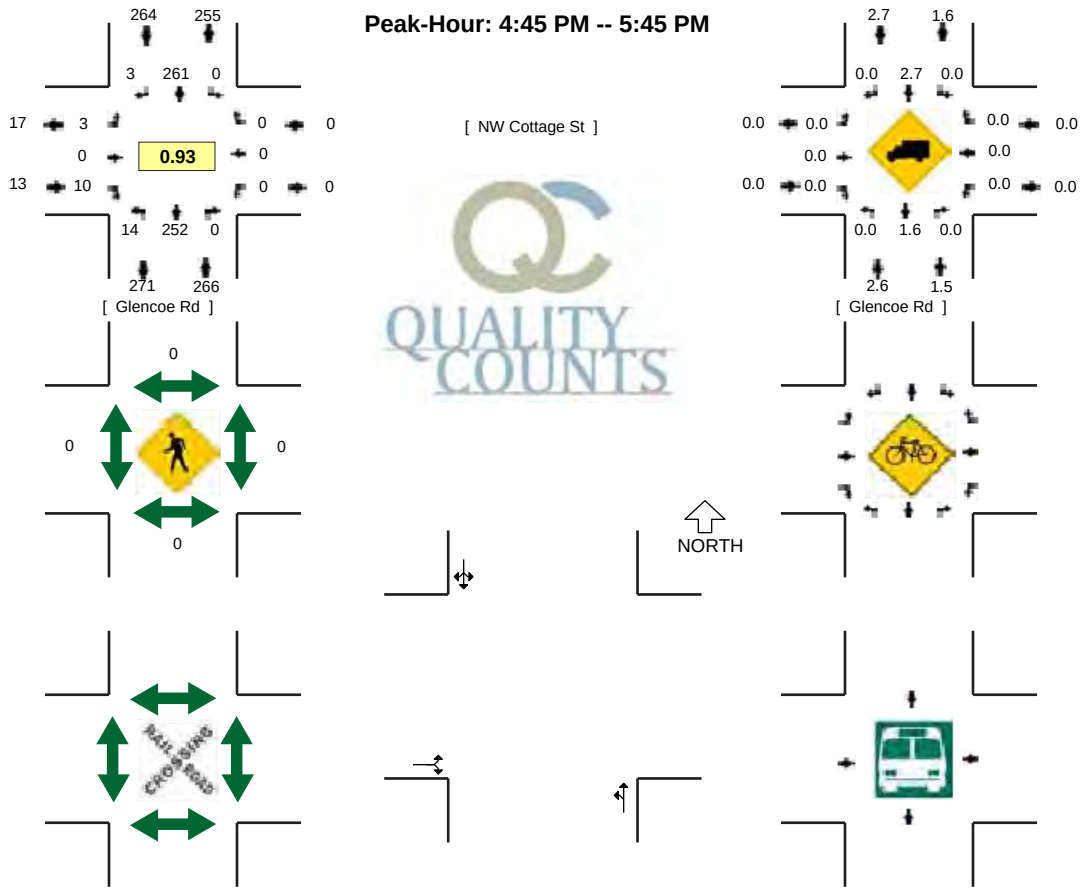
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--NW Cottage St
WEATHER:

QC JOB #: 10127608
DATE: 11/16/2005

Peak-Hour: 4:45 PM -- 5:45 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				NW Cottage St (Eastbound)				NW Cottage St (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	31	0		0	27	0		0	0	0		0	0	0		59	
4:05 PM	4	21	0		0	26	0		0	0	0		0	0	0		51	
4:10 PM	3	14	0		0	28	0		1	0	1		0	0	0		47	
4:15 PM	2	25	0		0	27	0		0	0	0		0	0	0		54	
4:20 PM	0	24	0		0	22	0		0	0	0		0	0	0		46	
4:25 PM	2	16	0		0	17	0		0	0	0		0	0	0		35	
4:30 PM	0	18	0		0	18	0		0	0	1		0	0	0		37	
4:35 PM	0	17	0		0	22	0		0	0	1		0	0	0		40	
4:40 PM	4	23	0		0	21	1		1	0	0		0	0	0		50	
4:45 PM	1	26	0		0	22	0		0	0	1		0	0	0		50	
4:50 PM	0	17	0		0	22	0		0	0	1		0	0	0		40	
4:55 PM	1	29	0		0	16	0		0	0	0		0	0	0		46	555
5:00 PM	0	21	0		0	24	0		0	0	1		0	0	0		46	542
5:05 PM	2	23	0		0	26	0		0	0	0		0	0	0		51	542
5:10 PM	1	21	0		0	18	1		0	0	0		0	0	0		41	536
5:15 PM	0	16	0		0	21	0		0	0	0		0	0	0		37	519
5:20 PM	2	24	0		0	26	0		0	0	1		0	0	0		53	526
5:25 PM	2	23	0		0	23	2		0	0	1		0	0	0		51	542
5:30 PM	2	15	0		0	22	0		2	0	1		0	0	0		42	547
5:35 PM	2	23	0		0	18	0		0	0	2		0	0	0		45	552
5:40 PM	1	14	0		0	23	0		1	0	2		0	0	0		41	543
5:45 PM	2	17	0		0	10	0		1	0	1		0	0	0		31	524
5:50 PM	0	27	0		0	8	0		0	0	4		0	0	0		39	523
5:55 PM	3	24	0		0	17	0		0	0	1		0	0	0		45	522

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	24	248	0		0	284	8		8	0	12		0	0	0		584
Heavy Trucks	0	4	0		0	0	0		0	0	0		0	0	0		4
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

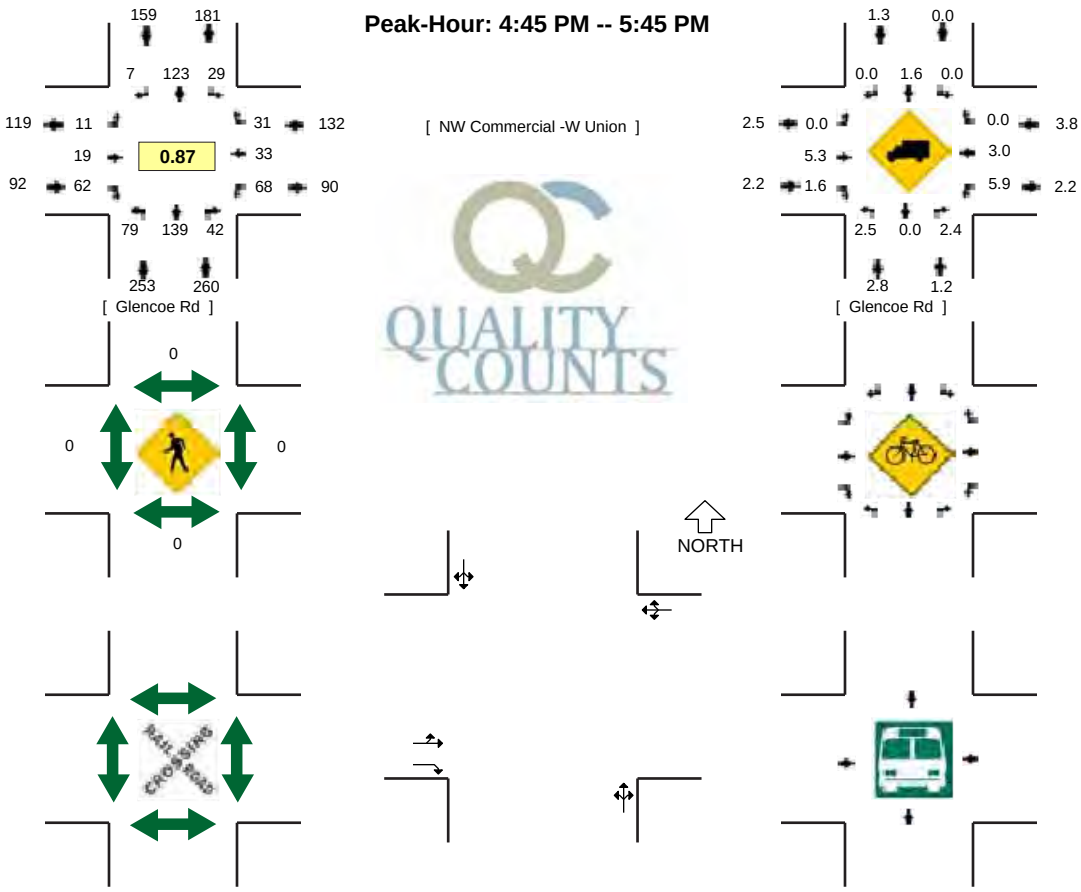
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--NW Commercial -W Union
WEATHER:

QC JOB #: 10127609
DATE: 11/16/2005

Peak-Hour: 4:45 PM -- 5:45 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				NW Commercial -W Union (Eastbound)				NW Commercial -W Union (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	13	9	1		1	10	1		0	6	6		9	2	2		60	
4:05 PM	7	16	6		2	11	1		2	4	6		3	0	0		58	
4:10 PM	0	11	2		2	14	0		0	1	10		4	2	2		48	
4:15 PM	11	9	5		2	6	0		0	1	12		9	2	2		59	
4:20 PM	7	11	3		4	8	1		0	1	8		4	3	2		52	
4:25 PM	12	8	0		2	6	1		1	1	2		8	6	2		49	
4:30 PM	7	4	3		1	7	0		1	0	7		5	4	2		41	
4:35 PM	4	11	7		3	8	0		3	1	12		2	1	2		54	
4:40 PM	5	11	4		0	12	0		1	0	5		5	2	4		49	
4:45 PM	8	13	8		2	14	0		0	1	4		5	3	1		59	
4:50 PM	6	12	3		4	7	1		2	1	4		8	6	1		55	
4:55 PM	9	18	1		0	10	1		0	2	3		3	3	4		54	638
5:00 PM	4	12	4		4	15	2		0	4	3		7	5	3		63	641
5:05 PM	10	11	3		1	8	1		5	3	8		6	2	2		60	643
5:10 PM	9	10	6		3	10	1		1	3	7		5	1	5		61	656
5:15 PM	5	9	1		2	11	1		0	2	4		5	4	2		46	643
5:20 PM	11	11	2		6	13	0		1	1	10		5	4	2		66	657
5:25 PM	8	8	7		2	8	0		0	1	6		8	0	4		52	660
5:30 PM	2	13	2		2	7	0		0	1	7		7	3	2		46	665
5:35 PM	6	12	4		3	9	0		0	0	4		4	1	2		45	656
5:40 PM	1	10	1		0	11	0		2	0	2		5	1	3		36	643
5:45 PM	4	11	2		4	8	1		2	2	3		2	0	2		41	625
5:50 PM	8	11	5		2	2	0		0	2	2		2	6	1		41	611
5:55 PM	10	11	4		2	10	0		0	3	5		2	0	1		48	605

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	92	132	52		32	132	16		24	40	72		72	32	40		736
Heavy Trucks	0	0	0		0	4	0		0	0	4		8	0	0		16
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132204
Station ID: Glencoe
Glencoe Rd S of Hwy 26

NB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/03/05	0	32	10	1	3	0	0	3	0	**1**	0	0	0	50
01:00	0	26	3	0	0	0	0	0	0	0	0	0	0	29
02:00	0	17	5	1	1	0	0	0	0	0	0	0	0	24
03:00	0	17	6	1	2	1	0	0	0	0	0	0	0	27
04:00	0	30	12	2	1	0	0	0	0	0	0	0	0	45
05:00	1	64	26	3	8	1	0	3	1	0	0	0	0	107
06:00	0	122	53	1	9	0	0	2	0	0	0	0	0	187
07:00	1	165	78	**4**	17	**3**	0	2	1	0	0	0	0	271
08:00	**4**	209	89	2	21	2	0	**7**	1	0	0	0	0	335
09:00	3	260	91	2	27	0	0	4	**2**	0	0	0	0	389
10:00	4	286	120	3	**31**	0	0	7	2	1	0	0	0	454
11:00	2	**311**	**121**	4	28	0	0	6	1	0	0	0	0	**473**
12 PM	5	302	111	**3**	**40**	0	0	5	0	0	0	0	0	**466**
13:00	2	290	**118**	2	27	0	0	4	**2**	0	0	0	0	445
14:00	4	303	110	0	24	2	0	5	1	0	0	0	0	449
15:00	0	**306**	95	3	31	1	0	**6**	2	**1**	0	0	0	445
16:00	**7**	285	89	0	19	1	0	1	0	0	0	0	0	402
17:00	2	298	108	0	26	**4**	0	1	1	0	0	0	0	440
18:00	4	237	79	0	12	1	0	0	1	0	0	0	0	334
19:00	3	160	49	0	9	0	0	1	0	0	0	0	0	222
20:00	0	124	35	0	3	0	0	2	0	0	0	0	0	164
21:00	3	125	36	0	4	0	0	0	0	0	0	0	0	168
22:00	0	104	31	0	5	1	0	0	0	0	0	0	0	141
23:00	0	73	25	2	2	0	0	0	0	0	0	0	0	102
Day Total	45	4146	1500	34	350	17	0	59	15	3	0	0	0	6169
Percent	0.7%	67.2%	24.3%	0.6%	5.7%	0.3%	0.0%	1.0%	0.2%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	11:00	11:00	07:00	10:00	07:00		08:00	09:00	00:00				11:00
Vol.	4	311	121	4	31	3	7		2	1				473
PM Peak	16:00	15:00	13:00	12:00	12:00	17:00		15:00	13:00	15:00				12:00
Vol.	7	306	118	3	40	4	6		2	1				466

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132204
Station ID: Glencoe
Glencoe Rd S of Hwy 26

NB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/04/05	0	38	10	0	2	0	0	0	0	0	0	0	0	50
01:00	0	26	2	0	2	0	0	0	0	0	0	0	0	30
02:00	0	21	6	0	2	0	0	0	0	0	0	0	0	29
03:00	0	18	4	0	2	0	0	0	0	0	0	0	0	24
04:00	1	23	3	0	1	0	0	0	0	0	0	0	0	28
05:00	1	32	13	0	9	0	0	0	0	0	0	0	0	55
06:00	1	65	31	0	8	0	0	0	0	0	0	0	0	105
07:00	1	85	40	0	6	1	0	**3**	0	0	0	0	0	136
08:00	**2**	146	46	0	18	**4**	0	2	0	0	0	0	0	218
09:00	0	166	54	**1**	**22**	2	0	3	1	0	0	0	0	249
10:00	0	229	86	0	18	1	0	3	**2**	0	0	0	0	339
11:00	2	**277**	**98**	1	22	4	0	1	0	0	0	0	0	**405**
12 PM	3	237	**115**	0	20	0	0	3	0	0	0	0	0	378
13:00	2	**310**	114	0	**22**	0	0	**5**	0	0	0	0	**1**	**454**
14:00	4	266	87	1	18	0	0	3	**1**	0	**1**	0	0	381
15:00	2	270	90	0	15	0	0	2	0	0	0	0	0	379
16:00	**5**	288	81	0	18	0	0	2	0	0	0	0	0	394
17:00	3	276	64	**2**	6	0	0	2	0	0	0	0	0	353
18:00	2	188	56	0	15	**1**	0	2	0	0	0	0	0	264
19:00	1	152	37	1	7	0	0	0	0	0	0	0	0	198
20:00	2	119	34	0	1	1	0	0	0	0	0	0	0	157
21:00	0	100	21	0	5	0	0	2	0	0	0	0	0	128
22:00	2	54	8	1	1	0	0	1	0	0	0	0	0	67
23:00	0	30	11	0	1	1	0	1	0	**1**	0	0	0	45
Day Total	34	3416	1111	7	241	15	0	35	4	1	1	0	1	4866
Percent	0.7%	70.2%	22.8%	0.1%	5.0%	0.3%	0.0%	0.7%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	11:00	11:00	09:00	09:00	08:00		07:00	10:00					11:00
Vol.	2	277	98	1	22	4		3	2					405
PM Peak	16:00	13:00	12:00	17:00	13:00	18:00		13:00	14:00	23:00	14:00		13:00	13:00
Vol.	5	310	115	2	22	1	5		1	1	1		1	454

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132204
Station ID: Glencoe
Glencoe Rd S of Hwy 26

NB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/05/05	0	16	2	1	0	0	0	0	0	0	0	0	0	19
01:00	0	11	2	0	0	0	0	1	0	0	0	0	0	14
02:00	0	17	4	0	1	0	0	2	0	0	0	0	0	24
03:00	0	17	10	1	3	0	0	0	0	0	0	0	0	31
04:00	1	67	25	0	13	1	0	2	2	0	0	0	0	111
05:00	2	213	100	2	23	6	0	3	0	0	0	0	0	349
06:00	4	372	**146**	5	**51**	7	0	16	6	2	0	0	0	**609**
07:00	**8**	**392**	132	4	39	7	0	16	5	2	0	0	0	605
08:00	2	307	105	**11**	33	**8**	0	14	5	1	0	**2**	0	488
09:00	1	209	100	6	31	3	0	8	**7**	0	0	0	0	365
10:00	0	192	88	3	36	4	**1**	**19**	1	**5**	0	1	0	350
11:00	0	231	86	7	34	3	1	14	5	0	0	0	**3**	384
12 PM	**3**	239	105	5	34	5	0	10	5	1	0	**1**	3	411
13:00	2	221	98	**8**	**43**	7	**2**	**15**	**10**	2	**1**	0	**4**	413
14:00	1	258	108	6	28	5	0	6	5	2	0	0	0	419
15:00	2	305	108	4	31	2	1	7	5	**4**	0	0	3	472
16:00	2	357	98	2	30	**9**	0	6	3	1	0	0	0	508
17:00	2	**376**	**112**	3	31	2	0	5	3	0	1	0	0	**535**
18:00	2	258	65	0	19	1	0	5	0	0	0	0	0	350
19:00	0	185	42	2	11	0	0	1	1	0	1	0	0	243
20:00	1	106	40	0	6	4	0	3	1	0	0	0	0	161
21:00	2	88	20	0	4	1	0	0	0	0	0	0	0	115
22:00	0	61	14	0	5	1	0	1	0	0	0	0	0	82
23:00	0	33	5	1	0	1	0	2	1	0	0	0	0	43
Day Total	35	4531	1615	71	506	77	5	156	65	20	3	4	13	7101
Percent	0.5%	63.8%	22.7%	1.0%	7.1%	1.1%	0.1%	2.2%	0.9%	0.3%	0.0%	0.1%	0.2%	
AM Peak	07:00	07:00	06:00	08:00	06:00	08:00	10:00	10:00	09:00	10:00		08:00	11:00	06:00
Vol.	8	392	146	11	51	8	1	19	7	5	2		3	609
PM Peak	12:00	17:00	17:00	13:00	13:00	16:00	13:00	13:00	13:00	15:00	13:00	12:00	13:00	17:00
Vol.	3	376	112	8	43	9	2	15	10	4	1	1	4	535

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132204
Station ID: Glencoe
Glencoe Rd S of Hwy 26

NB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/06/05	0	16	6	0	0	0	0	0	0	0	0	0	0	22
01:00	0	12	3	0	1	1	0	1	1	1	0	0	0	20
02:00	0	16	3	0	1	0	0	0	0	0	0	0	0	20
03:00	0	24	8	2	1	1	0	1	0	0	0	0	0	37
04:00	3	61	19	1	7	0	0	2	1	1	0	0	0	95
05:00	1	202	74	1	20	3	0	8	1	0	0	0	0	310
06:00	1	**380**	**144**	5	37	2	0	10	**7**	**3**	0	0	0	**589**
07:00	3	321	116	4	34	**8**	0	11	7	1	**1**	**1**	0	507
08:00	3	300	96	8	41	4	0	8	7	2	0	0	**3**	472
09:00	**5**	257	102	5	25	3	0	**15**	6	1	0	1	2	422
10:00	1	207	85	**9**	**45**	2	**1**	8	7	2	1	0	0	368
11:00	0	210	104	5	30	6	1	8	7	3	0	1	2	377
12 PM	1	254	100	5	26	4	0	**15**	8	**4**	0	0	1	418
13:00	1	265	71	6	34	**5**	0	9	**16**	1	0	**1**	**3**	412
14:00	1	254	102	**8**	21	1	0	9	12	0	0	0	1	409
15:00	3	314	107	5	33	4	0	6	3	2	0	0	0	477
16:00	**6**	334	**110**	2	**35**	1	0	5	2	1	**1**	0	2	499
17:00	4	**416**	92	1	17	5	0	3	1	1	0	0	0	**540**
18:00	2	262	85	1	19	1	0	3	0	0	1	0	0	374
19:00	3	194	57	0	10	3	0	1	2	0	0	0	0	270
20:00	4	152	30	1	8	1	0	1	1	0	0	0	0	198
21:00	0	152	34	1	5	3	0	0	1	0	0	0	0	196
22:00	1	55	18	0	3	2	**1**	0	2	0	0	0	0	82
23:00	1	31	7	1	0	0	0	1	0	0	0	0	0	41
Day Total	44	4689	1573	71	453	60	3	125	92	23	4	4	14	7155
Percent	0.6%	65.5%	22.0%	1.0%	6.3%	0.8%	0.0%	1.7%	1.3%	0.3%	0.1%	0.1%	0.2%	
AM Peak	09:00	06:00	06:00	10:00	10:00	07:00	10:00	09:00	06:00	06:00	07:00	07:00	08:00	06:00
Vol.	5	380	144	9	45	8	1	15	7	3	1	1	3	589
PM Peak	16:00	17:00	16:00	14:00	16:00	13:00	22:00	12:00	13:00	12:00	16:00	13:00	13:00	17:00
Vol.	6	416	110	8	35	5	1	15	16	4	1	1	3	540

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132204
Station ID: Glencoe
Glencoe Rd S of Hwy 26

NB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/07/05	0	21	2	0	4	0	0	0	0	1	0	0	1	29
01:00	1	13	2	0	1	0	0	0	0	0	**1**	0	0	18
02:00	0	14	5	1	2	0	0	1	1	0	0	0	0	24
03:00	0	22	9	1	4	0	0	3	0	0	0	0	0	39
04:00	1	62	20	2	9	2	0	0	1	2	0	0	0	99
05:00	3	221	82	3	20	**9**	0	3	2	0	0	1	0	344
06:00	3	**405**	**174**	**10**	**48**	4	**1**	**18**	2	1	1	0	0	**667**
07:00	**4**	391	126	8	29	7	0	18	7	2	0	0	1	593
08:00	2	291	139	10	41	4	1	17	1	1	0	1	**3**	511
09:00	2	250	126	5	37	5	1	12	2	3	0	1	2	446
10:00	0	223	84	6	33	4	0	13	**10**	4	0	**2**	1	380
11:00	1	218	74	7	38	5	0	13	4	**6**	0	0	1	367
12 PM	3	250	91	3	30	4	0	**14**	9	**2**	0	0	**2**	408
13:00	3	245	91	**5**	20	**8**	0	9	8	2	0	0	1	392
14:00	1	235	94	5	33	5	0	10	**14**	2	0	0	0	399
15:00	0	302	**134**	4	39	5	0	9	7	2	**1**	0	0	503
16:00	4	385	114	3	**42**	2	0	6	8	0	0	0	1	565
17:00	**8**	**395**	122	4	36	2	0	10	2	1	1	0	1	**582**
18:00	3	271	84	0	15	0	0	1	0	0	0	0	0	374
19:00	1	157	49	2	13	0	0	7	0	0	0	0	0	229
20:00	0	173	40	0	6	1	0	0	0	0	0	0	0	220
21:00	1	137	23	1	9	3	0	0	0	0	0	0	0	174
22:00	0	54	20	1	2	3	0	1	0	0	0	0	0	81
23:00	0	35	12	1	1	0	0	0	0	0	0	0	0	49
Day Total	41	4770	1717	82	512	73	3	165	78	29	4	5	14	7493
Percent	0.5%	63.7%	22.9%	1.1%	6.8%	1.0%	0.0%	2.2%	1.0%	0.4%	0.1%	0.1%	0.2%	
AM Peak	07:00	06:00	06:00	06:00	06:00	05:00	06:00	06:00	10:00	11:00	01:00	10:00	08:00	06:00
Vol.	4	405	174	10	48	9	1	18	10	6	1	2	3	667
PM Peak	17:00	17:00	15:00	13:00	16:00	13:00		12:00	14:00	12:00	15:00		12:00	17:00
Vol.	8	395	134	5	42	8	14		14	2	1		2	582

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132204
Station ID: Glencoe
Glencoe Rd S of Hwy 26

NB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/08/05	1	14	11	0	3	0	0	3	0	0	1	0	0	33
01:00	0	5	6	0	1	0	0	0	0	0	0	0	0	12
02:00	0	11	5	1	0	1	0	0	0	1	0	0	0	19
03:00	0	25	13	1	2	3	0	2	0	0	1	0	0	47
04:00	0	54	23	1	4	1	0	6	0	0	0	0	0	89
05:00	0	208	66	2	25	3	0	2	1	0	0	0	0	307
06:00	1	346	**132**	7	39	**9**	0	20	4	1	1	0	0	560
07:00	**2**	**391**	128	6	27	6	0	13	0	1	1	**1**	2	**578**
08:00	0	296	107	**13**	**40**	8	0	16	5	1	**2**	0	2	490
09:00	2	222	107	8	39	3	0	**21**	6	1	0	1	1	411
10:00	1	179	74	6	36	4	0	11	6	0	0	0	0	317
11:00	0	213	87	6	21	6	0	6	**12**	**4**	0	0	**3**	358
12 PM	2	226	96	2	28	**10**	1	6	11	**5**	**1**	0	2	390
13:00	1	196	77	3	38	8	**2**	8	**14**	1	0	0	**4**	352
14:00	2	264	121	**8**	30	7	1	**11**	11	1	0	0	2	458
15:00	2	315	112	8	32	6	1	11	5	1	0	0	0	493
16:00	2	**397**	113	3	**39**	3	0	8	4	1	0	0	0	**570**
17:00	**3**	342	**122**	2	29	1	0	8	0	1	0	0	0	508
18:00	3	270	83	1	16	3	0	0	0	2	0	0	0	378
19:00	1	163	49	0	10	1	0	3	2	0	0	0	0	229
20:00	0	127	40	0	9	1	0	1	1	1	0	0	0	180
21:00	0	106	31	0	3	4	0	0	0	0	0	0	0	144
22:00	0	52	15	2	2	3	0	1	1	0	0	0	0	76
23:00	0	38	6	0	2	0	0	0	0	0	0	0	0	46
Day Total	23	4460	1624	80	475	91	5	157	83	22	7	2	16	7045
Percent	0.3%	63.3%	23.1%	1.1%	6.7%	1.3%	0.1%	2.2%	1.2%	0.3%	0.1%	0.0%	0.2%	
AM Peak	07:00	07:00	06:00	08:00	08:00	06:00		09:00	11:00	11:00	08:00	07:00	11:00	07:00
Vol.	2	391	132	13	40	9	21		12	4	2	1	3	578
PM Peak	17:00	16:00	17:00	14:00	16:00	12:00	13:00	14:00	13:00	12:00	12:00		13:00	16:00
Vol.	3	397	122	8	39	10	2	11	14	5	1	4		570

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132204
Station ID: Glencoe
Glencoe Rd S of Hwy 26

NB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/09/05	0	16	4	1	0	1	0	1	0	0	0	0	0	23
01:00	0	17	6	0	1	0	0	0	1	0	0	0	0	25
02:00	1	24	8	1	1	1	0	2	0	1	0	0	0	39
03:00	0	23	9	1	3	0	0	1	2	0	0	0	0	39
04:00	1	62	14	1	12	1	0	3	0	0	0	0	0	94
05:00	1	184	85	4	26	4	0	3	2	0	0	0	0	309
06:00	1	334	140	5	33	7	0	13	4	0	0	0	0	537
07:00	**4**	**372**	**141**	2	**48**	6	0	14	5	**2**	**1**	0	1	**596**
08:00	1	282	86	**10**	30	**13**	**2**	**22**	6	2	0	**2**	2	458
09:00	4	267	95	6	30	8	0	10	1	1	0	0	1	423
10:00	1	209	111	5	42	4	0	12	6	2	1	1	1	395
11:00	3	232	85	4	36	5	2	5	**10**	0	0	1	**3**	386
12 PM	**4**	249	85	4	36	7	0	6	**14**	**5**	0	0	**4**	414
13:00	0	238	96	5	29	**8**	0	10	13	3	**2**	1	1	406
14:00	3	252	**122**	5	**44**	5	0	9	2	4	0	0	1	447
15:00	1	326	115	**8**	29	3	0	8	4	3	1	1	0	499
16:00	1	343	104	3	27	3	0	**12**	5	0	1	**2**	0	501
17:00	3	**349**	117	1	30	1	0	6	2	0	0	0	0	**509**
18:00	3	322	103	0	19	2	0	9	0	0	0	0	1	459
19:00	1	204	59	0	12	0	0	1	1	0	1	0	0	279
20:00	0	160	47	0	12	2	0	1	1	0	0	0	0	223
21:00	1	118	40	0	8	4	0	0	1	0	0	0	0	172
22:00	1	108	30	0	7	2	**1**	2	0	0	0	0	0	151
23:00	0	77	22	1	5	2	0	0	0	1	0	0	0	108
Day Total	35	4768	1724	67	520	89	5	150	80	24	7	8	15	7492
Percent	0.5%	63.6%	23.0%	0.9%	6.9%	1.2%	0.1%	2.0%	1.1%	0.3%	0.1%	0.1%	0.2%	
AM Peak	07:00	07:00	07:00	08:00	07:00	08:00	08:00	08:00	11:00	07:00	07:00	08:00	11:00	07:00
Vol.	4	372	141	10	48	13	2	22	10	2	1	2	3	596
PM Peak	12:00	17:00	14:00	15:00	14:00	13:00	22:00	16:00	12:00	12:00	13:00	16:00	12:00	17:00
Vol.	4	349	122	8	44	8	1	12	14	5	2	2	4	509
Grand Total	257	30780	10864	412	3057	422	21	847	417	122	26	23	73	47321
Percent	0.5%	65.0%	23.0%	0.9%	6.5%	0.9%	0.0%	1.8%	0.9%	0.3%	0.1%	0.0%	0.2%	

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132204
Station ID: Glencoe
Glencoe Rd S of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/03/05	0	81	24	0	3	0	0	0	0	0	0	0	0	108
01:00	0	50	7	0	2	1	0	0	0	0	0	0	0	60
02:00	0	34	7	0	1	1	0	0	0	0	0	0	0	43
03:00	0	20	7	0	0	1	0	0	0	0	0	0	0	28
04:00	0	21	8	0	1	0	**2**	0	2	0	0	0	0	34
05:00	0	47	19	0	5	2	0	**3**	1	0	0	0	0	77
06:00	0	79	24	1	6	**3**	1	3	2	0	0	0	0	119
07:00	0	134	45	1	13	2	0	2	3	0	0	0	0	200
08:00	0	149	43	**4**	16	2	1	0	3	**1**	0	0	0	219
09:00	0	213	82	2	24	0	1	0	**4**	0	0	0	0	326
10:00	**1**	211	87	2	25	2	0	3	1	0	0	0	0	332
11:00	0	**313**	**113**	2	**29**	0	0	3	2	1	0	0	0	**463**
12 PM	**1**	319	113	2	29	0	0	**9**	3	0	0	0	0	476
13:00	0	315	122	4	22	0	0	1	4	0	0	0	0	468
14:00	1	293	112	**5**	**37**	**1**	0	3	**7**	0	0	0	0	459
15:00	1	286	102	4	31	0	0	4	1	**1**	0	0	0	430
16:00	0	**354**	**135**	2	20	0	0	1	2	1	0	0	0	**515**
17:00	0	336	115	3	20	1	0	4	1	0	0	0	0	480
18:00	0	310	85	0	18	0	0	3	0	0	0	0	0	416
19:00	1	203	51	0	15	0	0	2	0	0	0	0	0	272
20:00	0	189	54	0	10	0	0	0	0	0	0	0	0	253
21:00	0	169	43	0	9	0	0	0	0	0	0	0	0	221
22:00	0	155	45	0	6	0	0	2	0	0	0	0	0	208
23:00	0	112	43	0	2	0	0	0	0	0	0	0	0	157
Day Total	5	4393	1486	32	344	16	5	43	36	4	0	0	0	6364
Percent	0.1%	69.0%	23.4%	0.5%	5.4%	0.3%	0.1%	0.7%	0.6%	0.1%	0.0%	0.0%	0.0%	
AM Peak	10:00	11:00	11:00	08:00	11:00	06:00	04:00	05:00	09:00	08:00				11:00
Vol.	1	313	113	4	29	3	2	3	4	1				463
PM Peak	12:00	16:00	16:00	14:00	14:00	14:00		12:00	14:00	15:00				16:00
Vol.	1	354	135	5	37	1	9		7	1				515

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132204
Station ID: Glencoe
Glencoe Rd S of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/04/05	0	68	18	0	1	0	0	0	0	0	0	0	0	87
01:00	0	39	8	0	3	**1**	0	1	0	0	0	0	0	52
02:00	0	30	8	0	3	0	0	0	0	0	0	0	0	41
03:00	0	21	5	0	1	0	0	0	0	0	0	0	0	27
04:00	0	24	7	0	2	0	0	0	0	0	0	0	0	33
05:00	0	34	8	0	1	0	0	0	0	0	0	0	0	43
06:00	0	54	15	0	4	0	0	0	1	0	0	0	0	74
07:00	0	99	23	0	5	1	0	0	0	0	0	0	0	128
08:00	0	131	31	0	10	1	0	0	0	0	0	0	0	173
09:00	0	159	46	**3**	12	0	0	**2**	**2**	0	0	0	0	224
10:00	0	207	75	0	**17**	1	0	1	0	0	0	0	0	301
11:00	0	**216**	**82**	0	16	0	0	1	0	0	0	0	0	**315**
12 PM	0	261	77	1	21	**2**	0	0	0	0	0	0	0	362
13:00	**2**	290	**90**	0	**22**	0	0	0	0	0	0	0	0	404
14:00	2	258	88	0	17	0	0	1	0	0	0	0	0	366
15:00	0	294	88	**2**	21	2	0	**6**	1	0	0	0	0	**414**
16:00	0	**307**	84	0	18	1	0	2	0	0	0	0	0	412
17:00	1	269	82	0	16	0	0	2	1	0	0	0	0	371
18:00	0	228	63	0	16	1	0	1	0	0	0	0	0	309
19:00	0	178	63	0	11	0	0	2	**2**	0	0	0	0	256
20:00	0	162	55	0	8	1	0	0	0	0	0	0	0	226
21:00	0	138	22	2	7	0	0	0	0	0	0	0	0	169
22:00	0	96	24	0	1	0	0	2	0	0	0	0	0	123
23:00	0	48	12	0	3	0	0	0	0	0	0	0	0	63
Day Total	5	3611	1074	8	236	11	0	21	7	0	0	0	0	4973
Percent	0.1%	72.6%	21.6%	0.2%	4.7%	0.2%	0.0%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak		11:00	11:00	09:00	10:00	01:00		09:00	09:00					11:00
Vol.		216	82	3	17	1		2	2					315
PM Peak	13:00	16:00	13:00	15:00	13:00	12:00		15:00	19:00					15:00
Vol.	2	307	90	2	22	2		6	2					414

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132204
Station ID: Glencoe
Glencoe Rd S of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/05/05	0	27	7	0	4	0	0	0	1	0	0	0	0	39
01:00	0	9	6	0	1	0	0	1	0	0	0	0	0	17
02:00	0	10	7	0	0	0	0	0	0	0	0	0	0	17
03:00	0	4	4	1	0	0	0	0	1	0	0	0	0	10
04:00	0	31	7	0	1	1	**2**	0	2	0	0	0	0	44
05:00	0	63	38	0	11	1	0	1	2	2	0	0	0	118
06:00	0	177	71	0	25	3	1	2	3	0	0	0	**2**	284
07:00	0	**354**	98	7	31	3	2	6	10	2	0	0	2	**515**
08:00	0	301	83	**11**	**37**	4	1	5	11	2	**1**	0	2	458
09:00	0	209	**116**	8	13	**10**	0	8	**13**	4	1	0	0	382
10:00	0	224	82	4	26	7	0	**9**	8	1	1	0	2	364
11:00	0	206	91	4	32	8	2	8	9	**5**	0	0	2	367
12 PM	**2**	211	81	**6**	40	5	**1**	5	**18**	3	0	0	1	373
13:00	0	257	100	5	33	6	0	**8**	12	2	0	0	**3**	426
14:00	0	290	119	5	31	**11**	0	0	11	**5**	0	0	3	475
15:00	1	426	152	2	39	10	0	3	10	2	0	0	1	646
16:00	0	478	**168**	6	**66**	8	0	7	11	4	0	**1**	3	**752**
17:00	0	**482**	167	6	48	3	0	4	2	0	0	0	3	715
18:00	0	317	116	1	21	1	0	4	2	0	0	0	0	462
19:00	0	206	59	2	14	0	0	1	4	0	0	0	0	286
20:00	0	157	48	1	5	1	0	0	0	0	0	0	0	212
21:00	0	169	35	0	5	0	0	0	2	0	0	0	0	211
22:00	0	92	30	0	7	3	0	0	1	0	0	0	0	133
23:00	0	40	12	0	2	1	0	1	2	0	0	0	0	58
Day Total	3	4740	1697	69	492	86	9	73	135	32	3	1	24	7364
Percent	0.0%	64.4%	23.0%	0.9%	6.7%	1.2%	0.1%	1.0%	1.8%	0.4%	0.0%	0.0%	0.3%	
AM Peak		07:00	09:00	08:00	08:00	09:00	04:00	10:00	09:00	11:00	08:00		06:00	07:00
Vol.	354		116	11	37	10	2	9	13	5	1		2	515
PM Peak	12:00	17:00	16:00	12:00	16:00	14:00	12:00	13:00	12:00	14:00		16:00	13:00	16:00
Vol.	2	482	168	6	66	11	1	8	18	5	1		3	752

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132204
Station ID: Glencoe
Glencoe Rd S of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/06/05	0	42	9	0	4	1	0	0	1	0	0	0	0	57
01:00	0	19	7	0	0	0	0	0	1	0	0	0	0	27
02:00	0	19	5	0	0	0	0	0	1	0	0	0	0	25
03:00	0	9	3	0	2	2	0	0	2	0	0	0	0	18
04:00	0	28	5	1	1	0	1	2	1	0	0	0	0	39
05:00	0	71	32	0	8	5	0	1	3	1	0	0	**2**	123
06:00	0	184	76	3	27	3	**3**	4	7	2	0	0	0	309
07:00	0	**379**	**104**	6	30	5	0	3	6	**4**	0	0	2	**539**
08:00	0	300	98	**8**	**35**	7	1	2	5	3	0	0	2	461
09:00	0	202	96	7	33	**12**	0	**10**	11	3	0	0	1	375
10:00	0	210	83	6	30	12	0	5	**15**	3	0	0	1	365
11:00	**1**	277	84	4	26	5	0	9	11	2	0	0	2	421
12 PM	0	280	80	4	30	5	0	**9**	**12**	1	0	0	0	421
13:00	**1**	214	81	**13**	21	4	0	4	6	1	0	0	0	345
14:00	0	326	92	9	36	7	0	7	8	**2**	0	0	1	488
15:00	1	414	**178**	1	35	9	0	7	6	0	0	0	0	651
16:00	0	**496**	176	11	**61**	**11**	0	9	6	1	0	**1**	**4**	**776**
17:00	0	488	165	2	37	7	0	6	1	1	0	0	0	707
18:00	0	337	112	0	19	2	0	4	3	1	0	0	1	479
19:00	0	218	58	2	15	0	0	0	1	0	0	0	0	294
20:00	1	173	37	1	5	0	0	0	1	0	0	0	0	218
21:00	0	195	39	3	5	0	0	0	5	0	0	0	1	248
22:00	0	118	27	1	3	0	0	0	0	0	0	0	0	149
23:00	0	62	18	0	3	1	0	0	0	0	0	0	0	84
Day Total	4	5061	1665	82	466	98	5	82	113	25	0	1	17	7619
Percent	0.1%	66.4%	21.9%	1.1%	6.1%	1.3%	0.1%	1.1%	1.5%	0.3%	0.0%	0.0%	0.2%	
AM Peak	11:00	07:00	07:00	08:00	08:00	09:00	06:00	09:00	10:00	07:00			05:00	07:00
Vol.	1	379	104	8	35	12	3	10	15	4			2	539
PM Peak	13:00	16:00	15:00	13:00	16:00	16:00		12:00	12:00	14:00		16:00	16:00	16:00
Vol.	1	496	178	13	61	11	9		12	2	1		4	776

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132204
Station ID: Glencoe
Glencoe Rd S of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/07/05	0	49	9	0	1	1	0	0	2	0	0	0	0	62
01:00	0	17	8	0	0	0	0	0	1	0	0	0	0	26
02:00	0	14	6	0	0	1	0	0	1	0	0	0	0	22
03:00	0	11	6	1	0	2	0	1	2	0	0	0	0	23
04:00	0	31	6	0	2	2	**1**	0	2	0	0	0	0	44
05:00	0	58	39	4	10	6	1	3	2	1	0	0	0	124
06:00	0	188	84	2	33	3	1	3	3	1	0	0	0	318
07:00	0	**338**	**104**	3	**49**	**7**	1	**7**	6	**6**	0	0	**4**	**525**
08:00	0	271	80	**9**	22	6	0	5	**13**	1	0	0	0	407
09:00	0	4	3	1	0	0	0	0	0	0	0	0	0	8
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 M P	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	**1**	233	101	**3**	21	**5**	0	5	0	0	**1**	**1**	1	372
17:00	0	**495**	**162**	2	**36**	2	0	4	1	0	0	0	**2**	**704**
18:00	1	344	98	2	27	1	0	**8**	1	0	0	0	0	482
19:00	0	254	54	0	13	1	0	0	**2**	0	0	1	0	325
20:00	0	189	58	0	8	0	0	1	2	0	0	0	0	258
21:00	0	185	41	1	12	0	0	0	2	0	0	0	0	241
22:00	0	127	42	0	5	0	0	0	0	0	0	0	0	174
23:00	0	59	19	0	0	1	0	1	1	0	0	0	0	81
Day Total	2	2867	920	28	239	38	4	38	41	9	1	2	7	4196
Percent	0.0%	68.3%	21.9%	0.7%	5.7%	0.9%	0.1%	0.9%	1.0%	0.2%	0.0%	0.0%	0.2%	
AM Peak		07:00	07:00	08:00	07:00	07:00	04:00	07:00	08:00	07:00			07:00	07:00
Vol.	338		104	9	49	7	1	7	13	6			4	525
PM Peak	16:00	17:00	17:00	16:00	17:00	16:00		18:00	19:00		16:00	16:00	17:00	17:00
Vol.	1	495	162	3	36	5	8		2	1		1	2	704

Quality Counts, LLC
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Site Code: 10132204
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Glencoe Rd S of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/08/05	0	50	12	0	1	0	0	0	3	0	0	0	0	66
01:00	0	16	9	0	4	0	0	0	0	0	0	0	0	29
02:00	0	26	7	1	1	0	0	0	0	0	0	0	0	35
03:00	0	6	4	1	1	1	0	0	2	0	0	0	0	15
04:00	0	29	10	0	2	2	1	0	0	0	0	0	0	44
05:00	0	56	29	3	11	3	0	3	1	1	0	0	1	108
06:00	0	188	80	3	25	2	2	2	11	**2**	1	0	0	316
07:00	0	**337**	**96**	7	**43**	4	**3**	3	4	0	0	0	2	**499**
08:00	**1**	313	93	**11**	33	8	3	2	6	1	0	0	2	473
09:00	0	224	91	3	28	**21**	1	1	**13**	1	0	0	1	384
10:00	1	206	80	7	28	14	2	6	12	2	**2**	0	2	362
11:00	0	211	81	1	28	5	3	**8**	11	1	0	0	**3**	352
12 PM	1	245	82	4	33	**12**	**2**	7	11	**3**	0	0	1	401
13:00	**2**	260	109	8	23	7	0	6	9	2	0	0	**2**	428
14:00	0	288	127	**12**	46	10	1	12	**13**	0	0	**1**	0	510
15:00	0	400	151	6	40	10	0	**13**	7	1	0	0	1	629
16:00	0	472	**169**	7	**50**	4	0	10	3	1	0	1	2	**719**
17:00	1	**483**	165	4	44	7	0	2	1	0	0	0	0	707
18:00	0	343	121	3	18	0	0	4	2	0	0	0	0	491
19:00	0	253	70	0	11	3	0	0	2	0	0	0	0	339
20:00	0	185	52	0	15	0	0	0	3	0	0	0	0	255
21:00	0	188	38	0	13	0	0	1	2	0	0	0	0	242
22:00	0	118	31	0	1	2	1	0	2	0	0	0	0	155
23:00	0	91	24	0	4	1	0	0	0	0	0	0	0	120
Day Total	6	4988	1731	81	503	116	19	80	118	15	3	2	17	7679
Percent	0.1%	65.0%	22.5%	1.1%	6.6%	1.5%	0.2%	1.0%	1.5%	0.2%	0.0%	0.0%	0.2%	
AM Peak	08:00	07:00	07:00	08:00	07:00	09:00	07:00	11:00	09:00	06:00	10:00		11:00	07:00
Vol.	1	337	96	11	43	21	3	8	13	2	2	3		499
PM Peak	13:00	17:00	16:00	14:00	16:00	12:00	12:00	15:00	14:00	12:00		14:00	13:00	16:00
Vol.	2	483	169	12	50	12	2	13	13	3	1		2	719

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132204
Station ID: Glencoe
Glencoe Rd S of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/09/05	0	54	9	0	1	0	0	0	3	0	0	0	0	67
01:00	0	23	12	0	1	1	0	0	1	0	0	0	0	38
02:00	0	19	3	0	1	0	0	1	0	0	0	0	0	24
03:00	0	11	4	0	3	0	1	0	3	0	0	0	0	22
04:00	0	21	10	0	2	4	1	0	0	0	0	0	1	39
05:00	0	51	23	4	7	3	**3**	4	4	**4**	0	0	1	104
06:00	0	180	74	0	29	2	1	5	10	2	1	0	1	305
07:00	0	**357**	96	6	**41**	16	1	**7**	9	1	0	0	2	**536**
08:00	0	319	**102**	**8**	31	5	0	2	4	1	0	0	1	473
09:00	0	208	93	2	25	**17**	0	5	13	3	0	**1**	0	367
10:00	0	224	89	3	33	14	0	4	**17**	0	**2**	0	3	389
11:00	0	269	94	2	33	14	1	2	10	3	0	1	**4**	433
12 PM	0	258	104	8	41	3	0	8	**15**	**5**	0	0	**3**	445
13:00	0	253	91	5	33	7	0	5	9	2	0	0	0	405
14:00	2	289	116	7	37	**14**	0	9	10	0	0	0	1	485
15:00	**3**	393	176	4	38	9	**1**	**11**	8	2	0	0	2	647
16:00	1	487	**182**	**11**	**54**	7	0	9	12	1	0	0	1	**765**
17:00	1	**496**	162	3	45	5	0	6	2	1	0	**1**	0	722
18:00	0	365	115	0	21	2	0	0	1	1	0	0	0	505
19:00	0	261	82	2	6	0	0	2	1	0	0	0	0	354
20:00	1	178	57	0	6	0	0	2	5	0	0	0	0	249
21:00	1	192	57	0	11	1	0	0	4	0	0	0	0	266
22:00	2	189	45	1	10	0	0	1	2	0	0	0	0	250
23:00	0	143	26	0	10	0	0	0	0	0	0	0	0	179
Day Total	11	5240	1822	66	519	124	9	83	143	26	3	3	20	8069
Percent	0.1%	64.9%	22.6%	0.8%	6.4%	1.5%	0.1%	1.0%	1.8%	0.3%	0.0%	0.0%	0.2%	
AM Peak		07:00	08:00	08:00	07:00	09:00	05:00	07:00	10:00	05:00	10:00	09:00	11:00	07:00
Vol.	357		102	8	41	17	3	7	17	4	2	1	4	536
PM Peak	15:00	17:00	16:00	16:00	16:00	14:00	15:00	15:00	12:00	12:00		17:00	12:00	16:00
Vol.	3	496	182	11	54	14	1	11	15	5	1		3	765
Grand Total	36	30900	10395	366	2799	489	51	420	593	111	10	9	85	46264
Percent	0.1%	66.8%	22.5%	0.8%	6.1%	1.1%	0.1%	0.9%	1.3%	0.2%	0.0%	0.0%	0.2%	

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code:
Station ID:
Hwy 26 EB On Ramp

EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/14/05	0	21	2	0	1	1	0	1	0	0	0	0	0	26
01:00	1	11	1	0	0	1	0	1	0	0	0	0	0	15
02:00	2	7	0	0	0	0	0	1	0	0	0	0	0	10
03:00	0	20	7	0	2	4	0	1	2	0	0	0	0	36
04:00	3	67	9	0	11	8	0	0	2	0	0	0	0	100
05:00	4	223	26	1	11	15	0	3	7	2	0	0	1	293
06:00	11	460	**93**	0	**40**	20	0	3	6	**5**	**1**	0	5	644
07:00	**18**	**543**	74	3	36	**27**	0	8	12	4	0	0	4	**729**
08:00	5	406	46	**5**	32	19	0	**14**	12	5	0	0	**9**	553
09:00	6	289	50	2	30	18	**1**	10	11	3	0	0	2	422
10:00	5	256	39	4	26	11	0	5	**14**	3	0	0	6	369
11:00	7	250	34	0	24	20	1	7	9	1	0	0	8	361
12 PM	6	256	34	3	22	15	0	6	12	**6**	1	**1**	6	368
13:00	7	262	43	0	21	16	0	5	**14**	2	0	0	4	374
14:00	8	221	38	**4**	23	19	**2**	5	11	6	0	0	**11**	348
15:00	6	281	45	3	22	15	1	7	6	1	0	0	6	393
16:00	**10**	315	**52**	2	**27**	**26**	0	**8**	10	1	0	0	3	**454**
17:00	7	**347**	34	1	13	22	0	7	5	1	**2**	0	2	441
18:00	9	229	27	1	12	16	0	1	1	0	0	0	0	296
19:00	6	187	17	0	9	11	0	3	2	1	0	0	0	236
20:00	5	114	12	0	5	10	0	0	2	0	0	0	1	149
21:00	4	110	6	0	4	11	0	1	0	0	0	0	1	137
22:00	2	65	1	0	2	7	1	1	1	0	0	0	0	80
23:00	3	23	0	0	0	2	0	0	1	0	0	0	3	32
Day Total	135	4963	690	29	373	314	6	98	140	41	4	1	72	6866
Percent	2.0%	72.3%	10.0%	0.4%	5.4%	4.6%	0.1%	1.4%	2.0%	0.6%	0.1%	0.0%	1.0%	
AM Peak	07:00	07:00	06:00	08:00	06:00	07:00	09:00	08:00	10:00	06:00	06:00		08:00	07:00
Vol.	18	543	93	5	40	27	1	14	14	5	1	9		729
PM Peak	16:00	17:00	16:00	14:00	16:00	16:00	14:00	16:00	13:00	12:00	17:00	12:00	14:00	16:00
Vol.	10	347	52	4	27	26	2	8	14	6	2	1	11	454

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code:
Station ID:
Hwy 26 EB On Ramp

EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/15/05	1	16	3	0	0	2	0	1	1	1	0	0	0	25
01:00	0	12	0	0	0	0	0	0	0	0	0	0	0	12
02:00	1	19	0	0	0	0	0	1	0	0	0	0	0	21
03:00	1	20	5	0	1	3	0	0	1	0	0	0	2	33
04:00	3	65	7	1	11	8	0	0	3	0	0	0	0	98
05:00	7	221	23	1	18	15	0	1	6	1	0	0	1	294
06:00	9	464	**89**	1	41	17	0	6	7	5	0	0	2	641
07:00	5	**545**	85	1	27	22	0	12	12	3	0	**1**	3	**716**
08:00	9	463	58	**5**	**48**	**24**	**1**	12	9	**7**	0	0	**8**	644
09:00	**14**	303	55	0	22	13	1	6	12	4	0	0	7	437
10:00	5	232	36	0	26	17	0	5	10	2	**1**	0	7	341
11:00	7	292	42	2	21	11	0	**13**	**15**	6	0	0	6	415
12 PM	3	264	48	**6**	21	15	0	8	**16**	3	0	0	4	388
13:00	12	228	46	3	25	11	0	**9**	8	**5**	0	0	**8**	355
14:00	10	255	41	4	23	19	1	9	8	1	0	0	5	376
15:00	6	283	35	2	17	13	0	1	5	3	0	0	5	370
16:00	8	334	46	2	**34**	23	0	5	4	1	0	0	4	461
17:00	9	**352**	**51**	1	16	**26**	0	2	4	2	0	0	4	**467**
18:00	**18**	261	37	1	11	22	1	5	2	1	0	0	2	361
19:00	12	184	24	0	8	8	0	5	0	0	0	0	0	241
20:00	7	125	10	0	6	1	0	0	0	0	0	0	1	150
21:00	3	115	7	1	2	11	0	4	1	0	0	0	0	144
22:00	0	59	7	0	1	3	**2**	2	2	1	0	0	1	78
23:00	3	35	3	1	1	1	0	1	0	0	0	0	2	47
Day Total	153	5147	758	32	380	285	6	108	126	46	1	1	72	7115
Percent	2.2%	72.3%	10.7%	0.4%	5.3%	4.0%	0.1%	1.5%	1.8%	0.6%	0.0%	0.0%	1.0%	
AM Peak	09:00	07:00	06:00	08:00	08:00	08:00	08:00	11:00	11:00	08:00	10:00	07:00	08:00	07:00
Vol.	14	545	89	5	48	24	1	13	15	7	1	1	8	716
PM Peak	18:00	17:00	17:00	12:00	16:00	17:00	22:00	13:00	12:00	13:00			13:00	17:00
Vol.	18	352	51	6	34	26	2	9	16	5			8	467

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code:
Station ID:
Hwy 26 EB On Ramp

EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/16/05	0	18	2	0	0	3	0	1	1	0	0	0	0	25
01:00	0	17	2	0	0	0	0	0	0	1	0	0	1	21
02:00	1	17	1	0	0	2	0	0	0	0	0	0	2	23
03:00	1	22	3	1	2	4	1	0	1	1	0	0	0	36
04:00	4	77	11	0	9	7	0	1	2	1	0	0	1	113
05:00	7	208	30	1	12	13	0	2	3	4	0	0	1	281
06:00	21	480	**93**	0	**38**	**29**	1	13	7	3	0	0	5	690
07:00	**23**	**575**	66	**6**	35	19	0	8	13	2	0	0	6	**753**
08:00	12	384	55	4	38	20	0	**18**	13	4	**1**	0	**9**	558
09:00	12	283	59	2	30	17	0	8	9	**8**	0	0	5	433
10:00	9	213	44	3	34	20	**2**	9	**15**	3	0	0	9	361
11:00	8	242	42	1	27	10	0	4	12	3	0	0	5	354
12 PM	10	260	35	2	26	13	0	**11**	8	**5**	0	0	**14**	384
13:00	8	254	39	1	27	**17**	**1**	6	**12**	3	0	0	8	376
14:00	6	270	42	**3**	26	14	0	7	8	4	0	0	10	390
15:00	12	309	47	3	**30**	14	0	7	12	3	0	0	3	440
16:00	13	353	51	1	23	14	0	7	8	4	0	**1**	6	481
17:00	**20**	**410**	**56**	0	28	13	0	2	2	4	0	0	3	**538**
18:00	14	310	24	0	12	12	0	3	3	0	0	0	0	378
19:00	4	151	16	1	13	6	0	1	3	0	0	0	0	195
20:00	4	113	17	0	3	12	0	0	0	0	0	0	1	150
21:00	6	108	12	0	4	13	0	1	0	0	0	0	1	145
22:00	4	61	9	0	5	6	0	0	0	0	0	0	0	85
23:00	2	21	0	1	1	3	0	0	3	0	0	0	2	33
Day Total	201	5156	756	30	423	281	5	109	135	53	1	1	92	7243
Percent	2.8%	71.2%	10.4%	0.4%	5.8%	3.9%	0.1%	1.5%	1.9%	0.7%	0.0%	0.0%	1.3%	
AM Peak	07:00	07:00	06:00	07:00	06:00	06:00	10:00	08:00	10:00	09:00	08:00		08:00	07:00
Vol.	23	575	93	6	38	29	2	18	15	8	1	9		753
PM Peak	17:00	17:00	17:00	14:00	15:00	13:00	13:00	12:00	13:00	12:00		16:00	12:00	17:00
Vol.	20	410	56	3	30	17	1	11	12	5	1		14	538

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code:
Station ID:
Hwy 26 EB On Ramp

EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/17/05	0	26	3	0	3	3	0	0	0	0	0	0	0	35
01:00	0	11	2	0	0	0	0	0	1	0	0	0	0	14
02:00	0	14	2	0	0	1	0	0	2	0	0	0	3	22
03:00	1	22	5	0	1	2	1	2	2	1	0	0	3	40
04:00	3	67	8	0	13	9	0	0	5	3	0	0	0	108
05:00	8	224	29	2	11	15	0	3	5	0	0	0	1	298
06:00	8	522	**87**	0	**41**	**30**	**3**	8	10	2	**1**	0	3	715
07:00	12	**568**	73	4	41	29	0	7	9	2	0	0	3	**748**
08:00	**19**	427	58	2	38	24	1	**17**	11	2	0	0	**16**	615
09:00	6	319	55	**6**	32	13	0	8	**12**	6	0	0	7	464
10:00	13	266	43	3	18	22	1	6	6	2	0	0	3	383
11:00	13	250	47	4	34	21	2	7	11	**10**	0	0	5	404
12 PM	3	266	**55**	4	20	15	0	**11**	8	3	0	0	5	390
13:00	7	241	52	1	29	14	0	5	**11**	2	0	0	3	365
14:00	10	256	52	3	26	**22**	0	9	10	**5**	0	**1**	**6**	400
15:00	**15**	304	42	**5**	**31**	16	**1**	8	4	1	0	1	4	432
16:00	14	367	43	1	28	12	0	8	8	4	0	0	6	**491**
17:00	8	**373**	46	0	23	22	1	6	2	1	0	0	2	484
18:00	8	292	15	0	17	15	0	5	3	0	0	0	1	356
19:00	4	163	18	0	10	11	0	3	0	1	0	0	2	212
20:00	4	156	16	0	6	10	0	1	0	0	0	0	0	193
21:00	7	107	9	1	4	12	0	1	1	1	0	0	1	144
22:00	2	62	6	0	1	11	0	0	0	0	0	1	2	85
23:00	1	42	5	0	3	2	0	0	2	1	0	0	0	56
Day Total	166	5345	771	36	430	331	10	115	123	47	1	3	76	7454
Percent	2.2%	71.7%	10.3%	0.5%	5.8%	4.4%	0.1%	1.5%	1.7%	0.6%	0.0%	0.0%	1.0%	
AM Peak	08:00	07:00	06:00	09:00	06:00	06:00	06:00	08:00	09:00	11:00	06:00		08:00	07:00
Vol.	19	568	87	6	41	30	3	17	12	10	1	1	6	748
PM Peak	15:00	17:00	12:00	15:00	15:00	14:00	15:00	12:00	13:00	14:00		14:00	14:00	16:00
Vol.	15	373	55	5	31	22	1	11	11	5	1		6	491

Quality Counts, LLC
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Site Code:
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EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/18/05	1	28	1	0	2	3	0	0	1	0	0	0	1	37
01:00	0	12	3	0	0	1	0	0	0	0	0	0	0	16
02:00	1	16	1	1	0	2	0	0	0	0	0	0	3	24
03:00	0	18	3	0	2	5	0	1	3	0	0	0	0	32
04:00	3	70	6	1	12	9	0	0	3	0	0	0	0	104
05:00	7	222	34	2	16	17	0	1	2	1	0	0	2	304
06:00	20	**468**	**78**	0	30	**28**	1	12	4	5	0	0	4	650
07:00	**21**	466	73	1	37	27	**2**	**14**	**15**	2	0	0	8	**666**
08:00	16	420	54	3	**38**	19	0	12	13	**6**	0	0	11	592
09:00	12	294	49	1	27	17	1	9	5	5	0	0	7	427
10:00	10	285	52	1	30	13	1	9	9	6	0	0	**12**	428
11:00	5	249	39	**4**	30	25	0	12	6	1	0	0	11	382
12 PM	6	272	27	1	23	16	0	10	**11**	**10**	0	0	7	383
13:00	13	287	50	1	16	16	0	6	6	5	0	0	7	407
14:00	6	271	50	3	**25**	15	0	8	10	2	0	0	**9**	399
15:00	14	310	**54**	**5**	24	16	0	8	10	2	0	0	2	445
16:00	**16**	364	33	0	22	**24**	0	**11**	10	3	0	0	2	485
17:00	11	**404**	25	1	13	23	0	5	2	0	0	**1**	1	**486**
18:00	16	329	28	0	14	17	0	4	1	1	0	0	3	413
19:00	4	210	17	0	8	10	0	2	2	0	0	0	2	255
20:00	6	126	12	0	13	9	**1**	1	1	0	0	0	2	171
21:00	2	148	18	1	8	11	0	1	2	0	0	0	0	191
22:00	8	116	5	0	2	9	0	1	1	0	0	0	2	144
23:00	1	54	7	0	4	3	1	0	3	1	0	0	2	76
Day Total	199	5439	719	26	396	335	7	127	120	50	0	1	98	7517
Percent	2.6%	72.4%	9.6%	0.3%	5.3%	4.5%	0.1%	1.7%	1.6%	0.7%	0.0%	0.0%	1.3%	
AM Peak	07:00	06:00	06:00	11:00	08:00	06:00	07:00	07:00	07:00	08:00			10:00	07:00
Vol.	21	468	78	4	38	28	2	14	15	6			12	666
PM Peak	16:00	17:00	15:00	15:00	14:00	16:00	20:00	16:00	12:00	12:00		17:00	14:00	17:00
Vol.	16	404	54	5	25	24	1	11	11	10	1		9	486

Quality Counts, LLC
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EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/19/05	4	28	6	0	3	6	0	0	0	0	0	0	1	48
01:00	3	16	2	0	1	1	0	0	1	1	0	0	0	25
02:00	0	19	0	0	0	0	0	0	0	1	0	0	0	20
03:00	1	19	1	0	2	3	0	0	0	1	0	0	0	27
04:00	0	37	5	1	4	3	0	0	0	0	0	0	0	50
05:00	2	69	9	0	6	4	0	3	2	1	0	0	0	96
06:00	4	133	30	2	16	**17**	0	3	0	0	0	0	0	205
07:00	6	213	30	1	19	7	1	5	**6**	**2**	0	0	1	291
08:00	7	255	31	0	**21**	12	**2**	**6**	2	0	0	0	**3**	339
09:00	10	308	44	0	15	16	2	5	3	1	0	0	0	404
10:00	18	**325**	44	0	20	15	1	3	5	1	0	0	2	434
11:00	**23**	324	**45**	**3**	17	14	0	3	3	2	0	0	3	**437**
12 M	P 9	311	32	1	19	11	0	1	2	**1**	0	0	**1**	388
13:00	12	**339**	43	1	12	9	0	**5**	**4**	0	0	0	1	426
14:00	**35**	271	35	2	13	12	0	1	2	0	0	0	1	372
15:00	11	268	40	**3**	**25**	15	0	5	2	0	**1**	0	0	370
16:00	12	333	**46**	2	13	18	0	5	0	0	0	0	1	**430**
17:00	21	320	36	0	14	**20**	0	3	1	0	0	0	0	415
18:00	18	302	27	0	13	15	0	3	2	0	0	0	1	381
19:00	9	189	19	1	12	16	0	2	0	0	0	0	0	248
20:00	8	124	8	0	7	3	0	2	1	0	0	0	1	154
21:00	11	145	17	0	3	9	0	1	1	0	0	0	0	187
22:00	7	96	8	0	3	6	0	0	0	0	0	0	0	120
23:00	8	81	3	0	2	4	0	0	0	0	0	0	0	98
Day Total	239	4525	561	17	260	236	6	56	37	11	1	0	16	5965
Percent	4.0%	75.9%	9.4%	0.3%	4.4%	4.0%	0.1%	0.9%	0.6%	0.2%	0.0%	0.0%	0.3%	
AM Peak	11:00	10:00	11:00	11:00	08:00	06:00	08:00	08:00	07:00	07:00			08:00	11:00
Vol.	23	325	45	3	21	17	2	6	6	2			3	437
PM Peak	14:00	13:00	16:00	15:00	15:00	17:00		13:00	13:00	12:00	15:00		12:00	16:00
Vol.	35	339	46	3	25	20	5		4	1	1		1	430

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code:
Station ID:
Hwy 26 EB On Ramp

EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/20/05	0	28	6	0	1	5	0	0	0	0	0	0	0	40
01:00	4	33	0	0	2	2	0	0	0	0	0	0	0	41
02:00	0	21	3	0	1	0	0	0	0	0	0	0	**2**	27
03:00	1	10	2	0	1	1	0	0	0	0	0	0	0	15
04:00	2	25	4	0	3	2	0	0	0	0	0	0	0	36
05:00	1	35	2	0	6	1	0	1	0	0	0	0	0	46
06:00	3	84	11	0	9	5	0	1	0	0	0	0	0	113
07:00	5	87	10	0	6	4	0	3	0	0	0	0	1	116
08:00	10	153	20	**2**	**14**	6	0	0	1	0	0	0	0	206
09:00	7	234	30	0	13	**15**	0	1	**2**	0	0	0	1	303
10:00	**15**	282	26	1	12	8	0	3	1	0	0	0	0	348
11:00	5	**293**	**31**	1	11	8	0	**4**	0	0	0	0	2	**355**
12 PM	10	271	**38**	0	14	10	0	2	1	0	0	0	0	346
13:00	12	267	29	0	13	12	0	**6**	0	0	0	0	**2**	341
14:00	6	284	29	**1**	14	12	0	3	0	0	0	0	0	349
15:00	16	270	29	0	4	12	0	3	**2**	**1**	0	0	1	338
16:00	10	**327**	29	0	12	**14**	0	4	1	0	0	0	0	**397**
17:00	**17**	316	16	1	11	14	0	2	1	0	0	0	0	378
18:00	9	224	30	0	**15**	7	0	2	0	0	0	0	2	289
19:00	8	156	11	0	6	8	0	0	2	0	0	0	0	191
20:00	4	144	5	0	5	8	0	2	2	0	0	0	1	171
21:00	2	76	4	0	3	10	0	1	0	1	0	0	0	97
22:00	4	63	5	0	1	3	0	1	0	0	0	0	0	77
23:00	2	30	1	0	1	3	0	0	0	0	0	0	1	38
Day Total	153	3713	371	6	178	170	0	39	13	2	0	0	13	4658
Percent	3.3%	79.7%	8.0%	0.1%	3.8%	3.6%	0.0%	0.8%	0.3%	0.0%	0.0%	0.0%	0.3%	
AM Peak	10:00	11:00	11:00	08:00	08:00	09:00		11:00	09:00				02:00	11:00
Vol.	15	293	31	2	14	15		4	2				2	355
PM Peak	17:00	16:00	12:00	14:00	18:00	16:00		13:00	15:00	15:00			13:00	16:00
Vol.	17	327	38	1	15	14	6		2	1			2	397
Grand Total	1246	34288	4626	176	2440	1952	40	652	694	250	8	7	439	46818
Percent	2.7%	73.2%	9.9%	0.4%	5.2%	4.2%	0.1%	1.4%	1.5%	0.5%	0.0%	0.0%	0.9%	

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132203
Station ID:
Hwy 26 EB Off Ramp

EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/14/05	1	4	0	0	0	1	0	0	0	0	0	0	0	6
01:00	1	2	0	0	0	0	0	0	0	0	0	0	0	3
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	1	0	0	0	3	0	0	0	0	0	0	0	4
04:00	1	2	0	0	0	1	0	0	0	0	0	0	0	4
05:00	8	19	1	0	1	6	1	0	0	0	0	0	0	36
06:00	18	32	7	0	**7**	12	0	0	0	1	0	0	0	77
07:00	**24**	42	6	**1**	4	**21**	0	**1**	1	**2**	0	0	0	102
08:00	23	**69**	**9**	0	2	16	0	1	0	0	0	0	0	**120**
09:00	11	48	4	0	3	20	0	1	1	1	0	0	0	89
10:00	12	45	7	0	1	12	**3**	1	**2**	0	0	0	**1**	84
11:00	21	27	7	0	4	8	2	0	0	1	0	0	0	70
12 PM	14	29	9	0	**12**	13	**2**	0	**1**	**2**	0	0	1	83
13:00	9	34	**14**	0	5	11	1	0	0	1	0	0	**2**	77
14:00	16	31	5	**1**	3	8	2	**1**	1	0	0	0	1	69
15:00	**22**	43	6	0	4	14	0	1	0	0	0	0	0	**90**
16:00	20	**44**	4	1	4	14	1	0	1	0	0	0	0	89
17:00	16	31	3	0	3	12	0	0	0	0	0	0	0	65
18:00	7	22	9	0	5	**15**	0	1	0	0	0	0	0	59
19:00	7	12	2	0	0	10	0	0	0	0	0	0	0	31
20:00	5	6	2	0	0	3	0	0	0	0	0	0	0	16
21:00	5	5	2	0	1	2	0	0	0	0	0	0	0	15
22:00	1	8	0	0	0	1	0	0	0	0	0	0	0	10
23:00	0	7	0	0	0	0	0	0	0	0	0	0	0	7
Day Total	242	564	97	3	59	203	12	7	7	8	0	0	5	1207
Percent	20.0%	46.7%	8.0%	0.2%	4.9%	16.8%	1.0%	0.6%	0.6%	0.7%	0.0%	0.0%	0.4%	
AM Peak	07:00	08:00	08:00	07:00	06:00	07:00	10:00	07:00	10:00	07:00			10:00	08:00
Vol.	24	69	9	1	7	21	3	1	2	2			1	120
PM Peak	15:00	16:00	13:00	14:00	12:00	18:00	12:00	14:00	12:00	12:00			13:00	15:00
Vol.	22	44	14	1	12	15	2	1	1	2			2	90

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132203
Station ID:
Hwy 26 EB Off Ramp

EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/15/05	0	0	0	0	0	1	0	0	0	0	0	0	0	1
01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
02:00	3	1	0	0	0	0	0	0	0	0	0	0	0	4
03:00	2	2	0	0	0	2	0	0	0	0	0	0	0	6
04:00	2	4	0	0	2	1	0	0	0	0	0	0	0	9
05:00	6	13	3	0	0	6	1	0	0	0	0	0	0	29
06:00	17	38	4	0	3	14	0	0	0	**1**	0	0	**1**	78
07:00	20	**49**	6	0	**10**	**23**	1	0	0	0	0	0	0	109
08:00	**34**	45	**13**	0	5	17	1	1	**1**	0	0	0	1	**118**
09:00	18	42	7	0	2	19	**2**	1	0	1	0	0	0	92
10:00	12	35	8	0	3	11	2	0	0	0	0	0	0	71
11:00	18	29	6	0	6	17	0	**2**	1	0	0	0	1	80
12 PM	23	37	2	0	4	**20**	**1**	0	0	**2**	0	0	0	89
13:00	20	30	10	0	**6**	17	0	0	0	0	0	0	0	83
14:00	16	35	10	0	6	18	1	**1**	**1**	0	0	0	**1**	89
15:00	**26**	**42**	11	1	5	10	0	1	0	2	0	0	1	**99**
16:00	16	37	**12**	**2**	3	16	1	0	0	0	0	0	0	87
17:00	12	29	8	0	3	10	0	1	1	0	0	0	0	64
18:00	24	26	11	0	2	12	0	1	0	1	0	0	0	77
19:00	10	19	4	0	2	10	0	0	0	0	0	0	0	45
20:00	9	8	2	0	0	5	0	0	0	0	0	0	0	24
21:00	5	12	0	0	2	5	0	0	1	0	0	0	0	25
22:00	4	6	0	0	0	4	0	0	1	0	0	0	0	15
23:00	2	2	0	0	0	3	0	0	0	0	0	0	0	7
Day Total	299	543	117	3	64	241	10	8	6	7	0	0	5	1303
Percent	22.9%	41.7%	9.0%	0.2%	4.9%	18.5%	0.8%	0.6%	0.5%	0.5%	0.0%	0.0%	0.4%	
AM Peak	08:00	07:00	08:00		07:00	07:00	09:00	11:00	08:00	06:00			06:00	08:00
Vol.	34	49	13		0	23	2	2	1	1			1	118
PM Peak	15:00	15:00	16:00	16:00	13:00	12:00	12:00	14:00	14:00	12:00			14:00	15:00
Vol.	26	42	12	2	6	20	1	1	1	2			1	99

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132203
Station ID:
Hwy 26 EB Off Ramp

EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/16/05	0	1	0	0	0	0	0	0	0	0	0	0	0	1
01:00	3	1	0	0	0	1	0	0	0	0	0	0	0	5
02:00	1	4	0	0	0	0	0	0	0	0	0	0	0	5
03:00	0	2	0	0	0	3	0	0	0	0	0	0	0	5
04:00	4	3	0	0	0	1	0	0	0	0	0	0	0	8
05:00	6	14	2	0	1	14	**2**	0	0	0	0	0	0	39
06:00	21	30	5	0	7	11	0	0	0	0	0	0	0	74
07:00	**29**	53	4	0	**11**	17	0	0	0	**1**	0	0	0	**115**
08:00	20	**59**	**10**	0	4	14	1	0	0	0	0	0	**1**	109
09:00	25	33	6	0	4	15	2	**1**	0	0	0	0	0	86
10:00	17	30	4	0	3	14	2	1	**2**	0	0	0	1	74
11:00	16	41	4	**1**	2	**18**	0	1	0	0	0	0	0	83
12 PM	**24**	**48**	4	0	2	7	1	1	0	**2**	0	0	0	**89**
13:00	10	28	6	0	7	12	**2**	1	0	2	0	0	0	68
14:00	11	37	7	0	2	15	1	1	0	1	0	0	0	75
15:00	14	36	4	1	**8**	**16**	0	**2**	**2**	1	0	0	**1**	85
16:00	21	41	8	**2**	1	12	0	1	0	1	0	0	0	87
17:00	10	29	**9**	0	3	11	0	0	1	1	0	0	0	64
18:00	19	32	5	1	4	14	0	2	0	0	0	0	0	77
19:00	4	15	1	0	3	5	0	0	0	0	0	0	0	28
20:00	6	14	0	0	1	3	0	0	0	0	0	0	0	24
21:00	4	7	0	0	1	2	0	0	0	0	0	0	0	14
22:00	4	3	2	0	1	2	0	0	0	0	0	0	0	12
23:00	3	3	0	0	1	2	0	0	0	0	0	0	0	9
Day Total	272	564	81	5	66	209	11	11	5	9	0	0	3	1236
Percent	22.0%	45.6%	6.6%	0.4%	5.3%	16.9%	0.9%	0.9%	0.4%	0.7%	0.0%	0.0%	0.2%	
AM Peak	07:00	08:00	08:00	11:00	07:00	11:00	05:00	09:00	10:00	07:00			08:00	07:00
Vol.	29	59	10	1	11	18	2	1	2	1			1	115
PM Peak	12:00	12:00	17:00	16:00	15:00	15:00	13:00	15:00	15:00	12:00			15:00	12:00
Vol.	24	48	9	2	8	16	2	2	2	2			1	89

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132203
Station ID:
Hwy 26 EB Off Ramp

EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/17/05	1	2	0	0	1	1	**1**	0	0	0	0	0	0	6
01:00	0	3	0	0	0	2	0	0	0	0	0	0	**1**	6
02:00	1	1	1	0	0	0	0	0	0	0	0	0	0	3
03:00	0	3	0	0	0	2	0	0	0	**1**	0	0	0	6
04:00	0	1	0	0	1	3	0	0	0	0	0	0	0	5
05:00	7	11	5	0	1	6	1	0	0	0	0	0	0	31
06:00	14	46	**10**	0	3	**28**	0	0	**1**	0	0	0	1	103
07:00	25	47	4	**2**	**8**	19	1	1	0	1	0	0	1	109
08:00	18	**61**	7	0	8	17	1	1	0	1	0	0	1	**115**
09:00	**28**	41	10	0	5	14	0	**2**	0	1	0	0	0	101
10:00	16	38	4	0	3	10	1	1	0	1	0	0	0	74
11:00	20	31	7	0	4	10	1	1	0	1	0	0	0	75
12 PM	16	26	**12**	0	**4**	**22**	1	0	**1**	**2**	0	0	0	84
13:00	11	23	3	0	2	11	1	0	1	0	0	0	0	52
14:00	**17**	29	6	0	2	9	1	2	0	0	0	0	0	66
15:00	17	**39**	9	**1**	1	17	1	**3**	0	0	0	0	**2**	**90**
16:00	11	33	7	1	4	12	**2**	3	1	0	0	0	0	74
17:00	15	30	10	0	4	16	0	0	1	0	0	0	2	78
18:00	11	20	6	0	3	15	0	2	0	0	0	0	0	57
19:00	5	16	6	0	1	14	0	0	0	0	0	0	0	42
20:00	5	15	1	0	0	5	0	0	0	0	0	0	0	26
21:00	3	11	2	0	0	2	0	0	0	0	0	0	0	18
22:00	4	10	1	0	0	2	0	1	0	0	0	0	0	18
23:00	2	2	0	0	1	1	0	0	0	0	0	0	0	6
Day Total	247	539	111	4	56	238	12	17	5	8	0	0	8	1245
Percent	19.8%	43.3%	8.9%	0.3%	4.5%	19.1%	1.0%	1.4%	0.4%	0.6%	0.0%	0.0%	0.6%	
AM Peak	09:00	08:00	06:00	07:00	07:00	06:00	00:00	09:00	06:00	03:00			01:00	08:00
Vol.	28	61	10	2	8	28	1	2	1	1			1	115
PM Peak	14:00	15:00	12:00	15:00	12:00	12:00	16:00	15:00	12:00	12:00			15:00	15:00
Vol.	17	39	12	1	4	22	2	3	1	2			2	90

Quality Counts, LLC
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Site Code: 10132203
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EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/18/05	0	2	0	0	0	2	0	1	0	0	0	0	0	5
01:00	0	0	1	0	0	0	1	0	0	0	0	0	0	2
02:00	2	1	0	**1**	0	2	0	0	0	0	0	0	0	6
03:00	1	2	0	0	0	1	0	0	0	0	0	0	0	4
04:00	0	0	1	0	2	2	0	0	0	0	0	0	0	5
05:00	6	13	4	0	2	5	0	0	0	0	0	0	0	30
06:00	16	40	7	0	6	14	2	0	0	0	0	0	0	85
07:00	**29**	46	2	1	6	18	1	0	0	0	0	0	0	103
08:00	29	**60**	**9**	0	**8**	**20**	3	**2**	0	0	0	0	0	**131**
09:00	27	30	6	0	5	14	2	1	0	0	0	0	**1**	86
10:00	16	36	9	0	2	12	**4**	1	0	0	0	0	1	81
11:00	13	41	6	0	6	17	1	2	0	0	0	0	0	86
12 PM	10	29	6	0	1	17	**2**	1	0	**1**	0	0	0	67
13:00	16	33	4	**1**	2	8	0	1	0	1	0	0	1	67
14:00	12	41	3	0	4	8	0	1	0	0	0	0	0	69
15:00	14	33	**10**	1	**7**	15	2	1	0	0	0	0	**2**	85
16:00	**25**	41	7	1	4	**25**	0	1	0	0	0	0	0	**104**
17:00	12	**48**	4	0	5	18	0	**2**	0	0	0	0	0	89
18:00	15	36	3	0	4	17	0	1	0	0	0	0	0	76
19:00	7	18	3	0	0	11	0	0	0	0	0	0	0	39
20:00	9	17	0	0	2	6	0	2	0	0	0	0	0	36
21:00	6	14	1	0	3	8	0	1	0	0	0	0	0	33
22:00	5	11	0	0	0	2	0	0	0	0	0	0	0	18
23:00	1	4	2	0	2	2	0	0	0	0	0	0	0	11
Day Total	271	596	88	5	71	244	18	18	0	2	0	0	5	1318
Percent	20.6%	45.2%	6.7%	0.4%	5.4%	18.5%	1.4%	1.4%	0.0%	0.2%	0.0%	0.0%	0.4%	
AM Peak	07:00	08:00	08:00	02:00	08:00	08:00	10:00	08:00					09:00	08:00
Vol.	29	60	9	1	8	20	4	2					1	131
PM Peak	16:00	17:00	15:00	13:00	15:00	16:00	12:00	17:00		12:00			15:00	16:00
Vol.	25	48	10	1	7	25	2	2	1			2		104

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132203
Station ID:
Hwy 26 EB Off Ramp

EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/19/05	2	3	1	0	1	2	0	0	0	0	0	0	0	9
01:00	3	1	0	0	0	1	0	0	0	0	0	0	0	5
02:00	2	1	0	0	0	1	0	0	0	0	0	0	0	4
03:00	1	2	0	0	0	0	0	0	0	0	0	0	0	3
04:00	2	1	0	0	1	1	0	0	0	0	0	0	0	5
05:00	2	6	1	0	0	3	0	0	0	0	0	0	0	12
06:00	4	18	3	0	0	3	0	0	0	0	0	0	0	28
07:00	8	19	6	0	**6**	4	**1**	**2**	0	0	0	0	0	46
08:00	13	19	4	0	3	9	1	0	0	0	0	0	0	49
09:00	**24**	**46**	6	**1**	3	10	1	0	0	0	0	0	0	**91**
10:00	24	30	**9**	0	3	**15**	0	1	**1**	0	0	0	0	83
11:00	17	44	6	1	4	12	0	0	0	0	0	0	0	84
12 PM	**30**	**51**	7	0	2	21	0	**3**	1	0	0	0	0	**115**
13:00	17	35	7	0	4	9	0	2	**3**	0	0	0	0	77
14:00	14	44	8	0	**6**	8	0	0	0	0	0	0	0	80
15:00	9	43	7	0	2	13	0	1	1	**1**	0	0	0	77
16:00	25	47	**9**	0	4	19	0	3	0	0	0	0	0	107
17:00	16	51	7	0	3	16	0	1	1	0	0	0	0	95
18:00	16	37	7	0	3	**26**	0	3	0	0	0	0	0	92
19:00	13	27	4	0	2	6	0	1	0	0	0	0	0	53
20:00	8	19	0	0	1	4	0	1	0	0	0	0	0	33
21:00	10	16	0	0	0	4	0	0	0	0	0	0	0	30
22:00	6	11	3	0	1	6	0	0	0	0	0	0	0	27
23:00	4	6	2	0	0	3	0	0	0	0	0	0	0	15
Day Total	270	577	97	2	49	196	3	18	7	1	0	0	0	1220
Percent	22.1%	47.3%	8.0%	0.2%	4.0%	16.1%	0.2%	1.5%	0.6%	0.1%	0.0%	0.0%	0.0%	
AM Peak	09:00	09:00	10:00	09:00	07:00	10:00	07:00	07:00	10:00					09:00
Vol.	24	46	9	1	6	15	1	2	1					91
PM Peak	12:00	12:00	16:00		14:00	18:00		12:00	13:00	15:00				12:00
Vol.	30	51	9	6		26	3		3	1				115

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132203
Station ID:
Hwy 26 EB Off Ramp

EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/20/05	2	4	1	0	1	1	0	0	0	0	0	0	0	9
01:00	1	3	0	0	0	1	0	0	0	0	0	0	0	5
02:00	1	4	0	0	0	0	0	0	0	0	0	0	0	5
03:00	1	0	0	0	0	1	0	0	0	**1**	0	0	0	3
04:00	0	2	1	0	0	2	0	0	0	0	0	0	0	5
05:00	1	2	0	0	1	0	0	0	0	0	0	0	0	4
06:00	1	6	0	0	1	5	0	**1**	0	0	0	0	0	14
07:00	4	12	2	0	0	5	0	0	0	0	0	0	0	23
08:00	8	14	1	0	3	4	0	0	**1**	1	0	0	0	32
09:00	16	27	5	0	3	8	0	1	0	0	0	0	**1**	61
10:00	**19**	31	**6**	0	2	9	0	0	0	0	0	0	0	67
11:00	13	**41**	3	0	**6**	**12**	**1**	0	0	0	0	0	0	**76**
12 M	P 14	45	4	0	0	11	0	1	0	0	0	0	0	75
13:00	23	40	5	0	4	13	0	1	0	0	0	0	0	86
14:00	21	44	8	0	3	10	0	0	1	0	0	0	0	87
15:00	**25**	40	13	0	5	12	0	0	1	0	0	0	0	96
16:00	20	38	13	0	2	15	**1**	**3**	0	0	0	0	0	92
17:00	24	**46**	**15**	0	4	**18**	0	2	1	0	0	0	0	**110**
18:00	12	44	4	0	**7**	15	0	0	**2**	0	0	0	0	84
19:00	9	10	3	0	1	5	0	2	0	0	0	0	0	30
20:00	4	14	3	0	1	7	1	0	0	0	0	0	0	30
21:00	6	12	0	0	0	6	0	0	0	0	0	0	0	24
22:00	1	6	1	0	0	1	0	0	0	0	0	0	0	9
23:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
Day Total	226	487	88	0	44	161	3	11	6	2	0	0	1	1029
Percent	22.0%	47.3%	8.6%	0.0%	4.3%	15.6%	0.3%	1.1%	0.6%	0.2%	0.0%	0.0%	0.1%	
AM Peak	10:00	11:00	10:00		11:00	11:00	11:00	06:00	08:00	03:00			09:00	11:00
Vol.	19	41	6		6	12	1	1	1	1			1	76
PM Peak	15:00	17:00	17:00		18:00	17:00	16:00	16:00	18:00					17:00
Vol.	25	46	15		7	18	1	3	2					110
Grand Total	1827	3870	679	22	409	1492	69	90	36	37	0	0	27	8558
Percent	21.3%	45.2%	7.9%	0.3%	4.8%	17.4%	0.8%	1.1%	0.4%	0.4%	0.0%	0.0%	0.3%	

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132206
Station ID:
Hwy 26 WB On Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/14/05	0	4	0	0	0	0	0	0	0	1	0	0	0	5
01:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
02:00	0	4	1	0	0	0	0	0	0	0	0	0	0	5
03:00	1	6	0	0	0	1	0	0	0	1	0	0	0	9
04:00	3	6	7	0	0	0	0	0	0	0	0	0	0	16
05:00	3	38	15	0	7	3	0	1	**2**	0	0	0	0	69
06:00	**7**	48	**18**	**1**	**11**	2	0	2	0	1	0	0	0	90
07:00	7	47	7	0	8	1	**1**	0	1	**3**	0	0	2	77
08:00	4	54	13	1	9	7	0	1	0	0	0	0	1	90
09:00	5	53	13	0	7	**9**	0	**4**	0	2	0	0	0	**93**
10:00	6	62	11	0	7	4	0	0	0	2	0	0	1	93
11:00	1	**63**	14	1	6	3	0	0	0	0	0	0	**4**	92
12 PM	**12**	53	**20**	0	7	4	**2**	1	0	**2**	0	0	0	101
13:00	8	72	15	**1**	6	**7**	1	**4**	**2**	2	0	0	**1**	119
14:00	5	85	10	0	8	6	0	2	0	2	0	0	1	119
15:00	6	101	9	0	7	6	1	3	0	1	0	0	0	134
16:00	10	96	16	0	**9**	7	0	2	0	2	0	0	0	142
17:00	12	**123**	19	0	7	4	0	0	0	0	0	0	0	**165**
18:00	5	98	11	0	6	2	0	1	0	0	0	0	0	123
19:00	5	64	10	0	4	2	0	1	0	0	0	0	0	86
20:00	1	47	4	0	2	2	0	0	1	0	0	0	0	57
21:00	1	41	3	0	5	1	0	0	0	0	0	0	0	51
22:00	1	30	4	0	0	3	0	0	0	0	0	0	1	39
23:00	2	11	1	0	0	0	0	0	0	0	0	0	0	14
Day Total	105	1209	221	4	116	74	5	22	6	19	0	0	11	1792
Percent	5.9%	67.5%	12.3%	0.2%	6.5%	4.1%	0.3%	1.2%	0.3%	1.1%	0.0%	0.0%	0.6%	
AM Peak	06:00	11:00	06:00	06:00	06:00	09:00	07:00	09:00	05:00	07:00			11:00	09:00
Vol.	7	63	18	1	11	9	1	4	2	3			4	93
PM Peak	12:00	17:00	12:00	13:00	16:00	13:00	12:00	13:00	13:00	12:00			13:00	17:00
Vol.	12	123	20	1	9	7	2	4	2	2			1	165

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132206
Station ID:
Hwy 26 WB On Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/15/05	1	11	0	0	0	0	0	0	0	0	0	0	0	12
01:00	1	4	0	0	0	1	0	0	0	0	0	0	0	6
02:00	1	2	0	0	0	0	0	1	0	0	0	0	0	4
03:00	0	4	1	0	0	0	**1**	0	0	0	0	0	0	6
04:00	0	11	3	0	1	1	0	0	0	0	0	0	0	16
05:00	4	36	**17**	0	1	5	0	2	0	0	0	0	0	65
06:00	8	29	12	**1**	5	1	0	**3**	0	0	0	0	0	59
07:00	2	43	14	0	**11**	4	1	3	1	0	0	0	0	79
08:00	2	50	11	0	8	5	0	1	0	1	0	0	0	78
09:00	5	53	15	1	5	2	0	1	0	**2**	0	0	**2**	86
10:00	**11**	57	12	1	7	5	1	1	0	1	0	0	0	96
11:00	11	**69**	16	0	3	**7**	0	2	**2**	2	0	0	2	**114**
12 PM	10	62	16	0	1	4	0	0	**1**	**2**	0	0	1	97
13:00	6	61	**22**	0	6	6	**2**	1	0	1	0	0	**2**	107
14:00	8	97	13	0	10	**11**	0	1	0	1	0	0	1	142
15:00	5	99	22	0	10	11	1	3	0	0	0	0	0	151
16:00	14	133	19	0	9	6	1	0	0	1	0	0	0	183
17:00	**17**	**134**	17	0	**11**	7	1	1	0	0	0	0	0	**188**
18:00	4	118	8	0	7	2	0	**4**	0	1	0	0	0	144
19:00	3	51	6	0	3	3	0	1	1	0	0	0	0	68
20:00	1	47	2	0	2	1	0	0	0	0	0	0	0	53
21:00	2	53	2	0	3	0	1	1	0	0	0	0	0	62
22:00	0	26	4	0	2	1	0	0	0	0	0	0	0	33
23:00	0	13	1	0	1	0	0	0	0	1	0	0	0	16
Day Total	116	1263	233	3	106	83	9	26	5	13	0	0	8	1865
Percent	6.2%	67.7%	12.5%	0.2%	5.7%	4.5%	0.5%	1.4%	0.3%	0.7%	0.0%	0.0%	0.4%	
AM Peak	10:00	11:00	05:00	06:00	07:00	11:00	03:00	06:00	11:00	09:00			09:00	11:00
Vol.	11	69	17	1	11	7	1	3	2	2			2	114
PM Peak	17:00	17:00	13:00		17:00	14:00	13:00	18:00	12:00	12:00			13:00	17:00
Vol.	17	134	22		**1**	11	2	4	1	2			2	188

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132206
Station ID:
Hwy 26 WB On Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/16/05	0	8	1	0	1	0	0	0	0	1	0	0	0	11
01:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5
02:00	0	6	1	0	0	0	0	0	0	0	**1**	0	0	8
03:00	0	2	0	0	0	1	0	0	0	0	0	0	0	3
04:00	0	7	0	0	1	1	1	1	0	0	0	0	0	11
05:00	0	18	7	0	2	2	0	2	0	1	0	0	0	32
06:00	3	39	9	**1**	6	4	0	**5**	0	**4**	0	0	0	71
07:00	6	35	9	0	**9**	**7**	0	0	0	3	0	0	**3**	72
08:00	7	48	14	0	6	5	0	2	**1**	0	0	0	0	83
09:00	7	**66**	12	0	8	2	**2**	2	0	4	0	0	2	**105**
10:00	3	52	8	0	7	2	2	2	0	2	0	0	1	79
11:00	**12**	56	**16**	0	7	4	1	0	1	1	0	0	1	99
12 M P	8	69	9	0	9	**9**	0	0	**1**	0	0	0	0	105
13:00	9	65	20	0	3	5	**2**	**2**	1	0	0	0	**3**	110
14:00	**19**	76	13	0	10	5	2	2	0	**4**	0	0	0	131
15:00	11	81	**24**	0	3	5	0	0	1	0	0	0	3	128
16:00	8	116	17	0	**11**	6	1	1	0	0	0	0	0	160
17:00	10	**139**	19	0	10	8	0	1	1	0	0	0	0	**188**
18:00	2	101	16	0	9	4	0	1	0	0	0	0	0	133
19:00	3	69	15	0	5	4	0	0	0	0	0	0	0	96
20:00	3	56	6	0	6	0	0	1	0	0	0	0	0	72
21:00	0	50	4	0	3	0	0	0	0	1	0	0	0	58
22:00	3	31	3	0	2	1	0	0	0	0	0	0	0	40
23:00	1	23	2	0	1	1	0	0	0	0	0	0	0	28
Day Total	115	1218	225	1	119	76	11	22	6	21	1	0	13	1828
Percent	6.3%	66.6%	12.3%	0.1%	6.5%	4.2%	0.6%	1.2%	0.3%	1.1%	0.1%	0.0%	0.7%	
AM Peak	11:00	09:00	11:00	06:00	07:00	07:00	09:00	06:00	08:00	06:00	02:00		07:00	09:00
Vol.	12	66	16	1	9	7	2	5	1	4	1		3	105
PM Peak	14:00	17:00	15:00		16:00	12:00	13:00	13:00	12:00	14:00			13:00	17:00
Vol.	19	139	24		**1**	9	2	2	1	4			3	188

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132206
Station ID:
Hwy 26 WB On Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/17/05	1	14	0	0	0	0	0	0	0	0	0	0	0	15
01:00	0	6	0	0	0	1	0	0	0	0	0	0	0	7
02:00	0	1	1	0	0	0	0	0	**1**	0	0	0	0	3
03:00	1	4	0	0	0	0	**1**	0	0	0	0	0	0	6
04:00	1	10	1	0	2	0	0	1	0	0	0	0	0	15
05:00	1	22	6	0	3	1	0	2	0	0	0	0	0	35
06:00	2	34	12	**1**	6	2	1	0	0	0	0	0	1	59
07:00	4	46	11	0	12	0	0	1	0	1	0	0	0	75
08:00	2	55	15	1	12	2	0	1	1	3	0	0	1	93
09:00	**8**	59	**22**	0	**16**	**6**	0	0	0	**4**	0	0	0	**115**
10:00	3	59	18	1	4	3	0	1	1	1	0	0	1	92
11:00	4	**62**	12	0	11	3	0	**3**	1	1	0	0	**3**	100
12 PM	10	56	19	**1**	9	6	1	**2**	**1**	1	0	0	1	107
13:00	11	70	13	1	**13**	6	0	1	1	0	0	0	1	117
14:00	**15**	77	13	1	8	7	**2**	2	0	**3**	0	0	**2**	130
15:00	11	97	15	0	8	4	2	1	0	1	0	0	0	139
16:00	8	114	**26**	1	8	**10**	0	2	0	0	0	0	0	169
17:00	11	**131**	19	0	10	7	0	1	1	0	0	0	0	**180**
18:00	11	104	10	0	9	4	0	2	0	0	0	0	0	140
19:00	2	61	10	0	5	2	0	2	0	0	0	0	0	82
20:00	6	67	12	0	5	4	0	0	0	0	0	0	0	94
21:00	3	58	5	0	4	4	0	0	1	0	0	0	0	75
22:00	5	33	4	0	4	0	0	1	0	1	0	0	0	48
23:00	2	16	1	0	2	0	0	0	0	0	0	0	0	21
Day Total	122	1256	245	7	151	72	7	23	8	16	0	0	10	1917
Percent	6.4%	65.5%	12.8%	0.4%	7.9%	3.8%	0.4%	1.2%	0.4%	0.8%	0.0%	0.0%	0.5%	
AM Peak	09:00	11:00	09:00	06:00	09:00	09:00	03:00	11:00	02:00	09:00			11:00	09:00
Vol.	8	62	22	1	16	6	1	3	1	4			3	115
PM Peak	14:00	17:00	16:00	12:00	13:00	16:00	14:00	12:00	12:00	14:00			14:00	17:00
Vol.	15	131	26	1	13	10	2	2	1	3			2	180

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132206
Station ID:
Hwy 26 WB On Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/18/05	0	4	0	0	3	1	0	0	0	0	0	0	0	8
01:00	0	9	3	0	2	0	0	0	0	0	0	0	0	14
02:00	0	5	1	0	0	0	0	0	0	0	0	0	0	6
03:00	0	3	0	0	0	0	**1**	0	0	0	0	0	0	4
04:00	0	8	1	**1**	0	1	0	0	0	0	0	0	0	11
05:00	2	21	10	0	6	2	0	2	0	0	0	0	0	43
06:00	3	40	13	1	7	4	0	1	0	1	0	0	0	70
07:00	3	49	9	0	5	6	0	0	1	2	0	0	0	75
08:00	4	54	16	0	10	3	0	3	0	2	0	0	**2**	94
09:00	**7**	53	13	0	**14**	3	1	2	0	**4**	0	0	2	99
10:00	6	**76**	8	0	7	3	1	**7**	1	2	0	0	1	**112**
11:00	4	63	**17**	0	14	**7**	1	2	**2**	1	0	0	0	111
12 PM	11	69	15	0	5	7	**1**	2	0	0	0	0	**3**	113
13:00	**21**	73	11	0	10	9	0	**4**	0	**2**	0	0	0	130
14:00	11	111	17	0	14	8	0	3	2	2	0	0	2	170
15:00	11	141	19	0	**19**	9	1	1	1	0	0	0	1	203
16:00	15	140	14	0	14	10	0	3	1	1	0	0	0	198
17:00	12	**159**	20	0	15	**11**	1	4	0	0	0	0	1	**223**
18:00	12	143	**25**	0	15	10	1	3	**3**	0	0	0	0	212
19:00	3	103	9	0	9	1	1	2	1	0	0	0	0	129
20:00	4	68	14	0	7	5	0	0	0	0	0	0	0	98
21:00	6	65	11	0	4	4	0	0	1	0	0	0	1	92
22:00	2	47	8	0	4	3	1	0	1	1	0	0	0	67
23:00	0	23	5	0	2	3	0	0	0	0	0	0	0	33
Day Total	137	1527	259	2	186	110	10	39	14	18	0	0	13	2315
Percent	5.9%	66.0%	11.2%	0.1%	8.0%	4.8%	0.4%	1.7%	0.6%	0.8%	0.0%	0.0%	0.6%	
AM Peak	09:00	10:00	11:00	04:00	09:00	11:00	03:00	10:00	11:00	09:00			08:00	10:00
Vol.	7	76	17	1	14	7	1	7	2	4			2	112
PM Peak	13:00	17:00	18:00		15:00	17:00	12:00	13:00	18:00	13:00			12:00	17:00
Vol.	21	159	25		9	11	1	4	3	2			3	223

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132206
Station ID:
Hwy 26 WB On Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/19/05	3	20	1	0	1	1	0	0	0	0	0	0	0	26
01:00	0	17	1	0	1	1	0	1	0	0	0	0	0	21
02:00	0	12	1	0	1	1	0	1	0	0	0	0	0	16
03:00	1	4	2	0	1	0	0	0	0	0	0	0	0	8
04:00	1	9	7	0	2	1	0	0	0	0	0	0	0	20
05:00	3	38	**20**	0	**12**	0	**1**	4	0	0	0	0	0	78
06:00	8	40	11	0	12	1	0	**6**	1	0	0	0	0	79
07:00	4	47	13	0	7	3	0	3	0	0	0	0	**1**	78
08:00	8	67	18	0	12	5	0	4	0	0	0	0	0	114
09:00	6	79	8	0	6	**7**	0	4	0	0	0	0	1	111
10:00	**11**	92	18	0	5	6	0	4	0	0	0	0	0	136
11:00	11	**96**	17	0	9	7	1	5	**2**	0	0	0	0	**148**
12 PM	11	101	**26**	0	9	3	0	**4**	0	**1**	0	0	0	155
13:00	17	**116**	16	0	4	4	0	2	0	0	0	0	0	**159**
14:00	**18**	94	12	0	8	4	0	1	0	0	0	0	0	137
15:00	9	86	9	0	**10**	4	0	0	**1**	0	0	0	0	119
16:00	7	100	9	0	6	**6**	0	1	0	0	0	0	0	129
17:00	10	91	10	0	3	3	0	1	0	0	0	0	0	118
18:00	4	81	13	0	5	3	0	1	0	0	0	0	0	107
19:00	3	62	9	0	7	1	0	3	0	0	0	0	0	85
20:00	8	75	6	0	5	2	0	1	0	0	0	0	0	97
21:00	1	37	7	0	1	2	0	1	0	1	0	0	0	50
22:00	2	36	1	0	0	4	0	1	0	0	0	0	0	44
23:00	2	31	2	0	0	0	0	0	0	0	0	0	0	35
Day Total	148	1431	237	0	127	69	2	48	4	2	0	0	2	2070
Percent	7.1%	69.1%	11.4%	0.0%	6.1%	3.3%	0.1%	2.3%	0.2%	0.1%	0.0%	0.0%	0.1%	
AM Peak	10:00	11:00	05:00		05:00	09:00	05:00	06:00	11:00				07:00	11:00
Vol.	11	96	20		12	7	1	6	2				1	148
PM Peak	14:00	13:00	12:00		15:00	16:00		12:00	15:00	12:00				13:00
Vol.	18	116	26	10		6		4	1	1				159

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132206
Station ID:
Hwy 26 WB On Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/20/05	4	17	2	0	1	0	0	0	0	0	0	0	0	24
01:00	0	15	0	0	0	0	0	0	0	0	0	0	0	15
02:00	0	6	2	0	0	0	0	0	0	0	0	0	0	8
03:00	0	2	0	0	1	1	0	0	0	0	0	0	0	4
04:00	0	7	2	0	2	0	0	0	0	0	0	0	0	11
05:00	3	24	7	0	3	3	0	2	0	0	0	0	0	42
06:00	6	30	17	0	8	3	0	1	0	0	0	0	0	65
07:00	2	33	11	0	2	1	0	5	0	0	0	0	0	54
08:00	4	50	16	0	3	1	0	4	0	**1**	0	0	0	79
09:00	6	70	18	0	**13**	4	0	**6**	**1**	0	0	0	0	118
10:00	7	60	17	0	6	5	**1**	3	0	0	0	0	**1**	100
11:00	**8**	**96**	**19**	0	12	**7**	0	2	0	0	0	0	0	**144**
12 PM	**20**	**113**	12	0	7	**6**	0	**5**	0	0	0	0	0	**163**
13:00	7	91	**16**	0	1	5	0	1	**1**	0	0	0	0	122
14:00	9	74	13	0	6	5	**1**	2	1	0	0	0	**1**	112
15:00	5	58	11	0	**11**	3	0	0	0	0	0	0	0	88
16:00	5	74	9	0	4	5	0	1	0	0	0	0	0	98
17:00	8	61	7	0	5	4	0	0	0	0	0	0	0	85
18:00	4	66	9	0	5	4	0	0	0	0	0	0	0	88
19:00	2	46	9	0	2	2	0	1	1	**1**	0	0	0	64
20:00	2	38	2	0	1	3	0	1	0	0	0	0	0	47
21:00	0	37	7	0	2	1	0	1	0	0	0	0	0	48
22:00	0	21	1	0	1	0	0	0	0	1	0	0	1	25
23:00	0	13	0	0	2	0	0	0	0	0	0	0	0	15
Day Total	102	1102	207	0	98	63	2	35	4	3	0	0	3	1619
Percent	6.3%	68.1%	12.8%	0.0%	6.1%	3.9%	0.1%	2.2%	0.2%	0.2%	0.0%	0.0%	0.2%	
AM Peak	11:00	11:00	11:00		09:00	11:00	10:00	09:00	09:00	08:00			10:00	11:00
Vol.	8	96	19		**3**	7	1	6	1	1			1	144
PM Peak	12:00	12:00	13:00		15:00	12:00	14:00	12:00	13:00	19:00			14:00	12:00
Vol.	20	113	16		**1**	6	1	5	1	1			1	163
Grand Total	845	9006	1627	17	903	547	46	215	47	92	1	0	60	13406
Percent	6.3%	67.2%	12.1%	0.1%	6.7%	4.1%	0.3%	1.6%	0.4%	0.7%	0.0%	0.0%	0.4%	

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132205
Station ID:
Hwy 26 WB Off Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/14/05	0	35	4	0	1	0	0	2	0	1	0	0	0	43
01:00	0	31	4	0	2	0	0	2	0	0	0	0	0	39
02:00	0	13	0	0	1	0	0	0	2	0	0	0	0	16
03:00	0	13	0	1	2	3	0	0	1	0	0	0	0	20
04:00	0	32	9	0	4	3	3	1	8	0	0	0	0	60
05:00	0	91	19	0	17	7	0	3	0	1	0	0	2	140
06:00	0	212	49	1	**39**	1	1	5	4	1	0	0	3	316
07:00	1	**306**	45	**3**	25	18	2	7	9	2	0	0	2	**420**
08:00	1	272	39	3	28	9	**6**	5	13	2	0	0	1	379
09:00	**2**	217	**52**	3	36	8	1	4	**14**	**4**	0	**2**	3	346
10:00	0	238	52	2	18	**20**	3	**9**	8	3	0	0	5	358
11:00	0	263	52	2	28	8	2	7	13	3	**1**	0	**11**	390
12 PM	2	294	50	3	23	9	1	9	13	3	0	0	3	410
13:00	2	292	49	**7**	39	2	1	7	10	**4**	0	0	4	417
14:00	4	302	51	3	45	7	**3**	11	**16**	4	0	0	4	450
15:00	4	430	80	4	**54**	11	0	5	8	3	0	0	4	603
16:00	**7**	481	**98**	1	32	**16**	1	10	6	3	0	0	0	655
17:00	2	**519**	88	1	43	10	0	10	7	2	0	0	4	**686**
18:00	3	403	47	4	28	6	0	**14**	4	2	0	0	**10**	521
19:00	3	276	38	1	16	2	0	3	2	0	0	0	1	342
20:00	2	223	22	2	18	3	0	1	3	0	0	0	1	275
21:00	1	197	25	0	8	3	0	0	2	0	0	0	0	236
22:00	2	148	18	0	3	1	0	0	1	0	0	0	3	176
23:00	1	90	10	0	4	2	0	2	2	0	0	0	0	111
Day Total	37	5378	901	41	514	149	24	117	146	38	1	2	61	7409
Percent	0.5%	72.6%	12.2%	0.6%	6.9%	2.0%	0.3%	1.6%	2.0%	0.5%	0.0%	0.0%	0.8%	
AM Peak	09:00	07:00	09:00	07:00	06:00	10:00	08:00	10:00	09:00	09:00	11:00	09:00	11:00	07:00
Vol.	2	306	52	3	39	20	6	9	14	4	1	2	11	420
PM Peak	16:00	17:00	16:00	13:00	15:00	16:00	14:00	18:00	14:00	13:00			18:00	17:00
Vol.	7	519	98	7	54	16	3	14	16	4			10	686

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132205
Station ID:
Hwy 26 WB Off Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/15/05	0	60	1	0	0	0	0	0	0	1	0	0	1	63
01:00	0	26	2	0	1	3	0	1	0	0	0	0	0	33
02:00	0	20	3	0	2	1	0	1	1	1	0	0	0	29
03:00	0	15	3	0	2	1	0	0	3	1	0	0	0	25
04:00	0	24	13	0	3	5	**2**	1	3	0	0	0	2	53
05:00	1	80	26	0	15	6	1	4	0	1	0	0	1	135
06:00	**3**	192	40	2	26	6	2	4	3	1	0	0	1	280
07:00	2	**322**	49	4	25	9	1	3	10	**7**	0	0	1	**433**
08:00	1	269	49	**6**	27	8	1	**7**	9	1	0	0	4	382
09:00	0	229	**50**	3	**39**	14	2	5	10	5	0	0	4	361
10:00	3	243	49	5	30	**19**	0	7	**15**	2	2	0	**10**	385
11:00	2	221	48	6	32	13	2	6	8	3	**4**	0	6	351
12 PM	3	294	45	2	27	8	**1**	**11**	8	**3**	0	0	4	406
13:00	3	251	46	**6**	22	9	0	6	8	3	1	0	2	357
14:00	2	311	68	4	41	12	1	7	**12**	3	0	0	5	466
15:00	1	415	88	3	**50**	**15**	1	4	12	1	0	0	5	595
16:00	3	530	**91**	3	40	8	1	9	6	2	0	0	3	696
17:00	3	**552**	84	4	40	6	0	10	2	1	1	0	4	**707**
18:00	4	445	57	4	30	7	0	7	4	1	**2**	0	**8**	569
19:00	**5**	328	44	0	22	2	0	1	6	1	0	0	0	409
20:00	1	253	30	2	8	1	0	0	3	0	0	0	1	299
21:00	2	260	28	1	10	1	0	1	3	0	0	0	1	307
22:00	0	162	27	0	4	0	0	1	0	0	0	0	2	196
23:00	0	77	13	0	2	0	1	0	3	0	0	0	0	96
Day Total	39	5579	954	55	498	154	16	96	129	38	10	0	65	7633
Percent	0.5%	73.1%	12.5%	0.7%	6.5%	2.0%	0.2%	1.3%	1.7%	0.5%	0.1%	0.0%	0.9%	
AM Peak	06:00	07:00	09:00	08:00	09:00	10:00	04:00	08:00	10:00	07:00	11:00		10:00	07:00
Vol.	3	322	50	6	39	19	2	7	15	7	4	1	0	433
PM Peak	19:00	17:00	16:00	13:00	15:00	15:00	12:00	12:00	14:00	12:00	18:00		18:00	17:00
Vol.	5	552	91	6	50	15	1	11	12	3	2	8		707

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132205
Station ID:
Hwy 26 WB Off Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/16/05	1	59	8	0	5	0	0	0	4	1	0	0	0	78
01:00	0	20	1	0	0	2	0	0	0	0	1	0	1	25
02:00	0	21	5	0	2	0	1	0	1	0	0	0	0	30
03:00	0	21	2	1	3	1	0	0	2	0	0	0	0	30
04:00	1	32	4	0	2	5	2	4	1	0	0	0	0	51
05:00	0	72	16	0	9	2	2	4	3	0	0	0	1	109
06:00	1	183	45	1	33	11	2	7	7	0	0	0	3	293
07:00	**2**	**324**	54	2	32	14	2	2	11	3	0	**1**	2	**449**
08:00	2	269	46	3	21	7	4	3	10	3	0	0	5	373
09:00	2	242	44	**7**	**39**	17	2	7	10	**6**	0	0	6	382
10:00	1	255	54	2	33	**19**	0	10	**16**	2	0	0	6	398
11:00	2	260	**55**	4	34	12	**5**	**11**	12	4	**3**	0	**8**	410
12 PM	2	299	50	3	40	9	**3**	9	**14**	2	1	0	6	438
13:00	1	285	54	**6**	26	**13**	2	10	13	2	1	0	7	420
14:00	4	316	55	2	45	8	1	**12**	14	**3**	0	**1**	5	466
15:00	2	397	84	2	45	13	2	9	9	2	1	0	5	571
16:00	4	**538**	**102**	2	**48**	8	0	11	6	1	**2**	0	5	**727**
17:00	**5**	504	69	4	37	9	1	10	8	1	0	0	**8**	656
18:00	1	497	71	0	25	6	0	2	3	2	0	0	0	607
19:00	3	323	50	1	24	2	0	2	4	2	0	0	2	413
20:00	1	253	34	1	17	6	0	1	1	0	0	0	1	315
21:00	3	254	36	0	14	1	0	1	2	0	0	0	1	312
22:00	2	185	27	0	8	4	0	0	2	0	0	0	1	229
23:00	1	79	13	0	4	1	0	0	3	1	0	0	0	102
Day Total	41	5688	979	41	546	170	29	115	156	35	9	2	73	7884
Percent	0.5%	72.1%	12.4%	0.5%	6.9%	2.2%	0.4%	1.5%	2.0%	0.4%	0.1%	0.0%	0.9%	
AM Peak	07:00	07:00	11:00	09:00	09:00	10:00	11:00	11:00	10:00	09:00	11:00	07:00	11:00	07:00
Vol.	2	324	55	7	39	19	5	11	16	6	3	1	8	449
PM Peak	17:00	16:00	16:00	13:00	16:00	13:00	12:00	14:00	12:00	14:00	16:00	14:00	17:00	16:00
Vol.	5	538	102	6	48	13	3	12	14	3	2	1	8	727

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132205
Station ID:
Hwy 26 WB Off Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/17/05	0	73	6	0	1	1	0	0	0	0	0	0	0	81
01:00	2	33	4	0	4	0	0	1	6	0	0	0	0	50
02:00	0	17	2	0	0	2	1	0	0	0	0	0	0	22
03:00	0	19	4	0	2	0	0	0	0	1	0	0	0	26
04:00	1	28	6	0	4	7	1	1	5	0	0	0	0	53
05:00	0	78	12	0	17	6	1	4	0	2	0	0	0	120
06:00	0	199	44	2	25	3	0	4	7	1	0	0	3	288
07:00	1	**327**	52	3	36	4	1	6	10	3	0	0	3	**446**
08:00	**5**	266	48	2	24	11	0	5	10	**5**	0	0	3	379
09:00	1	261	54	**7**	**42**	**16**	1	4	7	4	0	0	4	401
10:00	3	232	53	5	26	8	**2**	**11**	**12**	5	0	0	**5**	362
11:00	3	246	**60**	4	34	13	1	8	12	4	0	0	4	389
12 PM	3	321	54	3	35	7	1	7	**14**	**4**	0	0	6	455
13:00	1	278	49	**9**	45	11	**2**	**12**	9	3	0	0	5	424
14:00	**6**	333	67	3	42	13	1	12	9	2	1	0	4	493
15:00	1	411	74	6	38	17	0	7	14	4	0	0	9	581
16:00	3	494	**99**	3	**57**	**18**	1	11	7	1	1	0	3	**698**
17:00	5	**533**	69	2	37	16	0	9	4	3	**4**	0	**10**	692
18:00	4	479	74	4	31	6	0	4	2	1	0	0	2	607
19:00	3	383	45	2	23	7	0	2	5	1	0	0	0	471
20:00	5	256	34	0	17	4	0	1	2	0	0	0	3	322
21:00	4	273	25	1	12	3	0	2	2	0	0	0	2	324
22:00	1	157	18	0	9	2	0	1	4	0	0	0	1	193
23:00	0	93	14	0	5	3	0	0	0	0	0	0	0	115
Day Total	52	5790	967	56	566	178	13	112	141	44	6	0	67	7992
Percent	0.7%	72.4%	12.1%	0.7%	7.1%	2.2%	0.2%	1.4%	1.8%	0.6%	0.1%	0.0%	0.8%	
AM Peak	08:00	07:00	11:00	09:00	09:00	09:00	10:00	10:00	10:00	08:00			10:00	07:00
Vol.	5	327	60	7	42	16	2	11	12	5			5	446
PM Peak	14:00	17:00	16:00	13:00	16:00	16:00	13:00	13:00	12:00	12:00	17:00		17:00	16:00
Vol.	6	533	99	9	57	18	2	12	14	4	4	1	0	698

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132205
Station ID:
Hwy 26 WB Off Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/18/05	0	63	7	0	5	0	0	1	0	1	0	0	0	77
01:00	0	41	5	0	2	0	0	1	0	0	0	0	1	50
02:00	0	29	5	0	1	2	0	0	0	1	0	0	0	38
03:00	0	26	3	1	2	4	1	0	1	1	0	0	0	39
04:00	0	34	5	0	1	4	0	0	4	0	0	0	0	48
05:00	1	67	16	0	9	0	3	5	1	0	0	0	1	103
06:00	3	186	45	1	26	10	1	0	7	7	0	0	1	287
07:00	**5**	**318**	48	1	25	**17**	**4**	2	5	5	**1**	0	7	**438**
08:00	1	313	37	4	21	7	3	3	11	2	0	0	**9**	411
09:00	4	233	39	**5**	24	13	1	6	**16**	**8**	0	0	7	356
10:00	2	255	**50**	2	33	17	3	6	12	3	1	0	9	393
11:00	2	258	50	2	**40**	15	3	**8**	5	5	0	**1**	7	396
12 M P	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Day Total	18	1823	310	16	189	89	19	32	62	33	2	1	42	2636
Percent	0.7%	69.2%	11.8%	0.6%	7.2%	3.4%	0.7%	1.2%	2.4%	1.3%	0.1%	0.0%	1.6%	
AM Peak	07:00	07:00	10:00	09:00	11:00	07:00	07:00	11:00	09:00	09:00	07:00	11:00	08:00	07:00
Vol.	5	318	50	5	40	17	4	8	16	8	1	1	9	438
PM Peak Vol.														

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132205
Station ID:
Hwy 26 WB Off Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/19/05	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 M	P 0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	**30**	231	30	0	16	21	0	2	**1**	0	0	0	0	331
18:00	21	**316**	26	**1**	**17**	**27**	0	1	0	0	0	0	0	**409**
19:00	27	254	**31**	1	14	11	0	2	0	0	0	0	0	340
20:00	16	224	23	0	9	15	0	**3**	0	0	0	0	**1**	291
21:00	13	221	24	0	9	5	0	3	0	**1**	0	0	0	276
22:00	13	188	18	0	2	19	0	1	0	0	0	0	0	241
23:00	8	115	8	0	2	6	**1**	1	0	0	0	0	0	141
Day Total	128	1549	160	2	69	104	1	13	1	1	0	0	1	2029
Percent	6.3%	76.3%	7.9%	0.1%	3.4%	5.1%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak Vol.														
PM Peak Vol.	17:00 30	18:00 316	19:00 31	18:00 1	18:00 17	18:00 27	23:00 1	20:00 3	17:00 1	21:00 1			20:00 1	18:00 409

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132205
Station ID:
Hwy 26 WB Off Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/20/05	7	95	13	0	4	4	0	0	0	0	0	0	0	123
01:00	6	47	7	0	3	3	0	1	0	0	0	0	0	67
02:00	1	47	2	0	3	3	0	0	0	**1**	0	0	0	57
03:00	2	22	1	0	1	1	0	0	1	0	0	0	0	28
04:00	2	30	2	0	0	0	0	0	0	0	0	0	0	34
05:00	3	44	9	0	4	7	0	1	0	0	0	0	0	68
06:00	8	73	16	0	6	4	0	1	0	0	0	0	0	108
07:00	9	68	11	0	4	5	0	**5**	0	0	0	0	0	102
08:00	10	110	15	**1**	7	4	0	5	1	0	0	0	0	153
09:00	12	156	26	0	**14**	11	0	5	**2**	0	0	0	0	226
10:00	16	175	21	0	12	12	**1**	1	1	0	0	0	**1**	240
11:00	**25**	**246**	**29**	1	9	**15**	1	2	2	1	0	0	0	**331**
12 PM	20	285	27	0	11	17	0	3	**3**	**1**	0	0	0	367
13:00	28	288	**41**	1	10	19	0	3	0	0	0	0	0	390
14:00	26	310	35	0	7	**21**	0	2	2	0	0	**1**	0	404
15:00	18	273	22	**2**	10	17	0	**4**	0	0	0	0	0	346
16:00	**40**	276	24	0	**20**	19	**1**	2	0	1	0	0	0	383
17:00	27	**321**	30	0	16	19	0	3	0	0	0	0	**1**	**417**
18:00	26	297	41	0	10	14	0	3	0	0	0	0	0	391
19:00	23	212	25	0	11	9	0	2	1	0	0	0	0	283
20:00	11	221	20	0	7	5	0	0	0	0	0	0	0	264
21:00	10	135	11	0	6	7	0	1	0	0	0	0	0	170
22:00	8	99	7	0	4	5	0	0	1	0	0	0	1	125
23:00	3	58	3	0	1	5	0	0	1	0	0	0	0	71
Day Total	341	3888	438	5	180	226	3	44	15	4	0	1	3	5148
Percent	6.6%	75.5%	8.5%	0.1%	3.5%	4.4%	0.1%	0.9%	0.3%	0.1%	0.0%	0.0%	0.1%	
AM Peak	11:00	11:00	11:00	08:00	09:00	11:00	10:00	07:00	09:00	02:00			10:00	11:00
Vol.	25	246	29	1	14	15	1	5	2	1			1	331
PM Peak	16:00	17:00	13:00	15:00	16:00	14:00	16:00	15:00	12:00	12:00		14:00	17:00	17:00
Vol.	40	321	41	2	20	21	1	4	3	1		1	1	417
Grand Total	656	29695	4709	216	2562	1070	105	529	650	193	28	6	312	40731
Percent	1.6%	72.9%	11.6%	0.5%	6.3%	2.6%	0.3%	1.3%	1.6%	0.5%	0.1%	0.0%	0.8%	

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

NB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/03/05	0	28	17	0	5	0	0	0	0	0	0	0	0	50
01:00	0	24	5	0	1	0	0	0	0	0	0	0	0	30
02:00	0	16	4	0	0	0	0	0	1	0	0	0	0	21
03:00	0	14	5	0	0	0	0	0	0	0	0	0	0	19
04:00	0	12	7	0	0	0	0	0	1	0	0	0	0	20
05:00	0	24	17	0	3	0	0	2	0	0	0	0	0	46
06:00	0	62	24	0	9	1	0	2	1	0	0	0	0	99
07:00	0	93	43	0	16	1	0	4	**2**	0	0	0	0	159
08:00	**1**	118	59	**2**	21	0	0	3	2	0	**1**	0	0	207
09:00	0	193	91	1	29	**2**	0	**6**	1	0	0	0	0	323
10:00	0	217	123	0	29	0	0	5	1	**1**	0	0	0	376
11:00	0	**226**	**125**	2	**38**	1	0	4	0	0	0	0	0	**396**
12 PM	0	**265**	103	0	**37**	0	0	**5**	**2**	0	**1**	0	0	**413**
13:00	1	215	100	**2**	21	0	0	3	0	0	0	0	0	342
14:00	1	226	**114**	1	29	**1**	0	2	0	0	0	0	0	374
15:00	**2**	210	86	2	31	0	0	3	0	0	0	0	0	334
16:00	0	184	77	1	15	0	0	2	1	0	0	0	0	280
17:00	0	176	67	0	16	0	0	4	0	0	0	0	0	263
18:00	1	172	60	0	10	0	0	3	0	0	0	0	0	246
19:00	0	126	50	0	7	0	0	2	0	0	0	0	0	185
20:00	0	110	38	0	10	1	0	0	0	0	0	0	0	159
21:00	0	95	35	0	9	0	0	1	1	0	0	0	0	141
22:00	1	97	26	0	10	1	0	1	0	0	0	0	0	136
23:00	0	55	21	0	1	0	0	0	0	0	0	0	0	77
Day Total	7	2958	1297	11	347	8	0	52	13	1	2	0	0	4696
Percent	0.1%	63.0%	27.6%	0.2%	7.4%	0.2%	0.0%	1.1%	0.3%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	11:00	11:00	08:00	11:00	09:00		09:00	07:00	10:00	08:00			11:00
Vol.	1	226	125	2	38	2	6		2	1	1			396
PM Peak	15:00	12:00	14:00	13:00	12:00	14:00		12:00	12:00		12:00			12:00
Vol.	2	265	114	2	37	1	5		2	1				413

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

NB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/04/05	0	27	9	0	1	0	0	0	0	0	0	0	0	37
01:00	0	27	10	**1**	1	0	0	0	0	0	0	0	0	39
02:00	0	23	5	0	2	0	0	0	0	0	0	0	0	30
03:00	0	8	3	0	0	0	0	0	0	0	0	0	0	11
04:00	0	13	2	0	0	0	0	1	0	0	0	0	0	16
05:00	0	16	8	0	2	0	0	1	0	0	0	0	0	27
06:00	0	38	23	1	7	0	0	2	0	0	0	0	0	71
07:00	0	55	24	0	12	0	0	3	0	0	0	0	0	94
08:00	0	95	43	1	16	**1**	0	3	**1**	0	0	0	0	160
09:00	0	131	53	0	18	0	0	**4**	0	0	0	0	0	206
10:00	**1**	181	83	0	18	0	0	3	0	0	0	0	**1**	287
11:00	0	**198**	**107**	0	**25**	0	0	2	1	0	**1**	0	0	**334**
12 PM	**1**	196	**113**	0	**33**	0	0	6	0	**1**	0	0	0	350
13:00	0	**248**	103	**1**	25	0	0	**7**	0	0	0	0	0	**384**
14:00	0	190	88	1	19	0	0	5	0	1	0	0	0	304
15:00	0	206	81	0	16	0	0	5	0	0	0	0	0	308
16:00	0	200	63	0	12	0	0	0	0	0	0	0	0	275
17:00	0	164	73	0	15	0	0	6	0	0	0	0	0	258
18:00	0	128	45	0	11	0	0	2	0	0	0	0	0	186
19:00	0	111	44	0	7	**1**	0	1	0	0	0	0	0	164
20:00	1	103	24	0	11	1	0	2	0	0	0	0	0	142
21:00	0	85	12	0	5	0	0	0	0	0	0	0	0	102
22:00	0	41	16	0	2	0	0	0	0	0	0	0	0	59
23:00	0	20	10	0	0	0	0	0	0	0	0	0	0	30
Day Total	3	2504	1042	5	258	3	0	53	2	2	1	0	1	3874
Percent	0.1%	64.6%	26.9%	0.1%	6.7%	0.1%	0.0%	1.4%	0.1%	0.1%	0.0%	0.0%	0.0%	
AM Peak	10:00	11:00	11:00	01:00	11:00	08:00		09:00	08:00		11:00		10:00	11:00
Vol.	1	198	107	1	25	1	4		1	1			1	334
PM Peak	12:00	13:00	12:00	13:00	12:00	19:00		13:00		12:00				13:00
Vol.	1	248	113	1	33	1	7			1				384

Quality Counts, LLC
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Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

NB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/05/05	0	13	7	0	0	0	0	0	0	0	0	0	0	20
01:00	0	6	3	0	0	0	0	0	0	0	0	0	0	9
02:00	0	5	1	0	0	1	0	0	1	0	0	0	0	8
03:00	0	13	6	1	2	0	0	0	0	0	0	0	0	22
04:00	0	15	9	0	4	6	0	1	1	0	0	0	0	36
05:00	0	59	32	0	11	1	0	2	0	0	0	0	0	105
06:00	2	157	69	**5**	29	5	0	4	2	0	0	0	1	274
07:00	**3**	146	63	0	25	4	**1**	4	5	0	0	0	1	252
08:00	1	129	81	2	19	**9**	0	3	1	0	**1**	0	**2**	248
09:00	0	134	**89**	1	27	7	1	**6**	6	0	0	0	0	271
10:00	2	122	62	2	**32**	5	1	4	**8**	1	0	**1**	2	242
11:00	3	**161**	83	3	19	9	1	6	4	**4**	0	1	1	**295**
12 M P	0	181	81	1	28	2	0	7	4	0	0	0	0	304
13:00	**3**	190	75	3	35	**9**	0	4	**12**	1	0	0	0	332
14:00	2	170	79	4	24	3	0	4	4	**2**	0	0	**1**	293
15:00	1	224	101	**6**	**45**	2	**1**	**9**	7	0	0	0	1	397
16:00	0	**276**	103	3	36	3	0	5	1	0	0	0	1	**428**
17:00	1	260	**111**	1	28	3	0	2	2	0	0	0	0	408
18:00	0	202	80	0	25	1	0	1	0	2	0	0	0	311
19:00	0	122	48	0	15	0	0	2	0	0	0	**1**	0	188
20:00	1	101	38	0	5	0	0	3	0	0	0	0	0	148
21:00	0	93	26	0	5	0	0	0	1	0	0	0	0	125
22:00	0	62	13	0	2	0	0	0	0	0	0	0	0	77
23:00	0	33	10	0	2	0	0	0	0	0	0	0	0	45
Day Total	19	2874	1270	32	418	70	5	67	59	10	1	3	10	4838
Percent	0.4%	59.4%	26.3%	0.7%	8.6%	1.4%	0.1%	1.4%	1.2%	0.2%	0.0%	0.1%	0.2%	
AM Peak	07:00	11:00	09:00	06:00	10:00	08:00	07:00	09:00	10:00	11:00	08:00	10:00	08:00	11:00
Vol.	3	161	89	5	32	9	1	6	8	4	1	1	2	295
PM Peak	13:00	16:00	17:00	15:00	15:00	13:00	15:00	15:00	13:00	14:00		19:00	14:00	16:00
Vol.	3	276	111	6	45	9	1	9	12	2	1		1	428

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

NB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/06/05	0	16	5	0	0	0	0	0	0	0	0	0	0	21
01:00	0	9	2	0	1	0	0	0	1	0	0	0	0	13
02:00	0	13	1	0	0	0	0	0	1	1	0	0	0	16
03:00	0	8	3	0	1	3	0	0	1	0	0	0	0	16
04:00	0	16	5	1	2	2	0	0	1	0	0	0	0	27
05:00	0	56	34	3	10	3	0	2	2	0	0	0	1	111
06:00	1	155	68	3	33	1	2	2	0	0	0	0	0	265
07:00	0	150	76	1	**35**	6	1	3	3	1	0	0	0	276
08:00	1	159	71	2	21	4	0	2	5	2	**1**	0	1	269
09:00	0	139	69	**7**	35	7	**3**	**9**	0	0	0	0	**2**	271
10:00	2	129	63	2	34	5	0	4	**6**	1	0	0	2	248
11:00	**3**	**175**	**89**	4	24	**8**	0	5	3	**3**	0	0	0	**314**
12 PM	**2**	174	81	4	**30**	**4**	0	4	**5**	0	0	**1**	0	305
13:00	1	163	61	**9**	27	3	0	10	5	**3**	0	0	0	282
14:00	1	168	73	2	22	2	0	**12**	5	0	0	0	**1**	286
15:00	1	236	94	5	20	3	0	6	1	1	0	0	0	367
16:00	1	228	**116**	1	25	2	0	3	3	1	0	0	0	380
17:00	0	**290**	97	1	19	0	0	4	2	1	0	0	0	**414**
18:00	0	209	93	0	21	1	0	4	2	0	0	0	0	330
19:00	0	144	38	0	16	0	0	1	0	0	0	0	0	199
20:00	0	104	35	0	9	0	0	0	0	0	0	0	0	148
21:00	0	108	23	1	5	0	0	0	0	0	0	0	0	137
22:00	0	54	18	0	1	1	**1**	0	1	0	0	0	1	77
23:00	0	31	7	0	2	0	0	0	0	0	0	0	0	40
Day Total	13	2934	1222	46	393	55	7	71	47	14	1	1	8	4812
Percent	0.3%	61.0%	25.4%	1.0%	8.2%	1.1%	0.1%	1.5%	1.0%	0.3%	0.0%	0.0%	0.2%	
AM Peak	11:00	11:00	11:00	09:00	07:00	11:00	09:00	09:00	10:00	11:00	08:00		09:00	11:00
Vol.	3	175	89	7	35	8	3	9	6	3	1		2	314
PM Peak	12:00	17:00	16:00	13:00	12:00	12:00	22:00	14:00	12:00	13:00		12:00	14:00	17:00
Vol.	2	290	116	9	30	4	1	12	5	3	1		1	414

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

NB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/07/05	0	20	4	0	1	0	0	0	1	0	0	0	0	26
01:00	0	7	1	0	1	0	0	0	0	0	0	0	0	9
02:00	0	12	5	0	0	0	0	0	0	0	0	0	0	17
03:00	0	11	2	0	1	1	**1**	0	1	0	0	0	0	17
04:00	1	16	9	1	3	8	0	1	0	0	0	0	0	39
05:00	0	65	35	2	11	1	0	2	2	0	0	0	0	118
06:00	1	143	62	2	28	3	1	3	3	1	0	0	0	247
07:00	0	**154**	71	3	**37**	6	0	5	3	2	0	0	0	281
08:00	0	118	69	3	25	**9**	0	5	2	**3**	0	0	1	235
09:00	1	144	**88**	**4**	33	3	0	2	3	3	0	0	0	281
10:00	2	124	64	4	17	6	0	**6**	**10**	1	0	1	1	236
11:00	**3**	148	73	3	35	8	0	5	7	3	0	**2**	**2**	**289**
12 PM	1	177	90	**8**	32	**6**	0	**6**	3	1	0	0	0	324
13:00	1	175	91	5	17	3	0	1	3	**2**	0	0	0	298
14:00	0	198	97	5	28	4	0	6	**5**	1	0	0	**1**	345
15:00	1	236	110	4	30	5	0	4	3	0	0	0	0	393
16:00	**3**	265	**124**	1	**41**	2	0	6	4	1	0	0	0	**447**
17:00	2	**282**	106	0	26	1	0	0	1	1	0	0	0	419
18:00	0	216	71	0	22	0	0	3	3	0	0	0	0	315
19:00	1	129	52	0	13	1	0	2	2	1	0	0	0	201
20:00	0	107	43	0	9	0	0	1	1	0	0	0	0	161
21:00	0	109	27	0	5	0	0	0	0	0	0	0	0	141
22:00	0	54	22	0	5	0	0	0	0	0	0	**1**	0	82
23:00	0	38	13	0	1	0	0	0	0	0	0	0	0	52
Day Total	17	2948	1329	45	421	67	2	58	57	20	0	4	5	4973
Percent	0.3%	59.3%	26.7%	0.9%	8.5%	1.3%	0.0%	1.2%	1.1%	0.4%	0.0%	0.1%	0.1%	
AM Peak	11:00	07:00	09:00	09:00	07:00	08:00	03:00	10:00	10:00	08:00		11:00	11:00	11:00
Vol.	3	154	88	4	37	9	1	6	10	3	2		2	289
PM Peak	16:00	17:00	16:00	12:00	16:00	12:00		12:00	14:00	13:00		22:00	14:00	16:00
Vol.	3	282	124	8	41	6	6		5	2	1		1	447

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

NB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/08/05	0	20	3	0	1	0	0	0	0	**1**	0	0	0	25
01:00	0	11	9	0	1	0	0	0	0	0	0	0	0	21
02:00	0	7	3	0	0	0	0	0	1	0	0	0	0	11
03:00	0	15	4	0	1	0	0	0	3	0	0	0	0	23
04:00	0	19	6	**4**	3	6	0	0	1	0	0	0	1	40
05:00	0	60	35	1	11	3	0	2	0	0	0	**1**	0	113
06:00	0	135	65	4	22	1	**2**	5	5	0	0	0	**3**	242
07:00	0	141	54	1	28	7	1	2	4	0	0	0	1	239
08:00	0	146	**72**	1	**35**	7	0	**9**	3	0	0	0	1	274
09:00	**1**	116	70	2	29	**8**	0	4	2	1	0	0	1	234
10:00	1	127	66	2	27	3	0	7	**8**	0	**1**	0	0	242
11:00	0	**163**	72	2	19	6	2	5	4	0	0	0	2	**275**
12 PM	0	188	70	**5**	28	**9**	1	7	**8**	**4**	0	0	**2**	322
13:00	0	186	88	5	28	4	1	8	4	0	0	0	0	324
14:00	0	193	78	2	35	3	0	**12**	7	1	0	0	0	331
15:00	**2**	271	89	5	28	4	**2**	9	2	0	0	0	1	413
16:00	0	268	**123**	1	**39**	0	0	3	0	0	**1**	**1**	0	436
17:00	0	**294**	112	2	31	1	0	1	1	0	0	0	0	**442**
18:00	2	216	82	1	18	3	0	2	1	0	1	0	0	326
19:00	1	150	52	1	19	1	0	3	1	0	0	0	0	228
20:00	0	124	41	0	13	0	0	1	1	0	0	0	1	181
21:00	1	99	44	0	3	1	0	0	0	0	0	0	0	148
22:00	0	79	21	0	4	1	0	0	1	0	0	0	0	106
23:00	0	43	12	0	0	0	0	0	0	0	0	0	0	55
Day Total	8	3071	1271	39	423	68	9	80	57	7	3	2	13	5051
Percent	0.2%	60.8%	25.2%	0.8%	8.4%	1.3%	0.2%	1.6%	1.1%	0.1%	0.1%	0.0%	0.3%	
AM Peak	09:00	11:00	08:00	04:00	08:00	09:00	06:00	08:00	10:00	00:00	10:00	05:00	06:00	11:00
Vol.	1	163	72	4	35	8	2	9	8	1	1	1	3	275
PM Peak	15:00	17:00	16:00	12:00	16:00	12:00	15:00	14:00	12:00	12:00	16:00	16:00	12:00	17:00
Vol.	2	294	123	5	39	9	2	12	8	4	1	1	2	442

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

NB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/09/05	0	26	4	0	1	0	0	0	1	0	0	0	0	32
01:00	0	8	2	0	0	0	0	0	1	0	0	0	0	11
02:00	0	11	4	0	1	0	0	0	0	0	0	0	0	16
03:00	0	11	8	0	0	0	0	0	2	0	0	0	0	21
04:00	0	18	6	1	5	5	0	0	1	0	0	0	0	36
05:00	0	56	31	1	9	4	0	2	1	1	0	0	0	105
06:00	0	146	65	**4**	**37**	1	**1**	0	0	1	0	0	**3**	258
07:00	0	152	63	0	31	5	0	2	3	2	0	0	2	260
08:00	1	135	63	3	26	**9**	0	**7**	2	0	0	0	0	246
09:00	0	143	71	4	25	7	1	6	3	1	0	**2**	0	263
10:00	**2**	**170**	68	1	25	7	1	2	2	**3**	0	0	1	282
11:00	1	165	**89**	2	35	7	0	5	**5**	1	0	0	2	**312**
12 PM	1	204	74	3	**33**	5	0	8	**5**	**4**	0	0	**2**	339
13:00	1	191	89	5	27	**8**	0	4	4	1	0	0	2	332
14:00	**3**	249	95	2	30	3	0	**10**	1	0	0	0	0	393
15:00	2	257	114	**7**	22	3	0	7	4	1	0	0	1	418
16:00	1	**276**	**117**	2	32	0	0	4	1	0	0	0	0	**433**
17:00	0	270	109	0	30	1	0	5	1	0	0	0	0	416
18:00	0	215	70	1	16	1	0	7	0	0	0	0	2	312
19:00	0	133	54	0	7	0	0	4	1	0	0	0	0	199
20:00	1	114	40	0	13	0	0	1	2	0	0	0	0	171
21:00	0	91	40	0	12	1	0	1	0	0	0	0	0	145
22:00	0	105	29	1	4	0	0	2	0	0	0	0	0	141
23:00	0	56	22	0	3	0	0	0	0	0	0	0	0	81
Day Total	13	3202	1327	37	424	67	3	77	40	15	0	2	15	5222
Percent	0.2%	61.3%	25.4%	0.7%	8.1%	1.3%	0.1%	1.5%	0.8%	0.3%	0.0%	0.0%	0.3%	
AM Peak	10:00	10:00	11:00	06:00	06:00	08:00	06:00	08:00	11:00	10:00		09:00	06:00	11:00
Vol.	2	170	89	4	37	9	1	7	5	3		2	3	312
PM Peak	14:00	16:00	16:00	15:00	12:00	13:00		14:00	12:00	12:00			12:00	16:00
Vol.	3	276	117	7	33	8	10		5	4			2	433
Grand Total	80	20491	8758	215	2684	338	26	458	275	69	8	12	52	33466
Percent	0.2%	61.2%	26.2%	0.6%	8.0%	1.0%	0.1%	1.4%	0.8%	0.2%	0.0%	0.0%	0.2%	

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/03/05	0	27	16	0	2	0	0	0	1	0	0	0	0	46
01:00	0	19	7	0	2	0	0	0	0	0	0	0	0	28
02:00	0	8	4	0	0	0	0	0	1	0	0	0	0	13
03:00	0	11	5	0	0	0	0	0	0	0	0	0	0	16
04:00	0	16	7	0	1	0	0	0	0	0	0	0	0	24
05:00	0	23	17	0	5	0	0	1	1	0	0	0	0	47
06:00	0	67	24	0	11	**2**	0	2	**3**	0	0	0	0	109
07:00	0	88	49	1	17	0	0	4	0	0	0	0	**1**	160
08:00	**1**	138	67	**3**	23	1	0	**6**	1	0	0	0	0	240
09:00	0	175	88	0	24	2	0	4	2	0	0	0	0	295
10:00	1	**233**	109	2	28	1	0	3	2	0	0	0	0	379
11:00	0	224	**120**	1	**30**	0	0	3	2	0	0	0	0	**380**
12 PM	**2**	**264**	**115**	**2**	**34**	0	0	**4**	0	0	0	0	0	**421**
13:00	1	244	109	2	23	**1**	0	3	0	0	0	0	0	383
14:00	1	228	100	1	28	0	0	3	**2**	0	0	**1**	0	364
15:00	0	190	93	2	27	0	0	4	0	0	0	0	0	316
16:00	0	241	103	0	18	0	0	3	0	0	0	0	0	365
17:00	0	195	72	0	17	0	0	0	0	0	0	0	0	284
18:00	0	166	53	0	14	0	0	1	0	0	0	0	0	234
19:00	0	115	34	0	9	0	0	3	0	0	0	0	0	161
20:00	0	87	28	0	5	1	0	0	0	0	0	0	0	121
21:00	0	83	31	0	5	0	0	1	0	0	0	0	**1**	121
22:00	1	79	25	0	9	0	0	2	0	0	0	0	0	116
23:00	0	56	18	0	1	0	0	0	0	0	0	0	0	75
Day Total	7	2977	1294	14	333	8	0	47	15	0	0	1	2	4698
Percent	0.1%	63.4%	27.5%	0.3%	7.1%	0.2%	0.0%	1.0%	0.3%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	10:00	11:00	08:00	11:00	06:00		08:00	06:00				07:00	11:00
Vol.	1	233	120	3	30	2		6	3				1	380
PM Peak	12:00	12:00	12:00	12:00	12:00	13:00		12:00	14:00			14:00	21:00	12:00
Vol.	2	264	115	2	34	1	4		2		1		1	421

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/04/05	0	26	9	0	1	0	0	0	0	0	0	0	0	36
01:00	0	15	9	**1**	1	0	0	0	0	0	0	0	0	26
02:00	0	8	6	0	2	0	0	0	0	0	0	0	**1**	17
03:00	0	17	2	0	0	0	0	0	0	0	0	0	0	19
04:00	0	7	1	0	1	0	0	1	0	0	0	0	0	10
05:00	0	15	13	0	0	0	0	1	0	0	0	0	0	29
06:00	0	38	19	1	6	0	0	1	0	0	0	0	0	65
07:00	0	53	18	0	8	0	0	**5**	0	0	0	0	0	84
08:00	0	91	50	1	13	0	0	4	0	0	0	0	0	159
09:00	0	158	54	0	18	0	0	1	0	0	0	0	1	232
10:00	**1**	**190**	65	0	**20**	0	0	4	**1**	0	0	0	0	**281**
11:00	0	170	**71**	0	18	0	0	2	0	0	0	0	1	262
12 PM	0	223	**115**	0	25	0	0	2	**1**	0	0	0	0	366
13:00	**1**	**241**	111	**1**	**35**	0	0	3	0	0	0	0	0	**392**
14:00	1	213	95	1	20	**1**	0	**4**	0	0	0	0	0	335
15:00	1	213	83	0	26	0	0	4	1	0	0	0	0	328
16:00	0	207	76	0	23	0	0	2	0	0	0	0	0	308
17:00	0	162	87	0	13	0	0	3	0	0	0	0	0	265
18:00	0	129	41	0	11	0	0	0	0	0	0	0	0	181
19:00	0	108	35	0	9	1	0	0	0	0	0	0	0	153
20:00	0	75	19	0	11	1	0	0	0	0	0	0	0	106
21:00	0	59	13	0	6	0	0	1	0	0	0	0	0	79
22:00	0	32	11	0	1	0	0	1	0	0	0	0	0	45
23:00	0	12	11	0	1	0	0	0	1	0	0	0	0	25
Day Total	4	2462	1014	5	269	3	0	39	4	0	0	0	3	3803
Percent	0.1%	64.7%	26.7%	0.1%	7.1%	0.1%	0.0%	1.0%	0.1%	0.0%	0.0%	0.0%	0.1%	
AM Peak	10:00	10:00	11:00	01:00	10:00			07:00	10:00				02:00	10:00
Vol.	1	190	71	1	20			5	1				1	281
PM Peak	13:00	13:00	12:00	13:00	13:00	14:00		14:00	12:00					13:00
Vol.	1	241	115	1	35	1		4	1					392

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/05/05	0	7	8	0	0	0	0	0	0	0	0	0	0	15
01:00	0	6	2	0	1	0	0	0	0	0	0	0	0	9
02:00	0	3	2	0	0	0	0	0	1	0	0	0	0	6
03:00	0	8	4	1	1	1	0	0	0	0	0	0	0	15
04:00	0	28	17	0	6	2	0	0	1	1	0	0	0	55
05:00	0	73	36	0	15	0	0	1	2	1	0	0	1	129
06:00	1	172	73	0	30	3	**1**	3	4	**3**	0	0	0	290
07:00	**4**	**204**	81	2	30	**7**	1	**6**	5	2	0	0	0	**342**
08:00	4	169	89	**4**	**36**	4	1	2	4	0	0	0	1	314
09:00	0	156	76	2	26	3	0	4	3	3	0	0	0	273
10:00	1	175	72	2	31	1	0	6	**8**	2	**1**	**1**	**2**	302
11:00	4	170	**91**	4	23	5	1	5	4	2	0	0	1	310
12 PM	1	162	77	1	28	6	0	5	**11**	1	0	0	1	293
13:00	1	193	93	1	25	1	**1**	0	3	**2**	0	0	0	320
14:00	**5**	216	85	3	28	**7**	1	7	6	1	0	0	**2**	361
15:00	0	235	102	3	29	3	0	5	5	0	0	0	0	382
16:00	5	**256**	76	**5**	**43**	2	0	**9**	3	1	0	0	1	**401**
17:00	1	226	**116**	1	24	0	0	1	1	0	0	0	0	370
18:00	0	157	58	0	15	1	0	0	0	1	0	0	1	233
19:00	0	81	51	0	13	0	0	2	0	0	0	0	0	147
20:00	0	73	27	2	3	0	0	0	0	0	0	0	0	105
21:00	1	53	14	1	4	0	0	0	0	0	0	0	0	73
22:00	0	54	13	0	3	1	0	0	0	0	0	0	0	71
23:00	0	24	5	0	5	1	0	0	0	0	0	0	0	35
Day Total	28	2901	1268	32	419	48	6	56	61	20	1	1	10	4851
Percent	0.6%	59.8%	26.1%	0.7%	8.6%	1.0%	0.1%	1.2%	1.3%	0.4%	0.0%	0.0%	0.2%	
AM Peak	07:00	07:00	11:00	08:00	08:00	07:00	06:00	07:00	10:00	06:00	10:00	10:00	10:00	07:00
Vol.	4	204	91	4	36	7	1	6	8	3	1	1	2	342
PM Peak	14:00	16:00	17:00	16:00	16:00	14:00	13:00	16:00	12:00	13:00			14:00	16:00
Vol.	5	256	116	5	43	7	1	9	11	2			2	401

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/06/05	0	18	4	0	1	1	0	0	0	0	0	0	0	24
01:00	0	8	1	0	0	0	0	0	1	0	0	0	0	10
02:00	1	13	2	0	0	0	0	0	1	0	0	0	0	17
03:00	0	7	2	0	1	0	0	0	0	0	0	0	0	10
04:00	0	33	13	0	6	0	0	0	1	0	0	0	0	53
05:00	0	72	39	0	9	2	**1**	0	1	3	0	0	0	127
06:00	1	159	70	0	26	2	1	1	3	3	0	**1**	0	267
07:00	1	**191**	89	2	27	3	1	5	3	4	0	0	**1**	**327**
08:00	**4**	181	77	4	32	6	0	4	2	1	0	0	0	311
09:00	1	150	90	**7**	33	4	0	**9**	3	2	0	0	0	299
10:00	1	170	67	2	**41**	**7**	1	5	**7**	1	0	0	0	302
11:00	2	176	**107**	1	19	2	0	3	2	**5**	0	0	1	318
12 PM	3	185	72	3	28	**7**	**1**	7	3	1	0	0	1	311
13:00	1	153	66	**5**	16	2	0	2	2	**2**	0	0	0	249
14:00	**4**	169	65	2	24	1	1	8	**7**	0	0	0	**2**	283
15:00	0	212	**94**	0	25	4	0	**11**	2	1	0	0	0	349
16:00	1	235	84	1	**36**	1	0	5	1	0	0	0	0	**364**
17:00	1	**244**	68	1	20	1	0	1	2	0	0	0	0	338
18:00	1	186	65	0	21	1	0	1	2	0	0	0	0	277
19:00	0	109	37	0	9	0	0	2	0	0	0	0	0	157
20:00	0	82	26	0	9	0	0	0	1	0	0	0	0	118
21:00	0	72	24	1	5	0	0	0	0	0	0	0	0	102
22:00	0	36	16	0	2	0	0	0	1	0	0	0	0	55
23:00	1	24	8	0	1	1	0	0	0	0	0	0	0	35
Day Total	23	2885	1186	29	391	45	6	64	45	23	0	1	5	4703
Percent	0.5%	61.3%	25.2%	0.6%	8.3%	1.0%	0.1%	1.4%	1.0%	0.5%	0.0%	0.0%	0.1%	
AM Peak	08:00	07:00	11:00	09:00	10:00	10:00	05:00	09:00	10:00	11:00		06:00	07:00	07:00
Vol.	4	191	107	7	41	7	1	9	7	5		1	1	327
PM Peak	14:00	17:00	15:00	13:00	16:00	12:00	12:00	15:00	14:00	13:00			14:00	16:00
Vol.	4	244	94	5	36	7	1	11	7	2			2	364

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/07/05	1	15	2	0	1	1	0	0	0	0	0	0	0	20
01:00	0	12	1	0	0	0	0	0	0	0	0	0	0	13
02:00	0	9	3	0	0	0	0	1	0	0	0	0	0	13
03:00	0	9	4	0	0	2	0	0	0	0	0	0	0	15
04:00	0	29	17	1	5	1	0	1	0	1	0	0	0	55
05:00	0	79	41	1	11	3	0	3	3	**3**	0	0	0	144
06:00	**3**	181	82	0	**38**	5	**2**	4	4	1	0	0	0	320
07:00	3	**198**	**90**	4	33	4	1	2	1	3	**1**	0	1	**341**
08:00	2	185	82	**9**	21	2	1	**8**	6	2	0	0	1	319
09:00	0	162	77	3	34	2	1	4	4	3	0	0	0	290
10:00	0	145	88	1	20	**6**	0	6	2	1	0	0	**2**	271
11:00	0	182	83	1	38	2	0	3	**10**	2	0	**1**	1	323
12 PM	**2**	178	88	**5**	32	5	**1**	**5**	4	0	0	**1**	0	321
13:00	2	169	85	3	24	**6**	0	3	**7**	**3**	0	0	0	302
14:00	1	211	93	4	23	4	0	2	4	2	0	0	0	344
15:00	0	212	**104**	0	29	2	0	3	3	0	0	0	0	353
16:00	2	**235**	104	3	**37**	4	0	2	3	0	0	1	0	**391**
17:00	2	220	99	1	27	0	0	0	0	0	0	0	0	349
18:00	1	156	56	1	16	0	0	1	1	0	0	0	0	232
19:00	0	118	42	0	12	0	0	2	0	0	0	0	0	174
20:00	1	89	38	0	13	1	0	0	1	0	0	0	0	143
21:00	0	70	18	0	4	0	0	0	1	1	0	0	0	94
22:00	0	29	17	0	1	0	0	1	0	0	0	0	0	48
23:00	0	16	12	0	2	1	0	0	0	0	0	0	**1**	32
Day Total	20	2909	1326	37	421	51	6	51	54	22	1	3	6	4907
Percent	0.4%	59.3%	27.0%	0.8%	8.6%	1.0%	0.1%	1.0%	1.1%	0.4%	0.0%	0.1%	0.1%	
AM Peak	06:00	07:00	07:00	08:00	06:00	10:00	06:00	08:00	11:00	05:00	07:00	11:00	10:00	07:00
Vol.	3	198	90	9	38	6	2	8	10	3	1	1	2	341
PM Peak	12:00	16:00	15:00	12:00	16:00	13:00	12:00	12:00	13:00	13:00		12:00	23:00	16:00
Vol.	2	235	104	5	37	6	1	5	7	3		1	1	391

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/08/05	0	10	5	0	2	0	0	0	0	0	0	0	0	17
01:00	0	7	7	0	1	0	0	0	0	0	0	0	0	15
02:00	0	14	3	0	0	0	0	0	1	0	0	0	0	18
03:00	0	7	4	0	2	1	0	0	2	0	0	0	**1**	17
04:00	0	31	13	0	6	1	0	0	2	1	0	0	0	54
05:00	0	73	39	1	11	2	0	3	0	**3**	0	**1**	0	133
06:00	2	169	67	0	26	3	**2**	1	6	2	0	0	0	278
07:00	2	**213**	**101**	4	**37**	3	2	4	2	3	0	0	0	**371**
08:00	**3**	186	68	**7**	36	4	1	**8**	3	0	0	0	1	317
09:00	1	178	74	2	29	**8**	0	3	5	0	0	0	1	301
10:00	2	137	72	0	29	3	0	8	**8**	2	0	0	1	262
11:00	0	149	73	0	19	4	2	8	5	1	0	0	0	261
12 PM	1	204	74	2	21	**5**	**2**	5	5	**2**	0	0	0	321
13:00	**3**	187	78	2	20	4	0	**8**	7	1	0	0	**1**	311
14:00	1	190	80	**3**	**40**	2	1	5	**9**	1	**1**	0	1	334
15:00	2	233	85	1	29	4	0	6	4	1	0	0	0	365
16:00	0	238	93	3	36	1	0	6	0	0	0	**1**	0	**378**
17:00	0	**242**	**102**	2	31	0	0	1	0	0	0	0	0	378
18:00	1	191	69	1	14	1	0	3	1	0	0	0	0	281
19:00	2	122	50	0	18	2	0	1	1	0	0	0	0	196
20:00	0	86	42	0	9	0	0	0	0	0	0	0	0	137
21:00	0	89	23	0	8	0	0	0	0	0	0	0	0	120
22:00	1	47	15	0	2	1	1	0	1	0	0	0	0	68
23:00	0	26	6	0	1	1	0	0	0	0	0	0	0	34
Day Total	21	3029	1243	28	427	50	11	70	62	17	1	2	6	4967
Percent	0.4%	61.0%	25.0%	0.6%	8.6%	1.0%	0.2%	1.4%	1.2%	0.3%	0.0%	0.0%	0.1%	
AM Peak	08:00	07:00	07:00	08:00	07:00	09:00	06:00	08:00	10:00	05:00		05:00	03:00	07:00
Vol.	3	213	101	7	37	8	2	8	8	3		1	1	371
PM Peak	13:00	17:00	17:00	14:00	14:00	12:00	12:00	13:00	14:00	12:00	14:00	16:00	13:00	16:00
Vol.	3	242	102	3	40	5	2	8	9	2	1	1	1	378

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/09/05	0	12	5	0	0	0	0	0	2	0	0	0	0	19
01:00	0	10	1	0	0	0	0	0	0	0	0	0	0	11
02:00	0	15	6	0	0	0	0	0	1	0	0	0	0	22
03:00	1	8	5	0	0	1	0	0	0	0	0	0	0	15
04:00	0	29	12	0	8	2	0	0	1	0	0	0	0	52
05:00	2	66	36	2	8	5	0	1	4	**3**	0	0	0	127
06:00	2	170	65	0	32	4	**3**	1	1	3	0	0	**2**	283
07:00	2	**205**	84	4	**37**	1	2	**6**	4	0	0	0	2	**347**
08:00	1	195	80	**5**	27	2	1	5	2	0	0	0	0	318
09:00	2	173	**92**	4	20	5	0	3	4	0	0	**1**	1	305
10:00	0	174	84	0	29	**6**	1	1	**5**	1	0	0	0	301
11:00	**4**	190	86	3	36	6	2	3	2	2	0	0	0	334
12 PM	2	223	96	1	**39**	3	**1**	**11**	2	**2**	0	0	**2**	382
13:00	1	190	81	3	28	4	0	4	**5**	2	0	0	1	319
14:00	2	234	76	3	22	**6**	0	10	4	1	0	0	2	360
15:00	**4**	255	87	1	28	2	0	10	4	0	0	0	0	391
16:00	2	**265**	**110**	**4**	36	1	0	4	1	0	**1**	0	0	**424**
17:00	0	241	88	0	26	1	0	4	0	0	0	0	0	360
18:00	0	183	72	0	19	0	0	1	1	0	0	0	0	276
19:00	0	143	48	0	6	0	0	4	1	0	0	0	0	202
20:00	0	73	25	0	8	0	0	0	0	0	0	0	0	106
21:00	0	65	19	0	8	0	0	1	0	0	0	0	0	93
22:00	3	80	22	0	4	1	0	2	0	0	0	0	0	112
23:00	0	56	16	0	4	1	0	0	1	0	0	0	0	78
Day Total	28	3255	1296	30	425	51	10	71	45	14	1	1	10	5237
Percent	0.5%	62.2%	24.7%	0.6%	8.1%	1.0%	0.2%	1.4%	0.9%	0.3%	0.0%	0.0%	0.2%	
AM Peak	11:00	07:00	09:00	08:00	07:00	10:00	06:00	07:00	10:00	05:00		09:00	06:00	07:00
Vol.	4	205	92	5	37	6	3	6	5	3		1	2	347
PM Peak	15:00	16:00	16:00	16:00	12:00	14:00	12:00	12:00	13:00	12:00	16:00		12:00	16:00
Vol.	4	265	110	4	39	6	1	11	5	2	1	2		424
Grand Total	131	20418	8627	175	2685	256	39	398	286	96	4	9	42	33166
Percent	0.4%	61.6%	26.0%	0.5%	8.1%	0.8%	0.1%	1.2%	0.9%	0.3%	0.0%	0.0%	0.1%	

Appendix B

Existing Conditions
Operations
Worksheets

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Scenario Report

Scenario:	exam
Command:	exam
Volume:	exam
Geometry:	exam
Impact Fee:	Default Impact Fee
Trip Generation:	Default Trip Generation
Trip Distribution:	Default Trip Distribution
Paths:	Default Paths
Routes:	Default Routes
Configuration:	Default Configuration

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 NW Beach Rd/Glencoe Rd	D	25.4	0.000	D	25.4	0.000	+ 0.000 D/V
# 4 Texaco Dwy/Glencoe Rd	B	11.0	0.000	B	11.0	0.000	+ 0.000 D/V
# 5 NW Highland Ct/Glencoe Rd	C	21.9	0.000	C	21.9	0.000	+ 0.000 D/V
# 6 Chevron Dwy/Glencoe Rd	B	11.2	0.000	B	11.2	0.000	+ 0.000 D/V
# 7 NW Pacific St/Glencoe Rd	B	14.5	0.000	B	14.5	0.000	+ 0.000 D/V
# 8 NW Cottage St/Glencoe Rd	B	10.1	0.000	B	10.1	0.000	+ 0.000 D/V
# 9 NW Commercial/Glencoe Rd	A	9.1	0.285	A	9.1	0.285	+ 0.000 V/C

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #1 NW Beach Rd/Glencoe Rd

Average Delay (sec/veh): 0.5 Worst Case Level Of Service: D[25.4]

```
Street Name:            Glencoe Rd                    NW Beach Rd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  1  0  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:       4  655     0     0  459     8    17    0     3     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    4  655     0     0  459     8    17    0     3     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     5  744     0     0  522     9    19    0     3     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     5  744     0     0  522     9    19    0     3     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.2 xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx   6.3 xxxxx xxxx xxxxx
FollowUpTim:  2.3 xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  531 xxxx xxxxx  xxxx xxxx xxxxx  1282 xxxx   526  xxxx xxxx xxxxx
Potent Cap.: 1017 xxxx xxxxx  xxxx xxxx xxxxx   179 xxxx   546  xxxx xxxx xxxxx
Move Cap.:   1017 xxxx xxxxx  xxxx xxxx xxxxx   179 xxxx   546  xxxx xxxx xxxxx
Volume/Cap:  0.00 xxxx  xxxx  xxxx xxxx  xxxx  0.11 xxxx  0.01  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  8.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  199 xxxxx  xxxx    0 xxxxx
SharedQueue:  0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.4 xxxxx xxxxx xxxx xxxxx
Shrd StpDel:  8.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 25.4 xxxxx xxxxx xxxx xxxxx
Shared LOS:    A    *     *     *    *     *     *    D     *     *    *     *
ApproachDel:    xxxxxx          xxxxxx             25.4            xxxxxx
ApproachLOS:        *               *               D                 *
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #1 NW Beach Rd/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             6%               7%               5%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:                        #2
Dist(miles):                       0.123
Speed (mph):                       45.00
SignalIndex:                       #2
Cycle Time:                           72 secs
InitVolume:                      0   410
Saturation:                      0  1089
ArrivalType:                     0     3
G/C:                          0.00  0.77
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:                           0.000 0.768
gq1:                          0.00  6.28
gq2:                          0.00  3.79
gq:                           0.00 10.07
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:                             0.550
beta:                              0.645
ta (secs):                         9.840
F:                                 0.223
f:                           1.000 1.000
vcmax:                           0  1003
vcg:                             0   410
vcmin:                        1000  1000
tp:                            0.0   0.1
p:                                 0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.002/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 531 xxxxx xxxxx    0 xxxxx xxxxx 1280     0   526    0     0     0
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 0.998 1.000 1.00 0.998 0.998
ConflictVol: 531 xxxxx xxxxx    0 xxxxx xxxxx 1282     0   526    0     0     0
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap: 1017 xxxxx xxxxx  900 xxxxx xxxxx  180   900   546  900   900   900
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 0.998 1.000 1.00 0.998 0.998
PotentCap:  1017 xxxxx xxxxx  898 xxxxx xxxxx  179   898   546  898   898   898
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #4 Texaco Dwy/Glencoe Rd

Average Delay (sec/veh): 0.2 Worst Case Level Of Service: B[11.0]

```
Street Name:            Glencoe Rd                          Texaco Dwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  0  0  1  0    0  0  1  0  0    0  0  0  0  0    0  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:       0  288    44     0  386     0     0    0     0     0    0    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  288    44     0  386     0     0    0     0     0    0    10
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91
PHF Volume:     0  316    48     0  424     0     0    0     0     0    0    11
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     0  316    48     0  424     0     0    0     0     0    0    11
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   6.5
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   3.5
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   355
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   614
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   614
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  0.02
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   0.1
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  11.0
LOS by Move:   *    *     *     *    *     *     *    *     *     *    *     B
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:    *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx           xxxxxx             11.0
ApproachLOS:        *                *                *                 B
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #4 Texaco Dwy/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             5%               8%               0%              25%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:       #5
Dist(miles):      0.071
Speed (mph):      35.00
SignalIndex:      #3
Cycle Time:          72 secs
InitVolume:     0   189
Saturation:     0  1492
ArrivalType:    0     3
G/C:         0.00  0.51
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.506
gq1:         0.00  4.50
gq2:         0.00  0.65
gq:          0.00  5.15
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.450
beta:             0.690
ta (secs):        7.303
F:                0.306
f:          1.000 1.000
vcmax:          0  1265
vcg:            0   189
vcmin:       1000  1000
tp:           0.0   2.9
p:                0.040
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.040/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol:   0 xxxxx xxxxx    0 xxxxx xxxxx    0     0     0    0     0   341
UpstreamAdj:1.00 x.xxx x.xxx 0.96 x.xxx x.xxx 0.96 0.960 1.000 0.96 0.960 0.960
ConflictVol:   0 xxxxx xxxxx    0 xxxxx xxxxx    0     0     0    0     0   355
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:  900 xxxxx xxxxx  900 xxxxx xxxxx  900   900   900  900   900   640
UpstreamAdj:1.00 x.xxx x.xxx 0.96 x.xxx x.xxx 0.96 0.960 1.000 0.96 0.960 0.960
PotentCap:   900 xxxxx xxxxx  864 xxxxx xxxxx  864   864   900  864   864   614
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #5 NW Highland Ct/Glencoe Rd

Average Delay (sec/veh): 4.9 Worst Case Level Of Service: C[21.9]

```
Street Name:            Glencoe Rd                    NW Highland Ct
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:      71  177    50    16  222    16    12    1   116    48    4    16
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   71  177    50    16  222    16    12    1   116    48    4    16
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87
PHF Volume:    82  203    57    18  255    18    14    1   133    55    5    18
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    82  203    57    18  255    18    14    1   133    55    5    18
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.2  6.6   6.3
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.6  4.1   3.4
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  274 xxxx xxxxx   264 xxxx xxxxx   716  733   264   772  713   235
Potent Cap.: 1284 xxxx xxxxx  1270 xxxx xxxxx   342  344   774   307  347   784
Move Cap.:   1284 xxxx xxxxx  1270 xxxx xxxxx   311  318   774   239  320   784
Volume/Cap:  0.06 xxxx  xxxx  0.01 xxxx  xxxx  0.04 0.00  0.17  0.23 0.01  0.02
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.2 xxxx xxxxx   0.0 xxxx xxxxx   0.1 xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  8.0 xxxx xxxxx   7.9 xxxx xxxxx  17.1 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     A    *     *     C    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   765  xxxx  291 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   0.6 xxxxx  1.1 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  10.7 xxxxx 21.9 xxxxx
Shared LOS:    *    *     *     *    *     *     *    *     B     *    C     *
ApproachDel:    xxxxxx          xxxxxx             11.3             21.9
ApproachLOS:        *               *                B                C
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #5 NW Highland Ct/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             3%               5%               2%               7%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.071 ( 0.031)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:          72 secs
InitVolume:     0   189
Saturation:     0  1492
ArrivalType:    0     3
G/C:         0.00  0.51
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.506
gq1:         0.00  4.50
gq2:         0.00  0.65
gq:          0.00  5.15
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.550
beta:             0.645
ta (secs):       10.491
F:                0.212
f:          1.000 1.000
vcmax:          0  1054
vcg:            0   190
vcmin:       1000  1000
tp:           0.0   0.8
p:                0.011
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.011/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 274 xxxxx xxxxx  261 xxxxx xxxxx  708   725   264  764   706   232
UpstreamAdj:1.00 x.xxx x.xxx 0.99 x.xxx x.xxx 0.99 0.989 1.000 0.99 0.989 0.989
ConflictVol: 274 xxxxx xxxxx  264 xxxxx xxxxx  716   733   264  772   713   235
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap: 1284 xxxxx xxxxx 1283 xxxxx xxxxx  345   348   774  311   351   792
UpstreamAdj:1.00 x.xxx x.xxx 0.99 x.xxx x.xxx 0.99 0.989 1.000 0.99 0.989 0.989
PotentCap:  1284 xxxxx xxxxx 1270 xxxxx xxxxx  342   344   774  307   347   784
```

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Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #6 Chevron Dwy/Glencoe Rd

Average Delay (sec/veh): 1.2 Worst Case Level Of Service: B[11.2]

```
Street Name:            Glencoe Rd                    Chevron Dwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  1  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:      25  180     0     0  229    39    16    0    23     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   25  180     0     0  229    39    16    0    23     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.80 0.80  0.80  0.80 0.80  0.80  0.80 0.80  0.80  0.80 0.80  0.80
PHF Volume:    31  225     0     0  286    49    20    0    29     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    31  225     0     0  286    49    20    0    29     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.2 xxxx xxxxx xxxxx xxxx xxxxx   6.5 xxxx   6.3 xxxxx xxxx xxxxx
FollowUpTim:  2.3 xxxx xxxxx xxxxx xxxx xxxxx   3.6 xxxx   3.4 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  335 xxxx xxxxx  xxxx xxxx xxxxx   598 xxxx   311  xxxx xxxx xxxxx
Potent Cap.: 1197 xxxx xxxxx  xxxx xxxx xxxxx   454 xxxx   713  xxxx xxxx xxxxx
Move Cap.:   1197 xxxx xxxxx  xxxx xxxx xxxxx   445 xxxx   713  xxxx xxxx xxxxx
Total Cap:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   535    0 xxxxx     0    0 xxxxx
Volume/Cap:  0.03 xxxx  xxxx  xxxx xxxx  xxxx  0.04 xxxx  0.04  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  8.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  627 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.3 xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 11.2 xxxxx xxxxx xxxx xxxxx
Shared LOS:    *    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             11.2           xxxxxx
ApproachLOS:        *                *                B               *
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #6 Chevron Dwy/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             7%               6%               9%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.071 ( 0.601)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 335 xxxxx xxxxx    0 xxxxx xxxxx  598     0   311    0     0     0
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 335 xxxxx xxxxx    0 xxxxx xxxxx  598     0   311    0     0     0
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap: 1197 xxxxx xxxxx  900 xxxxx xxxxx  454   900   713  900   900   900
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:  1197 xxxxx xxxxx  900 xxxxx xxxxx  454   900   713  900   900   900
```

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Kittelson & Associates, Inc. - Project #7191
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Existing Weekday AM Peak Hour

```
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance [Median Type: TWLTL][Median Storage: 1 car ]
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage One Module:
InitCfltVol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  311     0 xxxxx    0     0 xxxxx
UpstreamSat:xxxx xxxxx xxxxx xxxx xxxxx xxxxx    0     0 xxxxx    0     0 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Cnflict Vol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  311     0 xxxxx    0     0 xxxxx
InitPotCap: xxxx xxxxx xxxxx xxxx xxxxx xxxxx  728   900 xxxxx  900   900 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Potent Cap.:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  728   900 xxxxx  900   900 xxxxx
Move Cap.:  xxxx xxxxx xxxxx xxxx xxxxx xxxxx  728   900 xxxxx  876   876 xxxxx
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage Two Module:
InitCfltVol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  288     0 xxxxx    0     0 xxxxx
UpstreamSat:xxxx xxxxx xxxxx xxxx xxxxx xxxxx    0     0 xxxxx    0     0 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Cnflict Vol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  288     0 xxxxx    0     0 xxxxx
InitPotCap: xxxx xxxxx xxxxx xxxx xxxxx xxxxx  746   900 xxxxx  900   900 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Potent Cap.:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  746   900 xxxxx  900   900 xxxxx
Move Cap.:  xxxx xxxxx xxxxx xxxx xxxxx xxxxx  726   876 xxxxx  864   900 xxxxx
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

```
*******************************************************************************
Intersection #7 NW Pacific St/Glencoe Rd
*******************************************************************************
Average Delay (sec/veh):      1.6   Worst Case Level Of Service:       B[ 14.5]
*******************************************************************************
Street Name:            Glencoe Rd                    NW Pacific St
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  1  0  0  0    0  1  0  0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:       8  178     0    13  245     0     7    5     2     4    2    34
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    8  178     0    13  245     0     7    5     2     4    2    34
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.78 0.78  0.78  0.78 0.78  0.78  0.78 0.78  0.78  0.78 0.78  0.78
PHF Volume:    10  228     0    17  314     0     9    6     3     5    3    44
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    10  228     0    17  314     0     9    6     3     5    3    44
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.2 xxxx xxxxx   4.1 xxxx xxxxx   7.2  6.6   6.3   7.2  6.6   6.3
FollowUpTim:  2.3 xxxx xxxxx   2.2 xxxx xxxxx   3.6  4.1   3.4   3.6  4.1   3.4
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  314 xxxx xxxxx   228 xxxx xxxxx   619  596   314   601  596   228
Potent Cap.: 1218 xxxx xxxxx  1328 xxxx xxxxx   384  401   699   404  409   796
Move Cap.:   1218 xxxx xxxxx  1328 xxxx xxxxx   356  393   699   391  400   796
Volume/Cap:  0.01 xxxx  xxxx  0.01 xxxx  xxxx  0.03 0.02  0.00  0.01 0.01  0.05
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.0 xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  8.0 xxxx xxxxx   7.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  397 xxxxx  xxxx  691 xxxxx
SharedQueue:  0.0 xxxx xxxxx   0.0 xxxx xxxxx xxxxx  0.1 xxxxx xxxxx  0.2 xxxxx
Shrd StpDel:  8.0 xxxx xxxxx   7.7 xxxx xxxxx xxxxx 14.5 xxxxx xxxxx 10.6 xxxxx
Shared LOS:    A    *     *     A    *     *     *    B     *     *    B     *
ApproachDel:    xxxxxx           xxxxxx             14.5             10.6
ApproachLOS:        *                *                B                B
```

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Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #7 NW Pacific St/Glencoe Rd

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
HevVeh:	7%	4%	14%	8%
Grade:	0%	0%	0%	0%
Peds/Hour:	0	0	0	0
LaneWidth:	12 feet	12 feet	12 feet	12 feet

Pedestrian Walk Speed: 4.00 feet/sec
Time Period: 0.25 hour

```
Upstream Signals:
Link Index:       #5
Dist(miles):  0.071 ( 0.681)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 314 xxxxx xxxxx  228 xxxxx xxxxx  619   596   314  601   596   228
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 314 xxxxx xxxxx  228 xxxxx xxxxx  619   596   314  601   596   228
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap: 1218 xxxxx xxxxx 1328 xxxxx xxxxx  384   401   699  404   409   796
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:  1218 xxxxx xxxxx 1328 xxxxx xxxxx  384   401   699  404   409   796
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #8 NW Cottage St/Glencoe Rd

Average Delay (sec/veh): 0.4 Worst Case Level Of Service: B[10.1]

Street Name:	Glencoe Rd		NW Cottage St	
Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Rights:	Include	Include	Include	Include
Lanes:	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0	0 0 0 0 0

```
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:       2  196     0     0  230     1     1    0    16     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    2  196     0     0  230     1     1    0    16     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.79 0.79  0.79  0.79 0.79  0.79  0.79 0.79  0.79  0.79 0.79  0.79
PHF Volume:     3  248     0     0  291     1     1    0    20     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     3  248     0     0  291     1     1    0    20     0    0     0
Critical Gap Module:
Critical Gp:  4.2 xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.3 xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx   3.3 xxxxx xxxx xxxxx
Capacity Module:
Cnflict Vol:  292 xxxx xxxxx  xxxx xxxx xxxxx   545 xxxx   292  xxxx xxxx xxxxx
Potent Cap.: 1247 xxxx xxxxx  xxxx xxxx xxxxx   503 xxxx   752  xxxx xxxx xxxxx
Move Cap.:   1247 xxxx xxxxx  xxxx xxxx xxxxx   502 xxxx   752  xxxx xxxx xxxxx
Volume/Cap:  0.00 xxxx  xxxx  xxxx xxxx  xxxx  0.00 xxxx  0.03  xxxx xxxx  xxxx
Level Of Service Module:
Queue:        0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  7.9 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  731 xxxxx  xxxx xxxx xxxxx
SharedQueue:  0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.1 xxxxx xxxxx xxxx xxxxx
Shrd StpDel:  7.9 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 10.1 xxxxx xxxxx xxxx xxxxx
Shared LOS:    A    *     *     *    *     *     B     *     *    *     *
ApproachDel:    xxxxxx          xxxxxx            10.1          xxxxxx
ApproachLOS:         *               *               B               *
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #8 NW Cottage St/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
HevVeh:             6%               5%               0%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
-----------|----------------|----------------|----------------|----------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.071 ( 0.681)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 292 xxxxx xxxxx    0 xxxxx xxxxx  545     0   292    0     0     0
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 292 xxxxx xxxxx    0 xxxxx xxxxx  545     0   292    0     0     0
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap: 1247 xxxxx xxxxx  900 xxxxx xxxxx  503   900   752  900   900   900
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:  1247 xxxxx xxxxx  900 xxxxx xxxxx  503   900   752  900   900   900
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #9 NW Commercial/Glencoe Rd

```
Cycle (sec):        100                Critical Vol./Cap. (X):        0.285
Loss Time (sec):      0 (Y+R =  4 sec) Average Delay (sec/veh):        9.1
Optimal Cycle:        0                Level Of Service:                A
Street Name:            Glencoe Rd                NW Commercial/West Union
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:      51   77    55    27  151     2     4   12    44    31   16    15
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   51   77    55    27  151     2     4   12    44    31   16    15
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.83 0.83  0.83  0.83 0.83  0.83  0.83 0.83  0.83  0.83 0.83  0.83
PHF Volume:    61   93    66    33  182     2     5   14    53    37   19    18
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   61   93    66    33  182     2     5   14    53    37   19    18
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:    61   93    66    33  182     2     5   14    53    37   19    18
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.28 0.42  0.30  0.15 0.84  0.01  0.07 0.20  0.73  0.50 0.26  0.24
Final Sat.:   216  326   233   114  638     8    47  140   514   325  168   157
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.28 0.28  0.28  0.29 0.29  0.29  0.10 0.10  0.10  0.12 0.12  0.12
Crit Moves:  ****                          ****  ****             ****
Delay/Veh:    9.2  9.2   9.2   9.3  9.3   9.3   8.2  8.2   8.2   8.7  8.7   8.7
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   9.2  9.2   9.2   9.3  9.3   9.3   8.2  8.2   8.2   8.7  8.7   8.7
LOS by Move:   A    A     A     A    A     A     A    A     A     A    A     A
ApproachDel:       9.2              9.3              8.2              8.7
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:        9.2              9.3              8.2              8.7
LOS by Appr:        A                A                A                A
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM 4-Way Stop Method
Base Volume Alternative

Intersection #9 NW Commercial/Glencoe Rd

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Time Period: 0.25 hour				
HevVeh:	7%	4%	10%	13%
Alpha Value: 0.01				
GroupType:	1	1	1	1
P[C1]:	0.59	0.59	0.47	0.47
P[C2]:	0.22	0.22	0.06	0.05
P[C3]:	0.13	0.13	0.36	0.36
P[C4]:	0.06	0.06	0.11	0.11
P[C5]:	0.00	0.00	0.01	0.01
Padj[C1]:	0.007	0.007	0.011	0.011
Padj[C2]:	0.000	0.000	0.005	0.005
Padj[C3]:	-0.003	-0.003	-0.009	-0.010
Padj[C4]:	-0.003	-0.003	-0.007	-0.006
Padj[C5]:	-0.000	-0.000	-0.001	-0.001
Lane:	L1	L1	L1	L1
LaneType:	LEFTTHRURITE	LEFTTHRURITE	LEFTTHRURITE	LEFTTHRURITE
HeadwayAdj:	-0.006	0.091	-0.257	0.176
Volume:	220	217	72	75
Capacity:	776	761	701	649
DegOfUtil:	0.28	0.28	0.09	0.11
DepHeadway:	4.50	4.59	4.72	5.14
ServiceTime:	2.5	2.6	2.7	3.1
Delay:	9.2	9.3	8.2	8.7

Approach:	North Bound	South Bound	East Bound	West Bound
ApproachDel:	9.2	9.3	8.2	8.7
Delay Adj:	1.00	1.00	1.00	1.00
ApprAdjDel:	9.2	9.3	8.2	8.7
LOS by Appr:	A	A	A	A

OverallDel: 9.1
OverallLOS: A

HCM Signalized Intersection Capacity Analysis
2: US 26 EB Ramps & NW Glencoe Road

5/4/2006

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)		0%			0%			2%			-2%	
Total Lost time (s)		3.0	3.0					3.0	3.0		3.0	
Lane Util. Factor		1.00	1.00					1.00	1.00		1.00	
Frt		1.00	0.85					1.00	0.85		1.00	
Flt Protected		0.95	1.00					1.00	1.00		0.98	
Satd. Flow (prot)		1682	1500					1610	1368		1600	
Flt Permitted		0.95	1.00					1.00	1.00		0.98	
Satd. Flow (perm)		1682	1500					1610	1368		1600	
Volume (vph)	45	1	112	0	0	0	0	170	590	213	410	0
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	56	1	138	0	0	0	0	210	728	263	506	0
Lane Group Flow (vph)	0	57	138	0	0	0	0	210	728	0	769	0
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	7%	7%	7%	8%	8%	8%
Turn Type	Split		Prot						Prot	pm+pt		
Protected Phases	4	4	4					2	2	1	6	
Permitted Phases								2		6	6	
Actuated Green, G (s)		9.5	9.5					54.0	54.0		54.0	
Effective Green, g (s)		10.5	10.5					55.5	55.5		55.5	
Actuated g/C Ratio		0.15	0.15					0.77	0.77		0.77	
Clearance Time (s)		4.0	4.0					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		245	219					1241	1055		1233	
v/s Ratio Prot		0.03	c0.09					0.13	c0.53		0.48	
v/s Ratio Perm												
v/c Ratio		0.23	0.63					0.17	0.69		0.62	
Uniform Delay, d1		27.2	28.9					2.2	4.0		3.6	
Progression Factor		1.00	1.00					1.00	1.00		3.89	
Incremental Delay, d2		2.2	13.0					0.3	3.7		1.7	
Delay (s)		29.4	41.9					2.5	7.7		15.8	
Level of Service		C	D					A	A		B	
Approach Delay (s)		38.3			0.0			6.6			15.8	
Approach LOS		D			A			A			B	

Intersection Summary			
HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	72.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	104.4%	ICU Level of Service	F

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)		0%			2%			-2%			2%	
Total Lost time (s)				3.0	3.0			3.0			3.0	3.0
Lane Util. Factor				1.00	1.00			1.00			1.00	1.00
Frt				1.00	0.85			1.00			1.00	0.85
Flt Protected				0.95	1.00			0.99			1.00	1.00
Satd. Flow (prot)				1498	1342			1633			1580	1343
Flt Permitted				0.95	1.00			0.94			1.00	1.00
Satd. Flow (perm)				1498	1342			1538			1580	1343
Volume (vph)	0	0	0	290	1	143	25	189	0	0	333	53
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	0	0	0	362	1	179	31	236	0	0	416	66
Lane Group Flow (vph)	0	0	0	362	180	0	0	267	0	0	416	66
Heavy Vehicles (%)	0%	0%	0%	13%	13%	13%	7%	7%	7%	9%	9%	9%
Turn Type				Split			pm+pt					Prot
Protected Phases				8	8		5	2			6	6
Permitted Phases							2					
Actuated Green, G (s)				20.5	20.5			43.0			43.0	43.0
Effective Green, g (s)				21.5	21.5			44.5			44.5	44.5
Actuated g/C Ratio				0.30	0.30			0.62			0.62	0.62
Clearance Time (s)				4.0	4.0			4.5			4.5	4.5
Vehicle Extension (s)				3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)				447	401			951			977	830
v/s Ratio Prot				c0.24	0.13						c0.26	0.05
v/s Ratio Perm								0.17				
v/c Ratio				0.81	0.45			0.28			0.43	0.08
Uniform Delay, d1				23.4	20.5			6.4			7.1	5.5
Progression Factor				1.00	1.00			0.75			1.00	1.00
Incremental Delay, d2				14.6	3.6			0.2			1.4	0.2
Delay (s)				38.0	24.1			4.9			8.5	5.7
Level of Service				D	C			A			A	A
Approach Delay (s)		0.0			33.4			4.9			8.1	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	18.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	72.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	55.3%	ICU Level of Service	A

c Critical Lane Group

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday PM Peak Hour

Scenario Report

Scenario:	expm
Command:	expm
Volume:	expm
Geometry:	expm
Impact Fee:	Default Impact Fee
Trip Generation:	Default Trip Generation
Trip Distribution:	Default Trip Distribution
Paths:	Default Paths
Routes:	Default Routes
Configuration:	Default Configuration

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday PM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 NW Beach Rd/Glencoe Rd	F	56.4	0.000	F	56.4	0.000	+ 0.000 D/V
# 4 Texaco Dwy/Glencoe Rd	B	11.2	0.000	B	11.2	0.000	+ 0.000 D/V
# 5 NW Highland Ct/Glencoe Rd	C	24.9	0.000	C	24.9	0.000	+ 0.000 D/V
# 6 Chevron Dwy/Glencoe Rd	B	11.2	0.000	B	11.2	0.000	+ 0.000 D/V
# 7 NW Pacific St/Glencoe Rd	C	15.4	0.000	C	15.4	0.000	+ 0.000 D/V
# 8 NW Cottage St/Glencoe Rd	B	10.5	0.000	B	10.5	0.000	+ 0.000 D/V
# 9 NW Commercial/Glencoe Rd	A	10.0	0.411	A	10.0	0.411	+ 0.000 V/C

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #1 NW Beach Rd/Glencoe Rd

Average Delay (sec/veh): 0.8 Worst Case Level Of Service: F[56.4]

```
Street Name:            Glencoe Rd                    NW Beach Rd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  1  0  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:      17  625     0     0  715    24    11    0     5     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   17  625     0     0  715    24    11    0     5     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91
PHF Volume:    19  687     0     0  786    26    12    0     5     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    19  687     0     0  786    26    12    0     5     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.5 xxxx   6.3 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.6 xxxx   3.4 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  812 xxxx xxxxx  xxxx xxxx xxxxx  1849 xxxx   799  xxxx xxxx xxxxx
Potent Cap.:  814 xxxx xxxxx  xxxx xxxx xxxxx    66 xxxx   379  xxxx xxxx xxxxx
Move Cap.:    814 xxxx xxxxx  xxxx xxxx xxxxx    65 xxxx   379  xxxx xxxx xxxxx
Volume/Cap:  0.02 xxxx  xxxx  xxxx xxxx  xxxx  0.19 xxxx  0.01  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  9.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx   87 xxxxx  xxxx xxxx xxxxx
SharedQueue:  0.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.7 xxxxx xxxxx xxxx xxxxx
Shrd StpDel:  9.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 56.4 xxxxx xxxxx xxxx xxxxx
Shared LOS:    A    *     *     *    *     *     *    F     *     *    *     *
ApproachDel:    xxxxxx          xxxxxx             56.4           xxxxxx
ApproachLOS:        *               *               F               *
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #1 NW Beach Rd/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             2%               5%               6%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:                        #2
Dist(miles):                       0.123
Speed (mph):                       45.00
SignalIndex:                       #2
Cycle Time:                           72 secs
InitVolume:                      0   691
Saturation:                      0  1398
ArrivalType:                     0     3
G/C:                          0.00  0.79
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:                           0.000 0.793
gq1:                          0.00  7.38
gq2:                          0.00  7.22
gq:                           0.00 14.60
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:                             0.550
beta:                              0.645
ta (secs):                         9.840
F:                                 0.223
f:                           1.000 1.000
vcmax:                           0  1362
vcg:                             0   691
vcmin:                        1000  1000
tp:                            0.0  12.7
p:                                 0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.176/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 812 xxxxx xxxxx    0 xxxxx xxxxx 1523     0   799    0     0     0
UpstreamAdj:1.00 x.xxx x.xxx 0.82 x.xxx x.xxx 0.82 0.824 1.000 0.82 0.824 0.824
ConflictVol: 812 xxxxx xxxxx    0 xxxxx xxxxx 1849     0   799    0     0     0
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:  814 xxxxx xxxxx  900 xxxxx xxxxx   80   900   379  900   900   900
UpstreamAdj:1.00 x.xxx x.xxx 0.82 x.xxx x.xxx 0.82 0.824 1.000 0.82 0.824 0.824
PotentCap:   814 xxxxx xxxxx  741 xxxxx xxxxx   66   741   379  741   741   741
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #4 Texaco Dwy/Glencoe Rd

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: B[11.2]

```
Street Name:            Glencoe Rd                      Texaco Dwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  0  0  1  0    0  0  1  0  0    0  0  0  0  0    0  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:       0  399    49     0  399     0     0    0     0     0    0     1
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  399    49     0  399     0     0    0     0     0    0     1
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93
PHF Volume:     0  429    53     0  429     0     0    0     0     0    0     1
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     0  429    53     0  429     0     0    0     0     0    0     1
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   470
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   578
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   578
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   0.0
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  11.2
LOS by Move:   *    *     *     *    *     *     *    *     *     *    *     B
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:    *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx           xxxxxx             11.2
ApproachLOS:        *                *                *                 B
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
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Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #4 Texaco Dwy/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             2%               1%               2%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:       #5
Dist(miles):      0.071
Speed (mph):      35.00
SignalIndex:      #3
Cycle Time:          72 secs
InitVolume:     0   186
Saturation:     0  1111
ArrivalType:    0     3
G/C:         0.00  0.42
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.419
gq1:         0.00  7.00
gq2:         0.00  1.41
gq:          0.00  8.41
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.450
beta:             0.690
ta (secs):        7.303
F:                0.306
f:          1.000 1.000
vcmax:          0  1059
vcg:            0   186
vcmin:       1000  1000
tp:           0.0   2.3
p:                0.032
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.032/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol:   0 xxxxx xxxxx    0 xxxxx xxxxx    0     0     0    0     0   455
UpstreamAdj:1.00 x.xxx x.xxx 0.97 x.xxx x.xxx 0.97 0.968 1.000 0.97 0.968 0.968
ConflictVol:   0 xxxxx xxxxx    0 xxxxx xxxxx    0     0     0    0     0   470
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:  900 xxxxx xxxxx  900 xxxxx xxxxx  900   900   900  900   900   597
UpstreamAdj:1.00 x.xxx x.xxx 0.97 x.xxx x.xxx 0.97 0.968 1.000 0.97 0.968 0.968
PotentCap:   900 xxxxx xxxxx  871 xxxxx xxxxx  871   871   900  871   871   578
```

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #5 NW Highland Ct/Glencoe Rd

Average Delay (sec/veh): 4.6 Worst Case Level Of Service: C[24.9]

```
Street Name:            Glencoe Rd                    NW Highland Ct
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:      97  293    10    12  261    15    10    4    87    51    4    20
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   97  293    10    12  261    15    10    4    87    51    4    20
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.92 0.92  0.92  0.92 0.92  0.92  0.92 0.92  0.92  0.92 0.92  0.92
PHF Volume:   105  318    11    13  284    16    11    4    95    55    4    22
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:   105  318    11    13  284    16    11    4    95    55    4    22
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  300 xxxx xxxxx   329 xxxx xxxxx   866  858   292   902  861   324
Potent Cap.: 1261 xxxx xxxxx  1236 xxxx xxxxx   274  294   747   261  295   722
Move Cap.:   1261 xxxx xxxxx  1236 xxxx xxxxx   243  267   747   209  268   722
Volume/Cap:  0.08 xxxx  xxxx  0.01 xxxx  xxxx  0.04 0.02  0.13  0.27 0.02  0.03
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.3 xxxx xxxxx   0.0 xxxx xxxxx   0.1 xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  8.1 xxxx xxxxx   7.9 xxxx xxxxx  20.5 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     A    *     *     C    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   693  xxxx  261 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   0.5 xxxxx  1.3 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  11.1 xxxxx 24.9 xxxxx
Shared LOS:    *    *     *     *    *     *     *    *     B     *    C     *
ApproachDel:    xxxxxx           xxxxxx             12.0             24.9
ApproachLOS:        *                *                B                C
```


Kittelson & Associates, Inc. - Project #7191
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Existing Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #5 NW Highland Ct/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             2%               1%               2%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.071 ( 0.031)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:          72 secs
InitVolume:     0   186
Saturation:     0  1111
ArrivalType:    0     3
G/C:         0.00  0.42
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.419
gq1:         0.00  7.00
gq2:         0.00  1.41
gq:          0.00  8.41
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.550
beta:             0.645
ta (secs):       10.491
F:                0.212
f:          1.000 1.000
vcmax:          0   961
vcg:            0   190
vcmin:       1000  1000
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 300 xxxxx xxxxx  329 xxxxx xxxxx  866   858   292  902   861   324
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 300 xxxxx xxxxx  329 xxxxx xxxxx  866   858   292  902   861   324
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap: 1261 xxxxx xxxxx 1236 xxxxx xxxxx  274   294   747  261   295   722
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:  1261 xxxxx xxxxx 1236 xxxxx xxxxx  274   294   747  261   295   722
```

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #6 Chevron Dwy/Glencoe Rd

Average Delay (sec/veh): 0.9 Worst Case Level Of Service: B[11.2]

```
Street Name:            Glencoe Rd                    Chevron Dwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  1  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:      23  300     0     0  266    28    16    0    22     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   23  300     0     0  266    28    16    0    22     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91
PHF Volume:    25  330     0     0  292    31    18    0    24     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    25  330     0     0  292    31    18    0    24     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.2 xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.3 xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  323 xxxx xxxxx  xxxx xxxx xxxxx   688 xxxx   308  xxxx xxxx xxxxx
Potent Cap.: 1214 xxxx xxxxx  xxxx xxxx xxxxx   415 xxxx   737  xxxx xxxx xxxxx
Move Cap.:   1214 xxxx xxxxx  xxxx xxxx xxxxx   409 xxxx   737  xxxx xxxx xxxxx
Total Cap:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   511    0 xxxxx     0    0 xxxxx
Volume/Cap:  0.02 xxxx  xxxx  xxxx xxxx  xxxx  0.03 xxxx  0.03  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  8.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  621 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.2 xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 11.2 xxxxx xxxxx xxxx xxxxx
Shared LOS:    *    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             11.2           xxxxxx
ApproachLOS:        *                *                B               *
```


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Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #6 Chevron Dwy/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             6%               1%               0%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.071 ( 0.601)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 323 xxxxx xxxxx    0 xxxxx xxxxx  688     0   308    0     0     0
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 323 xxxxx xxxxx    0 xxxxx xxxxx  688     0   308    0     0     0
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap: 1214 xxxxx xxxxx  900 xxxxx xxxxx  415   900   737  900   900   900
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:  1214 xxxxx xxxxx  900 xxxxx xxxxx  415   900   737  900   900   900
```

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```
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance [Median Type: TWLTL][Median Storage: 1 car ]
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage One Module:
InitCfltVol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  308     0 xxxxx    0     0 xxxxx
UpstreamSat:xxxx xxxxx xxxxx xxxx xxxxx xxxxx    0     0 xxxxx    0     0 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Cnflict Vol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  308     0 xxxxx    0     0 xxxxx
InitPotCap: xxxx xxxxx xxxxx xxxx xxxxx xxxxx  750   900 xxxxx  900   900 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Potent Cap.:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  750   900 xxxxx  900   900 xxxxx
Move Cap.:  xxxx xxxxx xxxxx xxxx xxxxx xxxxx  750   900 xxxxx  881   881 xxxxx
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage Two Module:
InitCfltVol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  380     0 xxxxx    0     0 xxxxx
UpstreamSat:xxxx xxxxx xxxxx xxxx xxxxx xxxxx    0     0 xxxxx    0     0 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Cnflict Vol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  380     0 xxxxx    0     0 xxxxx
InitPotCap: xxxx xxxxx xxxxx xxxx xxxxx xxxxx  696   900 xxxxx  900   900 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Potent Cap.:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  696   900 xxxxx  900   900 xxxxx
Move Cap.:  xxxx xxxxx xxxxx xxxx xxxxx xxxxx  681   881 xxxxx  870   900 xxxxx
```


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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

```
*******************************************************************************
Intersection #7 NW Pacific St/Glencoe Rd
*******************************************************************************
Average Delay (sec/veh):      1.6   Worst Case Level Of Service:       C[ 15.4]
*******************************************************************************
Street Name:            Glencoe Rd                    NW Pacific St
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:      40  255     9     5  277     6    29    0     4     6    1     4
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   40  255     9     5  277     6    29    0     4     6    1     4
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.94 0.94  0.94  0.94 0.94  0.94  0.94 0.94  0.94  0.94 0.94  0.94
PHF Volume:    43  271    10     5  295     6    31    0     4     6    1     4
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    43  271    10     5  295     6    31    0     4     6    1     4
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1 xxxx   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5 xxxx   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  301 xxxx xxxxx   281 xxxx xxxxx   672 xxxx   298   672  673   276
Potent Cap.: 1266 xxxx xxxxx  1287 xxxx xxxxx   372 xxxx   746   372  379   768
Move Cap.:   1266 xxxx xxxxx  1287 xxxx xxxxx   358 xxxx   746   359  365   768
Volume/Cap:  0.03 xxxx  xxxx  0.00 xxxx  xxxx  0.09 xxxx  0.01  0.02 0.00  0.01
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.1 xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  7.9 xxxx xxxxx   7.8 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  382 xxxxx  xxxx  446 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.3 xxxxx xxxxx  0.1 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 15.4 xxxxx xxxxx 13.3 xxxxx
Shared LOS:    *    *     *     *    *     *     *    C     *     *    B     *
ApproachDel:    xxxxxx           xxxxxx             15.4             13.3
ApproachLOS:        *                *                C                B
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #7 NW Pacific St/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
HevVeh:             1%               1%               0%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
-----------|----------------|----------------|----------------|----------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.071 ( 0.681)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 301 xxxxx xxxxx  281 xxxxx xxxxx  672     0   298  672   673   276
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 301 xxxxx xxxxx  281 xxxxx xxxxx  672     0   298  672   673   276
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap: 1266 xxxxx xxxxx 1287 xxxxx xxxxx  372   900   746  372   379   768
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:  1266 xxxxx xxxxx 1287 xxxxx xxxxx  372   900   746  372   379   768
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #8 NW Cottage St/Glencoe Rd

Average Delay (sec/veh): 0.5 Worst Case Level Of Service: B[10.5]

```
Street Name:            Glencoe Rd                    NW Cottage St
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------||----------------||----------------||----------------||----------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  1  0  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  0  0  0
-----------||----------------||----------------||----------------||----------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:      14  252     0     0  261     3     3    0    10     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   14  252     0     0  261     3     3    0    10     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93
PHF Volume:    15  271     0     0  281     3     3    0    11     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    15  271     0     0  281     3     3    0    11     0    0     0
-----------||----------------||----------------||----------------||----------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx   3.3 xxxxx xxxx xxxxx
-----------||----------------||----------------||----------------||----------------|
Capacity Module:
Cnflict Vol:  284 xxxx xxxxx  xxxx xxxx xxxxx   583 xxxx   282  xxxx xxxx xxxxx
Potent Cap.: 1278 xxxx xxxxx  xxxx xxxx xxxxx   478 xxxx   761  xxxx xxxx xxxxx
Move Cap.:   1278 xxxx xxxxx  xxxx xxxx xxxxx   473 xxxx   761  xxxx xxxx xxxxx
Volume/Cap:  0.01 xxxx  xxxx  xxxx xxxx  xxxx  0.01 xxxx  0.01  xxxx xxxx  xxxx
-----------||----------------||----------------||----------------||----------------|
Level Of Service Module:
Queue:        0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  7.8 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  668 xxxxx  xxxx xxxx xxxxx
SharedQueue:  0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.1 xxxxx xxxxx xxxx xxxxx
Shrd StpDel:  7.8 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 10.5 xxxxx xxxxx xxxx xxxxx
Shared LOS:    A    *     *     *    *     *     B     *     *    *     *
ApproachDel:    xxxxxx          xxxxxx            10.5          xxxxxx
ApproachLOS:        *               *               B               *
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #8 NW Cottage St/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
HevVeh:             2%               3%               0%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
-----------|----------------|----------------|----------------|----------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.071 ( 0.681)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 284 xxxxx xxxxx    0 xxxxx xxxxx  583     0   282    0     0     0
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 284 xxxxx xxxxx    0 xxxxx xxxxx  583     0   282    0     0     0
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap: 1278 xxxxx xxxxx  900 xxxxx xxxxx  478   900   761  900   900   900
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:  1278 xxxxx xxxxx  900 xxxxx xxxxx  478   900   761  900   900   900
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #9 NW Commercial/Glencoe Rd

```
Cycle (sec):        100                Critical Vol./Cap. (X):        0.411
Loss Time (sec):      0 (Y+R =  4 sec) Average Delay (sec/veh):        10.0
Optimal Cycle:        0                Level Of Service:                 A
Street Name:            Glencoe Rd                NW Commercial/West Union
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:      79  139    42    29  123     7    11   19    62    68   33    31
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   79  139    42    29  123     7    11   19    62    68   33    31
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87
PHF Volume:    91  160    48    33  141     8    13   22    71    78   38    36
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   91  160    48    33  141     8    13   22    71    78   38    36
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:    91  160    48    33  141     8    13   22    71    78   38    36
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.30 0.54  0.16  0.18 0.78  0.04  0.12 0.21  0.67  0.52 0.25  0.23
Final Sat.:   221  389   117   126  534    30    80  138   449   330  160   150
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.41 0.41  0.41  0.26 0.26  0.26  0.16 0.16  0.16  0.24 0.24  0.24
Crit Moves:  ****                 ****        ****                 ****
Delay/Veh:   10.8 10.8  10.8   9.6  9.6   9.6   8.7  8.7   8.7   9.7  9.7   9.7
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  10.8 10.8  10.8   9.6  9.6   9.6   8.7  8.7   8.7   9.7  9.7   9.7
LOS by Move:   B    B     B     A    A     A     A    A     A     A    A     A
ApproachDel:      10.8              9.6              8.7              9.7
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       10.8              9.6              8.7              9.7
LOS by Appr:        B                A                A                A
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM 4-Way Stop Method
Base Volume Alternative

Intersection #9 NW Commercial/Glencoe Rd

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Time Period: 0.25 hour				
HevVeh:	1%	1%	2%	4%
Alpha Value: 0.01				
GroupType:	1	1	1	1
P[C1]:	0.50	0.40	0.35	0.39
P[C2]:	0.17	0.26	0.10	0.07
P[C3]:	0.22	0.18	0.35	0.38
P[C4]:	0.10	0.14	0.18	0.15
P[C5]:	0.01	0.01	0.02	0.01
Padj[C1]:	0.009	0.011	0.014	0.013
Padj[C2]:	0.003	0.002	0.007	0.007
Padj[C3]:	-0.006	-0.004	-0.008	-0.010
Padj[C4]:	-0.006	-0.008	-0.010	-0.009
Padj[C5]:	-0.001	-0.001	-0.002	-0.001
Lane:	L1	L1	L1	L1
LaneType:	LEFTTHRURITE	LEFTTHRURITE	LEFTTHRURITE	LEFTTHRURITE
HeadwayAdj:	-0.019	0.027	-0.346	0.030
Volume:	299	183	106	152
Capacity:	727	691	667	640
DegOfUtil:	0.40	0.25	0.14	0.22
DepHeadway:	4.76	4.94	4.91	5.21
ServiceTime:	2.8	2.9	2.9	3.2
Delay:	10.8	9.6	8.7	9.7

Approach:	North Bound	South Bound	East Bound	West Bound
ApproachDel:	10.8	9.6	8.7	9.7
Delay Adj:	1.00	1.00	1.00	1.00
ApprAdjDel:	10.8	9.6	8.7	9.7
LOS by Appr:	B	A	A	A

OverallDel: 10.0
OverallLOS: A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)		0%			0%			2%			-2%	
Total Lost time (s)		3.0	3.0					3.0	3.0		3.0	
Lane Util. Factor		1.00	1.00					1.00	1.00		1.00	
Frt		1.00	0.85					1.00	0.85		1.00	
Flt Protected		0.95	1.00					1.00	1.00		0.99	
Satd. Flow (prot)		1666	1485					1656	1408		1658	
Flt Permitted		0.95	1.00					1.00	1.00		0.99	
Satd. Flow (perm)		1666	1485					1656	1408		1658	
Volume (vph)	35	1	59	0	0	0	0	258	408	157	691	0
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	40	1	68	0	0	0	0	297	469	180	794	0
Lane Group Flow (vph)	0	41	68	0	0	0	0	297	469	0	974	0
Heavy Vehicles (%)	3%	3%	3%	0%	0%	0%	4%	4%	4%	5%	5%	5%
Turn Type	Split		Prot						Prot	pm+pt		
Protected Phases	4	4	4					2	2	1	6	
Permitted Phases								2		6	6	
Actuated Green, G (s)		7.5	7.5					56.0	56.0		56.0	
Effective Green, g (s)		8.5	8.5					57.5	57.5		57.5	
Actuated g/C Ratio		0.12	0.12					0.80	0.80		0.80	
Clearance Time (s)		4.0	4.0					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		197	175					1323	1124		1324	
v/s Ratio Prot		0.02	c0.05					0.18	0.33		c0.59	
v/s Ratio Perm												
v/c Ratio		0.21	0.39					0.22	0.42		0.74	
Uniform Delay, d1		28.7	29.3					1.8	2.2		3.5	
Progression Factor		1.00	1.00					1.00	1.00		1.98	
Incremental Delay, d2		2.4	6.4					0.4	1.1		2.7	
Delay (s)		31.1	35.7					2.2	3.3		9.8	
Level of Service		C	D					A	A		A	
Approach Delay (s)		34.0			0.0			2.9			9.8	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	8.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	72.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	98.6%	ICU Level of Service	E

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)		0%			2%			-2%			2%	
Total Lost time (s)				3.0	3.0			3.0			3.0	3.0
Lane Util. Factor				1.00	1.00			1.00			1.00	1.00
Frt				1.00	0.85			1.00			1.00	0.85
Flt Protected				0.95	1.00			0.98			1.00	1.00
Satd. Flow (prot)				1628	1458			1692			1672	1422
Flt Permitted				0.95	1.00			0.76			1.00	1.00
Satd. Flow (perm)				1628	1458			1316			1672	1422
Volume (vph)	0	0	0	520	2	262	107	186	0	0	328	71
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	559	2	282	115	200	0	0	353	76
Lane Group Flow (vph)	0	0	0	559	284	0	0	315	0	0	353	76
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	2%	2%	2%	3%	3%	3%
Turn Type				Split			pm+pt					Prot
Protected Phases				8	8		5	2			6	6
Permitted Phases							2					
Actuated Green, G (s)				28.5	28.5			35.0			35.0	35.0
Effective Green, g (s)				29.5	29.5			36.5			36.5	36.5
Actuated g/C Ratio				0.41	0.41			0.51			0.51	0.51
Clearance Time (s)				4.0	4.0			4.5			4.5	4.5
Vehicle Extension (s)				3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)				667	597			667			848	721
v/s Ratio Prot				c0.34	0.19						0.21	0.05
v/s Ratio Perm								c0.24				
v/c Ratio				0.84	0.48			0.47			0.42	0.11
Uniform Delay, d1				19.1	15.6			11.5			11.1	9.2
Progression Factor				1.00	1.00			0.80			1.00	1.00
Incremental Delay, d2				12.0	2.7			0.5			1.5	0.3
Delay (s)				31.1	18.3			9.7			12.6	9.5
Level of Service				C	B			A			B	A
Approach Delay (s)		0.0			26.8			9.7			12.1	
Approach LOS		A			C			A			B	

Intersection Summary			
HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	72.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	80.1%	ICU Level of Service	D

c Critical Lane Group

Appendix D

Future No-Build Traffic Conditions

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING/TRAFFIC ENGINEERING
610 SW ALDER, SUITE 700 • PORTLAND, OR 97205 • (503) 228-5230 • FAX (503) 273-8169

TECHNICAL MEMORANDUM

Glencoe Interchange Area Management Plan
Technical Memorandum #2
Year 2030 Forecast Future Conditions

Date: July 27, 2010 **Project** #: 7191

To: PMT / SWG Committees

From: Matt Hughart, AICP, Andrew Ooms, Marc Butorac, P.E., P.T.O.E.

cc: Glencoe Project Team

This technical memorandum is the second in a series of memorandums that are being prepared to support the development of the Glencoe Interchange Area Management Plan (IAMP) and the subsequent environmental analysis work. This memorandum documents the future baseline traffic conditions analysis under a "no-build" scenario. Specifically, this memorandum identifies how the 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[1] and no improvements to the transportation network beyond those currently identified in the adopted Washington County or City of North Plains Transportation System Plans.

Included in this memorandum is a description of future planned transportation infrastructure improvements within the study area, an assessment of forecast traffic growth through the year 2030, and an assessment of how the resulting traffic growth will impact the operations along the roadways and intersections located within the Glencoe IAMP study area.

FUTURE CONDITIONS STUDY AREA

The future conditions study area can be divided into the local study area, the regional study area, and the IAMP study area. The local study area is comprised of those land uses located within ½

[1] Year 2030 was selected as the planning horizon year for the Glencoe IAMP. This horizon year reflects the need to prepare a minimum twenty-year analysis as required by Oregon's Transportation Planning Rule and other federal regulations. Since the funds to construct improvements to the Highway 26/Glencoe interchange are not secure at this time, the four additional analysis years offer some flexibility and allow the plan to maintain its long-term standing while formal interchange improvement funding is being secured.

mile of the existing Glencoe interchange south of Highway 26 and those land uses located within the City of North Plain's city limits.

In addition to the local study area, 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.

The final study area is the Glencoe IAMP study area. While the focus of the local and regional study area is primarily concerned with future land use and the resulting traffic impacts of that land use, the IAMP study area is focused on the specific traffic impacts and property access conditions within the immediate vicinity of the interchange. At this stage of the planning process, the IAMP study area is not specifically defined as different interchange forms have not yet been developed. However, the basic parameters of the IAMP study area include all roadway infrastructure located within 1,320 feet of the interchange ramp terminals. This distance corresponds to the 1/4-mile spacing standard outlined in Oregon's OAR 734-051 Division 51 rules for interchange ramps. From these general parameters, Figure 2-1 illustrates the study area boundaries utilized in the future conditions analysis.

PLANNED TRANSPORTATION IMPROVEMENTS

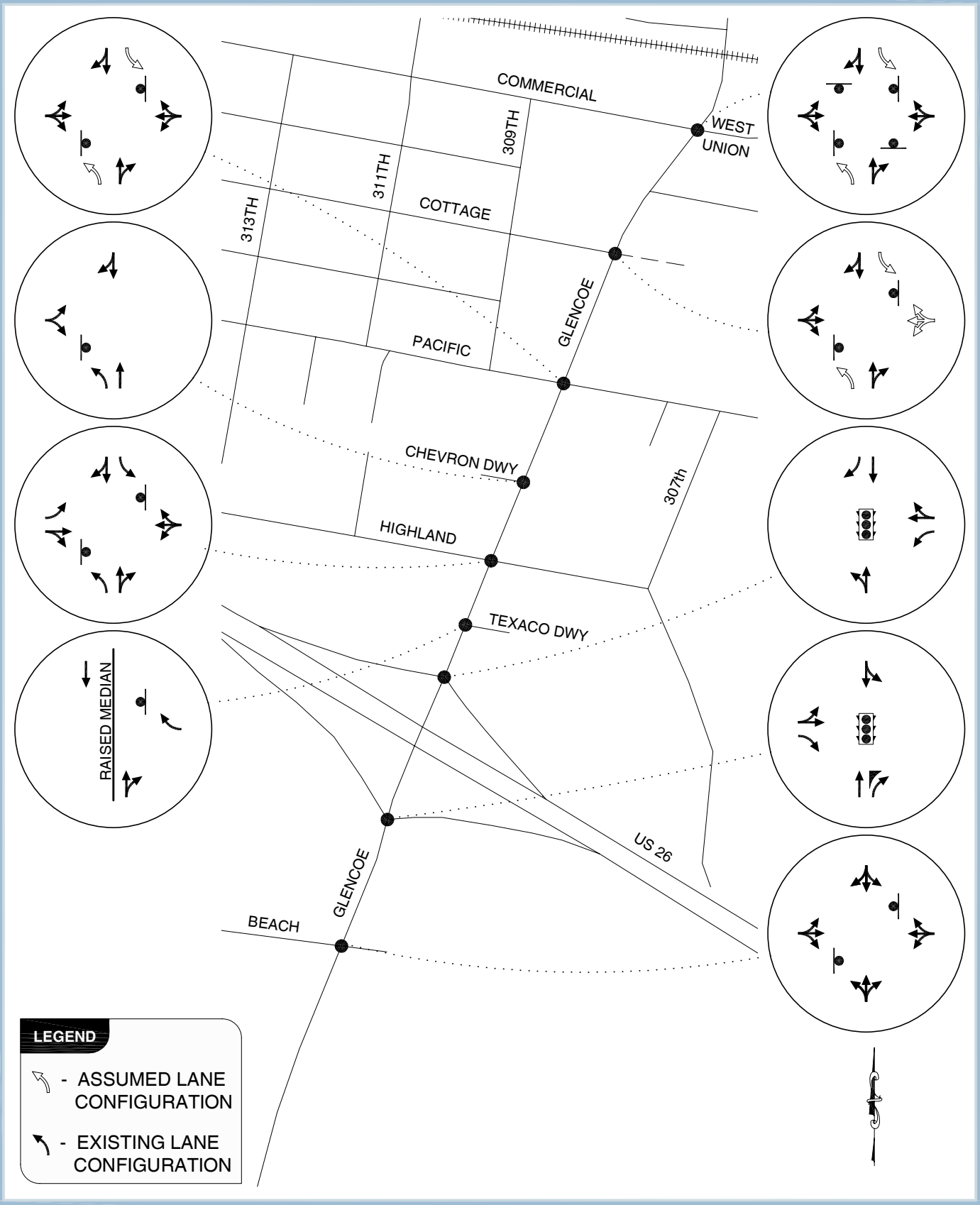
As documented in the City of North Plains and Washington County Transportation System Plans (TSP), there are a number of transportation improvement projects that have been identified within the Glencoe IAMP study area. These projects include overall improvements to the Highway 26/Glencoe Road interchange and ramps, widening improvements to Glencoe Road north of the Highway 26 interchange to the West Union Road/Commercial Street corridor, and intersection based improvements to several of the major roadway intersections along Glencoe Road north of the interchange. Of these projects, only Washington County's Glencoe Road widening project is funded at this time. The Highway 26/Glencoe Road interchange improvements will be re-evaluated as part of this IAMP project and the noted intersection improvement projects along Glencoe Road are likely to come about as a result of future development along the Glencoe Road corridor. As such, only the Glencoe Road widening project will be assumed as part of the future 2030 "no-build" traffic conditions analysis. Specific details regarding the scope of this project are outlined below.

The Glencoe Road widening project is a Washington County generated project that has been funded as part of the Major Streets Transportation Improvement Projects (MSTIP). This project involves a widening of Glencoe Road to a full three-lane cross section that includes one travel lane in each direction, a center left-turn lane, and sidewalks and bicycle lanes on both sides of the roadway. This widening is planned to occur along the section of Glencoe Road north of Highway 26 to just beyond the West Union Road/Commercial Street intersection. Figure 2-2 illustrates the resulting intersection configurations that are assumed to be in place for the "no-build" assessment of future traffic conditions.

GLENCOE RD

Glencoe Road IAMP
Study Area Boundary

Figure 2-1



Glencoe Road IAMP

Assumed Future Lane Configurations & Traffic Control Devices

Figure 2-2

Forest Grove/Cornelius-Sunset Highway Connection

In response to several comments regarding the issue of travel to/from Forest Grove/Cornelius and Highway 26, the following paragraphs provide a brief summary of Washington County's 1988 *Forest Grove/Cornelius-Sunset Highway Connection Study*.

Washington County's MSTIP program identifies and funds capital improvements to the County's transportation system. In order to determine the most effective use of MSTIP funds for improving a route from Cornelius and Forest Grove to Highway 26, Washington County completed the *Forest Grove/Cornelius-Sunset Highway Connection Study* in 1988. This study, which included technical and citizen advisory committees, identified eleven build alternatives for connecting these areas to Highway 26.

The results of the study, which were subsequently incorporated into Washington County's 1988 Transportation Plan, ended up focusing on the Glencoe interchange as the primary access point to Highway 26 and identified Glencoe Road, Zion Church Road, Cornelius/Schefflin Road and Martin Road as the most appropriate roads for arterial improvements to provide connections to Cornelius and Forest Grove from Highway 26.

With the inclusion of this study in the Transportation Plan and MSTIP program, the County invested in the Glencoe, Zion Church, Cornelius-Schefflin and Martin Roads corridor for capital improvements. Nearly all of these projects have been completed to date, with the exception of the widening of Cornelius-Schefflin Road (scheduled to begin in 2006). At this point in time, identification of an alternative route to provide primary access for Cornelius and Forest Grove would not be economically feasible nor responsive to previous formalized planning efforts that included extensive community participation.

FUTURE 2030 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 the North Plains city limits.
- Future traffic related to regional growth in the larger study area vicinity which includes among others 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 utilized in the development of the City's TSP and involves an assessment of traffic increases related to approved (in-process) developments and assumed infill developments. To account for traffic growth in the larger regional vicinity, the Washington County Regional Transportation Planning Model was utilized to develop growth rates for those movements that impact the Glencoe interchange and surrounding roadway network. A detailed explanation of the local and regional growth assessment areas is provided in the following sections.

Local Traffic Growth in the City of North Plains

Local traffic growth in the City of North Plains is anticipated to come from in-process developments and infill developments. For the purposes of this study, it is assumed that the City will achieve a reasonable level of maximum buildout in each of these areas as described in the following sections.

Approved/In-Process Development Traffic Growth

Through consultation with staff from the City of North Plains, a number of near-term development projects have been identified that are approved but not yet built within the existing city limits. These projects include six separate residential developments totaling 130 housing units, a large public storage unit, and a commercial retail development along Glencoe Road.

Using this information, a trip generation estimate was prepared for these in-process developments and the expected site-generated traffic was assigned to the study area roadways. Additional details regarding these development projects, trip generation estimates, and the resulting weekday a.m. and p.m. peak hour site-generated traffic volumes are provided in Appendix "A".

Infill Development Traffic Growth

Consistent with the North Plains TSP, this analysis effort recognizes that the potential exists for a significant number of additional housing units to be developed within the existing city limits in the form of infill development. Based on a review of the *North Plains Comprehensive Plan*, conversations with City staff, and building upon the analysis utilized in the North Plains TSP, it was determined that the City can accommodate an additional 270 housing units (not including the 130 in-process homes previously discussed) within the existing city limits[2]. Based on this assessment, a trip generation estimate was prepared for an assumed buildout of infill housing. Specific details regarding the infill residential development assumptions, trip generation estimates, and the resulting peak hour site-generated traffic volumes are provided in Appendix "B".

In addition to an anticipated increase in infill housing development within the existing city limits, this traffic forecasting effort also investigated the potential for commercial infill development, particularly along the Glencoe Road corridor. This commercially zoned corridor from Highway 26 to West Union Road is the main commercial hub for local residents and is also a major service provider for travelers along the Highway 26 corridor. To account for commercial infill growth, an analysis was performed along the Glencoe Road study corridor to determine a reasonable maximum buildout potential of those vacant or underutilized lands. To complete this analysis, information was obtained from aerial maps, tax lot records, and field visits. Based on this data, a review of the applicable zoning maps and development codes, and consultation with City staff, a conceptual future buildout map was developed for the commercially zoned properties along Glencoe Road that have the greatest potential for future development or redevelopment. Copies of these maps are also included in Appendix "B" along with the specific development assumptions, trip generation estimates, and peak hour site-generated traffic volumes.

[2] According to the City of North Plains Comprehensive Plan, there were 662 housing units located within the existing City limits in 2004 with room for an additional 400 infill housing units.

Along with an anticipated increase in infill housing and commercial development within the existing city limits, this traffic forecasting effort also investigated the potential for industrial infill development. Although difficult to accurately quantify the amount of industrial land that may be developed over the course of the planning horizon, a review of employment projections from recent studies and consultation with City staff suggests that the City could experience an additional 34.4 acres of new industrial development through the year 2030. Based on this projection, it was assumed that new industrial development would occur in the City's west and east side industrial corridors. Specific details regarding the infill industrial development assumptions, trip generation estimates, and the resulting peak hour site-generated traffic volumes are provided in Appendix "B".

Background Growth in Regional Through Traffic

As previously mentioned, the second form of traffic growth that will impact the US 26/Glencoe interchange and supporting roadway network is related to growth occurring in the larger regional vicinity. It is recognized that a portion of the residents in these surrounding communities utilize the Glencoe interchange for travel to/from the Highway 26 corridor. To account for this traffic growth in the larger regional vicinity, the Washington County Regional Transportation Planning model was utilized to help determine long-term growth rates for those movements that are primarily influenced by the presence of these regional urban environments.

Based on a review of the model outputs, it was determined that traffic volumes on Glencoe Road south of Highway 26 are estimated to grow at approximately 2 percent per year[3]. Other regional supporting roadways such as NW Mountaindale Road and NW Shadybrook Road were determined to grow at a more nominal 1 percent per year given that they primarily serve rural areas that are not anticipated to grow significantly. Using these growth rates, the existing weekday a.m. and p.m. peak hour turning movement counts at the appropriate US 26/Glencoe Road interchange terminals were factored accordingly.

FUTURE PEAK HOUR TRAFFIC VOLUMES

Future year 2030 weekday a.m. and p.m. 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. The resulting 2030 forecast weekday a.m. and p.m. peak hour traffic volumes are shown in Figures 2-3 and 2-4. It should be noted that these forecasts are somewhat conservative due to some overlap in traffic assignments between the residential and commercial/industrial developments assumed within the City of North Plains.

Intersection Operations Analysis

A traffic operations analysis was performed for the study intersections using the forecast traffic volumes shown in Figure 2-3 and 2-4. 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

[3] These growth rate assumptions include the impact of the new Jackson School Road interchange. Based on the model results, it is anticipated that the Jackson School Road interchange will serve as a significant alternative to the Glencoe interchange for regional travel between the central/westerly portions of the City of Hillsboro.

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 a.m. and p.m. peak hours.

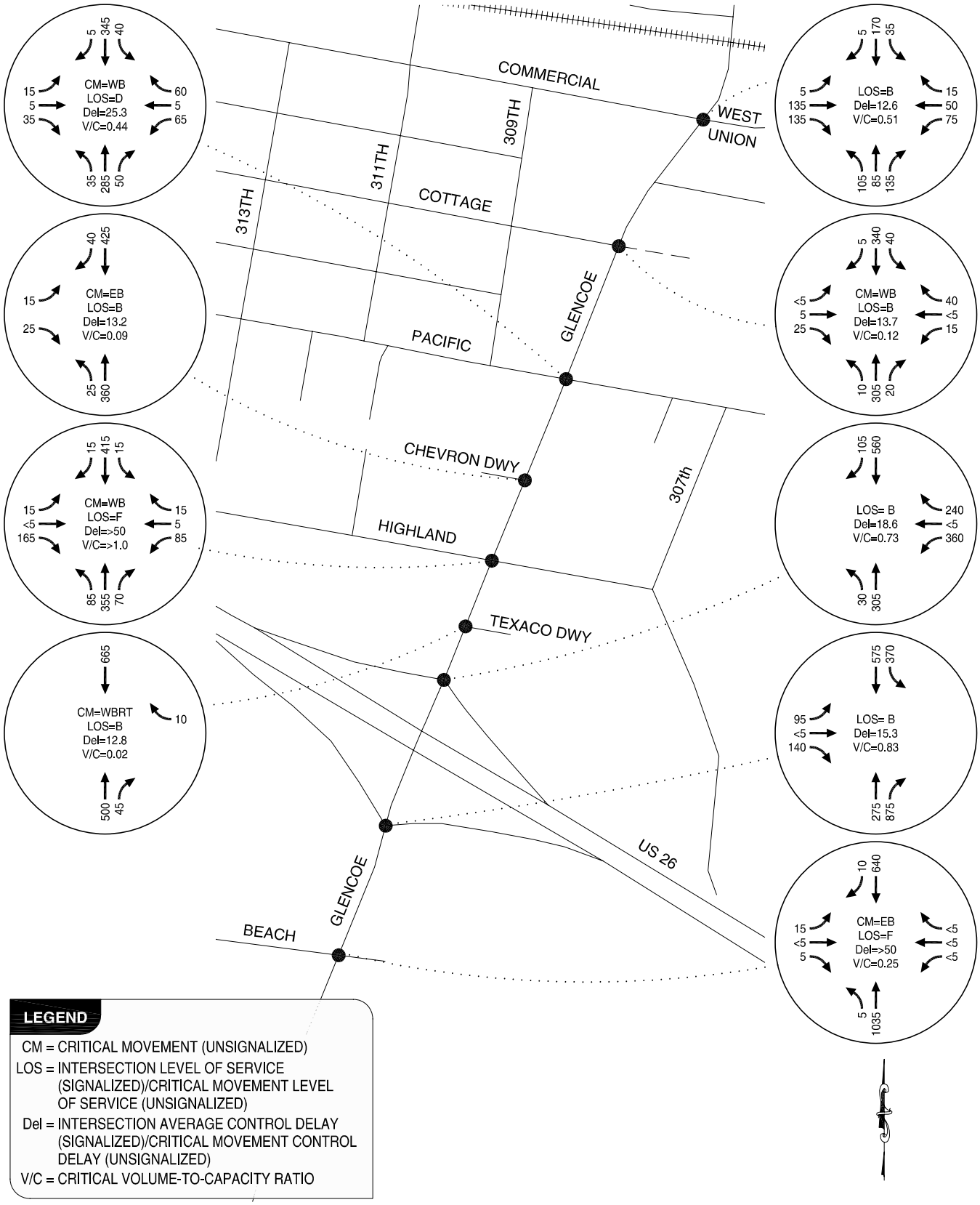
Table 2-1
Future Year Traffic Conditions, Weekday AM and PM Peak Hours

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 = 0.75
NW Pacific Street/ NW Glencoe Road	Unsignalized	WB = 0.05	WB = 0.44	WB = 0.09	WB = 0.85
Chevron Driveway/ NW Glencoe Road	Unsignalized	EB = 0.08	EB = 0.09	EB = 0.07	EB = 0.10
NW Highland Court/ NW Glencoe Road	Unsignalized	WB = 0.27	WB = 1.05	WB = 0.31	WB = 1.85
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 = 0.23	EB = 0.20	EB = 0.32

[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 a.m. and p.m. 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 a.m. and p.m. peak hours.

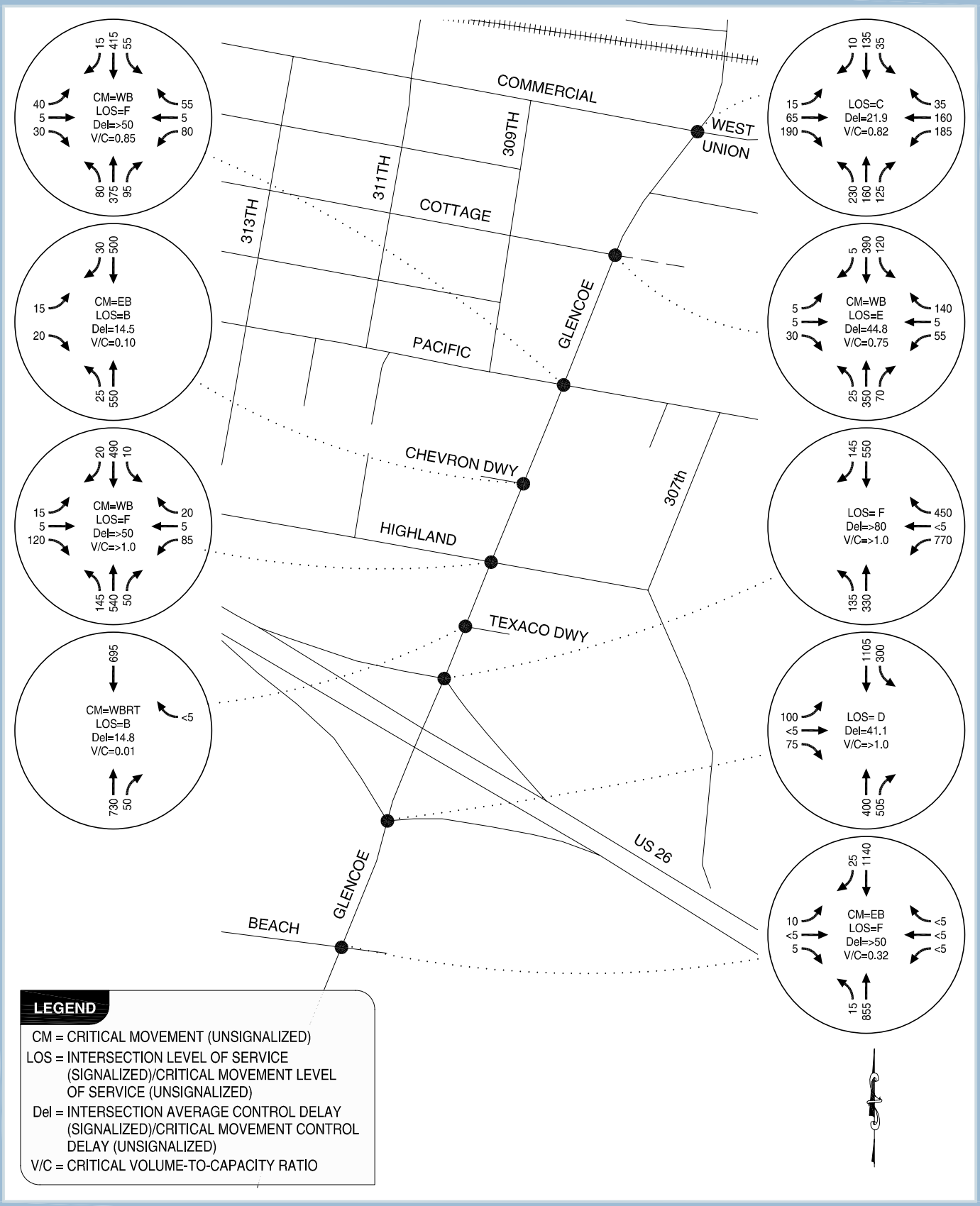
EB = critical eastbound approach
WB = critical westbound approach



Glencoe Road IAMP

2030 Total Traffic Conditions
Weekday AM Peak Hour

Figure 2-3



Glencoe Road IAMP

2030 Total Traffic Conditions
Weekday PM Peak Hour

Figure 2-4

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 a.m. and p.m. 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 to occur 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, this mitigation measure will be investigated in context with the various interchange and access alternatives that will be developed as part of the Glencoe IAMP.

US 26/Glencoe Road Ramp Terminals

Both the eastbound and westbound US 26/Glencoe Road ramp terminals are forecast to operate above capacity during the weekday p.m. 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.

Next Steps

The next phase of the Glencoe IAMP, *Alternatives Evaluation*, will investigate potential transportation improvement alternatives that will address these deficiencies and ensure that the overall transportation network will meet the needs of the study area through the 2030 horizon year.

Appendix A

In-Process
Developments

Appendix A

APPROVED/IN-PROCESS DEVELOPMENT TRAFFIC GROWTH

Through consultation with City staff, the following development projects have been approved but not yet built within the City of North Plains. These projects include a number of small to medium sized residential projects located throughout the City, and a commercial retail project located off of NW Glencoe Road. The specific size and location of each identified in-process development is outlined below.

- 10-unit single-family development located on the southwest corner of the NW Glencoe Road/NW North Avenue intersection.
- 12-unit single-family development located near the intersection of NW North Avenue/NW Main Street.
- 12-unit single-family attached development located near the corner of the NW 321st Avenue/NW Cottage Street intersection.
- 15-unit single-family development located along NW Highland Court midway between NW Glencoe Road and NW 313th Avenue.
- 26-unit single-family development located on the south side of NW West Union Road and east of NW Glencoe Road.
- 7,500 square-foot commercial retail development located west of NW Glencoe Road and between NW Pacific Street and NW Cottage Street. Of the 7,500 square feet, 2,500 will consist of a bank and the remainder will be miscellaneous commercial retail. To date, no specific tenants have been identified for the 5,000 square foot retail component.
- An 84,395 square-foot/430 unit public store development located in the east side of the city and north of West Union Road.
- 55-unit single-family residential development to be located in the northwest portion of the city near NW Gordon Road/NW North Avenue. It should be noted that this project is not yet formally approved by the City. However, it is being included in the in-process development list based on conversations with City staff.

Figure A-1 identifies the in-process developments and their respective locations within the City of North Plains. Though consultation with City staff, all of these projects are anticipated to be built within the immediate near-term future.

IN-PROCESS DEVELOPMENT KEY

- A 10 UNITS SINGLE FAMILY
- B 12 UNITS SINGLE FAMILY
- C 12 UNITS SINGLE FAMILY
- D 15 UNITS SINGLE FAMILY
- E 26 UNITS SINGLE FAMILY
- F 55 UNITS SINGLE FAMILY
- G 7,500 SQ FT SHOPPING CENTER / BANK
- H 84,395 SQ FT PUBLIC STORAGE

CITY OF NORTH PLAINS IN-PROCESS DEVELOPMENTS
NORTH PLAINS, OREGON

FIGURE **A-1**

Kittelson & Associates, Inc.
Transportation Engineering / Planning

To assess the cumulative impact of the in-process developments on the Glencoe interchange and study area intersections, estimates of daily, weekday a.m. and weekday p.m. peak hour trip ends were developed based on empirical observations at similar land uses. These observations are summarized in the standard reference Trip Generation 7th Edition, published by the Institute of Transportation Engineers. Table 2-2 summarizes the estimated trip generation for each of these in-process development projects.

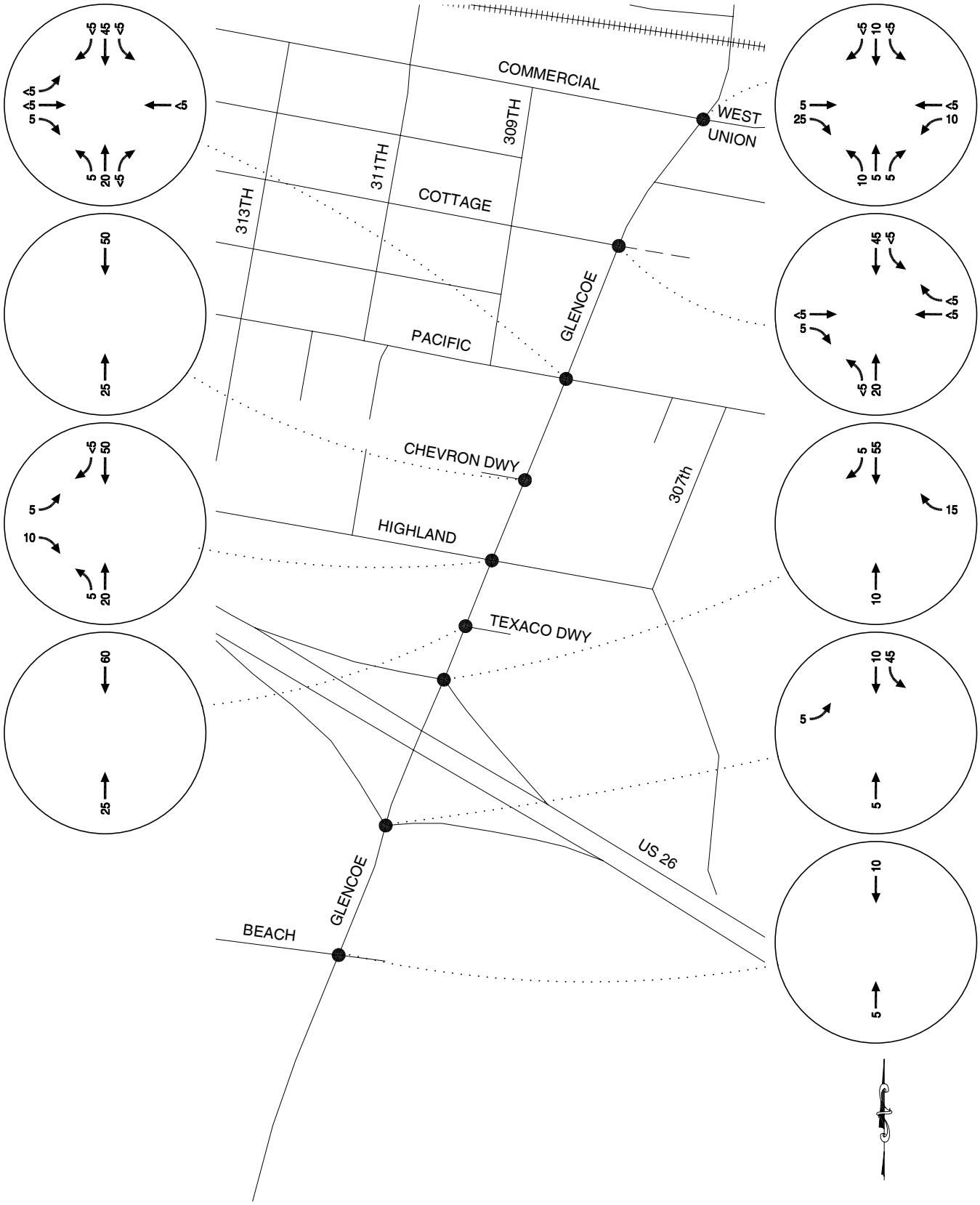
Table 2-2
In-Process Development Trip Generation Estimates

Land Use	ITE Code	Size (Units/ Sq. Ft.)	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Single-family residential	210	10	120	15	5	10	15	10	5
Single-family residential	210	12	150	20	5	15	15	10	5
Townhomes[1]	230	12	110	10	5	5	10	5	5
Single-family residential	210	15	180	20	5	15	20	10	10
Townhomes[1]	230	26	200	20	5	15	20	15	5
Single-family residential	210	55	600	45	10	35	60	40	20
Mini-Warehouse (Public Storage Unit)	151	84,395	210	15	10	5	20	10	10
Drive-thru Bank	912	2,500	620	30	15	15	115	55	60
Pass-By (47%)			*(290)*	*(10)*	*(5)*	*(5)*	*(50)*	*(25)*	*(25)*
Shopping Center	820	5,000	210	5	5	0	20	10	10
Total			**1,900**	**165**	**55**	**110**	**225**	**130**	**95**

[1] These residential development projects consist of single-family attached homes. For the purposes of the trip generation assessment, they were analyzed using the Townhome land use designation in the Trip Generation manual.

As shown in the table above, the identified in-process developments are anticipated to generate 1,900 net new daily trips of which 165 are estimated to occur during the weekday a.m. peak hour and 225 are estimated to occur during the weekday p.m. peak hour.

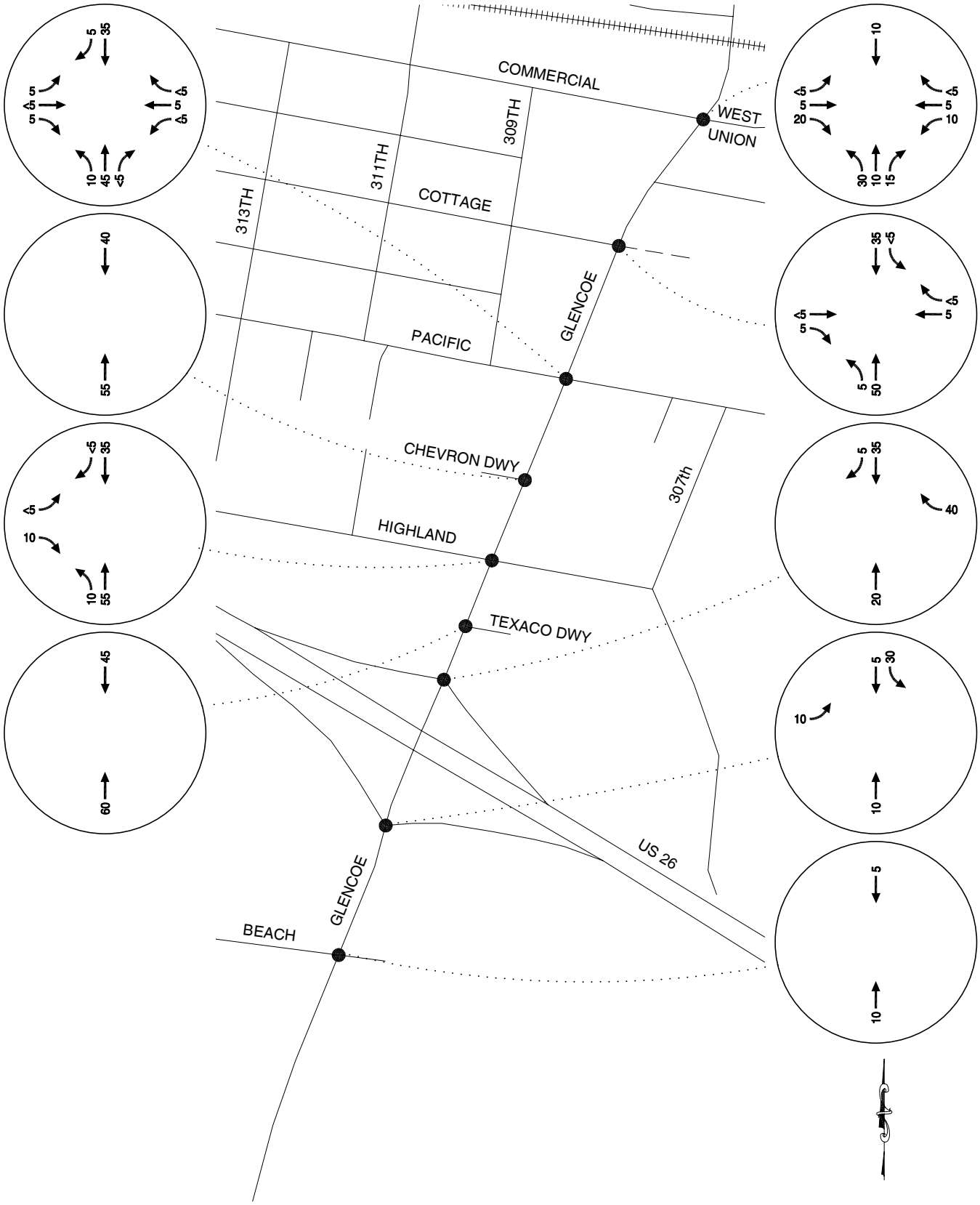
The estimated distribution pattern of site-generated trips associated with the in-process developments was determined through a review of existing traffic patterns, a review of the surrounding roadway network, and a select zone output from the Washington County Regional Transportation Planning model. The resulting in-process traffic volumes at the study area intersections during the weekday a.m. and p.m. peak hours are illustrated in Figures A-2 and A-3, respectively.



Glencoe Road IAMP

In-Process Site Generated Traffic Volumes
Weekday AM Peak Hour

Figure A-2



Glencoe Road IAMP

In-Process Site Generated Traffic Volumes
Weekday PM Peak Hour

Figure A-3

Appendix B

Residential,
Commercial, and
Industrial Infill
Development

Appendix B

Residential Infill Development

It is recognized that there is the potential for infill housing development within the existing North Plains city limits. A review of the North Plains Comprehensive Plan, conversations with City staff, and building upon the analysis utilized in the North Plains TSP, it was determined that the City can potentially accommodate an additional 270 housing units (not including the previously noted 130 in-process single-family homes) within the existing city limits through the horizon year of the plan. This figure is based on a review of the housing inventory information contained in the City's Comprehensive Plan.

Infill housing development can occur in the form of planned subdivisions on larger land parcels or in the form of small individual lots capable of supporting only a limited number of homes. Based on a review of tax lots and vacant/underdeveloped land parcels (obtained from a review of aerial photographs), assumptions have been made regarding the percentage of infill housing that can potentially take place within the existing City limits by different quadrants. These quadrants and housing infill development percentages are illustrated in Figure B-1. For conservative purposes, it was assumed that all new infill housing would occur in the form of single-family detached homes.

From this assessment, estimates of daily, weekday a.m., and weekday p.m. peak hour trip ends were developed based on empirical observations at similar residential land uses. These observations are summarized in the standard reference Trip Generation 7th Edition. Table 2-3 summarizes the estimated trip generation for each quadrant of infill housing as referenced in Figure B-1.

Table 2-3
Infill Housing Trip Generation Estimates

Land Use	ITE Code	Size (Units)	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Northwest Quadrant Single-family Residential	210	62	670	50	15	35	70	45	25
Northeast Quadrant Single-family Residential	210	10	100	10	0	10	10	5	5
Southeast Quadrant Single-family Residential	210	90	960	75	20	55	100	65	35
Southwest Quadrant Single-family Residential	210	108	1,120	85	20	65	115	70	45
Total Residential Infill			**2,850**	**220**	**55**	**165**	**295**	**185**	**110**

As shown in the table above, the assumed housing infill developments are anticipated to generate 2,850 net new daily trips of which 220 are estimated to occur during the weekday a.m. peak hour and 295 are estimated to occur during the weekday p.m. peak hour.

LEGEND

% ASSUMED PERCENTAGE OF INFILL HOMES

⟷ ASSUMED INGRESS/EGRESS POINTS

HOUSING INFILL DEVELOPMENT
NORTH PLAINS, OREGON

FIGURE **B-1**

Kittelson & Associates, Inc.
Transportation Engineering / Planning

Commercial Infill Development

The traffic forecasting effort also investigated the potential for commercial infill development along the Glencoe Road corridor from Highway 26 to West Union Road. This commercially zoned corridor is the main commercial hub for local residents and is also a major highway service area for travelers along the Highway 26 corridor.

To account for commercial infill growth, an analysis was performed along the Glencoe Road study corridor to determine a reasonable maximum buildout potential of any vacant or underdeveloped commercially zoned property. To complete this analysis, information was obtained from aerial maps, tax lot records, and field visits. Based on this data, a review of the applicable zoning maps and development codes, and consultation with City staff, a conceptual future buildout map was developed for the commercially zoned properties along Glencoe Road that have the greatest potential for future development or redevelopment. This map is illustrated in Figure B-2. As shown on the map, it was assumed for the purposes of this study that there could be the potential for a number of new commercial developments along the Glencoe study corridor that would serve both the existing and future residents of North Plains and highway travelers along Highway 26. These development assumptions include single-family sit-down restaurants, a motel, a large 120,000 shopping center that could potentially include a grocery store, a smaller 20,000 square foot shopping center, and a medical/dental office building[4].

[4] For the purposes of this study, it was assumed that the two sit-down restaurants would access off of Pacific Street. The 120,000 square foot shopping center would have access to Glencoe Road via a driveway connection at the Glencoe Road/NW Cottage Street intersection. In addition, it was also assumed that there would be an access driveway to NW Pacific Street and an access to an assumed improvement to NW Kaybern Street. The 20,000 square foot shopping center was also assumed to have access to NW Kaybern Street. The motel was assumed to have access to both Pacific Street and Highland Court while the medical/dental office was assumed to have access to Cottage Street. These access assumptions are consistent with Washington County's access spacing requirement of 600 feet along roadways such as Glencoe Road.

COMMERCIAL INFILL REDEVELOPMENT
NORTH PLAINS, OREGON

FIGURE **B-2**

Kittelson & Associates, Inc.
Transportation Engineering / Planning

Using these assumptions, estimates of daily, weekday a.m., and weekday p.m. peak hour trip ends of the infill commercial were developed based on empirical observations at similar land uses. These observations are summarized in the standard reference Trip Generation 7th Edition. Table 2-4 summarizes the estimated trip generation for each assumed commercial development.

Table 2-4
Infill Commercial Trip Generation Estimates

Land Use	ITE Code	Size (sq. ft.)	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Shopping Center	820	20,000	860	20	15	5	75	35	40
Pass-By (34%)			*(290)*	*(0)*	*(0)*	*(0)*	*(20)*	*(10)*	*(10)*
Shopping Center	820	120,000	5,150	125	75	50	450	215	235
Pass-By (34%)			*(1,750)*	*(40)*	*(20)*	*(20)*	*(150)*	*(75)*	*(75)*
High-Turnover Restaurant	932	5,000	640	55	30	25	55	35	20
Pass-By (50%)			*(320)*	*(0)*	*(0)*	*(0)*	*(30)*	*(15)*	*(15)*
Medical Dental Office	720	5,000	180	10	8	2	20	5	15
High-Turnover Restaurant	932	6,000	765	70	35	35	65	40	25
Pass-By (50%)			*(380)*	*(0)*	*(0)*	*(0)*	*(35)*	*(20)*	*(15)*
Motel	320	100 rooms	575	45	15	30	60	30	30
Total Commercial Infill			**5,430**	**285**	**158**	**127**	**490**	**240**	**250**

As shown in the table above, the assumed commercial infill developments are anticipated to generate 5,430 net new daily trips of which 285 are estimated to occur during the weekday a.m. peak hour and 490 are estimated to occur during the weekday p.m. peak hour.

Industrial Development

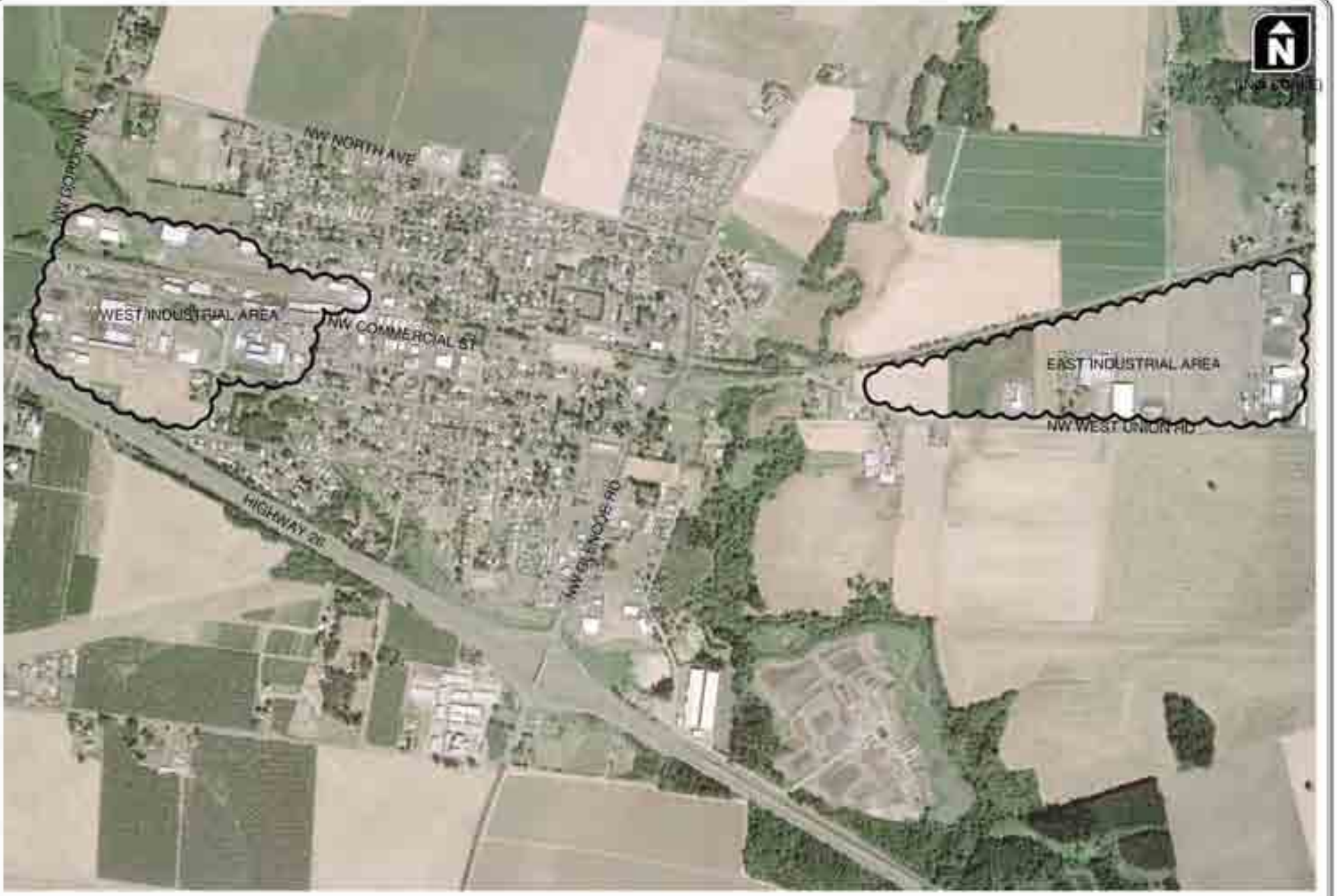
Due to varying market and land value conditions, it is difficult to forecast the amount of industrial land that may be developed over a long-term horizon year such as 2030. However, employment projections from recent studies[5] can be used in estimating industrial land need for the long-term planning horizon of this project. Based on this methodology, it has been determined that industrial development needs will grow at a rate of approximately 0.73 acres per year. At that rate, roughly 17.5 acres of industrial land could potentially be developed within the City through the 2030 planning horizon. In review of this methodology, City staff felt that there could be an additional 17 acres of industrial development when considering past trends, recent development proposals, and the presence of large undeveloped vacant parcels that have good regional access to Highway 26 via both Glencoe Road and Jackson School Road. For conservative purposes, it was subsequently assumed that there could be approximately 34.5 acres of new industrial development through the 2030 horizon year.

For the purposes of this study, it was assumed that 25 percent of the future industrial development would occur in the City's west side industrial zone. The other 75 percent was assumed to develop in the City's east side industrial zone. These assumptions were based in part on direction from City staff who indicated that the majority of large contiguous industrial zoned property is located in the east side industrial area. Figure B-3 conceptually illustrates the location of the assumed industrial growth within the City of North Plains.

After determining the approximate location of future industrial development within the City, additional assumptions were made regarding the size and type of industrial development. These assumptions include the following:

- Industrial development would consist of a mix of general light industrial and manufacturing uses as defined in the ITE Trip Generation manual.
- The size of future light industrial and manufacturing uses would be comparable in size and scale to existing industrial related uses currently located in the City (buildings less than 50,000 square feet in size).
- Industrial related uses would develop at a floor-to-area ratio (FAR) of approximately 30 percent.
- The size of vacant or underutilized parcels in the City's west side industrial zone would accommodate smaller industrial related uses on the order of 25,000 – 30,000 square feet.
- The size of vacant parcels in the City's east side industrial zone would accommodate larger industrial related uses on the order of 40,000 – 45,000 square feet.

[5] Employment growth in the City of North Plains was estimated based on population projections as outlined in the City's Comprehensive Plan. The determination of future industrial land needs to support the employment growth was based estimates prepared by Leland Consulting Group as part of the North Plains Neighboring Cities Study in 1997.



INDUSTRIAL INFILL DEVELOPMENT
NORTH PLAINS, OREGON

FIGURE **B-3**

Kittelson & Associates, Inc.
Transportation Engineering / Planning

Using this information, estimates of daily, weekday a.m., and weekday p.m. peak hour trip ends of industrial uses were developed based on empirical observations at similar land uses. These observations are summarized in the standard reference Trip Generation 7th Edition. Table 2-5 summarizes the estimated trip generation for each assumed industrial use.

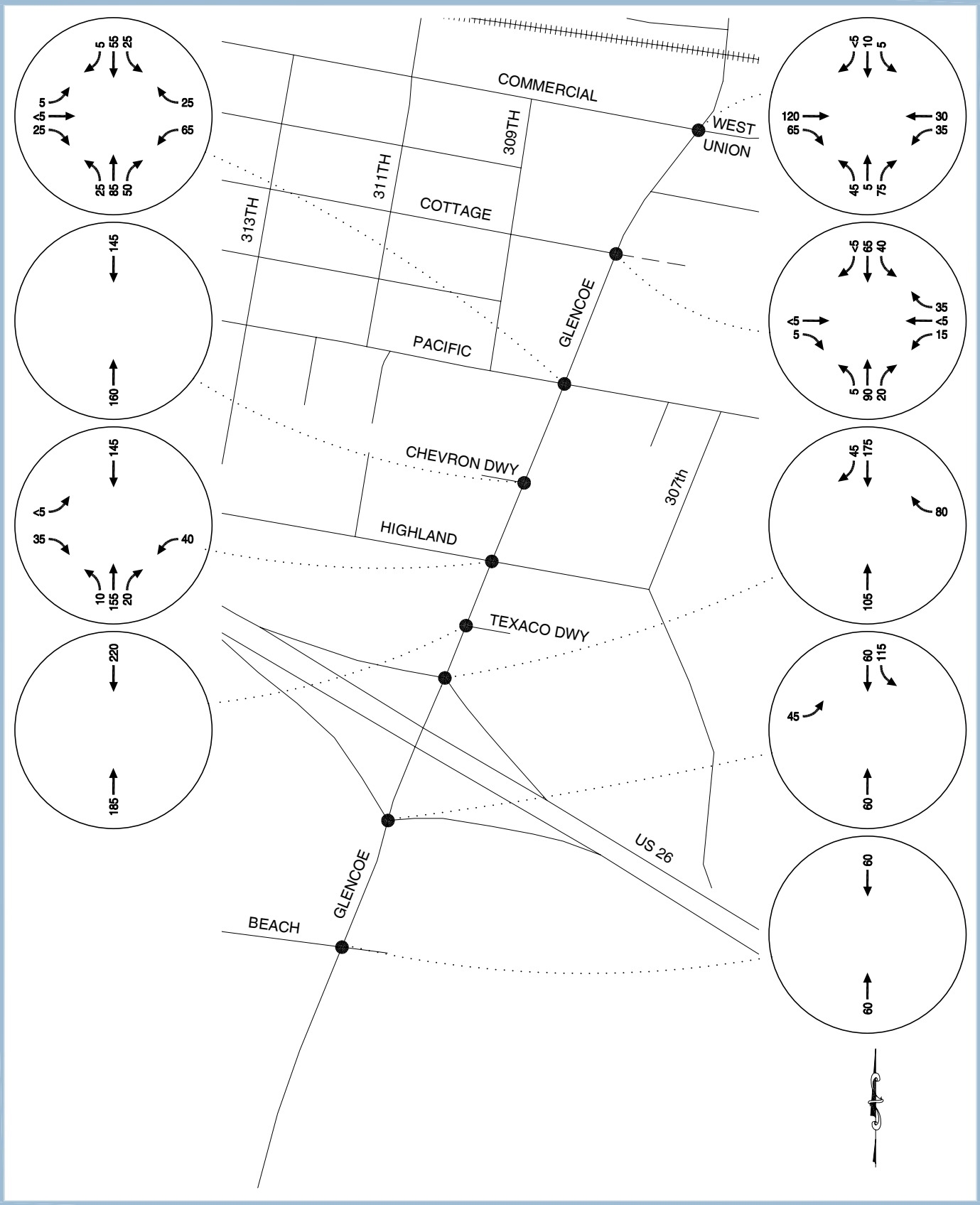
Table 2-5
Infill Industrial Trip Generation Estimates

Land Use	ITE Code	Size (sq. ft.)	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
West Side									
General Light Industrial	110	30,000	200	30	25	5	30	5	25
Manufacturing	140	25,000	100	20	15	5	20	5	15
East Side									
General Light Industrial	110	40,000	280	35	30	5	40	5	35
Manufacturing	140	45,000	170	30	25	5	35	10	25
Manufacturing	140	40,000	150	30	25	5	30	10	20
General Light Industrial	110	45,000	310	40	35	5	45	5	40
General Light Industrial	110	40,000	280	35	30	5	40	5	35
Manufacturing	140	45,000	170	30	25	5	35	10	25
Manufacturing	140	40,000	150	30	25	5	30	10	20
General Light Industrial	110	45,000	310	40	35	5	45	5	40
Total			**2,120**	**320**	**270**	**50**	**350**	**70**	**280**

As shown in the table above, the assumed industrial infill developments are anticipated to generate 2,120 net new daily trips of which 320 are estimated to occur during the weekday a.m. peak hour and 350 are estimated to occur during the weekday p.m. peak hour.

TOTAL INFILL TRAFFIC

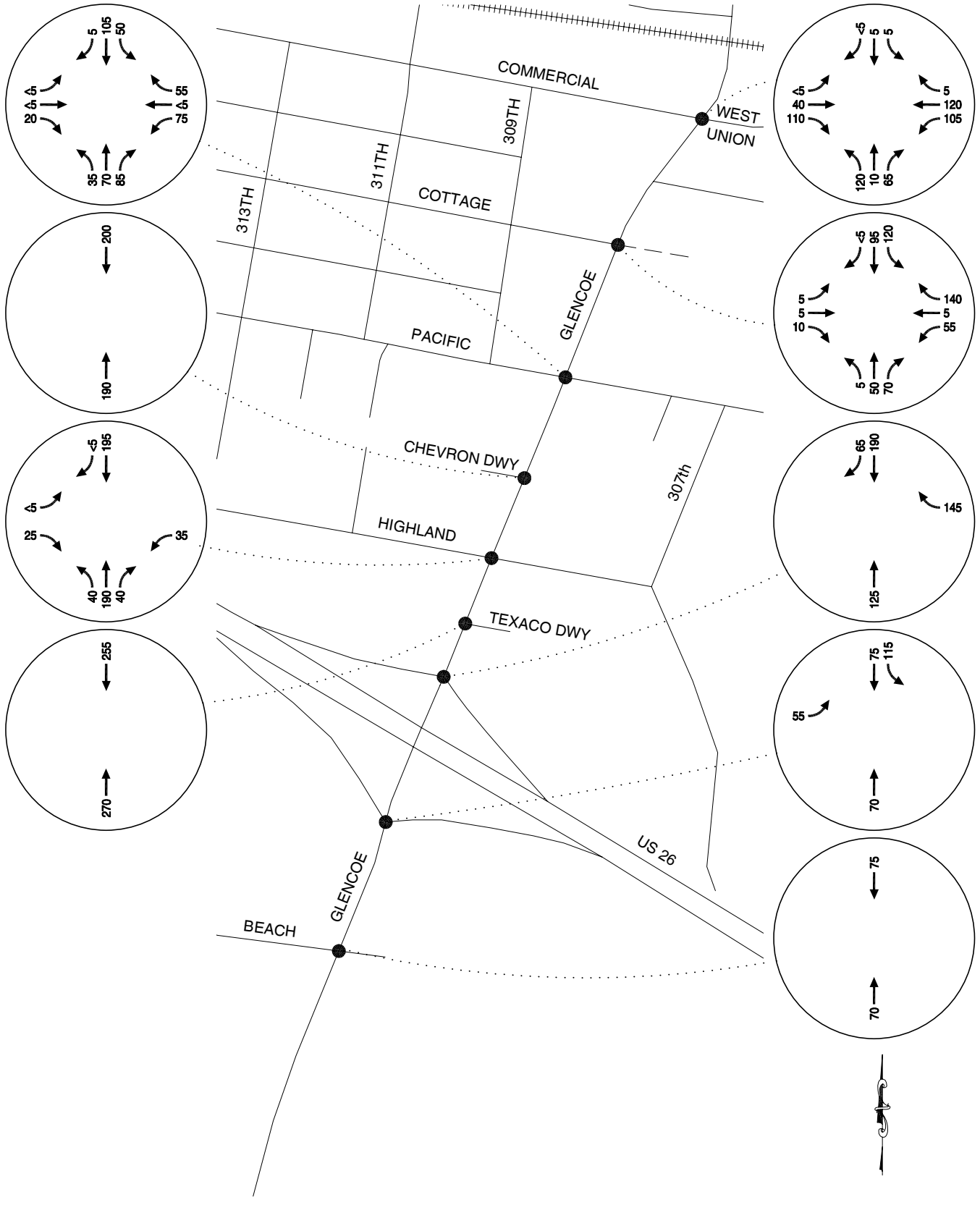
The previous sections outlined the future year development assumptions for residential, commercial, and industrial development within the City of North Plains. Based on these development assumptions and the estimated trip generation potential of each, Figures B-4 and B-5 illustrate the future site-generated traffic volumes at the study area intersections during the weekday a.m. and p.m. peak periods.



Glencoe Road IAMP

Infill Site Generated Traffic Volumes
Weekday AM Peak Hour

Figure B-4



Glencoe Road IAMP

Infill Site Generated Traffic Volumes
Weekday PM Peak Hour

Figure B-5

Appendix C

2030 Operational
Analysis Worksheets

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 NW Beach Rd/Glencoe Rd	E	46.3	0.000	F	59.1	0.000	+12.782 D/V
# 2 Hwy 26 EB ramps/Glencoe Rd	F	123.8	1.276	F	148.7	1.344	+24.886 D/V
# 3 Hwy 26 WB ramps/Glencoe Rd	C	23.1	0.752	D	46.5	1.009	+23.394 D/V
# 4 Texaco Dwy/Glencoe Rd	B	10.6	0.000	B	12.8	0.000	+ 2.142 D/V
# 5 NW Highland Ct/Glencoe Rd	C	20.2	0.000	F	172.3	0.000	+152.038 D/V
# 6 Chevron Dwy/Glencoe Rd	B	10.8	0.000	B	13.2	0.000	+ 2.357 D/V
# 7 NW Pacific St/Glencoe Rd	B	13.3	0.000	D	25.3	0.000	+12.008 D/V
# 8 NW Cottage St/Glencoe Rd	A	9.8	0.000	B	13.7	0.000	+ 3.877 D/V
# 9 NW Commercial/Glencoe Rd	A	8.9	0.245	B	12.6	0.514	+ 0.269 V/C

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 NW Beach Rd/Glencoe Rd

Average Delay (sec/veh): 0.7 Worst Case Level Of Service: F[59.1]

Street Name:	Glencoe Rd						NW Beach Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 1	0	0 0	0 0	0	1 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM												
Base Vol:	4	655	0	0	459	8	17	0	3	0	0	0
Growth Adj:	1.00	1.48	1.00	1.00	1.24	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	4	969	0	0	569	8	17	0	3	0	0	0
Added Vol:	0	66	0	0	69	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	4	1035	0	0	638	8	17	0	3	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	4	1150	0	0	709	9	19	0	3	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	4	1150	0	0	709	9	19	0	3	0	0	0
Critical Gap Module:												
Critical Gp:	4.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.6	6.3	7.1	6.5	6.2
FollowUpTim:	2.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	718	xxxx	xxxxx	xxxx	xxxx	xxxxx	1873	1873	714	1875	1877	1150
Potent Cap.:	865	xxxx	xxxxx	xxxx	xxxx	xxxxx	78	71	427	55	72	243
Move Cap.:	865	xxxx	xxxxx	xxxx	xxxx	xxxxx	77	70	427	55	72	243
Volume/Cap:	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	0.24	0.00	0.01	0.00	0.00	0.00
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	9.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	88	xxxxx	xxxx	0	xxxxx
SharedQueue:	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.9	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	9.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	59.1	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	A	*	*	*	*	*	*	F	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			59.1			xxxxxx		
ApproachLOS:	*			*			F			*		

Note: Queue reported is the number of cars per lane.

```
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am                          Tue Jul 27, 2010 14:25:07                 Page 6-1
-------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
                     Year 2030 No-Build Weekday AM Peak Hour
-------------------------------------------------------------------------------
                  Level Of Service Detailed Computation Report
                          2000 HCM Unsignalized Method
                            Future Volume Alternative
*******************************************************************************
Intersection #1 NW Beach Rd/Glencoe Rd
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
HevVeh:             6%               7%               5%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
-----------|----------------|----------------|----------------|----------------|
Upstream Signals:
Link Index:                        #2
Dist(miles):                       0.000
Speed (mph):                       45.00
SignalIndex:                       #2
Cycle Time:                            0 secs
InitVolume:                     0     0
Saturation:                     0     0
ArrivalType:                    0     0
G/C:                         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:                          0.000 0.000
gq1:                         0.00  0.00
gq2:                         0.00  0.00
gq:                          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:                             0.000
beta:                              0.000
ta (secs):                         0.000
F:                                 0.000
f:                          0.000 0.000
vcmax:                          0     0
vcg:                            0     0
vcmin:                          0     0
tp:                           0.0   0.0
p:                                 0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 718 xxxxx xxxxx    0 xxxxx xxxxx 1873  1873   714 1875  1877  1150
AdjCnflVol:  718 xxxxx xxxxx    0 xxxxx xxxxx 1873  1873   714 1875  1877  1150
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 718 xxxxx xxxxx    0 xxxxx xxxxx 1873  1873   714 1875  1877  1150
*** Computation 5: Capacity for Subject Movement During Unblocked Period
InitPotCap:  865 xxxxx xxxxx  900 xxxxx xxxxx   78    71   427   55    72   243
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000

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-------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
                     Year 2030 No-Build Weekday AM Peak Hour
-------------------------------------------------------------------------------
Potent Cap.: 865 xxxxx xxxxx  900 xxxxx xxxxx   78    71   427   55    72   243
```

```
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-------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
                     Year 2030 No-Build Weekday AM Peak Hour
-------------------------------------------------------------------------------
                         Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #4 Texaco Dwy/Glencoe Rd
*******************************************************************************
Average Delay (sec/veh):      0.1       Worst Case Level Of Service: B[ 12.8]
*******************************************************************************
Street Name:            Glencoe Rd                      Texaco Dwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  0  0  1  0    0  0  1  0  0    0  0  0  0  0    0  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:       0  288    44     0  386     0     0    0     0     0    0    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  288    44     0  386     0     0    0     0     0    0    10
Added Vol:      0  212     0     0  280     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0  500    44     0  666     0     0    0     0     0    0    10
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     0  556    49     0  740     0     0    0     0     0    0    11
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0  556    49     0  740     0     0    0     0     0    0    11
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   6.5
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   3.5
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   580
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   474
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   474
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  0.02
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   0.1
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  12.8
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     B
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx           xxxxxx             12.8
ApproachLOS:         *                *                *                B
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************

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-------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
                     Year 2030 No-Build Weekday AM Peak Hour
-------------------------------------------------------------------------------
                  Level Of Service Detailed Computation Report
                          2000 HCM Unsignalized Method
                           Future Volume Alternative
*******************************************************************************
Intersection #4 Texaco Dwy/Glencoe Rd
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             5%               8%               0%              25%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:       #5
Dist(miles):      0.000
Speed (mph):      35.00
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol:   0 xxxxx xxxxx    0 xxxxx xxxxx 1326  1344   740 1320  1320   580
AdjCnflVol:    0 xxxxx xxxxx    0 xxxxx xxxxx 1326  1344   740 1320  1320   580
```

```
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol:   0 xxxxx xxxxx    0 xxxxx xxxxx 1326  1344   740 1320  1320   580
*** Computation 5: Capacity for Subject Movement During Unblocked Period
InitPotCap:  900 xxxxx xxxxx  900 xxxxx xxxxx  134   153   420  155   141   474
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000

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-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
                    Year 2030 No-Build Weekday AM Peak Hour
-------------------------------------------------------------------------------
Potent Cap.: 900 xxxxx xxxxx  900 xxxxx xxxxx  134   153   420  155   141   474
```

```
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-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
                    Year 2030 No-Build Weekday AM Peak Hour
-------------------------------------------------------------------------------
                       Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #5 NW Highland Ct/Glencoe Rd
*******************************************************************************
Average Delay (sec/veh):     17.8       Worst Case Level Of Service: F[172.3]
*******************************************************************************
Street Name:            Glencoe Rd                      NW Highland Ct
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:      71  177    50    16  222    16    12    1   116    48    4    16
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   71  177    50    16  222    16    12    1   116    48    4    16
Added Vol:     15  179    18     0  192     1     4    0    49    39    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   86  356    68    16  414    17    16    1   165    87    4    16
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    96  396    76    18  460    19    18    1   183    97    4    18
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   96  396    76    18  460    19    18    1   183    97    4    18
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.2  6.6   6.3
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.6  4.1   3.4
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  479 xxxx xxxxx   471 xxxx xxxxx  1141 1167   469  1222 1139   433
Potent Cap.: 1078 xxxx xxxxx  1075 xxxx xxxxx   178  194   594   153  197   612
Move Cap.:   1078 xxxx xxxxx  1075 xxxx xxxxx   156  173   594    97  177   612
Volume/Cap:  0.09 xxxx  xxxx  0.02 xxxx  xxxx  0.11 0.01  0.31  1.00 0.03  0.03
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.3 xxxx xxxxx   0.1 xxxx xxxxx   0.4 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.7 xxxx xxxxx   8.4 xxxx xxxxx  31.0 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     A    *     *     D    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   585  xxxx  113 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   1.3 xxxxx  7.1 xxxxx
```

```
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  14.0 xxxxx  172 xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     B     *    F     *
ApproachDel:    xxxxxx           xxxxxx             15.5            172.3
ApproachLOS:         *                *               C                F
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************

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am                        Tue Jul 27, 2010 14:25:07                Page 14-1
-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
                    Year 2030 No-Build Weekday AM Peak Hour
-------------------------------------------------------------------------------
                 Level Of Service Detailed Computation Report
                         2000 HCM Unsignalized Method
                           Future Volume Alternative
*******************************************************************************
Intersection #5 NW Highland Ct/Glencoe Rd
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
HevVeh:             3%               5%               2%               7%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
-----------|----------------|----------------|----------------|----------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.000 ( 0.031)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 479 xxxxx xxxxx  471 xxxxx xxxxx 1141  1167   469 1222  1139   433
AdjCnflVol:  479 xxxxx xxxxx  471 xxxxx xxxxx 1141  1167   469 1222  1139   433
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 479 xxxxx xxxxx  471 xxxxx xxxxx 1141  1167   469 1222  1139   433
*** Computation 5: Capacity for Subject Movement During Unblocked Period
InitPotCap: 1078 xxxxx xxxxx 1075 xxxxx xxxxx  178   194   594  153   197   612
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000

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-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #7191
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-------------------------------------------------------------------------------
Potent Cap.:1078 xxxxx xxxxx 1075 xxxxx xxxxx  178   194   594  153   197   612
```

```
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-------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
                     Year 2030 No-Build Weekday AM Peak Hour
-------------------------------------------------------------------------------
                       Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #6 Chevron Dwy/Glencoe Rd
*******************************************************************************
Average Delay (sec/veh):      0.8       Worst Case Level Of Service: B[ 13.2]
*******************************************************************************
Street Name:            Glencoe Rd                      Chevron Dwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  1  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:      25  180     0     0  229    39    16    0    23     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   25  180     0     0  229    39    16    0    23     0    0     0
Added Vol:      0  182     0     0  194     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   25  362     0     0  423    39    16    0    23     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    28  402     0     0  470    43    18    0    26     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   28  402     0     0  470    43    18    0    26     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.2 xxxx xxxxx xxxxx xxxx xxxxx   6.5  6.6   6.3 xxxxx xxxx xxxxx
FollowUpTim:  2.3 xxxx xxxxx xxxxx xxxx xxxxx   3.6  4.1   3.4 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  513 xxxx xxxxx  xxxx xxxx xxxxx   949  949   492  xxxx xxxx xxxxx
Potent Cap.: 1027 xxxx xxxxx  xxxx xxxx xxxxx   281  253   563  xxxx xxxx xxxxx
Move Cap.:   1027 xxxx xxxxx  xxxx xxxx xxxxx   275  246   563  xxxx xxxx xxxxx
Total Cap:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   401  358 xxxxx   344  356 xxxxx
Volume/Cap:  0.03 xxxx  xxxx  xxxx xxxx  xxxx  0.04 0.00  0.05  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  483 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.3 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 13.2 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             13.2           xxxxxx
ApproachLOS:         *                *                B                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.

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-------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
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-------------------------------------------------------------------------------
                  Level Of Service Detailed Computation Report
                          2000 HCM Unsignalized Method
                           Future Volume Alternative
*******************************************************************************
Intersection #6 Chevron Dwy/Glencoe Rd
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:              7%               6%               9%               0%
Grade:               0%               0%               0%               0%
Peds/Hour:           0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.000 ( 0.031)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
```

```
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 513 xxxxx xxxxx    0 xxxxx xxxxx  949   949   492  962   971   402
AdjCnflVol:  513 xxxxx xxxxx    0 xxxxx xxxxx  949   949   492  962   971   402
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 513 xxxxx xxxxx    0 xxxxx xxxxx  949   949   492  962   971   402
*** Computation 5: Capacity for Subject Movement During Unblocked Period
InitPotCap: 1027 xxxxx xxxxx  900 xxxxx xxxxx  281   253   563  237   255   652
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000

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-------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project #7191
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-------------------------------------------------------------------------------
Potent Cap.:1027 xxxxx xxxxx  900 xxxxx xxxxx  281   253   563  237   255   652
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance [Median Type: TWLTL][Median Storage: 1 car]
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage One Module:
InitCfltVol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  492   492 xxxxx  458   458 xxxxx
UpstreamSat:xxxx xxxxx xxxxx xxxx xxxxx xxxxx    0     0 xxxxx    0     0 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Cnflict Vol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  492   492 xxxxx  458   458 xxxxx
InitPotCap: xxxx xxxxx xxxxx xxxx xxxxx xxxxx  601   536 xxxxx  587   571 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Potent Cap.:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  601   536 xxxxx  587   571 xxxxx
Move Cap.:  xxxx xxxxx xxxxx xxxx xxxxx xxxxx  601   536 xxxxx  571   555 xxxxx
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage Two Module:
InitCfltVol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  458   458 xxxxx  504   513 xxxxx
UpstreamSat:xxxx xxxxx xxxxx xxxx xxxxx xxxxx    0     0 xxxxx    0     0 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Cnflict Vol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  458   458 xxxxx  504   513 xxxxx
InitPotCap: xxxx xxxxx xxxxx xxxx xxxxx xxxxx  623   555 xxxxx  554   539 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Potent Cap.:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  623   555 xxxxx  554   539 xxxxx
Move Cap.:  xxxx xxxxx xxxxx xxxx xxxxx xxxxx  606   540 xxxxx  528   539 xxxxx

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                  Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
                     Year 2030 No-Build Weekday AM Peak Hour
-------------------------------------------------------------------------------
                       Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #7 NW Pacific St/Glencoe Rd
*******************************************************************************
Average Delay (sec/veh):      5.0       Worst Case Level Of Service: D[ 25.3]
*******************************************************************************
Street Name:            Glencoe Rd                     NW Pacific St
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  0  1  0    1  0  0  1  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:       8  178     0    13  245     0     7    5     2     4    2    34
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    8  178     0    13  245     0     7    5     2     4    2    34
Added Vol:     25  105    52    25   99     5     6    2    32    63    1    24
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   33  283    52    38  344     5    13    7    34    67    3    58
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    37  314    58    42  382     6    14    8    38    74    3    64
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   37  314    58    42  382     6    14    8    38    74    3    64
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.2 xxxx xxxxx   4.1 xxxx xxxxx   7.2  6.6   6.3   7.2  6.6   6.3
FollowUpTim:  2.3 xxxx xxxxx   2.2 xxxx xxxxx   3.6  4.1   3.4   3.6  4.1   3.4
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  388 xxxx xxxxx   372 xxxx xxxxx   920  915   385   909  889   343
Potent Cap.: 1144 xxxx xxxxx  1175 xxxx xxxxx   239  261   637   250  276   686
Move Cap.:   1144 xxxx xxxxx  1175 xxxx xxxxx   204  243   637   217  258   686
Volume/Cap:  0.03 xxxx  xxxx  0.04 xxxx  xxxx  0.07 0.03  0.06  0.34 0.01  0.09
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
```

```
2Way95thQ:    0.1 xxxx xxxxx   0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.3 xxxx xxxxx   8.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  370 xxxxx  xxxx  317 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.6 xxxxx xxxxx  2.2 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 16.6 xxxxx xxxxx 25.3 xxxxx
Shared LOS:     *    *     *     *    *     *     *    C     *     *    D     *
ApproachDel:    xxxxxx           xxxxxx             16.6             25.3
ApproachLOS:         *                *               C               D
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************

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-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
                    Year 2030 No-Build Weekday AM Peak Hour
-------------------------------------------------------------------------------
                 Level Of Service Detailed Computation Report
                         2000 HCM Unsignalized Method
                           Future Volume Alternative
*******************************************************************************
Intersection #7 NW Pacific St/Glencoe Rd
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
HevVeh:             7%               4%              14%               8%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
-----------|----------------|----------------|----------------|----------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.000 ( 0.031)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:              0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 388 xxxxx xxxxx  372 xxxxx xxxxx  920   915   385  909   889   343
AdjCnflVol:  388 xxxxx xxxxx  372 xxxxx xxxxx  920   915   385  909   889   343
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 388 xxxxx xxxxx  372 xxxxx xxxxx  920   915   385  909   889   343
*** Computation 5: Capacity for Subject Movement During Unblocked Period
InitPotCap: 1144 xxxxx xxxxx 1175 xxxxx xxxxx  239   261   637  250   276   686
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000

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-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #7191
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-------------------------------------------------------------------------------
Potent Cap.:1144 xxxxx xxxxx 1175 xxxxx xxxxx  239   261   637  250   276   686
```

```
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-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
                     Year 2030 No-Build Weekday AM Peak Hour
-------------------------------------------------------------------------------
                          Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #8 NW Cottage St/Glencoe Rd
*******************************************************************************
Average Delay (sec/veh):      1.9       Worst Case Level Of Service: B[ 13.7]
*******************************************************************************
Street Name:            Glencoe Rd                      NW Cottage St
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  0  1  0    1  0  0  1  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:       2  196     0     0  230     1     1    0    16     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    2  196     0     0  230     1     1    0    16     0    0     0
Added Vol:      8  117     8    31  118     2     0    3     9     4    1    28
PasserByVol:    0  -10    10    10  -10     0     0    0     0    10    0    10
Initial Fut:   10  303    18    41  338     3     1    3    25    14    1    38
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    11  337    20    46  376     3     1    3    28    16    1    42
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   11  337    20    46  376     3     1    3    28    16    1    42
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.2 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.3 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  379 xxxx xxxxx   357 xxxx xxxxx   859  847   377   853  839   347
Potent Cap.: 1158 xxxx xxxxx  1186 xxxx xxxxx   279  301   674   281  304   701
Move Cap.:   1158 xxxx xxxxx  1186 xxxx xxxxx   252  287   674   258  290   701
Volume/Cap:  0.01 xxxx  xxxx  0.04 xxxx  xxxx  0.00 0.01  0.04  0.06 0.00  0.06
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx   0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.1 xxxx xxxxx   8.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  563 xxxxx  xxxx  473 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.2 xxxxx xxxxx  0.4 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 11.8 xxxxx xxxxx 13.7 xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     *    B     *
ApproachDel:    xxxxxx           xxxxxx             11.8             13.7
ApproachLOS:         *                *                B                B
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************

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-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #7191
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                     Year 2030 No-Build Weekday AM Peak Hour
-------------------------------------------------------------------------------
                  Level Of Service Detailed Computation Report
                          2000 HCM Unsignalized Method
                            Future Volume Alternative
*******************************************************************************
Intersection #8 NW Cottage St/Glencoe Rd
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
HevVeh:             6%               5%               0%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
-----------|----------------|----------------|----------------|----------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.000 ( 0.031)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
```

```
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 379 xxxxx xxxxx  357 xxxxx xxxxx  859   847   377  853   839   347
AdjCnflVol:  379 xxxxx xxxxx  357 xxxxx xxxxx  859   847   377  853   839   347
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 379 xxxxx xxxxx  357 xxxxx xxxxx  859   847   377  853   839   347
*** Computation 5: Capacity for Subject Movement During Unblocked Period
InitPotCap: 1158 xxxxx xxxxx 1186 xxxxx xxxxx  279   301   674  281   304   701
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
```



```
Potent Cap.:1158 xxxxx xxxxx 1186 xxxxx xxxxx  279   301   674  281   304   701
```



```
Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)
*******************************************************************************
Intersection #9 NW Commercial/Glencoe Rd
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.514
Loss Time (sec):       0 (Y+R=4.0 sec)  Average Delay (sec/veh):        12.6
Optimal Cycle:         0                Level Of Service:                 B
*******************************************************************************
Street Name:            Glencoe Rd                 NW Commercial/West Union
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  0  1  0    1  0  0  1  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:      51   77    55    27  151     2     4   12    44    31   16    15
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   51   77    55    27  151     2     4   12    44    31   16    15
Added Vol:     55    8    80     7   20     2     1  125    92    46   32     1
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  106   85   135    34  171     4     5  137   136    77   48    16
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:   118   94   150    38  190     4     6  152   151    86   53    18
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  118   94   150    38  190     4     6  152   151    86   53    18
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  118   94   150    38  190     4     6  152   151    86   53    18
```

```
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.39  0.61  1.00 0.98  0.02  0.02 0.49  0.49  0.55 0.34  0.11
Final Sat.:   506  225   357   490  516    12    11  296   294   287  179    60
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.23 0.42  0.42  0.08 0.37  0.37  0.51 0.51  0.51  0.30 0.30  0.30
Crit Moves:             ****       ****              ****              ****
Delay/Veh:   11.5 12.5  12.5  10.2 12.5  12.5  14.0 14.0  14.0  11.7 11.7  11.7
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  11.5 12.5  12.5  10.2 12.5  12.5  14.0 14.0  14.0  11.7 11.7  11.7
LOS by Move:    B    B     B     B    B     B     B    B     B     B    B     B
ApproachDel:      12.2             12.1             14.0             11.7
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       12.2             12.1             14.0             11.7
LOS by Appr:         B                B                B                B
AllWayAvgQ:   0.3  0.6   0.6   0.1  0.5   0.5   0.9  0.9   0.9   0.3  0.3   0.3
*******************************************************************************
```

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```
am                          Tue Jul 27, 2010 14:25:07                Page 21-2
-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
                    Year 2030 No-Build Weekday AM Peak Hour
-------------------------------------------------------------------------------
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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```
am                          Tue Jul 27, 2010 14:25:07                Page 22-1
-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
                    Year 2030 No-Build Weekday AM Peak Hour
-------------------------------------------------------------------------------
                 Level Of Service Detailed Computation Report
                          2000 HCM 4-Way Stop Method
                           Future Volume Alternative
*******************************************************************************
Intersection #9 NW Commercial/Glencoe Rd
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
Time Period: 0.25 hour
HevVeh:             7%               4%              10%              13%
Alpha Value: 0.01
-----------|----------------|----------------|----------------|----------------|
GroupType:          5                5                2                2
P[C1]:            0.22             0.17             0.20             0.14
P[C2]:            0.15             0.20             0.08             0.14
P[C3]:            0.30             0.23             0.37             0.26
P[C4]:            0.28             0.33             0.29             0.36
P[C5]:            0.05             0.07             0.06             0.10
Padj[C1]:         0.018            0.019            0.019            0.021
Padj[C2]:         0.009            0.009            0.010            0.011
Padj[C3]:        -0.005           -0.002           -0.007           -0.002
Padj[C4]:        -0.016           -0.019           -0.017           -0.020
Padj[C5]:        -0.005           -0.007           -0.006           -0.010
-----------|----------------|----------------|----------------|----------------|
Lanes:          L1      L2       L1      L2       L1      L2       L1      L2
LaneType:     LEFT   RTTHRU    LEFT   RTTHRU    LTR    NOLANE    LTR    NOLANE
-----------|----------------|----------------|----------------|----------------|
HeadwayAdj:    0.619  -0.311    0.568   0.052   -0.120  xx.xxx    0.262  xx.xxx
Volume:         118     244       38     194      309  xxxxxx      157  xxxxxx
Capacity:       506     583      490     528      601   xxxxx      525   xxxxx
```

```
DegOfUtil:     0.22    0.40     0.07    0.35     0.49    x.xx     0.28    x.xx
DepHeadway:    6.83    5.90     6.95    6.43     5.69   xx.xx     6.34   xx.xx
ServiceTime:   4.5     3.6      4.6     4.1      3.7    xx.x      4.3    xx.x
Delay:        11.5    12.5     10.2    12.5     14.0   xxx.x     11.7   xxx.x
Queue:         0.3     0.6      0.1     0.5      0.9   xxx.x      0.3   xxx.x
-----------|---------------|---------------|---------------|---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
-----------|---------------|---------------|---------------|---------------|
ApproachDel:     12.2             12.1             14.0             11.7
Delay Adj:       1.00             1.00             1.00             1.00
ApprAdjDel:      12.2             12.1             14.0             11.7
LOS by Appr:       B                B                B                B
OverallDel:                                  12.6
OverallLOS:                                    B
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday PM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/Veh	Base V/C	Future LOS	Future Del/Veh	Future V/C	Change in
# 1 NW Beach Rd/Glencoe Rd	F	70.6	0.000	F	96.1	0.000	+25.423 D/V
# 2 Hwy 26 EB ramps/Glencoe Rd	E	72.8	1.135	F	138.6	1.797	+65.829 D/V
# 3 Hwy 26 WB ramps/Glencoe Rd	E	70.7	1.104	F	130.2	1.302	+59.469 D/V
# 4 Texaco Dwy/Glencoe Rd	B	11.0	0.000	B	14.8	0.000	+ 3.776 D/V
# 5 NW Highland Ct/Glencoe Rd	D	26.1	0.000	F	538.1	0.000	+511.943 D/V
# 6 Chevron Dwy/Glencoe Rd	B	11.3	0.000	B	14.5	0.000	+ 3.259 D/V
# 7 NW Pacific St/Glencoe Rd	C	15.9	0.000	F	82.9	0.000	+66.955 D/V
# 8 NW Cottage St/Glencoe Rd	B	10.6	0.000	E	44.8	0.000	+34.152 D/V
# 9 NW Commercial/Glencoe Rd	A	9.5	0.299	C	21.9	0.816	+ 0.517 V/C

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
*******************************************************************************
Intersection #1 NW Beach Rd/Glencoe Rd
*******************************************************************************
Average Delay (sec/veh):      0.8       Worst Case Level Of Service: F[ 96.1]
*******************************************************************************
Street Name:            Glencoe Rd                        NW Beach Rd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  1  0  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:      17  625     0     0  715    24    11    0     5     0    0     0
Growth Adj:  1.00 1.24  1.00  1.00 1.48  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   17  775     0     0 1058    24    11    0     5     0    0     0
Added Vol:      0   78     0     0   80     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   17  853     0     0 1138    24    11    0     5     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    19  948     0     0 1265    27    12    0     6     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   19  948     0     0 1265    27    12    0     6     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
```

```
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.5  6.6   6.3   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.6  4.1   3.4   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1291 xxxx xxxxx  xxxx xxxx xxxxx  2264 2264  1278  2266 2277   948
Potent Cap.:  537 xxxx xxxxx  xxxx xxxx xxxxx    44   40   199    29   41   319
Move Cap.:    537 xxxx xxxxx  xxxx xxxx xxxxx    42   38   199    28   39   319
Volume/Cap:  0.04 xxxx  xxxx  xxxx xxxx  xxxx  0.29 0.00  0.03  0.00 0.00  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del: 11.9 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    B    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx   56 xxxxx  xxxx    0 xxxxx
SharedQueue:  0.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.1 xxxxx xxxxx xxxx xxxxx
Shrd ConDel: 11.9 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 96.1 xxxxx xxxxx xxxx xxxxx
Shared LOS:     B    *     *     *    *     *     *    F     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             96.1           xxxxxx
ApproachLOS:         *                *                F                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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```
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-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
                     Year 2030 No-Build Weekday PM Peak Hour
-------------------------------------------------------------------------------
                 Level Of Service Detailed Computation Report
                         2000 HCM Unsignalized Method
                           Future Volume Alternative
*******************************************************************************
Intersection #1 NW Beach Rd/Glencoe Rd
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------|---------------|---------------|---------------|
HevVeh:             2%               5%               6%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
-----------|---------------|---------------|---------------|---------------|
Upstream Signals:
Link Index:                        #2
Dist(miles):                       0.000
Speed (mph):                       45.00
SignalIndex:                       #2
Cycle Time:                            0 secs
InitVolume:                      0     0
Saturation:                      0     0
ArrivalType:                     0     0
G/C:                          0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:                           0.000 0.000
gq1:                          0.00  0.00
gq2:                          0.00  0.00
gq:                           0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:                            0.000
beta:                             0.000
ta (secs):                        0.000
F:                                0.000
f:                            0.000 0.000
vcmax:                            0     0
vcg:                              0     0
vcmin:                            0     0
tp:                             0.0   0.0
p:                                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol:1291 xxxxx xxxxx    0 xxxxx xxxxx 2264  2264  1278 2266  2277   948
AdjCnflVol: 1291 xxxxx xxxxx    0 xxxxx xxxxx 2264  2264  1278 2266  2277   948
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol:1291 xxxxx xxxxx    0 xxxxx xxxxx 2264  2264  1278 2266  2277   948
*** Computation 5: Capacity for Subject Movement During Unblocked Period
InitPotCap:  537 xxxxx xxxxx  900 xxxxx xxxxx   44    40   199   29    41   319
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
```

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```
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-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
                     Year 2030 No-Build Weekday PM Peak Hour
-------------------------------------------------------------------------------
Potent Cap.: 537 xxxxx xxxxx  900 xxxxx xxxxx   44    40   199   29    41   319
```

```
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-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
                      Year 2030 No-Build Weekday PM Peak Hour
-------------------------------------------------------------------------------
                       Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #4 Texaco Dwy/Glencoe Rd
*******************************************************************************
Average Delay (sec/veh):      0.0       Worst Case Level Of Service: B[ 14.8]
*******************************************************************************
Street Name:            Glencoe Rd                      Texaco Dwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  0  0  1  0    0  0  1  0  0    0  0  0  0  0    0  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:       0  399    49     0  399     0     0    0     0     0    0     1
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  399    49     0  399     0     0    0     0     0    0     1
Added Vol:      0  333     0     0  298     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0  732    49     0  697     0     0    0     0     0    0     1
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     0  813    54     0  774     0     0    0     0     0    0     1
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0  813    54     0  774     0     0    0     0     0    0     1
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   841
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   368
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   368
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   0.0
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  14.8
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     B
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx           xxxxxx             14.8
ApproachLOS:        *                *                *                  B
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************

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-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
                      Year 2030 No-Build Weekday PM Peak Hour
-------------------------------------------------------------------------------
                 Level Of Service Detailed Computation Report
                         2000 HCM Unsignalized Method
                           Future Volume Alternative
*******************************************************************************
Intersection #4 Texaco Dwy/Glencoe Rd
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             2%               1%               2%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:       #5
Dist(miles):      0.000
Speed (mph):      35.00
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
```

```
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol:   0 xxxxx xxxxx    0 xxxxx xxxxx 1616  1642   774 1615  1615   841
AdjCnflVol:    0 xxxxx xxxxx    0 xxxxx xxxxx 1616  1642   774 1615  1615   841
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol:   0 xxxxx xxxxx    0 xxxxx xxxxx 1616  1642   774 1615  1615   841
*** Computation 5: Capacity for Subject Movement During Unblocked Period
InitPotCap:  900 xxxxx xxxxx  900 xxxxx xxxxx   83   100   398  115   105   368
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
```



```
Potent Cap.: 900 xxxxx xxxxx  900 xxxxx xxxxx   83   100   398  115   105   368
```



```
                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #5 NW Highland Ct/Glencoe Rd
*******************************************************************************
Average Delay (sec/veh):     42.2       Worst Case Level Of Service: F[538.1]
*******************************************************************************
Street Name:            Glencoe Rd                    NW Highland Ct
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:      97  293    10    12  261    15    10    4    87    51    4    20
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   97  293    10    12  261    15    10    4    87    51    4    20
Added Vol:     47  245    41     0  231     4     4    0    33    35    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  144  538    51    12  492    19    14    4   120    86    4    20
```

```
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:   160  598    57    13  547    21    16    4   133    96    4    22
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:  160  598    57    13  547    21    16    4   133    96    4    22
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  568 xxxx xxxxx   654 xxxx xxxxx  1543 1558   557  1599 1541   626
Potent Cap.: 1004 xxxx xxxxx   937 xxxx xxxxx    94  112   530    87  116   488
Move Cap.:   1004 xxxx xxxxx   937 xxxx xxxxx    75   93   530    54   97   488
Volume/Cap:  0.16 xxxx  xxxx  0.01 xxxx  xxxx  0.21 0.05  0.25  1.76 0.05  0.05
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.6 xxxx xxxxx   0.0 xxxx xxxxx   0.7 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  9.3 xxxx xxxxx   8.9 xxxx xxxxx  65.2 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     A    *     *     F    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   460  xxxx   66 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   1.2 xxxxx 11.1 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  16.1 xxxxx  538 xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     C     *    F     *
ApproachDel:    xxxxxx           xxxxxx             21.1           538.1
ApproachLOS:         *                *                C               F
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************

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-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
                      Year 2030 No-Build Weekday PM Peak Hour
-------------------------------------------------------------------------------
                 Level Of Service Detailed Computation Report
                         2000 HCM Unsignalized Method
                           Future Volume Alternative
*******************************************************************************
Intersection #5 NW Highland Ct/Glencoe Rd
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------|---------------|---------------|---------------|
HevVeh:             2%               1%               2%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------|---------------|---------------|---------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.000 ( 0.031)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
```

```
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 568 xxxxx xxxxx  654 xxxxx xxxxx 1543  1558   557 1599  1541   626
AdjCnflVol:  568 xxxxx xxxxx  654 xxxxx xxxxx 1543  1558   557 1599  1541   626
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 568 xxxxx xxxxx  654 xxxxx xxxxx 1543  1558   557 1599  1541   626
*** Computation 5: Capacity for Subject Movement During Unblocked Period
InitPotCap: 1004 xxxxx xxxxx  937 xxxxx xxxxx   94   112   530   87   116   488
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000

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-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #7191
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-------------------------------------------------------------------------------
Potent Cap.:1004 xxxxx xxxxx  937 xxxxx xxxxx   94   112   530   87   116   488
```

```
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-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
                     Year 2030 No-Build Weekday PM Peak Hour
-------------------------------------------------------------------------------
                       Level Of Service Computation Report
            2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #6 Chevron Dwy/Glencoe Rd
*******************************************************************************
Average Delay (sec/veh):      0.7       Worst Case Level Of Service: B[ 14.5]
*******************************************************************************
Street Name:            Glencoe Rd                      Chevron Dwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  1  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:      23  300     0     0  266    28    16    0    22     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   23  300     0     0  266    28    16    0    22     0    0     0
Added Vol:      0  249     0     0  235     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   23  549     0     0  501    28    16    0    22     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    26  610     0     0  557    31    18    0    24     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   26  610     0     0  557    31    18    0    24     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.2 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.3 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  588 xxxx xxxxx  xxxx xxxx xxxxx  1233 1233   572  xxxx xxxx xxxxx
Potent Cap.:  968 xxxx xxxxx  xxxx xxxx xxxxx   197  178   523  xxxx xxxx xxxxx
Move Cap.:    968 xxxx xxxxx  xxxx xxxx xxxxx   193  174   523  xxxx xxxx xxxxx
Total Cap:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   331  297 xxxxx   269  288 xxxxx
Volume/Cap:  0.03 xxxx  xxxx  xxxx xxxx  xxxx  0.05 0.00  0.05  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.8 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  421 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.3 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 14.5 xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx              14.5            xxxxxx
ApproachLOS:         *                *                 B                 *
*******************************************************************************
Note: Queue reported is the number of cars per lane.

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-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
                     Year 2030 No-Build Weekday PM Peak Hour
-------------------------------------------------------------------------------
                 Level Of Service Detailed Computation Report
                         2000 HCM Unsignalized Method
                           Future Volume Alternative
*******************************************************************************
Intersection #6 Chevron Dwy/Glencoe Rd
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             6%               1%               0%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:       #5
```

```
Dist(miles):  0.000 ( 0.031)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 588 xxxxx xxxxx    0 xxxxx xxxxx 1233  1233   572 1246  1249   610
AdjCnflVol:  588 xxxxx xxxxx    0 xxxxx xxxxx 1233  1233   572 1246  1249   610
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 588 xxxxx xxxxx    0 xxxxx xxxxx 1233  1233   572 1246  1249   610
*** Computation 5: Capacity for Subject Movement During Unblocked Period
InitPotCap:  968 xxxxx xxxxx  900 xxxxx xxxxx  197   178   523  152   175   498
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000

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--------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
                     Year 2030 No-Build Weekday PM Peak Hour
--------------------------------------------------------------------------------
Potent Cap.: 968 xxxxx xxxxx  900 xxxxx xxxxx  197   178   523  152   175   498
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance [Median Type: TWLTL][Median Storage: 1 car]
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage One Module:
InitCfltVol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  572   572 xxxxx  661   661 xxxxx
UpstreamSat:xxxx xxxxx xxxxx xxxx xxxxx xxxxx    0     0 xxxxx    0     0 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Cnflict Vol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  572   572 xxxxx  661   661 xxxxx
InitPotCap: xxxx xxxxx xxxxx xxxx xxxxx xxxxx  568   507 xxxxx  455   463 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Potent Cap.:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  568   507 xxxxx  455   463 xxxxx
Move Cap.:  xxxx xxxxx xxxxx xxxx xxxxx xxxxx  568   507 xxxxx  443   451 xxxxx
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage Two Module:
InitCfltVol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  661   661 xxxxx  584   588 xxxxx
UpstreamSat:xxxx xxxxx xxxxx xxxx xxxxx xxxxx    0     0 xxxxx    0     0 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Cnflict Vol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  661   661 xxxxx  584   588 xxxxx
InitPotCap: xxxx xxxxx xxxxx xxxx xxxxx xxxxx  517   463 xxxxx  501   499 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Potent Cap.:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  517   463 xxxxx  501   499 xxxxx
Move Cap.:  xxxx xxxxx xxxxx xxxx xxxxx xxxxx  504   451 xxxxx  477   499 xxxxx

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--------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
                     Year 2030 No-Build Weekday PM Peak Hour
--------------------------------------------------------------------------------
                       Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #7 NW Pacific St/Glencoe Rd
********************************************************************************
Average Delay (sec/veh):     12.6       Worst Case Level Of Service: F[ 82.9]
********************************************************************************
Street Name:            Glencoe Rd                     NW Pacific St
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  0  1  0    1  0  0  1  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
```

```
Base Vol:      40  255     9     5  277     6    29    0     4     6    1     4
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   40  255     9     5  277     6    29    0     4     6    1     4
Added Vol:     42  129    78    45  143    10     9    3    25    67    4    43
PasserByVol:    0  -10    10     5   -5     0     0    0     0     5    0    10
Initial Fut:   82  374    97    55  415    16    38    3    29    78    5    57
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    91  416   108    61  461    18    42    3    32    87    6    63
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   91  416   108    61  461    18    42    3    32    87    6    63
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  479 xxxx xxxxx   523 xxxx xxxxx  1278 1298   470  1262 1253   469
Potent Cap.: 1089 xxxx xxxxx  1048 xxxx xxxxx   144  163   598   148  174   598
Move Cap.:   1089 xxxx xxxxx  1048 xxxx xxxxx   112  141   598   123  150   598
Volume/Cap:  0.08 xxxx  xxxx  0.06 xxxx  xxxx  0.38 0.02  0.05  0.70 0.04  0.11
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.3 xxxx xxxxx   0.2 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.6 xxxx xxxxx   8.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  172 xxxxx  xxxx  184 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  2.1 xxxxx xxxxx  6.1 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 42.3 xxxxx xxxxx 82.9 xxxxx
Shared LOS:     *    *     *     *    *     *     *    E     *     *    F     *
ApproachDel:    xxxxxx           xxxxxx             42.3             82.9
ApproachLOS:         *                *                E                F
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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```
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-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
                     Year 2030 No-Build Weekday PM Peak Hour
-------------------------------------------------------------------------------
                 Level Of Service Detailed Computation Report
                         2000 HCM Unsignalized Method
                           Future Volume Alternative
*******************************************************************************
Intersection #7 NW Pacific St/Glencoe Rd
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------|---------------|---------------|---------------|
HevVeh:             1%               1%               0%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
-----------|---------------|---------------|---------------|---------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.000 ( 0.031)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 479 xxxxx xxxxx  523 xxxxx xxxxx 1278  1298   470 1262  1253   469
AdjCnflVol:  479 xxxxx xxxxx  523 xxxxx xxxxx 1278  1298   470 1262  1253   469
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 479 xxxxx xxxxx  523 xxxxx xxxxx 1278  1298   470 1262  1253   469
*** Computation 5: Capacity for Subject Movement During Unblocked Period
InitPotCap: 1089 xxxxx xxxxx 1048 xxxxx xxxxx  144   163   598  148   174   598
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
```

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```
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-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
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-------------------------------------------------------------------------------
Potent Cap.:1089 xxxxx xxxxx 1048 xxxxx xxxxx  144   163   598  148   174   598
```

```
Lanes:        1  0  0  1  0    1  0  0  1  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:      14  252     0     0  261     3     3    0    10     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   14  252     0     0  261     3     3    0    10     0    0     0
Added Vol:     12  152    16    84  166     1     3    4    18    19    7    86
PasserByVol:    0  -55    55    35  -35     0     0    0     0    35    0    55
Initial Fut:   26  349    71   119  392     4     6    4    28    54    7   141
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    29  388    79   132  436     4     7    4    31    60    8   157
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   29  388    79   132  436     4     7    4    31    60    8   157
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  440 xxxx xxxxx   467 xxxx xxxxx  1269 1227   438  1205 1189   427
Potent Cap.: 1120 xxxx xxxxx  1090 xxxx xxxxx   146  180   623   162  189   632
Move Cap.:   1120 xxxx xxxxx  1090 xxxx xxxxx    94  154   623   134  162   632
Volume/Cap:  0.03 xxxx  xxxx  0.12 xxxx  xxxx  0.07 0.03  0.05  0.45 0.05  0.25
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.1 xxxx xxxxx   0.4 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.3 xxxx xxxxx   8.8 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  283 xxxxx  xxxx  302 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.5 xxxxx xxxxx  5.5 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 20.0 xxxxx xxxxx 44.8 xxxxx
Shared LOS:     *    *     *     *    *     *     *    C     *     *    E     *
ApproachDel:    xxxxxx           xxxxxx             20.0             44.8
ApproachLOS:         *                *               C               E
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
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-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
                     Year 2030 No-Build Weekday PM Peak Hour
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #8 NW Cottage St/Glencoe Rd
*******************************************************************************
Average Delay (sec/veh):      9.2       Worst Case Level Of Service: E[ 44.8]
*******************************************************************************
Street Name:            Glencoe Rd                    NW Cottage St
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
```

```
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-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #7191
     Glencoe Road Interchange Area Management Plan - North Plains, Oregon
                     Year 2030 No-Build Weekday PM Peak Hour
-------------------------------------------------------------------------------
                 Level Of Service Detailed Computation Report
                         2000 HCM Unsignalized Method
                           Future Volume Alternative
*******************************************************************************
Intersection #8 NW Cottage St/Glencoe Rd
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:            2%               3%               0%               0%
Grade:             0%               0%               0%               0%
Peds/Hour:         0                0                0                0
```

```
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
-----------|----------------|----------------|----------------|----------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.000 ( 0.031)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 440 xxxxx xxxxx  467 xxxxx xxxxx 1269  1227   438 1205  1189   427
AdjCnflVol:  440 xxxxx xxxxx  467 xxxxx xxxxx 1269  1227   438 1205  1189   427
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 440 xxxxx xxxxx  467 xxxxx xxxxx 1269  1227   438 1205  1189   427
*** Computation 5: Capacity for Subject Movement During Unblocked Period
InitPotCap: 1120 xxxxx xxxxx 1090 xxxxx xxxxx  146   180   623  162   189   632
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
```



```
Potent Cap.:1120 xxxxx xxxxx 1090 xxxxx xxxxx  146   180   623  162   189   632
```



```
                        Level Of Service Computation Report
            2000 HCM 4-Way Stop Method (Future Volume Alternative)
*******************************************************************************
Intersection #9 NW Commercial/Glencoe Rd
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.816
Loss Time (sec):       0 (Y+R=4.0 sec)  Average Delay (sec/veh):        21.9
Optimal Cycle:         0                Level Of Service:                  C
*******************************************************************************
Street Name:            Glencoe Rd                 NW Commercial/West Union
```

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  0  1  0    1  0  0  1  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:      79  139    42    29  123     7    11   19    62    68   33    31
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   79  139    42    29  123     7    11   19    62    68   33    31
Added Vol:    151   20    82     4   11     1     2   44   129   118  125     5
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  230  159   124    33  134     8    13   63   191   186  158    36
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:   256  177   138    37  149     9    14   70   212   207  176    40
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  256  177   138    37  149     9    14   70   212   207  176    40
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  256  177   138    37  149     9    14   70   212   207  176    40
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.56  0.44  1.00 0.94  0.06  0.05 0.24  0.71  0.49 0.42  0.09
Final Sat.:   455  285   222   396  397    24    25  120   365   253  215    49
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.56 0.62  0.62  0.09 0.37  0.37  0.58 0.58  0.58  0.82 0.82  0.82
Crit Moves:       ****                  ****       ****             ****
Delay/Veh:   19.4 19.7  19.7  11.8 14.6  14.6  17.6 17.6  17.6  31.7 31.7  31.7
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  19.4 19.7  19.7  11.8 14.6  14.6  17.6 17.6  17.6  31.7 31.7  31.7
LOS by Move:    C    C     C     B    B     B     C    C     C     D    D     D
ApproachDel:      19.6             14.1             17.6             31.7
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       19.6             14.1             17.6             31.7
LOS by Appr:         C                B                C                D
AllWayAvgQ:   1.1  1.4   1.4   0.1  0.5   0.5   1.1  1.1   1.1   3.1  3.1   3.1
*******************************************************************************
```

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Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday PM Peak Hour

Note: Queue reported is the number of cars per lane.

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Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM 4-Way Stop Method
Future Volume Alternative

Intersection #9 NW Commercial/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
```

```
-----------|----------------|----------------|----------------|----------------|
Time Period: 0.25 hour
HevVeh:             1%               1%               2%               4%
Alpha Value: 0.01
-----------|----------------|----------------|----------------|----------------|
GroupType:          5                5                2                2
P[C1]:            0.05             0.02             0.02             0.05
P[C2]:            0.04             0.07             0.09             0.06
P[C3]:            0.28             0.08             0.11             0.25
P[C4]:            0.45             0.46             0.52             0.46
P[C5]:            0.18             0.36             0.26             0.18
Padj[C1]:         0.027            0.031            0.029            0.027
Padj[C2]:         0.017            0.020            0.018            0.017
Padj[C3]:        -0.000            0.009            0.007            0.001
Padj[C4]:        -0.025           -0.024           -0.028           -0.026
Padj[C5]:        -0.018           -0.036           -0.026           -0.018
-----------|----------------|----------------|----------------|----------------|
Lanes:          L1      L2       L1      L2       L1      L2       L1      L2
LaneType:     LEFT   RTTHRU    LEFT   RTTHRU    LTR    NOLANE    LTR    NOLANE
-----------|----------------|----------------|----------------|----------------|
HeadwayAdj:    0.517  -0.290    0.517  -0.022   -0.385  xx.xxx    0.109  xx.xxx
Volume:         256     314       37     158      297  xxxxxx      422  xxxxxx
Capacity:       455     507      396     421      510   xxxxx      517   xxxxx
DegOfUtil:     0.55    0.60     0.09    0.34     0.55    x.xx     0.80    x.xx
DepHeadway:    7.73    6.93     8.37    7.83     6.68   xx.xx     6.82   xx.xx
ServiceTime:   5.4     4.6      6.1     5.5      4.7    xx.x      4.8    xx.x
Delay:        19.4    19.7     11.8    14.6     17.6   xxx.x     31.7   xxx.x
Queue:         1.1     1.4      0.1     0.5      1.1   xxx.x      3.1   xxx.x
-----------|----------------|----------------|----------------|----------------|
Approach:      North Bound      South Bound       East Bound       West Bound
-----------|----------------|----------------|----------------|----------------|
ApproachDel:     19.6             14.1             17.6             31.7
Delay Adj:       1.00             1.00             1.00             1.00
ApprAdjDel:      19.6             14.1             17.6             31.7
LOS by Appr:       C                B                C                D
OverallDel:                                  21.9
OverallLOS:                                    C
```

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)		0%			2%			-2%			2%	
Total Lost time (s)				3.0	3.0			3.0			3.0	3.0
Lane Util. Factor				1.00	1.00			1.00			1.00	1.00
Frt				1.00	0.85			1.00			1.00	0.85
Flt Protected				0.95	1.00			1.00			1.00	1.00
Satd. Flow (prot)				1525	1366			1651			1610	1368
Flt Permitted				0.95	1.00			0.93			1.00	1.00
Satd. Flow (perm)				1525	1366			1536			1610	1368
Volume (vph)	0	0	0	359	1	240	31	335	0	0	645	105
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	378	1	253	33	353	0	0	679	111
Lane Group Flow (vph)	0	0	0	378	254	0	0	386	0	0	679	111
Heavy Vehicles (%)	0%	0%	0%	11%	11%	11%	6%	6%	6%	7%	7%	7%
Turn Type				Split			pm+pt					Prot
Protected Phases				8	8		5	2			6	6
Permitted Phases							2					
Actuated Green, G (s)				20.5	20.5			43.0			43.0	43.0
Effective Green, g (s)				21.5	21.5			44.5			44.5	44.5
Actuated g/C Ratio				0.30	0.30			0.62			0.62	0.62
Clearance Time (s)				4.0	4.0			4.5			4.5	4.5
Vehicle Extension (s)				3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)				455	408			949			995	846
v/s Ratio Prot				c0.25	0.19						c0.42	0.08
v/s Ratio Perm								0.25				
v/c Ratio				0.83	0.62			0.41			0.68	0.13
Uniform Delay, d1				23.6	21.8			7.0			9.1	5.7
Progression Factor				1.00	1.00			0.69			1.00	1.00
Incremental Delay, d2				16.0	7.0			0.3			3.8	0.3
Delay (s)				39.6	28.7			5.1			12.9	6.0
Level of Service				D	C			A			B	A
Approach Delay (s)		0.0			35.2			5.1			11.9	
Approach LOS		A			D			A			B	

Intersection Summary			
HCM Average Control Delay	18.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	72.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	71.7%	ICU Level of Service	C

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)		0%			0%			2%			-2%	
Total Lost time (s)		3.0	3.0					3.0	3.0		3.0	
Lane Util. Factor		1.00	1.00					1.00	1.00		1.00	
Frt		1.00	0.85					1.00	0.85		1.00	
Flt Protected		0.95	1.00					1.00	1.00		0.98	
Satd. Flow (prot)		1681	1500					1625	1381		1608	
Flt Permitted		0.95	1.00					1.00	1.00		0.98	
Satd. Flow (perm)		1681	1500					1625	1381		1608	
Volume (vph)	95	1	138	0	0	0	0	275	873	425	580	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	100	1	145	0	0	0	0	289	919	447	611	0
Lane Group Flow (vph)	0	101	145	0	0	0	0	289	919	0	1058	0
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	6%	6%	6%	7%	7%	7%
Turn Type	Split		Prot						Prot	pm+pt		
Protected Phases	4	4	4					2	2	1	6	
Permitted Phases								2		6	6	
Actuated Green, G (s)		9.5	9.5					54.0	54.0		54.0	
Effective Green, g (s)		10.5	10.5					55.5	55.5		55.5	
Actuated g/C Ratio		0.15	0.15					0.77	0.77		0.77	
Clearance Time (s)		4.0	4.0					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		245	219					1253	1065		1240	
v/s Ratio Prot		0.06	c0.10					0.18	c0.67		0.66	
v/s Ratio Perm												
v/c Ratio		0.41	0.66					0.23	0.86		0.85	
Uniform Delay, d1		27.9	29.1					2.3	5.6		5.5	
Progression Factor		1.00	1.00					1.00	1.00		1.49	
Incremental Delay, d2		5.1	14.7					0.4	9.3		5.2	
Delay (s)		33.0	43.8					2.7	14.9		13.4	
Level of Service		C	D					A	B		B	
Approach Delay (s)		39.3			0.0			12.0			13.4	
Approach LOS		D			A			B			B	

Intersection Summary			
HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	72.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	136.0%	ICU Level of Service	H

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)		0%			2%			-2%			2%	
Total Lost time (s)				3.0	3.0			3.0			3.0	3.0
Lane Util. Factor				1.00	1.00			1.00			1.00	1.00
Frt				1.00	0.85			1.00			1.00	0.85
Flt Protected				0.95	1.00			0.99			1.00	1.00
Satd. Flow (prot)				1628	1458			1699			1672	1422
Flt Permitted				0.95	1.00			0.43			1.00	1.00
Satd. Flow (perm)				1628	1458			743			1672	1422
Volume (vph)	0	0	0	769	2	445	140	360	0	0	640	140
Peak-hour factor, PHF	0.95	0.95	1.00	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	809	2	468	147	379	0	0	674	147
Lane Group Flow (vph)	0	0	0	809	470	0	0	526	0	0	674	147
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	2%	2%	2%	3%	3%	3%
Turn Type				Split			pm+pt					Prot
Protected Phases				8	8		5	2			6	6
Permitted Phases							2					
Actuated Green, G (s)				28.5	28.5			35.0			35.0	35.0
Effective Green, g (s)				29.5	29.5			36.5			36.5	36.5
Actuated g/C Ratio				0.41	0.41			0.51			0.51	0.51
Clearance Time (s)				4.0	4.0			4.5			4.5	4.5
Vehicle Extension (s)				3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)				667	597			377			848	721
v/s Ratio Prot				c0.50	0.32						0.40	0.10
v/s Ratio Perm								c0.71				
v/c Ratio				1.21	0.79			1.40			0.79	0.20
Uniform Delay, d1				21.2	18.5			17.8			14.7	9.8
Progression Factor				1.00	1.00			0.66			1.00	1.00
Incremental Delay, d2				109.3	10.1			191.7			7.6	0.6
Delay (s)				130.5	28.6			203.3			22.3	10.4
Level of Service				F	C			F			C	B
Approach Delay (s)		0.0			93.1			203.3			20.1	
Approach LOS		A			F			F			C	

Intersection Summary			
HCM Average Control Delay	92.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	72.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	124.4%	ICU Level of Service	H

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)		0%			0%			2%			-2%	
Total Lost time (s)		3.0	3.0					3.0	3.0		3.0	
Lane Util. Factor		1.00	1.00					1.00	1.00		1.00	
Frt		1.00	0.85					1.00	0.85		1.00	
Flt Protected		0.95	1.00					1.00	1.00		0.99	
Satd. Flow (prot)		1665	1485					1656	1408		1672	
Flt Permitted		0.95	1.00					1.00	1.00		0.99	
Satd. Flow (perm)		1665	1485					1656	1408		1672	
Volume (vph)	100	1	73	0	0	0	0	400	510	300	1110	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	105	1	77	0	0	0	0	421	537	316	1168	0
Lane Group Flow (vph)	0	106	77	0	0	0	0	421	537	0	1484	0
Heavy Vehicles (%)	3%	3%	3%	0%	0%	0%	4%	4%	4%	4%	4%	4%
Turn Type	Split		Prot						Prot	pm+pt		
Protected Phases	4	4	4					2	2	1	6	
Permitted Phases								2		6	6	
Actuated Green, G (s)		7.5	7.5					56.0	56.0		56.0	
Effective Green, g (s)		8.5	8.5					57.5	57.5		57.5	
Actuated g/C Ratio		0.12	0.12					0.80	0.80		0.80	
Clearance Time (s)		4.0	4.0					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		197	175					1323	1124		1335	
v/s Ratio Prot		c0.06	0.05					0.25	0.38		c0.89	
v/s Ratio Perm												
v/c Ratio		0.54	0.44					0.32	0.48		1.11	
Uniform Delay, d1		29.9	29.5					2.0	2.4		7.2	
Progression Factor		1.00	1.00					1.00	1.00		1.99	
Incremental Delay, d2		10.1	7.8					0.6	1.5		51.4	
Delay (s)		40.0	37.4					2.6	3.8		65.8	
Level of Service		D	D					A	A		E	
Approach Delay (s)		38.9			0.0			3.3			65.8	
Approach LOS		D			A			A			E	

Intersection Summary			
HCM Average Control Delay	41.1	HCM Level of Service	D
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	72.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	134.6%	ICU Level of Service	H

c Critical Lane Group

Appendix E

Future Build Traffic Conditions

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MEMORANDUM

Date: July 30, 2010 Project #: 7191

To: Tim Wilson, ODOT

From: Matt Hughart and Shing Tsoi
Project: Glencoe Interchange Management Plan
Subject: Future 2030 Analysis for Four-Lane US 26/Glencoe Road Overpass

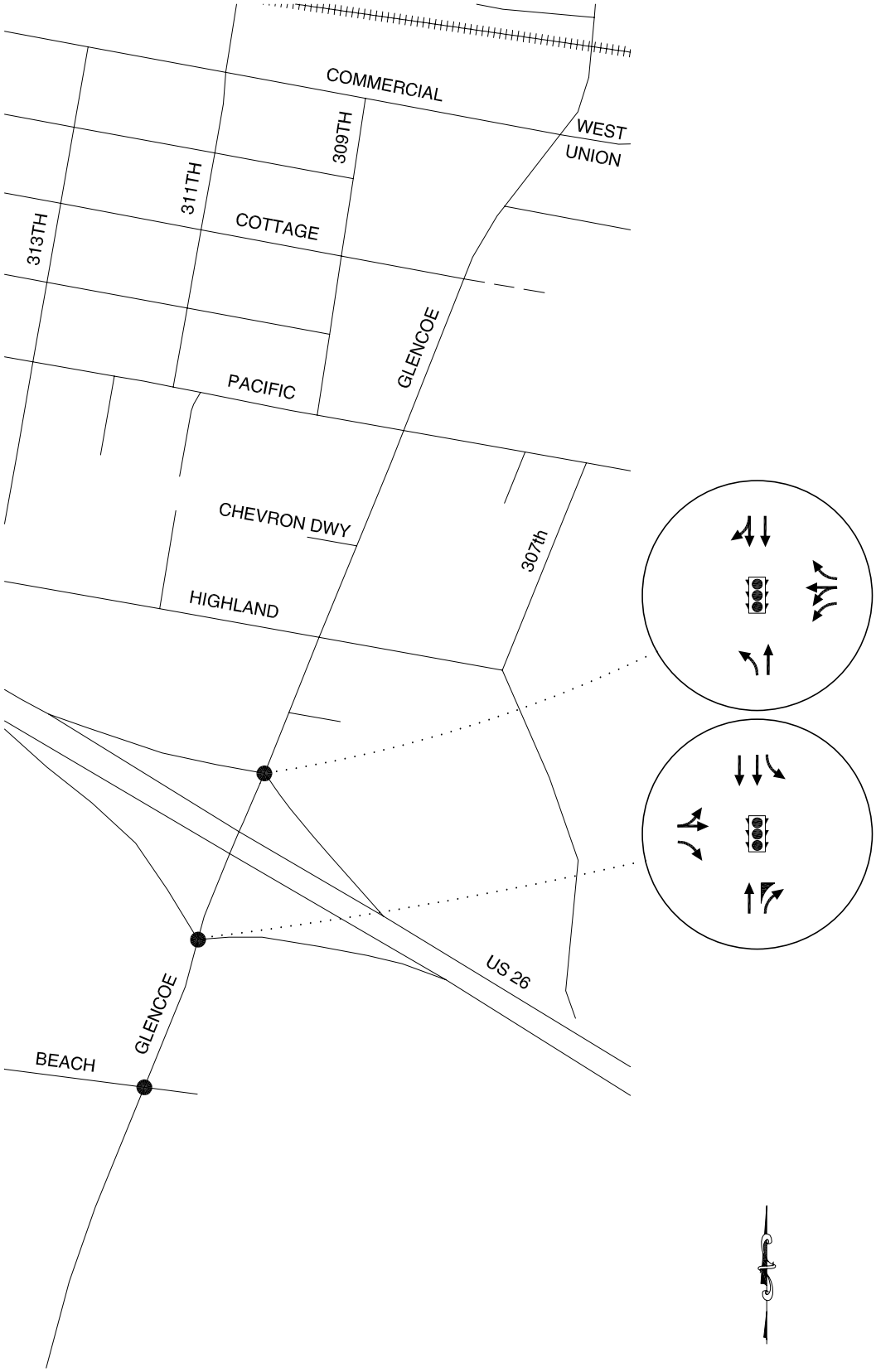
This memorandum supports the development of the Glencoe Interchange Area Management Plan (IAMP) by documenting the future traffic conditions analysis under the planned interchange widening project. Specifically, this memorandum identifies how the Glencoe interchange will operate upon an assumption of future local and regional traffic growth through the year 2030 with a four-lane interchange overpass at Highway 26/Glencoe Road interchange.

FUTURE US 26/GLENCOE ROAD INTERCHANGE IMPROVEMENTS

The US 26/Glencoe Road interchange is planned to be reconstructed. Based on preliminary interchange design work being prepared by ODOT staff, this reconstruction effort will include the following design elements:

- A four-lane overpass structure accommodating two southbound lanes, one northbound lane, and back-to-back left-turn lanes.
- A widened westbound off-ramp that includes dual westbound left-turn lanes and a separate right-turn lane.
- A northbound Glencoe Road approach at the eastbound ramp terminal that includes a single through lane and a dedicated right-turn lane.
- A widened eastbound on-ramp that includes two lanes for approximately 300 feet in order to accommodate a free northbound right-turn movement off of Glencoe Road.
- The effective storage distance for through movements between the eastbound and westbound ramp teminals is assumed to be 425 feet.
- The total back-to-back left-turn storage distance between the eastbound and westbound ramp terminals is assumed to be no greater than 350 feet.

Figure 1 illustrates the assumed lane configurations and traffic control devices at the eastbound and westbound ramp terminals.



Glencoe Road IAMP

Assumed Future Lane Configurations & Traffic Control Devices

Figure 1

ANALYSIS PARAMETERS AND ASSUMPTIONS

In order to analyze the operations of the interchange reconstruction, Synchro 7 was used for intersection operations analysis and SimTraffic was used for queue length simulation and analysis. The detector settings and simulation parameters in Synchro and SimTraffic were set according to the guidelines provided in Oregon Department of Transportation (ODOT) Analysis Procedures Manual. In addition, the analysis included the following key elements, assumptions, and settings as summarized below:

- The signal timing and phasing were optimized according to the traffic volumes, balancing between queue lengths and operations performance.
- The 2030 forecast volumes are consistent with the Glencoe Interchange Area Management Plan (IAMP) Technical Memorandum #2 dated July 27, 2010. These volumes do not include potential growth associated with the annexation of urbanization within the North Plains UGB.
- The heavy vehicle percentages and peak hour factor (PHF) were set according to the base traffic counts used for the Glencoe IAMP study mentioned above.
- The ideal saturation flow rate of 1,900 vehicles per hour per lane was utilized after consulting with ODOT staff.

ODOT Highway Design Manual (HDM) requires a volume-to-capacity (v/c) ratio standard of 0.65 for the westbound terminal and 0.60 for the eastbound terminal.

2030 OPERATIONS (WITHOUT BUILD-OUT OF THE NORTH PLAINS UGB)

Taking into account the variability in the precision of the Synchro and SimTraffic analysis results, it was generally concluded that a four-lane interchange overpass can accommodate the 2030 build-out traffic volumes (without traffic from the North Plains UGB) as illustrated in Figures 2 and 3. The operational results of the 2020 traffic volumes are outlined in Table 1. A summary of the findings include the following:

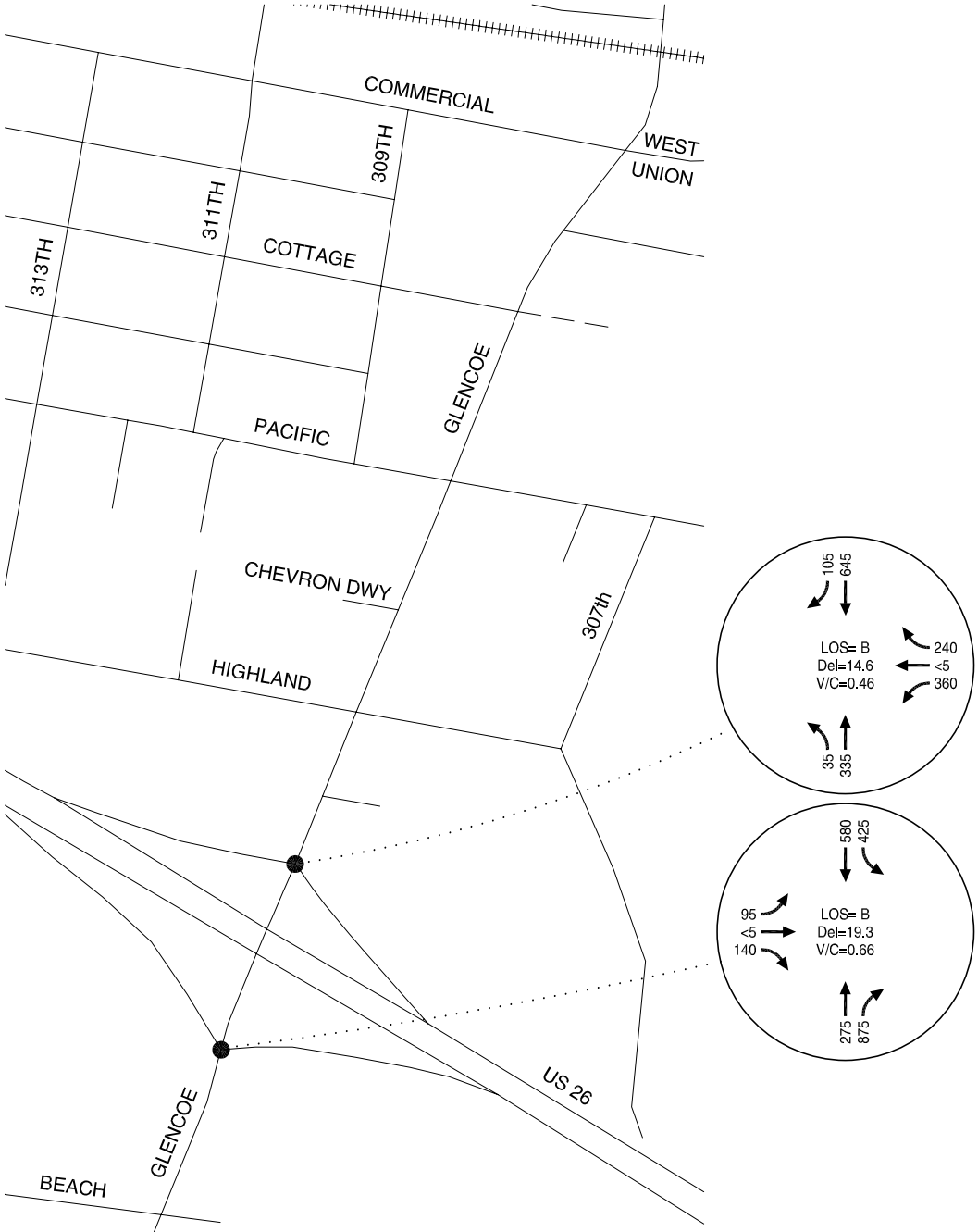
- The four-lane interchange overpass can accommodate critical freeway offramp traffic volume projections through the year 2030.
- The critical southbound left-turn queue at the eastbound ramp terminal and critical northbound left-turn queue at the westbound ramp terminal can essentially be accommodated within the 350 feet of back-to-back storage distance. In order to achieve this, relatively short cycle lengths (70 seconds during the AM period and 60 seconds during the PM period) were utilized.
    - While the critical queues can be accommodated, it should be noted that the southbound left-turn queue during the a.m. peak period will utilize all of the left-turn storage and that there may be vehicles parked on the double yellow transition stripe at times.

- The northbound through and right-turn queues at the eastbound ramp terminal will be improved considerably from the no-build traffic conditions. These improvements are the result of the provision of the free right-turn movement for the northbound right-turn lane onto the eastbound on-ramp.

Table 1 Glencoe Road Interchange Analysis for Four-Lane Scenario (Without North Plains UGB)

Scenario	Intersection	95th % Queue			Available Storage (ft)[3]	V/C	
		Approach	Queue (ft)				
		Movements	AM	PM		AM	PM
2030 4-lane Bridge (back-to-back LTL)	WB Off-ramp[1]	WB Left	174	227	600	0.46	0.66
		WB Thru/Left	185	243	600		
		WB Right	127	178	600		
		NB Left	64	137	150[4]		
		NB Thru	139	181	430		
		SB Thru	185	223	370		
		SB Thru/Right	105	195	200		
	EB Off-ramp[2]	EB Thru/Left	141	127	600	0.66	0.47
		EB Right	83	68	200		
		NB Thru	397	118	530		
		NB Right	154	32	175		
		SB Left	198	179	200[4]		
		SB Inside Thru	62	110	430		
		SB Outside Thru	53	143	430		

[1] HDM v/c ratio standard of 0.65
[2] HDM v/c ratio standard of 0.60
[3] Per discussion with ODOT staff based on ODOT's proposed design, or based on distance to upstream intersections
[4] These assumed storage distances represent the maximum amount of storage that can be provided, including the deceleration area.



LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)

LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)

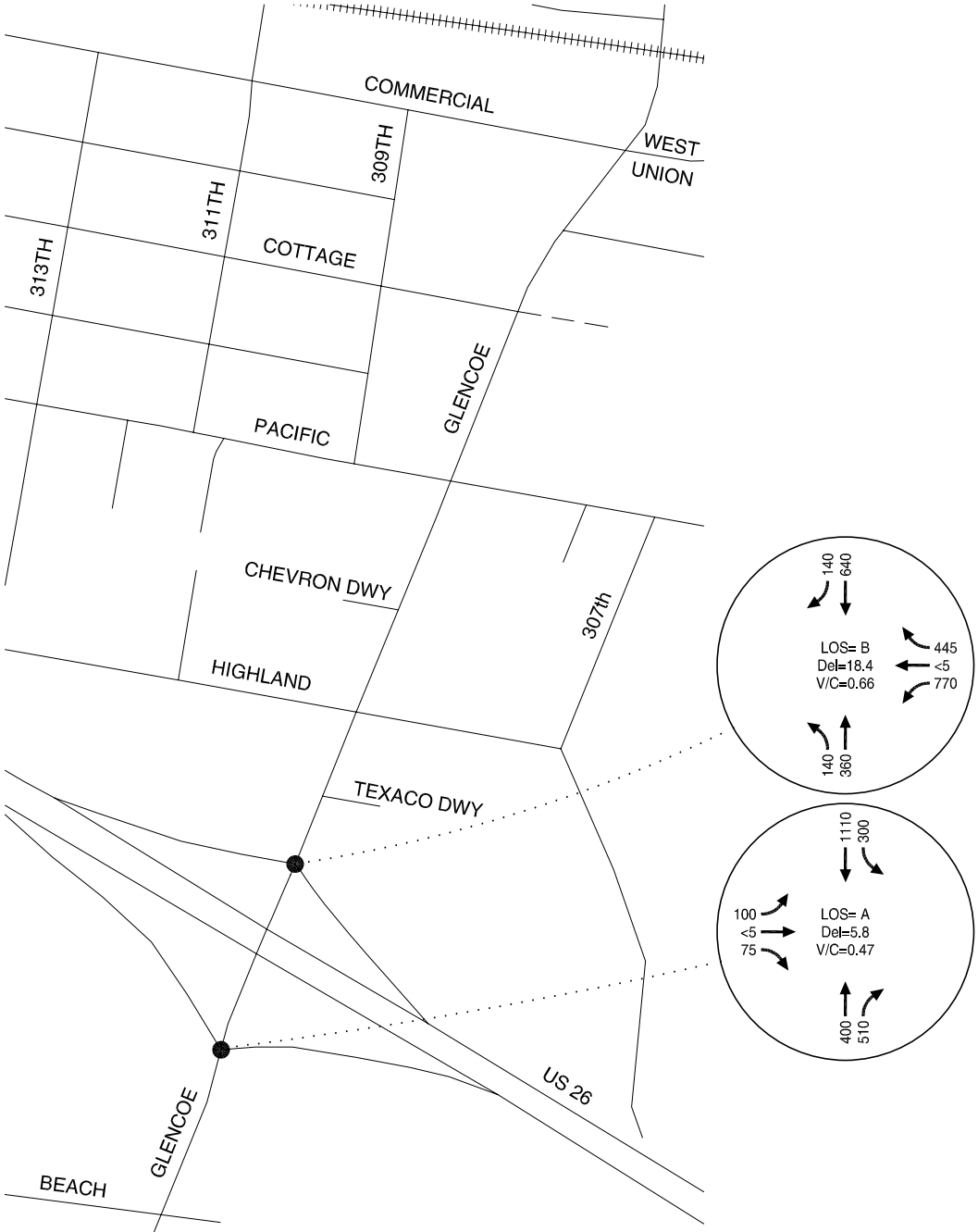
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)

V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

Glencoe Road IAMP

2030 Total Traffic Conditions (with Interchange Reconstruction), Weekday AM Peak Hour

Figure 2



LEGEND

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

Glencoe Road IAMP

2030 Total Traffic Conditions (with Interchange Reconstruction), Weekday PM Peak Hour

Figure 3

Appendix A

2030 Operational
Analysis Worksheets

HCM Signalized Intersection Capacity Analysis
5: EB Off-ramp & Glencoe Rd

6/18/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	95	0	136	0	0	0	0	276	873	427	578	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			2%			-2%	
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					1.00	1.00	1.00	0.95	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1770	1583					1758	1494	1688	3376	
Flt Permitted		0.95	1.00					1.00	1.00	0.51	1.00	
Satd. Flow (perm)		1770	1583					1758	1494	910	3376	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	100	0	143	0	0	0	0	291	919	449	608	0
RTOR Reduction (vph)	0	0	129	0	0	0	0	0	363	0	0	0
Lane Group Flow (vph)	0	100	14	0	0	0	0	291	556	449	608	0
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	7%	7%	7%	8%	8%	8%
Turn Type	Split		Perm						Perm	pm+pt		
Protected Phases	7	7						2		1	6	
Permitted Phases			7						2	6		
Actuated Green, G (s)		7.0	7.0					28.9	28.9	55.0	55.0	
Effective Green, g (s)		7.0	7.0					28.9	28.9	55.0	55.0	
Actuated g/C Ratio		0.10	0.10					0.41	0.41	0.79	0.79	
Clearance Time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Vehicle Extension (s)		2.5	2.5					4.0	4.0	2.5	4.0	
Lane Grp Cap (vph)		177	158					726	617	961	2653	
v/s Ratio Prot		c0.06						0.17		c0.15	0.18	
v/s Ratio Perm			0.01						c0.37	0.22		
v/c Ratio		0.56	0.09					0.40	0.90	0.47	0.23	
Uniform Delay, d1		30.0	28.6					14.5	19.2	4.5	2.0	
Progression Factor		1.00	1.00					1.00	1.00	1.21	0.36	
Incremental Delay, d2		3.3	0.2					0.5	16.7	1.5	0.2	
Delay (s)		33.4	28.8					15.0	35.9	7.0	0.9	
Level of Service		C	C					B	D	A	A	
Approach Delay (s)		30.7			0.0			30.9			3.5	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	19.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	360	0	240	34	337	0	0	645	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-2%			2%	
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0			4.0	
Lane Util. Factor				0.95	0.95	1.00	1.00	1.00			0.95	
Frt				1.00	1.00	0.85	1.00	1.00			0.98	
Flt Protected				0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)				1531	1531	1442	1704	1793			3239	
Flt Permitted				0.95	0.95	1.00	0.29	1.00			1.00	
Satd. Flow (perm)				1531	1531	1442	524	1793			3239	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	379	0	253	36	355	0	0	679	111
RTOR Reduction (vph)	0	0	0	0	0	206	0	0	0	0	12	0
Lane Group Flow (vph)	0	0	0	189	190	47	36	355	0	0	778	0
Heavy Vehicles (%)	0%	0%	0%	12%	12%	12%	7%	7%	7%	8%	8%	8%
Turn Type				Split		Perm	pm+pt					
Protected Phases				8	8		1	6			2	
Permitted Phases						8	6					
Actuated Green, G (s)				13.0	13.0	13.0	49.0	49.0			43.1	
Effective Green, g (s)				13.0	13.0	13.0	49.0	49.0			43.1	
Actuated g/C Ratio				0.19	0.19	0.19	0.70	0.70			0.62	
Clearance Time (s)				4.0	4.0	4.0	4.0	4.0			4.0	
Vehicle Extension (s)				4.0	4.0	4.0	2.5	4.0			4.0	
Lane Grp Cap (vph)				284	284	268	399	1255			1994	
v/s Ratio Prot				0.12	c0.12		0.00	c0.20			c0.24	
v/s Ratio Perm						0.03	0.06					
v/c Ratio				0.67	0.67	0.18	0.09	0.28			0.39	
Uniform Delay, d1				26.5	26.5	24.0	3.7	3.9			6.8	
Progression Factor				1.00	1.00	1.00	0.06	1.23			1.00	
Incremental Delay, d2				6.3	6.4	0.4	0.1	0.5			0.6	
Delay (s)				32.8	32.9	24.4	0.3	5.4			7.4	
Level of Service				C	C	C	A	A			A	
Approach Delay (s)		0.0			29.5			4.9			7.4	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
5: EB Off-ramp & Glencoe Rd

6/18/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	0	74	0	0	0	0	402	508	300	1109	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			2%			-2%	
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					1.00	1.00	1.00	0.95	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1752	1568					1809	1537	1736	3472	
Flt Permitted		0.95	1.00					1.00	1.00	0.42	1.00	
Satd. Flow (perm)		1752	1568					1809	1537	760	3472	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	105	0	78	0	0	0	0	423	535	316	1167	0
RTOR Reduction (vph)	0	0	71	0	0	0	0	0	220	0	0	0
Lane Group Flow (vph)	0	105	7	0	0	0	0	423	315	316	1167	0
Heavy Vehicles (%)	3%	3%	3%	0%	0%	0%	4%	4%	4%	5%	5%	5%
Turn Type	Split		Perm						Perm	pm+pt		
Protected Phases	7	7						2		1	6	
Permitted Phases			7						2	6		
Actuated Green, G (s)		5.7	5.7					35.3	35.3	46.3	46.3	
Effective Green, g (s)		5.7	5.7					35.3	35.3	46.3	46.3	
Actuated g/C Ratio		0.10	0.10					0.59	0.59	0.77	0.77	
Clearance Time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Vehicle Extension (s)		2.5	2.5					4.0	4.0	2.5	4.0	
Lane Grp Cap (vph)		166	149					1064	904	700	2679	
v/s Ratio Prot		c0.06						0.23		0.05	c0.34	
v/s Ratio Perm			0.00						0.20	c0.30		
v/c Ratio		0.63	0.05					0.40	0.35	0.45	0.44	
Uniform Delay, d1		26.1	24.7					6.6	6.4	2.6	2.4	
Progression Factor		1.00	1.00					1.00	1.00	1.19	0.36	
Incremental Delay, d2		6.7	0.1					1.1	1.1	0.2	0.4	
Delay (s)		32.9	24.8					7.7	7.5	3.4	1.2	
Level of Service		C	C					A	A	A	A	
Approach Delay (s)		29.4			0.0			7.6			1.7	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	770	0	445	141	362	0	0	639	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-2%			2%	
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0			4.0	
Lane Util. Factor				0.95	0.95	1.00	1.00	1.00			0.95	
Frt				1.00	1.00	0.85	1.00	1.00			0.97	
Flt Protected				0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)				1649	1649	1553	1787	1881			3377	
Flt Permitted				0.95	0.95	1.00	0.17	1.00			1.00	
Satd. Flow (perm)				1649	1649	1553	315	1881			3377	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	811	0	468	148	381	0	0	673	147
RTOR Reduction (vph)	0	0	0	0	0	258	0	0	0	0	28	0
Lane Group Flow (vph)	0	0	0	405	406	210	148	381	0	0	792	0
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	2%	2%	2%	3%	3%	3%
Turn Type				Split		Perm	pm+pt					
Protected Phases				8	8		1	6			2	
Permitted Phases						8	6					
Actuated Green, G (s)				22.0	22.0	22.0	30.0	30.0			20.4	
Effective Green, g (s)				22.0	22.0	22.0	30.0	30.0			20.4	
Actuated g/C Ratio				0.37	0.37	0.37	0.50	0.50			0.34	
Clearance Time (s)				4.0	4.0	4.0	4.0	4.0			4.0	
Vehicle Extension (s)				4.0	4.0	4.0	2.5	4.0			4.0	
Lane Grp Cap (vph)				605	605	569	295	941			1148	
v/s Ratio Prot				0.25	c0.25		c0.05	0.20			c0.23	
v/s Ratio Perm						0.13	0.20					
v/c Ratio				0.67	0.67	0.37	0.50	0.40			0.69	
Uniform Delay, d1				15.9	16.0	13.9	9.9	9.4			17.1	
Progression Factor				1.00	1.00	1.00	1.47	1.06			1.00	
Incremental Delay, d2				5.8	5.8	1.8	0.9	1.2			3.4	
Delay (s)				21.7	21.8	15.7	15.4	11.2			20.5	
Level of Service				C	C	B	B	B			C	
Approach Delay (s)		0.0			19.6			12.4			20.5	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	18.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Appendix F

Public Involvement

Public Involvement

This appendix provides a summary of the public involvement efforts for the development of the US26/Glencoe Road Job Transportation Act project and the IAMP. Outreach took place from December 2009 to July 2010, which included meetings and discussions with the city of North Plains and Washington County. A JTA Region 1 web site was established in September 2009 to provide information regarding the JTA project.

In the spring 2006, Oregon Department of Transportation (ODOT), city of North Plains, and Washington County began planning for a U.S. 26/Glencoe Road interchange located in North Plains, and Washington County. ODOT initiated the Glencoe Road Interchange Area Management Plan (IAMP) project in an effort to address existing and future safety and operational issues at the existing interchange. The project's preferred conceptual interchange, including its purpose and needs, objectives and evaluation criteria and measures was developed by the project team with input from community stakeholder

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 (including accommodations for bicycle and pedestrian facilities), and making improvements to the local circulation system.

The JTA project and IAMP built upon the pervious work to help develop a $32.0 million project that could be built within the parameters of the JTA program. In January 2010 the partners (city of North Plains, Washington County and ODOT) agreed to a JTA Partnering Agreement. The Agreement purpose was to describe the partners' expectations regarding the JTA project, outline the partners' roles and responsibilities and establish communication and decision-making procedures.

After the JTA Partnering Agreement was established the partners begin development of a Memorandum of Understanding (MOU) between the city of North Plains, Washington County and ODOT. The MOU is to memorialize the intentions of the partners to work collaborative and the project elements and project development strategy.

The partners worked jointly for over a year to develop the MOU. The City of North Plains approved the MOU at its June 7, 2010 city council meeting per resolution number 1561. This city council meeting was the public hearing for the JTA project development.

Following the public hearing and approval by the city of North Plains City County Washington County and ODOT Region 1 signed the MOU.

MEMORANDUM OF UNDERSTANDING BETWEEN THE STATE OF OREGON, THE CITY OF NORTH PLAINS AND WASHINGTON COUNTY

US 26: Glencoe Interchange Project

This Memorandum of Understanding (MOU) is made and entered into by and between the State of Oregon, acting by and through its Department of Transportation, hereinafter referred to as "ODOT", and Washington County, acting by and through its Board of County Commissioners, hereinafter referred to as "County"; and the City of North Plains, acting by and through its City Council, hereinafter referred to as "City"; collectively referred to as "Partners". The US 26: Glencoe Interchange Project as funded through the Jobs and Transportation Act (JTA) of 2009 will hereinafter be referred to as "Project"

Purpose

The purpose of this Memorandum of Understanding is to memorialize the intentions of the Partners for their collaborative work on the Project. ODOT, the City and the County have worked to obtain funding for the Project to improve safety in the vicinity of the US 26: Glencoe Interchange Project.

US 26: Glencoe Project Purpose:
Increase vehicular capacity and safety of the west to south movement at the Glencoe Road Interchange within the proposed JTA budget.

Approximate project limits:
US 26: Glencoe Road interchange, and Glencoe Road from Highland Court to south of Beach Road.

Primary Project Priorities

- Increase interchange vehicular capacity to meet the needs for existing and future land use consistent with the adopted comprehensive plan 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 suggested by Project Partners,

- 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 WB US 26
- Accommodate potential trail under proposed Glencoe Rd structure replacing the current culvert.

Project Elements and Project Development Strategy

The Project, subject to this MOU, 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. Interchange improvement components associated with the project as referenced in this MOU include:

1. Lengthening and widening the US 26 WB exit ramp;
2. 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;
3. Constructing ramp terminal intersection improvements that improve the efficiency and safety of the interchange;
4. Replacing the culvert on Glencoe Road to the north of the interchange with a structure;
5. Improving pedestrian and bicycle connectivity across the structure.

The current preliminary cost estimate (planning level) for these components is approximately $32 million (estimate as of March 2010 shown inflated to 2013 dollars). If additional money becomes available, the Partners will be consulted for improvements consistent with the JTA project purpose listed above.

Project Management

ODOT will lead development of the interchange Project. The Partners will participate in the development of the Project.

Funding

The 2009 Oregon Legislature allocated $32,000,000 in House Bill 2001, the Oregon Jobs and Transportation Act (JTA), for this project.

Table 1: Funding Source Summary (as of March 2010)

Funding Source	**Funding Amount**	**Funding Type**	**Status**
JTA earmark	$32M	State	Secured
TOTAL	Approx. $32M		

It is recognized by the Partners that the obligations described in this MOU are an expression of intent only and the MOU is non-binding. Therefore, by signing this MOU, the Partners acknowledge to the others that they are expressing their mutual intent to work together to develop the project described.

This MOU may be executed in counterparts (facsimile or otherwise) which when taken together shall constitute one document for the Partners, notwithstanding that all Partners are not signatories to the same counterpart. All copies of this MOU so executed shall constitute an original.

WASHINGTON COUNTY

By: _____
XXXX
XXXX

Date: _____

OREGON DEPARTMENT OF TRANSPORTATION

By: _____
Jason Tell
Region 1 Manager

Date: _____

CITY OF NORTH PLAINS

By: _____
Mayor David Hatcher

Date: _____

JOB TRANSPORTATION ACT OVERVIEW

Introduction

House Bill 2001, also known as the Oregon Jobs and Transportation Act, is the transportation funding plan adopted by the 2009 Legislature. Three core themes emerged from the legislation:

- accountability, innovation and environmental stewardship;
- highway, road and street funding; and
- multimodal funding.

The Jobs and Transportation Act has many provisions addressing important elements of Oregon's transportation system and our economy. The following overview is a summary of what the Jobs and Transportation Act requires or allows the Oregon Transportation Commission, ODOT and other government bodies to do. The statute (chapter 865, Oregon Laws 2009) is available from the Oregon Legislature's Web site (pdf).

Accountability, Innovation and Environmental Stewardship

The interim House and Senate Transportation Committees will work with the OTC, local governments and stakeholders to review jurisdictional responsibilities; study best practices for stakeholder involvement and improve the delivery of metropolitan transportation services; and identify opportunities to improve program efficiency through the use of intergovernmental agreements. The interim committees will make recommendations to the next legislative session.

The Oregon Transportation Commission and the department are undertaking a number of studies and initiatives including the following:

- Develop design alternatives to improve the safety of Cornelius Pass Road in Multnomah and Washington counties (Cornelius Pass Road carries hazardous materials traffic).
- Implement a pilot to contract out for highway maintenance services.
- Contract with the Travel Information Council for the management of rest areas on I-5 and I-84.
- Participate in and finance the development of transportation plans needed to reduce greenhouse gas emission by light vehicles. ODOT will work with the Department of Land Conservation and Development, the Department of Energy, the Department of Environmental Quality, Metro, local governments in the Portland area, the Central Lane Metropolitan Planning Organization, and local governments in the Eugene-Springfield area within Central Lane MPO.
- Make the Road User Fee Task Force (RUFTF) permanent. RUFTF will continue to develop and refine alternatives to the gasoline tax as a method of raising revenue for highways, roads and streets.

HB 2001's revenue for highways, roads and streets increases in steps. This includes the revenue raised by:

- Light vehicle registration fees
- Light vehicle title fees
- License plate manufacturing fee
- Miscellaneous vehicle trip permit fees
- Heavy vehicle registration fees (beginning January 1, 2010)
- Weight-mile tax and related heavy vehicle fees (beginning October 1, 2010)
- Gasoline and diesel tax increase (January 1, 2011 or earlier if the economy shows signs of growing)

The revenue is distributed as follows:

- $3 million to the Travel Information Council to pay the cost of management, maintenance and improvement of rest areas on I-5 and I-84.
- $2 million per month to ODOT. The money keeps elements of the state highway program that were funded with flexible federal money whole now that the federal money is being reserved for eligible non-highway purposes.
- The balance of the money is distributed as follows:
    - 20 percent to city street programs based on population.
    - 30 percent to county road programs based on vehicle registration.
    - 50 percent to ODOT for the state highway program.

Prior to the full implementation of the fee increases, 68 percent of ODOT's state highway program money to maintenance, preservation and safety, and 32 percent to highway modernization. ODOT's money may also be used to pay debt service on bonds.

Highway, Road and Street Funding

HB 2001's revenue increases will be fully implemented by January 1, 2011. When fully implemented, HB 2001 will raise $300 million per year. The money will be distributed as follows:

- $3 million per year to the Travel Information Council until 2020.
- $2 million per month to ODOT.
- The balance of the money, about $273 million per year, is distributed as follows:
    - 20 percent (about $54.6 million per year) to city street programs based on population.
    - 30 percent (about $81.9 million per year) to county road programs based on vehicle registration.
    - 50 percent (about $136.5 million per year) to ODOT for the state highway program. The money is allocated as shown below. It may also be used to pay debt service on bonds.

- 33 percent or about $45 million to highway maintenance, preservation and safety.
- 15.75 percent or about $21.5 million to highway modernization program.
- 51.25 percent or about $70 million to bond repayment and the 2009 Transportation Projects Account for the 2009 Transportation Projects program.

The 2009 Transportation Projects program consists of 37 specific highway projects plus 12 additional projects that will be selected by local governments in Region 5 (eastern Oregon). These projects and allocations total $960.3 million. The 2009 Transportation Projects program will be financed by $840 million in Highway User Tax Bond proceeds plus the cash flow allocated to the Transportation Projects Account. In addition to paying debt service on the bonds, the Transportation Projects Account will provide a short-term supplement of $15 million per year for maintenance. The supplemental funding for maintenance will continue for about seven years until the full amount of cash flow into the Transportation Projects Account is needed for debt service.

Multimodal Funding

HB 2001 includes $100 million in lottery-backed bonds for the multimodal ConnectOregon III program. *Connect*Oregon III will provide grants and loans for air, marine/port, public transit and rail projects. *Connect*Oregon III requires at least ten percent of the program's funding to be allocated to each region of the state, provided there are eligible projects in the region. In addition, at least five percent of the *Connect*Oregon III money must be allocated to rural airport projects.

HB 2001 increases the custom plate fee to $100 for two years, (an increase of $25 per year). The additional revenue will allow the department to fund the second Cascades passenger train in the Willamette Valley without relying on a General Fund appropriation. HB 2001 also increases the ID card fee by $11. This will sustain revenues for transportation services for senior citizens and people with disabilities despite incurring higher transaction costs and lower ID card volumes.

HB 2001 creates an Urban Trail Fund. Money in the fund may be used to develop and maintain multi-use trails within urban growth boundaries for non-motorized vehicles and pedestrians. In a separate bill, the legislature appropriated $1 million for the Urban Trail Fund.

In a related action, the Oregon Transportation Commission adopted a rule that sets aside $24 million per year in flexible federal money that had been used in the state highway program. This money will fund eligible non-road projects such as public transportation capital purchases and construction, transportation demand management (for example, rideshare and carpool programs), and transportation growth management and similar

planning activities. These projects will be selected through the Statewide Transportation Improvement Program process.

Additional Provisions

HB 2001 contains a number of additional provisions, including:

- Creating a new vehicle class -- medium-speed electric vehicles -- to deal with vehicles described as "neighborhood electric vehicles." The department will adopt rules that define minimum safety standards for these vehicles.
- Establishing a process to allow consideration of co-location of ODOT and local government facilities during the interim when the legislature is not in session.
- Adding a requirement that the Department of Administrative Services, Office of Economic Analysis will conduct an Efficient Fee Study in addition to the biennial Highway Cost Allocation Study. The Efficient Fee Study is an alternative approach that will include highway replacement cost, traffic congestion cost and cost associated with greenhouse gas emissions.
- Implementing a four-year moratorium on new local fuel taxes, prohibiting local governments from enacting new ordinances, resolutions or other provisions taxing fuel.
- Making changes to the process under which a county commission may adopt a local option vehicle registration fee. The bill allows the board of commissioners in counties with a population greater than 350,000 (Clackamas, Multnomah and Washington) to adopt a county registration fee without first obtaining voter approval. Between October 2009 and June 2013, a local option fee may be adopted to finance the design and replacement of the Sellwood Bridge. After July 1, 2013, these counties may increase the county registration fee for any road purpose.
- Adding a provision that requires ODOT and the Travel Information Council to work with the private sector to develop a plan for installing electric motor vehicle charging stations at rest areas.
- Adding a provision prohibiting car rental companies from imposing a surcharge on rental agreements to cover the fees paid to register and title vehicles that is more than the amount reasonably calculated to recover the fees.
- Extending the income tax credit available for insurance companies that offer "pay as you drive" auto insurance.
- Extending the income tax credit available for individuals and firms that retrofit trucks with diesel engines.

HB 2001 contains a number of additional provisions, including:

- Creating a new vehicle class -- medium-speed electric vehicles -- to deal with vehicles described as "neighborhood electric vehicles." The department will adopt rules that define minimum safety standards for these vehicles.

- Establishing a process to allow consideration of co-location of ODOT and local government facilities during the interim when the legislature is not in session.
- Adding a requirement that the Department of Administrative Services, Office of Economic Analysis will conduct an Efficient Fee Study in addition to the biennial Highway Cost Allocation Study. The Efficient Fee Study is an alternative approach that will include highway replacement cost, traffic congestion cost and cost associated with greenhouse gas emissions.
- Implementing a four-year moratorium on new local fuel taxes, prohibiting local governments from enacting new ordinances, resolutions or other provisions taxing fuel.
- Making changes to the process under which a county commission may adopt a local option vehicle registration fee. The bill allows the board of commissioners in counties with a population greater than 350,000 (Clackamas, Multnomah and Washington) to adopt a county registration fee without first obtaining voter approval. Between October 2009 and June 2013, a local option fee may be adopted to finance the design and replacement of the Sellwood Bridge. After July 1, 2013, these counties may increase the county registration fee for any road purpose.
- Adding a provision that requires ODOT and the Travel Information Council to work with the private sector to develop a plan for installing electric motor vehicle charging stations at rest areas.
- Adding a provision prohibiting car rental companies from imposing a surcharge on rental agreements to cover the fees paid to register and title vehicles that is more than the amount reasonably calculated to recover the fees.
- Extending the income tax credit available for insurance companies that offer "pay as you drive" auto insurance.
- Extending the income tax credit available for individuals and firms that retrofit trucks with diesel engines.

Jobs for Transportation Act *(JTA)* Section 64 Projects

Section 64 of the Jobs and Transportation Act (JTA) identified funding for 37 specific highway projects across Oregon, and funding for 12 local governments in eastern Oregon. Project information is shown first in a summarized format, then as specific project work is identified a more detailed project report is provided.

The dollar sum of all detailed projects may not equal the overall summary information due to not all the work having been scheduled, or costs changing as more project refinements are made. Additionally, these dollar amounts may not exactly match the amounts given in the Statewide Transportation Improvement Program (STIP) because federal STIP requirements differ from JTA's requirements.

JTA Proj. #: 01
key (17059)

U.S. Highway 26 at the Glencoe Road Interchange

Overall Project Work Description:
The U.S. 26 project at the Glencoe Road Interchange is located in the City of North Plains in Washington County. The project will improve safety and operations of the highway.
The U.S. 26 at the Glencoe Road Interchange project as previously developed in the Draft Interchange Area Management Plan would lengthen and widen interchange ramps, reconstruct the overcrossing with additional through and turn lanes (including accommodations for bicycle and pedestrian facilities) and make improvements to the local circulation system. The full interchange reconstruction would cost an estimated $80 to $90 million.

Benefit of Project:
The existing two-lane Glencoe Road over-crossing lacks adequate shoulders, turn lanes, and bicycle/ pedestrian accommodations. The most significant safety issue is that the existing westbound off-ramp is not long enough to safely accommodate vehicles using the interchange, creating backups onto U.S. 26. In addition, the interchange cannot support 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 U.S. 26 to these cities. The Glencoe Road interchange modernization project is intended to support economic development and mobility in the region. This project is needed to support planned land use and industrial development in western Washington County.

Current Status:

ODOT has been working with the City of North Plains and Washington County to refine the project concept. A Memorandum of Understanding (MOU) has been developed identifying the project purpose, need, priorities, scope and funding. The North Plains City Council has approved the MOU and ODOT anticipates finalizing it over the coming weeks with Washington County

In late May, ODOT met with businesses in the interchange area to discuss two weeks of nighttime exploratory drilling work, which is required for project design. A one-page project summary was left with businesses and residences in the project area. ODOT plans to host a project open house in summer 2010. For more information visit the project webpage at http://www.oregon.gov/odot/hwy/region1/glencoe.

	Original:	Current:
Total Project Cost	**$32,000,000.00**	**$34,022,000.00**
JTA Project Cost	**$32,000,000.00**	**$32,000,000.00**
Expected Completion of Overall Project	**TBD**	**TBD**

This Overall Project Includes the following individual project(s)

US26: SUNSET HWY @ GLENCOE ROAD:

Project Phase:	**Design**	Contact Name:	**TBD**	Last Updated:	**7/9/2010**
REGION	**1**	ODOT Project ID	**12885**	State or Local Project	**S**
US Cong. Dist.	**1**	State Senate Dist.	**15**	State Rep. Dist.	**30**

	Original:	Current:
Total Project Cost	**$32,000,000.00**	**$34,022,000.00**
JTA Project Cost	**$32,000,000.00**	**$32,000,000.00**
Estimated Bid Opening	**3/22/2012**	**3/22/2012**
Estimated Completion	**TBD**	**TBD**

Explanation of Project Cost Changes: **Project cost revised to reflect additional federal funds on the project.**

Explanation of Completion Date Changes:

MEMORANDUM OF UNDERSTANDING BETWEEN THE STATE OF OREGON, THE CITY OF NORTH PLAINS AND WASHINGTON COUNTY

US 26: Glencoe Interchange Project

This Memorandum of Understanding (MOU) is made and entered into by and between the State of Oregon, acting by and through its Department of Transportation, hereinafter referred to as "ODOT", and Washington County, acting by and through its Board of County Commissioners, hereinafter referred to as "County"; and the City of North Plains, acting by and through its City Council, hereinafter referred to as "City"; collectively referred to as "Partners". The US 26: Glencoe Interchange Project as funded through the Jobs and Transportation Act (JTA) of 2009 will hereinafter be referred to as "Project"

Purpose

The purpose of this Memorandum of Understanding is to memorialize the intentions of the Partners for their collaborative work on the Project. ODOT, the City and the County have worked to obtain funding for the Project to improve safety in the vicinity of the US 26: Glencoe Interchange Project.

US 26: Glencoe Project Purpose:
Increase vehicular capacity and safety of the west to south movement at the Glencoe Road Interchange within the proposed JTA budget.

Approximate project limits:
US 26: Glencoe Road interchange, and Glencoe Road from Highland Court to south of Beach Road.

Primary Project Priorities

- Increase interchange vehicular capacity to meet the needs for existing and future land use consistent with the adopted comprehensive plan 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 suggested by Project Partners,

- 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 WB US 26
- Accommodate potential trail under proposed Glencoe Rd structure replacing the current culvert.

Project Elements and Project Development Strategy

The Project, subject to this MOU and potential future Cooperative Improvement/Intergovernmental Agreements between the Partners, 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. Interchange improvement components associated with the project as referenced in this MOU include:

1. Lengthening and widening the US 26 WB exit ramp;
2. 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;
3. Constructing ramp terminal intersection improvements that improve the efficiency and safety of the interchange;
4. Replacing the culvert on Glencoe Road to the north of the interchange with a structure;
5. Improving pedestrian and bicycle connectivity across the structure.

The current preliminary cost estimate (planning level) for these components is approximately $32 million (estimate as of March 2010 shown inflated to 2013 dollars). If additional money becomes available, ODOT intends to consult with the Partners for improvements consistent with the JTA project purpose listed above.

Project Management

ODOT intends to lead development of the interchange Project. The Partners intend to participate in the development of the Project.

Funding

The 2009 Oregon Legislature allocated $32,000,000 in House Bill 2001, the Oregon Jobs and Transportation Act (JTA), for this project.

Table 1: Funding Source Summary (as of March 2010)

Funding Source	Funding Amount	Funding Type	Status
JTA earmark	$32M	State	Secured
TOTAL	Approx. $32M		

It is recognized by the Partners that the obligations described in this MOU are an expression of intent only and the MOU is non-binding. Therefore, by signing this MOU, the Partners acknowledge to the others that they are expressing their mutual intent to work together to develop the project described. It is also understood by all Partners that, if required, they intend to enter into any subsequent Cooperative Improvement/Intergovernmental Agreements necessary to address funding of potential services provided by Partners, other than ODOT, as part of this Project or impacts to facilities, other than ODOT's, prior to utilizing funds or impacting said facilities.

This MOU may be executed in counterparts (facsimile or otherwise) which when taken together shall constitute one document for the Partners, notwithstanding that all Partners are not signatories to the same counterpart. All copies of this MOU so executed shall constitute an original:

WASHINGTON COUNTY

By: _____

Date: July 26, 2010

OREGON DEPARTMENT OF TRANSPORTATION

By: _____
Jason Tell
Region 1 Manager

Date: 7/30/10

CITY OF NORTH PLAINS

By: _____
David Hatcher, Mayor

Date: JUNE 7, 2010

ATTEST:

By: _____
Lisa J. Gibson, City Recorder

MEMORANDUM OF UNDERSTANDING BETWEEN THE STATE OF OREGON AND WASHINGTON COUNTY

This MOU is supplemental to the previous MOU related to the US26: Glencoe Interchange Project signed in 2010.

Washington County intends to apply up to $2M dollars of County funds to the US 26: Glencoe Interchange project over the project budget of to cover additional expenses related to build a 5 lae bridge deck. County liability is capped at $2M dollars. The $2M dollars can only be applied to the following:

- Widening the US 26 overcrossing structure
- Earthwork and minor paving to match the 5-lane structure
- Widening the structure immediately north of the Glencoe interchange to accommodate the future NB thru lane
- Other items mutually agreed to by County and ODOT.

It is recognized by ODOT and County that the obligations described in this MOU are an expression of intent only and the MOU is non-binding. Therefore, by signing this MOU, ODOT and County acknowledge to the others that they are expressing their mutual intent to work together to develop the project described. ODOT and County intend to enter into a Cooperative Improvement/Intergovernmental Agreements necessary to address funding of potential services provided by Partners, other than ODOT, as part of this Project or impacts to facilities, other than ODOT's, prior to utilizing funds or impacting said facilities.

WASHINGTON COUNTY

By: _____
Andrew Singelakis
Director of Land Use and Transportation

Date: July 26, 2010

OREGON DEPARTMENT OF TRANSPORTATION

By: _____
Jason Tell
ODOT Region 1 Manager

Date: 7/30/10

NORTH PLAINS
City to the Sunset

CITY OF NORTH PLAINS

31360 NW Commercial St. North Plains, Oregon 97133

June 9, 2010

Mr. Andrew Jackson
Oregon Department of Transportation
123 NW Flanders Street
Portland, OR 97209

RE: City of North Plains, Washington County and Oregon Department of Transportation Memorandum of Understanding for Collaborative Work on the U. S. Highway 26 NW Glencoe Road Interchange Project

Dear Mr. Jackson:

During its June 7, 2010, regular session, the North Plains City Council unanimously voted to approve Resolution No. 1561 approving the draft Memorandum of Understanding for Collaborative Work on the U. S. Highway 26 NW Glencoe Road Interchange Project between the City, Washington County and ODOT. A copy of the original signed agreement is enclosed for ODOT and Washington County signature.

It is necessary for the original agreement to be returned for our records. Please retain a copy for your files and return the original to my attention.

Please feel free to call our office at (503) 647-5555 with any questions.

Sincerely,

Lisa J. Gibson

Lisa J. Gibson
City Recorder

LJG/ljg

Enclosure

RESOLUTION NO. 1561

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF NORTH PLAINS, OREGON, AUTHORIZING THE MAYOR TO EXECUTE A MEMORANDUM OF UNDERSTANDING WITH OREGON DEPARTMENT OF TRANSPORTATION AND WASHINGTON COUNTY FOR COLLABORATIVE WORK ON THE U. S. HIGHWAY 26 NW GLENCOE ROAD INTERCHANGE PROJECT

WHEREAS, the City, Washington County and Oregon Department of Transportation staff have been meeting to determine the project priorities for the U. S. Highway 26 NW Glencoe Road project; and

WHEREAS, the priorities for the project have been determined and the agencies wish to have those priorities memorialized in a memorandum of understanding.

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF NORTH PLAINS, OREGON, AS FOLLOWS:

Section 1. Approve the draft Memorandum of Understanding, a copy of which is marked Exhibit A, attached hereto and by this reference incorporated herein.

Section 2. Authorize the Mayor of the City of North Plains to execute the attached agreement.

Section 3. This Resolution shall become effective immediately upon adoption by the City Council.

INTRODUCED AND ADOPTED this 7th day of June, 2010.

CITY OF NORTH PLAINS, OREGON

BY: _____
David Hatcher, Mayor

ATTEST:

BY: _____
Lisa J. Gibson, City Recorder

Appendix G

Pre-JTA Project

Appendix G1

Technical Memorandum #1 – Existing Transportation Inventory

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING/TRAFFIC ENGINEERING
610 SW ALDER, SUITE 700 • PORTLAND, OR 97205 • (503) 228-5230 • FAX (503) 273-8169

TECHNICAL MEMORANDUM

Glencoe Interchange Area Management Plan
Technical Memorandum #1
Existing Transportation Inventory

Date: May 8, 2006 **Project** #: 7191

To: PMT / SWG Committees

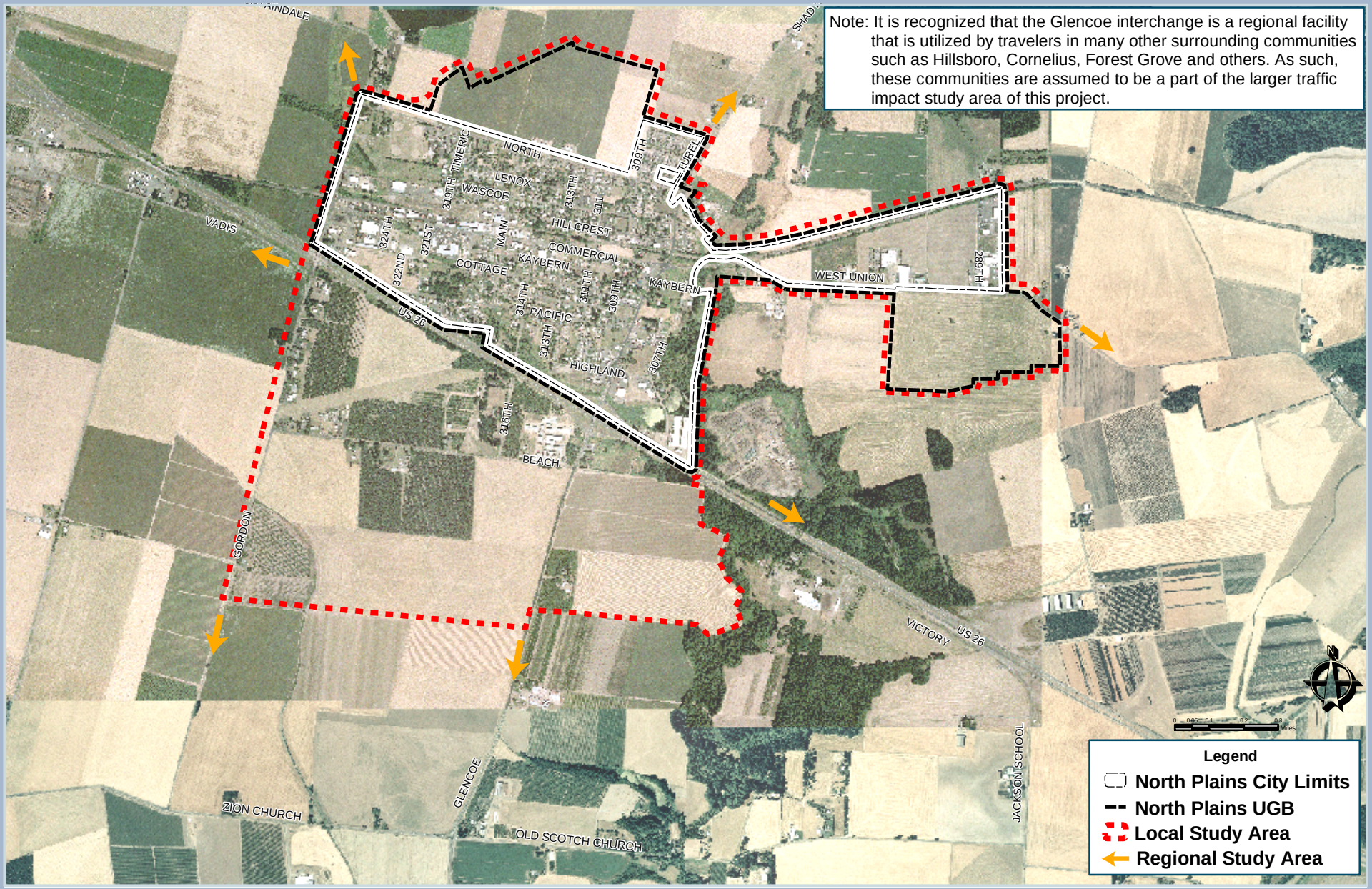
From: Matt Hughart, AICP, Andrew Ooms, Marc Butorac, P.E., P.T.O.E.

cc: Glencoe IAMP Project Team

This technical memorandum is one of a series of memorandums that are being prepared to support the development of the Glencoe Interchange Area Management Plan (IAMP) and the accompanying environmental analysis. This memorandum is an inventory (geometric and operational) of existing transportation conditions located within the vicinity of the Glencoe Road interchange and along the supporting City of North Plains/Washington County transportation system.

EXISTING CONDITIONS STUDY AREA

The existing conditions study area was selected based on a review of the surrounding roadway network, land use patterns, and existing ODOT access management policies associated with major freeway interchange projects. From these sources, the existing conditions study area centers on the existing US 26/Glencoe Road interchange and includes all roadway infrastructure located within 1,320 feet of the eastbound and westbound US 26 / Glencoe Road interchange ramp terminals. This distance corresponds to the ¼-mile spacing standard outlined in the Oregon Administrative Rules (OAR) 734-051 Division 51 rules (Reference 1) for interchange ramps. In addition to the ¼-mile access spacing standard, the study area has been extended along Glencoe Road up to the NW Commercial Street-NW West Union Road corridor to account for a Washington County roadway improvement project that will involve the widening of Glencoe Road to a full three-lane cross section with sidewalks and bicycle lanes. How surrounding communities such as Hillsboro, Cornelius, and Forest Grove use the NW Glencoe Road interchange will also be considered. From these general parameters, Figure 1-1 illustrates the existing conditions study area boundary.



Glencoe Road IAMP
Study Area Boundary

Figure 1-1

EXISTING TRANSPORTATION INVENTORY

The existing transportation inventory provides a detailed description of all transportation facilities and travel modes within the study area. In addition, the inventory identifies the current operational, traffic control, and geometric characteristics of roadways and other transportation facilities. A detailed description of these facilities is provided in the following sections.

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* (Reference 2) as a *Statewide Highway*, a *Freight Route*, and is considered a part of the National Highway System.

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* (Reference 3) 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 (Reference 4).

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 (Reference 5). 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

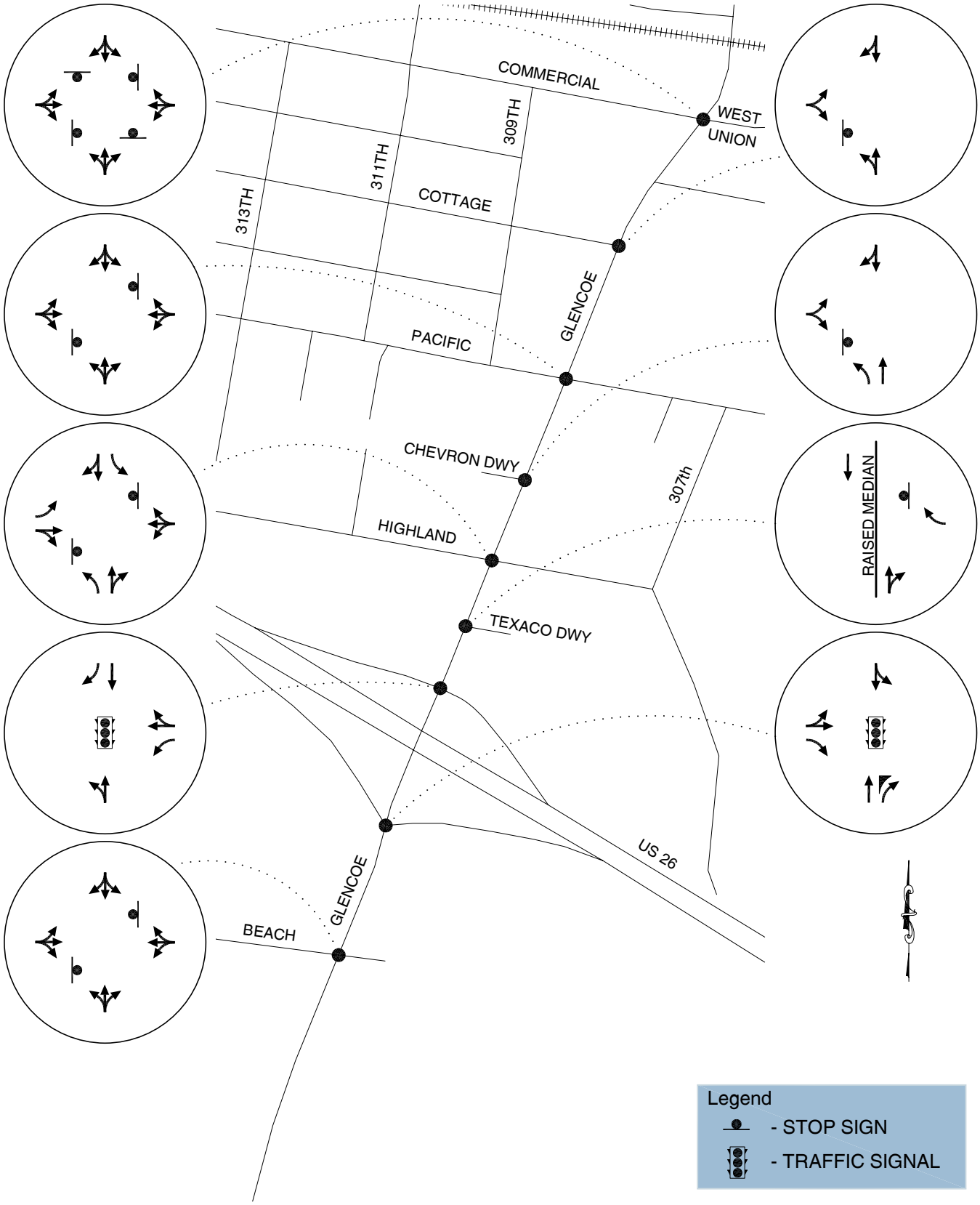
In addition to US 26 and NW Glencoe Road, the Glencoe IAMP study area contains a number of local and collector street facilities that serve area residents and business establishments. These roadways include NW Beach Road, NW Highland Court, NW Pacific Street, NW Cottage Street, NW Commercial Street-NW West Union Road, and NW Gordon Road. NW West Union Road is classified by Washington County as an arterial. The City of North Plains considers NW Commercial Street, NW Pacific Street, NW Highland Court, and NW 307th Avenue to be collector streets, while NW Cottage Street is classified as a local street. NW Beach Road is an unclassified County road.

Table 1-1 summarizes the major characteristics of US 26, NW Glencoe Road, and the secondary transportation facilities in the study area, while Figure 1-2 illustrates the existing lane configurations and traffic control devices at the respective key study area intersections.

Table 1-1
Existing Transportation Facilities and Roadway Designations

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



Glencoe Road IAMP

Existing Lane Configuration and Traffic Control Devices

Figure 1-2

Pedestrian and Bicycle Facilities

There are currently no bicycle lanes located along any of the Glencoe IAMP study area roadways. Sidewalks have been installed along portions of NW Glencoe Road associated with recent development projects; however this network is discontinuous and sporadic. There is a sub-standard sidewalk facility located on the east side of the Glencoe Road overpass. Field observations revealed low levels of pedestrian and bicycle activity. This low level of activity is likely attributed to a lack of pedestrian and bicycle facilities along the study area roadways and the predominance of commercial uses that cater to highway travelers.

Public Transportation Facilities

There are currently no transit routes that serve the City of North Plains or the major roadway facilities that run within the Glencoe IAMP study area. Demand response and special needs transportation services in the North Plains area are operated by Ride Connection. This service is currently available for qualifying residents in the Glencoe IAMP study area.

Railroad Facilities

The Portland & Western (P&W) rail line is an east-west short-line that runs parallel along the north side of NW Commercial Street. This rail line serves rail traffic between Portland and Hillsboro/Forest Grove.

EXISTING TRAFFIC VOLUMES AND PEAK HOUR OPERATIONS

As part of this study effort, manual intersection turning movement counts were conducted at each major intersection and driveway access along the NW Glencoe Road corridor from NW Beach Road to NW Commercial Street-NW West Union Road. These counts were conducted on mid-week days in November 2005. *Appendix A contains the traffic count summary data sheets.* A description of the data as it was utilized for the purposes of this report is summarized in the following sections.

System Peak Hour Intersection Volumes

From the manual intersection turning movement counts conducted in November 2005, weekday morning (7:00 a.m. – 9:00 a.m.) and evening (4:00 p.m. – 6:00 p.m.) peak hour traffic volumes were summarized for the purposes of evaluating the existing traffic operations at the key study intersections. Using the peak period count data, the system peak hour was determined across all study intersections. The weekday morning system peak hour was found to occur from 6:45 a.m. to 7:45 a.m. and the weekday evening system peak hour was found to occur from 4:45 p.m. to 5:45 p.m.

Seasonal Adjustments

It is recognized that major highways serving tourist and recreation destinations in Oregon are prone to a traffic volume fluctuations due to the effects of seasonal variation. Typically, the summer months experience higher traffic volumes due to additional traffic from recreational enthusiasts and vacationers while the winter months tend to experience the lowest traffic volumes. Using the methodology outlined by ODOT's Transportation Planning Analysis Unit

and through consultation with ODOT Region 1 staff, a seasonal adjustment factor of 1.09 was calculated for the interchange ramp terminals and those intersections/driveways along the Glencoe Road corridor that serve freeway oriented commercial establishments. Using this adjustment factor, the weekday a.m. and p.m. intersection turning movement counts were adjusted to represent the 30th highest hour yearly volume or the design volume.

After accounting for the seasonal variation in traffic, the turning movement counts from the weekday a.m. and p.m. peak hours were summarized and rounded to the nearest five vehicles per hour as shown in Figures 1-3 and 1-4.

Existing Intersection Operations

All operational analyses described in this report were performed in accordance with the procedures stated in the *2000 Highway Capacity Manual* (Reference 6). For the two Highway 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 a.m. and p.m. 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 a.m. and p.m. peak hours.

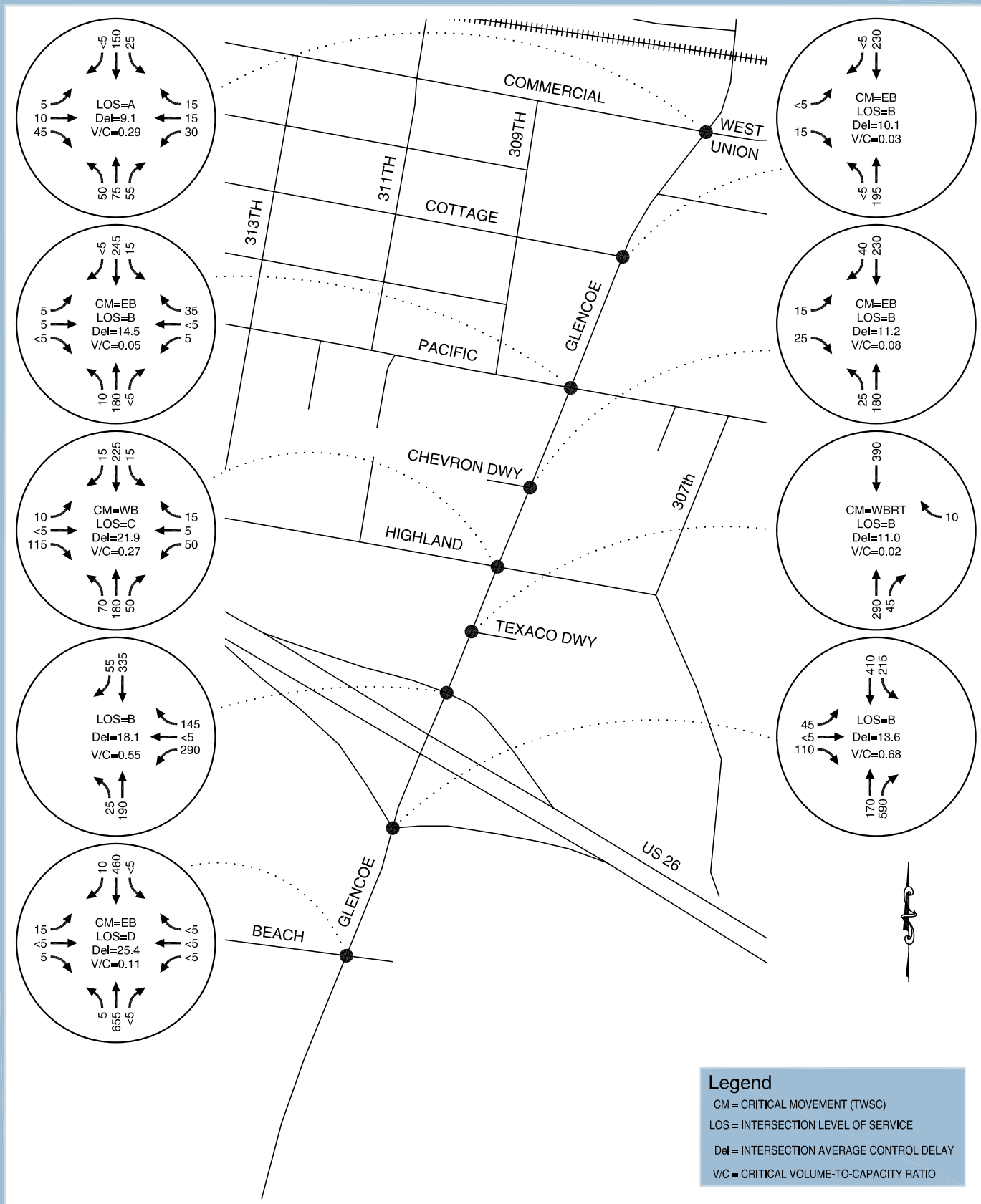
Using the traffic volumes shown in Figures 1-3 and 1-4, the existing intersection operations at each of the study intersections were calculated and are summarized in Table 1-2. *Appendix "B" contains the existing intersection operations summary sheets.* As shown in Table 1-2, all study intersections operate acceptably during the weekday a.m. and p.m. 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 a.m. and p.m. 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.

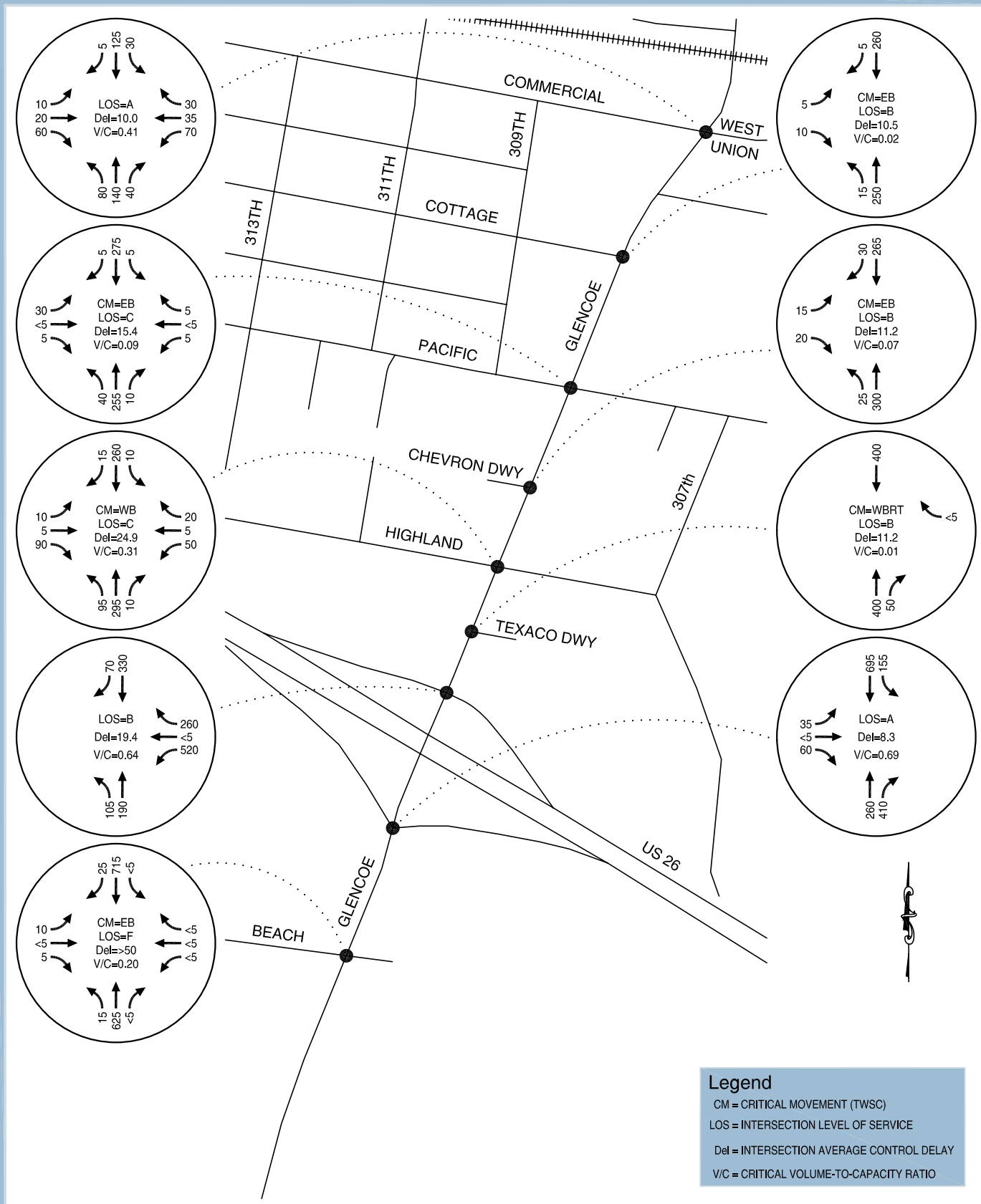
The US 26 WB off-ramp at NW Glencoe Road is striped as a single lane with a short right-turn flare at the intersection with NW Glencoe Road. Due to the heavy westbound left-turn movement at the intersection during the weekday p.m. peak hour, the lack of a separate left-turn and right-turn lane on the 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 p.m. peak period. As a result, right-turning vehicles tend to pass the queue on the shoulder.



Glencoe Road IAMP

Existing Traffic Conditions
Weekday AM Peak Hour

Figure 1-3



Glencoe Road IAMP

Existing Traffic Conditions
Weekday PM Peak Hour

Figure 1-4

Table 1-2
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.

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 p.m. 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.

TRAFFIC SAFETY

The crash histories at the respective study intersections were reviewed in an effort to identify potential intersection safety issues. Crash records were obtained from ODOT for the five-year period from January 1, 2000 through December 31, 2004. A summary of the crash data is provided in Table 1-4 that includes the severity and type of crashes over a five-year analysis period. It should be noted that there are no records of any crashes occurring at several of the study intersections. Reasons for this lack of data might be that the property damage limit was not exceeded or that the motorists did not report some crashes.

Table 1-3
Study Intersection Crash Histories (2000-2004)

Intersection / Roadway Segment	Number of Crashes	Collision Type				Severity	
		Turning	Rear-End	Angle	Other	Property Damage Only	Personal Injury
NW Commercial Street-West Union Road/ NW Glencoe Road	1	0	0	1	0	1	0
NW Cottage Street/ NW Glencoe Road	0	0	0	0	0	0	0
NW Pacific Street/ NW Glencoe Road	2	0	2	0	0	0	2
Chevron Driveway/ NW Glencoe Road	0	0	0	0	0	0	0
NW Highland Court/ NW Glencoe Road	1	1	0	0	0	1	0
Texaco Driveway/ NW Glencoe Road	2	0	2	0	0	2	0
US 26 WB Ramps/ NW Glencoe Road	18	13	3	0	2	13	5
US 26 EB Ramps/ NW Glencoe Road	9	5	4	0	0	6	3
NW Beach Road/ NW Glencoe Road	8	0	6	0	2	4	4

As illustrated in Table 1-4, the patterns amongst the crashes were evaluated to determine if there are any operational or geometric deficiencies that contribute to the crash patterns. The US 26 Ramps/NW Glencoe Road intersection experienced a significant number of turning movement collisions. Of the 13 turning crashes at the intersection, 7 involved the northbound left-turn movement, which during the data collection period was a permissive movement.

In 2005, northbound protective-permissive left turn phasing was added to the traffic signal at the US 26 WB Ramps/NW Glencoe Road intersection. In addition, the US 26 EB Ramps/NW Glencoe Road intersection was signalized. Both of these improvements are anticipated to reduce some collision types at these intersections; however, the crash data from 2005 has not yet been compiled.

Crash rates for intersections are often expressed in crashes per million entering vehicles (MEV) for evaluation purposes. Generally, a crash rate higher than 1.0 crashes/MEV indicates the need for further investigation at the intersection. These calculations are presented in Table 1-5 and show that all of the study intersections have relatively low crash rates.

In addition to this safety assessment, the latest Washington County Safety Priority Index System (SPIS) was reviewed to determine if any of the study intersections ranked among the highest accident locations in the County. Based on this review, none of the study intersections are included on the Washington County SPIS list.

Table 1-4
Study Intersection Crash Rate

Intersection	Number of Crashes	Crashes Per Year	Peak Hour TEV	MEV / Year	Crashes / MEV	>1 Crash/MEV
NW Commercial Street-West Union Avenue/ NW Glencoe Road	1	0.2	700	2.59	0.08	No
NW Cottage Street/ NW Glencoe Road	0	0.0	590	2.15	0.00	No
NW Pacific Street/ NW Glencoe Road	2	0.4	895	3.27	0.12	No
Chevron Driveway/ NW Glencoe Road	0	0.0	710	2.59	0.00	No
NW Highland Court/ NW Glencoe Road	1	0.2	915	3.34	0.06	No
Texaco Driveway/ NW Glencoe Road	2	0.4	895	3.27	0.12	No
US 26 WB Ramps/ NW Glencoe Road	18	3.6	1580	5.77	0.62	No
US 26 EB Ramps/ NW Glencoe Road	9	1.8	1740	6.35	0.28	No
NW Beach Road/ NW Glencoe Road	8	1.6	1520	5.55	0.29	No

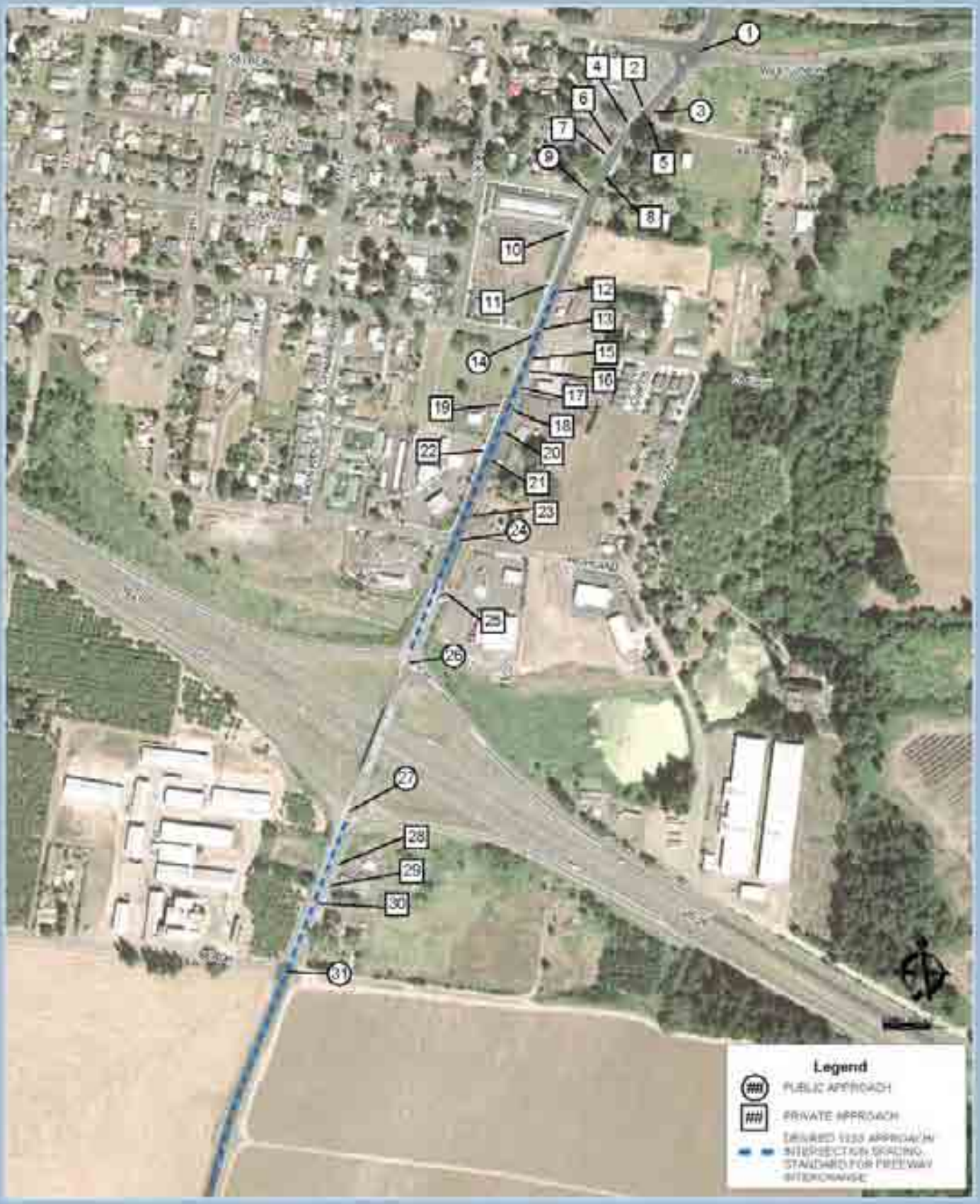
TEV = Total Entering Vehicles
MEV = Million Entering Vehicles

EXISTING ROADWAY ACCESS CONDITIONS

To gain an understanding of the existing access conditions along the Glencoe Road study corridor, an access inventory was prepared. Figure 1-5 shows the existing public and private roadway approaches to the existing Glencoe Road alignment within the Glencoe IAMP study area. As illustrated in Figure 1-6, Glencoe Road currently has thirty-one different public/private points of access between NW Beach Road and NW Commercial-NW West Union Road. Table 1-5 provides detailed information regarding each public or private access along the roadway.

As described in OAR 734-051, the desired distance between an interchange ramp terminal and the first major point of access (public or private) is 1,320 feet, or ¼ mile. Figure 1-5 illustrates that the access points north of US 26 along Glencoe Road (#10 though #26) fall within this desired minimum freeway interchange access spacing distance. South of US 26, approaches #27 through #31 fall within the same minimum freeway interchange spacing distance.

Under the rules stipulated in the Division 51 access management policy, a major highway improvement or the redevelopment of the land parcels that are served by these approaches may become subject to the 1,320 foot spacing guidelines.



GLENCOE RD

Glencoe Road IAMP

Existing Glencoe Road Public/Private Access Locations

Figure 1-5

Table 1-5
Glencoe Road Public/Private Approach Inventory

Approach Type	Figure 1-5 Access Number	Intersection Name	Property Owner/Business Name	Serves (Tax Map) & Lot Number	Side of Street
Public	1	NW Glencoe Road / NW Commercial Street-NW West Union Road	Public Street	N/A	Both
Private	2	NW Glencoe Road / Private Driveway	The Old Hichen Post	(1N 30W 1DA) #3200, 3903	West
Public	3	NW Glencoe Road / NW Kaybern Street	Public Street	N/A	East
Private	4	NW Glencoe Road / Private Driveway	West Coast Bank	(1N 30W 1DD) #301	West
Private	5	NW Glencoe Road / Private Driveway	Private Owner	(1N 30W 1DD) #100	East
Private	6	NW Glencoe Road / Private Driveway	West Coast Bank	(1N 30W 1DD) #301	West
Private	7	NW Glencoe Road / Private Driveway	Private Owner	(1N 30W 1DD) #300	West
Private	8	NW Glencoe Road / Private Driveway	Private Owner	(1N 30W 1DD) #101	East
Public	9	NW Glencoe Road / NW Cottage Street	Public Street	N/A	West
Private	10	NW Glencoe Road / Private Driveway	Shopping Center	(1N 30W 1DD) #600	West
Private	11	NW Glencoe Road / Private Driveway	North Plains Medical Center	(1N 30W 1DD) #600	West
Private	12	NW Glencoe Road / Private Driveway	Tom's Import Auto Service	(1N 30W 1DD) #201	East
Private	13	NW Glencoe Road / Private Driveway	Tom's Import Auto Service	(1N 30W 1DD) #201	East
Public	14	NW Glencoe Road / NW Pacific Street	Public Street	N/A	Both
Private	15	NW Glencoe Road / Private Driveway	King Torta Restaurant	(1N 30W 1DD) #702	East
Private	16	NW Glencoe Road / Private Driveway	Glencoe Oil and Lube	(1N 30W 1DD) #703	East
Private	17	NW Glencoe Road / Private Driveway	Glencoe Oil and Lube	(1N 30W 1DD) #703	East
Private	18	NW Glencoe Road / Private Driveway	Heritage Art Studio	(1N 30W 1DD) #900	East
Private	19	NW Glencoe Road / Private Driveway	Subway Restaurant	(1N 30W 1DC) #6200	West
Private	20	NW Glencoe Road / Private Driveway	Private Owner	(1N 30W 1DD) #1000	East
Private	21	NW Glencoe Road / Private Driveway	Private Owner	(1N 30W 1DD) #1100	East
Private	22	NW Glencoe Road / Private Driveway	Chevron/Espresso	(1N 30W 1DC) #6300, #6400	West
Private	23	NW Glencoe Road / Private Driveway	Private Owner	(1N 30W 1DD) #1200	East

Approach Type	Figure 1-5 Access Number	Intersection Name	Property Owner/Business Name	Serves (Tax Map) & Lot Number	Side of Street
Public	24	NW Glencoe Road / NW Highland Court	Public Street	N/A	Both
Private	25	NW Glencoe Road / Private Driveway	Texaco/76/Espresso and More/Pumpkin Ridge Hair Design	(1N 31W 20) #200	East
Public	26	NW Glencoe Road / US 26 WB On-Off Ramp	Oregon, Dept of Transportation	N/A	Both
Public	27	NW Glencoe Road / US 26 EB On-Off Ramp	Oregon, Dept of Transportation	N/A	Both
Private	28	NW Glencoe Road / Private Driveway	ARCO AM/PM	(1N 31W 20) #1001	East
Private	29	NW Glencoe Road / Private Driveway	ARCO AM/PM	(1N 31W 20) #1001	East
Private	30	NW Glencoe Road / Private Driveway	Private Owner	(1N 31W 20) #1101	East
Public	31	NW Glencoe Road / NW Beach Road	Public Roadway	N/A	West

OVERVIEW OF EXISTING GLENCOE INTERCHANGE DEFICIENCIES

Deck Width

The existing NW Glencoe Road bridge overpass is not sufficient as it lacks 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’-6”.

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.

Access within Interchange Influence Area

Ideally, there should be no public or private points of access within the influence area (1,320 feet) mile of an interchange ramp terminal. There are currently 22 public and private approaches along NW Glencoe Road that are located within the influence area of the interchange.

REFERENCES

1. Oregon Department of Transportation. *Division 51: Highway Approaches, Access Control, Spacing Standards and Medians*. Oregon Administrative Rules 734-051. 2000.

2. Oregon Department of Transportation. *1999 Oregon Highway Plan*. 1999.

3. Oregon Department of Transportation. *2004 Transportation Volume Tables*. http://egov.oregon.gov/ODOT/TD/TDATA/tsm/docs/TVTPages/2004tvt82-88.pdf

4. United States Department of Transportation – Federal Highway Administration. *Traffic Monitoring Guide*. May 2001. http://www.fhwa.dot.gov/ohim/tmguide/

5. Entranco, Inc. *Transportation System Plan – City of North Plains.* 2004

6. Transportation Research Board. *2000 Highway Capacity Manual - HCM 2000*. 2000.

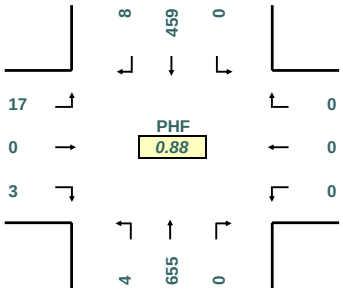
Appendix A

Traffic Count Data

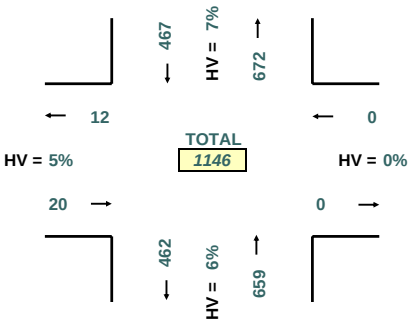
INTERSECTION:	*Glencoe--/Beach--*	**START TIME:**	*6:00 AM*
PROJECT ID#:		**END TIME:**	*9:00 AM*
QC JOB #:	*10127510*	**DATE:**	*11/16/2005*

QUALITY COUNTS
16285 SW 85th Avenue, Ste. 105
Tigard, OR 97224
Phone: 503-620-4242
Fax: 503 620-4545
email: jrw@qualitycounts.net
www.qualitycounts.net

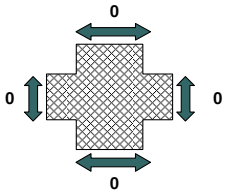
PEAK HOUR TURNING MOVEMENTS



PEAK HOUR LINK VOLUMES



PEAK HOUR PED CROSSING VOLUMES



PEAK HOUR: 6:45 AM TO 7:45 AM

PEAK 15 MINUTES: 7:30 AM TO 7:45 AM

5-MINUTE COUNT PERIOD BEGINNING AT	*Glencoe--* (Southbound)			*Beach--* (Westbound)			*Glencoe--* (Northbound)			*Beach--* (Eastbound)			Crosswalk Usage (Peds By Approach)				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
6:00 AM	0	15	0	0	0	0	0	39	0	0	0	0	0	0	0	0	54	0
6:05 AM	0	20	0	0	0	0	0	44	0	0	0	1	0	0	0	0	65	0
6:10 AM	0	24	0	0	0	0	0	39	1	0	0	1	0	0	0	0	65	0
6:15 AM	1	18	0	0	0	0	0	74	0	0	0	1	0	0	0	0	94	0
6:20 AM	0	23	0	0	0	0	0	73	1	0	0	0	0	0	0	0	97	0
6:25 AM	0	22	0	0	0	0	0	58	0	0	0	3	0	0	0	0	83	0
6:30 AM	0	23	0	0	0	0	0	65	0	0	0	0	0	0	0	0	88	0
6:35 AM	0	40	0	0	0	0	0	55	0	0	0	1	0	0	0	0	96	0
6:40 AM	0	35	0	0	0	0	0	55	0	1	0	2	0	0	0	0	93	0
6:45 AM	0	42	0	0	0	0	0	79	0	0	0	1	0	0	0	0	122	0
6:50 AM	1	40	0	0	0	0	0	55	0	0	0	1	0	0	0	0	97	0
6:55 AM	0	26	0	0	0	0	0	51	2	0	0	3	0	0	0	0	82	0
7:00 AM	0	30	0	0	0	0	0	50	1	0	0	2	0	0	0	0	83	0
7:05 AM	0	25	0	0	0	0	0	51	0	0	0	2	0	0	0	0	78	0
7:10 AM	2	40	0	0	0	0	0	44	0	0	0	1	0	0	0	0	87	0
7:15 AM	2	36	0	0	0	0	0	61	0	0	0	1	0	0	0	0	100	0
7:20 AM	0	35	0	0	0	0	0	36	0	1	0	1	0	0	0	0	73	0
7:25 AM	2	45	0	0	0	0	0	48	0	0	0	2	0	0	0	0	97	0
7:30 AM	1	45	0	0	0	0	0	54	0	0	0	2	0	0	0	0	102	0
7:35 AM	0	44	0	0	0	0	0	58	1	1	0	0	0	0	0	0	104	0
7:40 AM	0	51	0	0	0	0	0	68	0	1	0	1	0	0	0	0	121	0
7:45 AM	1	40	0	0	0	0	0	52	0	0	0	1	0	0	0	0	94	0
7:50 AM	0	37	0	0	0	0	0	52	0	2	0	2	0	0	0	0	93	0
7:55 AM	3	27	0	0	0	0	0	53	1	0	0	1	0	0	0	0	85	0
8:00 AM	1	29	0	0	0	0	0	42	0	0	0	1	0	0	0	0	73	0
8:05 AM	1	33	0	0	0	0	0	40	0	0	0	1	0	0	0	0	75	0
8:10 AM	1	32	0	0	0	0	0	33	0	1	0	0	0	0	0	0	67	0
8:15 AM	0	32	0	0	0	0	0	44	0	0	0	1	0	0	0	0	77	0
8:20 AM	2	29	0	0	0	0	0	41	1	0	0	1	0	0	0	0	74	0
8:25 AM	1	32	0	0	0	0	0	44	2	2	0	2	0	0	0	0	83	0
8:30 AM	0	30	0	0	0	0	0	34	0	0	0	0	0	0	0	0	64	0
8:35 AM	1	34	0	0	0	0	0	44	0	3	0	1	0	0	0	0	83	0
8:40 AM	1	38	0	0	0	0	0	34	0	0	0	0	0	0	0	0	73	0
8:45 AM	0	51	0	0	0	0	0	39	1	0	0	1	0	0	0	0	92	0
8:50 AM	2	34	0	0	0	0	0	27	1	0	0	0	0	0	0	0	64	0
8:55 AM	0	37	0	0	0	0	0	23	0	0	0	2	0	0	0	0	62	0

HOURLY TOTALS	Southbound			Westbound			Northbound			Eastbound			Pedestrians By Approach				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	West	East	North	South	Veh	Peds
6:00 AM	2	328	0	0	0	0	0	687	4	1	0	14	0	0	0	0	1036	0
6:15 AM	4	364	0	0	0	0	0	710	4	1	0	17	0	0	0	0	1100	0
6:30 AM	7	417	0	0	0	0	0	650	3	2	0	17	0	0	0	0	1096	0
6:45 AM	8	459	0	0	0	0	0	655	4	3	0	17	0	0	0	0	1146	0
7:00 AM	11	455	0	0	0	0	0	627	3	5	0	16	0	0	0	0	1117	0
7:15 AM	12	454	0	0	0	0	0	597	2	6	0	13	0	0	0	0	1084	0
7:30 AM	11	431	0	0	0	0	0	581	5	7	0	13	0	0	0	0	1048	0
7:45 AM	12	393	0	0	0	0	0	513	4	8	0	11	0	0	0	0	941	0
8:00 AM	10	411	0	0	0	0	0	445	5	6	0	10	0	0	0	0	887	0

Version 3.1

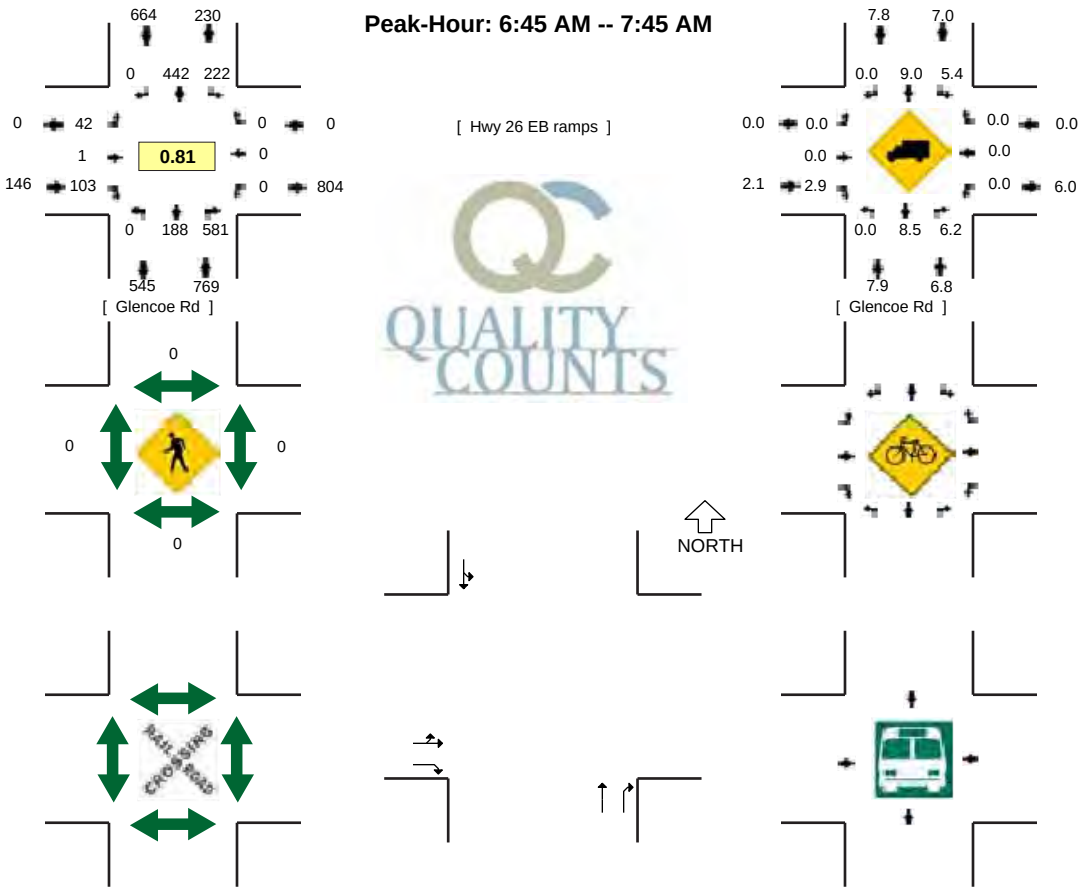
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--Hwy 26 EB ramps
WEATHER:

QC JOB #: 10127611
DATE: 11/16/2005

Peak-Hour: 6:45 AM -- 7:45 AM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				Hwy 26 EB ramps (Eastbound)				Hwy 26 EB ramps (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:15 AM	0	12	78		9	17	0		0	0	2		0	0	0		118	
6:20 AM	0	20	52		25	19	0		3	0	1		0	0	0		120	
6:25 AM	0	11	70		14	20	0		5	0	4		0	0	0		124	
6:30 AM	0	11	38		21	24	0		3	0	3		0	0	0		100	
6:35 AM	0	17	54		16	38	0		4	0	13		0	0	0		142	
6:40 AM	0	15	59		17	28	0		2	0	8		0	0	0		129	
6:45 AM	0	24	64		26	37	0		5	0	12		0	0	0		168	
6:50 AM	0	10	43		18	27	0		1	0	9		0	0	0		108	
6:55 AM	0	26	50		15	25	0		5	0	10		0	0	0		131	1405
7:00 AM	0	10	47		14	27	0		3	0	2		0	0	0		103	1427
7:05 AM	0	16	50		19	27	0		2	0	3		0	0	0		117	1453
7:10 AM	0	14	35		12	35	0		4	0	7		0	0	0		107	1467
7:15 AM	0	17	47		14	35	0		6	0	4		0	0	0		123	1472
7:20 AM	0	5	34		24	39	0		3	0	10		0	0	0		115	1467
7:25 AM	0	13	39		20	41	0		3	0	6		0	0	0		122	1465
7:30 AM	0	22	56		20	47	0		1	1	12		0	0	0		159	1524
7:35 AM	0	20	63		20	39	0		5	0	12		0	0	0		159	1541
7:40 AM	0	11	53		20	63	0		4	0	16		0	0	0		167	1579
7:45 AM	0	18	47		25	32	0		6	0	6		0	0	0		134	1545
7:50 AM	0	17	29		9	36	0		1	0	7		0	0	0		99	1536
7:55 AM	0	20	36		14	30	0		3	0	8		0	0	0		111	1516
8:00 AM	0	16	34		10	25	0		2	0	6		0	0	0		93	1506
8:05 AM	0	15	38		11	33	0		1	0	10		0	0	0		108	1497
8:10 AM	0	11	27		19	26	0		3	0	7		0	0	0		93	1483

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	212	688		240	596	0		40	4	160		0	0	0		1940
Heavy Trucks	0	4	40		12	52	0		0	0	0		0	0	0		108
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

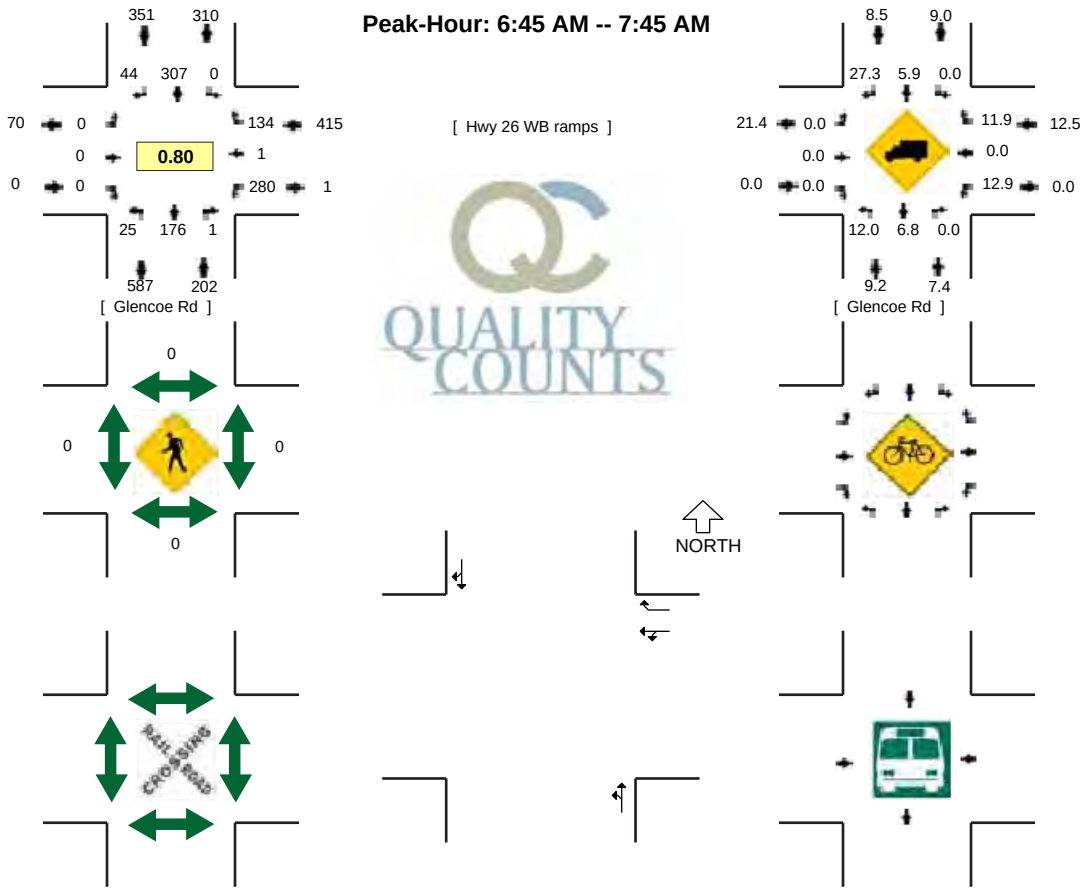
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--Hwy 26 WB ramps
WEATHER:

QC JOB #: 10127612
DATE: 11/16/2005

Peak-Hour: 6:45 AM -- 7:45 AM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				Hwy 26 WB ramps (Eastbound)				Hwy 26 WB ramps (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:15 AM	1	15	0		0	15	1		0	0	0		10	0	9		51	
6:20 AM	1	14	0		0	23	4		0	0	0		13	1	14		70	
6:25 AM	0	14	0		0	13	4		0	0	0		19	0	15		65	
6:30 AM	0	15	0		0	23	11		0	0	0		18	0	15		82	
6:35 AM	5	8	0		0	27	12		0	0	0		21	0	16		89	
6:40 AM	1	20	0		0	23	2		0	0	0		19	0	10		75	
6:45 AM	2	24	0		0	30	4		0	0	0		27	1	9		97	
6:50 AM	1	10	0		0	19	3		0	0	0		16	0	12		61	
6:55 AM	1	20	0		0	18	1		0	0	0		12	0	12		64	795
7:00 AM	0	13	0		0	19	4		0	0	0		16	0	4		56	805
7:05 AM	2	9	0		0	20	5		0	0	0		19	0	11		66	824
7:10 AM	6	12	0		0	24	2		0	0	0		21	0	10		75	851
7:15 AM	1	20	0		0	21	5		0	0	0		25	0	9		81	881
7:20 AM	1	9	0		0	29	1		0	0	0		23	0	14		77	888
7:25 AM	2	10	0		0	34	4		0	0	0		27	0	10		87	910
7:30 AM	2	14	1		0	29	2		0	0	0		33	0	21		102	930
7:35 AM	4	21	0		0	31	6		0	0	0		26	0	10		98	939
7:40 AM	3	14	0		0	33	7		0	0	0		35	0	12		104	968
7:45 AM	4	14	0		0	30	6		0	0	0		19	0	9		82	953
7:50 AM	3	11	0		0	16	5		0	0	0		27	3	16		81	973
7:55 AM	3	15	0		0	24	7		0	0	0		15	0	10		74	983
8:00 AM	3	15	0		0	22	3		0	0	0		13	0	13		69	996
8:05 AM	4	9	0		0	23	4		0	0	0		16	0	6		62	992
8:10 AM	4	15	0		0	24	4		0	0	0		15	0	7		69	986

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	36	196	4		0	372	60		0	0	0		376	0	172		1216
Heavy Trucks	4	4	0		0	16	12		0	0	0		48	0	28		112
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

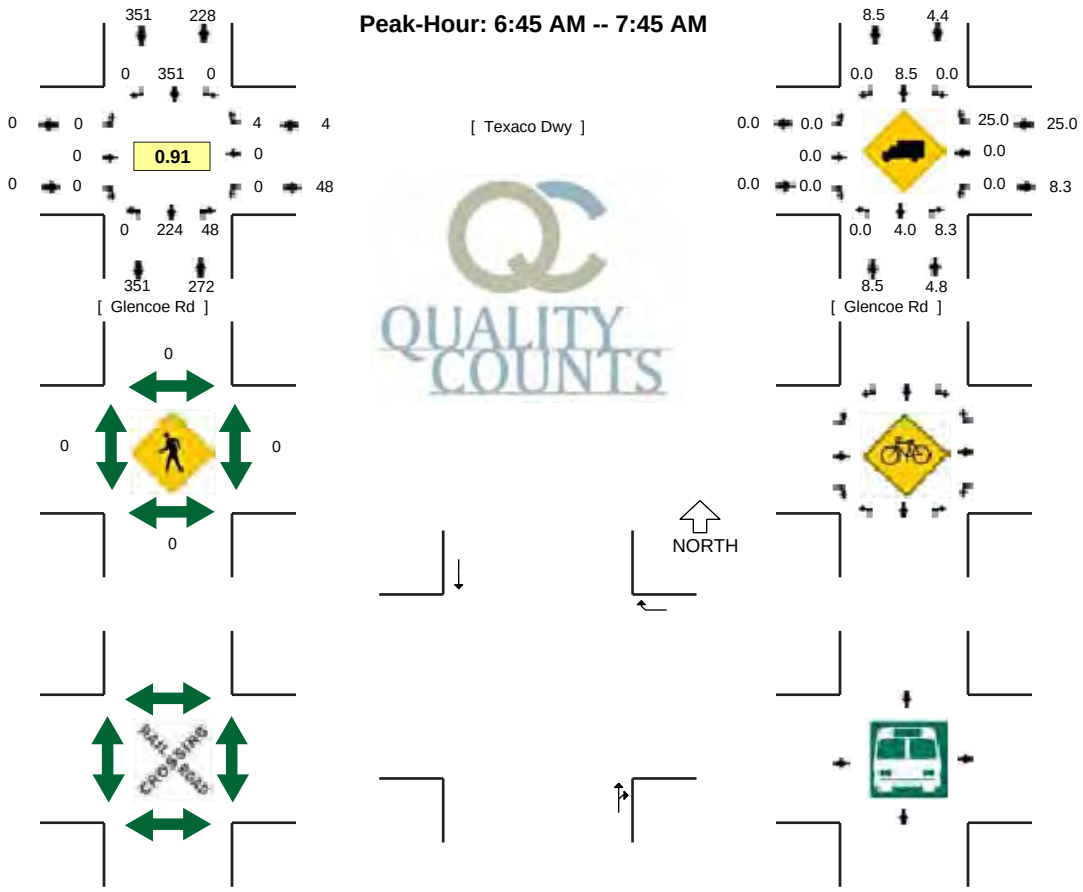
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--Texaco Dwy
WEATHER:

QC JOB #: 10127613
DATE: 11/16/2005

Peak-Hour: 6:45 AM -- 7:45 AM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				Texaco Dwy (Eastbound)				Texaco Dwy (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:15 AM	0	21	1		0	16	0		0	0	0		0	0	0		38	
6:20 AM	0	2	2		0	27	0		0	0	0		0	0	0		31	
6:25 AM	0	1	5		0	17	0		0	0	0		0	0	0		23	
6:30 AM	0	2	2		0	34	0		0	0	0		0	0	2		40	
6:35 AM	0	0	2		0	39	0		0	0	0		0	0	0		41	
6:40 AM	0	28	2		0	25	0		0	0	0		0	0	0		55	
6:45 AM	0	28	1		0	34	0		0	0	0		0	0	0		63	
6:50 AM	0	27	2		0	22	0		0	0	0		0	0	1		52	
6:55 AM	0	28	6		0	19	0		0	0	0		0	0	0		53	502
7:00 AM	0	14	4		0	23	0		0	0	0		0	0	0		41	511
7:05 AM	0	15	6		0	25	0		0	0	0		0	0	1		47	517
7:10 AM	0	14	8		0	26	0		0	0	0		0	0	1		49	533
7:15 AM	0	28	5		0	26	0		0	0	0		0	0	0		59	554
7:20 AM	0	18	2		0	30	0		0	0	0		0	0	1		51	574
7:25 AM	0	23	0		0	38	0		0	0	0		0	0	0		61	612
7:30 AM	0	27	3		0	31	0		0	0	0		0	0	0		61	633
7:35 AM	0	2	4		0	37	0		0	0	0		0	0	0		43	635
7:40 AM	0	0	7		0	40	0		0	0	0		0	0	0		47	627
7:45 AM	0	2	4		0	36	0		0	0	0		0	0	0		42	606
7:50 AM	0	2	5		0	21	0		0	0	0		0	0	0		28	582
7:55 AM	0	21	4		0	31	0		0	0	0		0	0	0		56	585
8:00 AM	0	29	2		0	25	0		0	0	0		0	0	1		57	601
8:05 AM	0	14	2		0	27	0		0	0	0		0	0	0		43	597
8:10 AM	0	12	6		0	28	0		0	0	0		0	0	0		46	594

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	272	20		0	396	0		0	0	0		0	0	4		692
Heavy Trucks	0	4	4		0	32	0		0	0	0		0	0	0		40
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

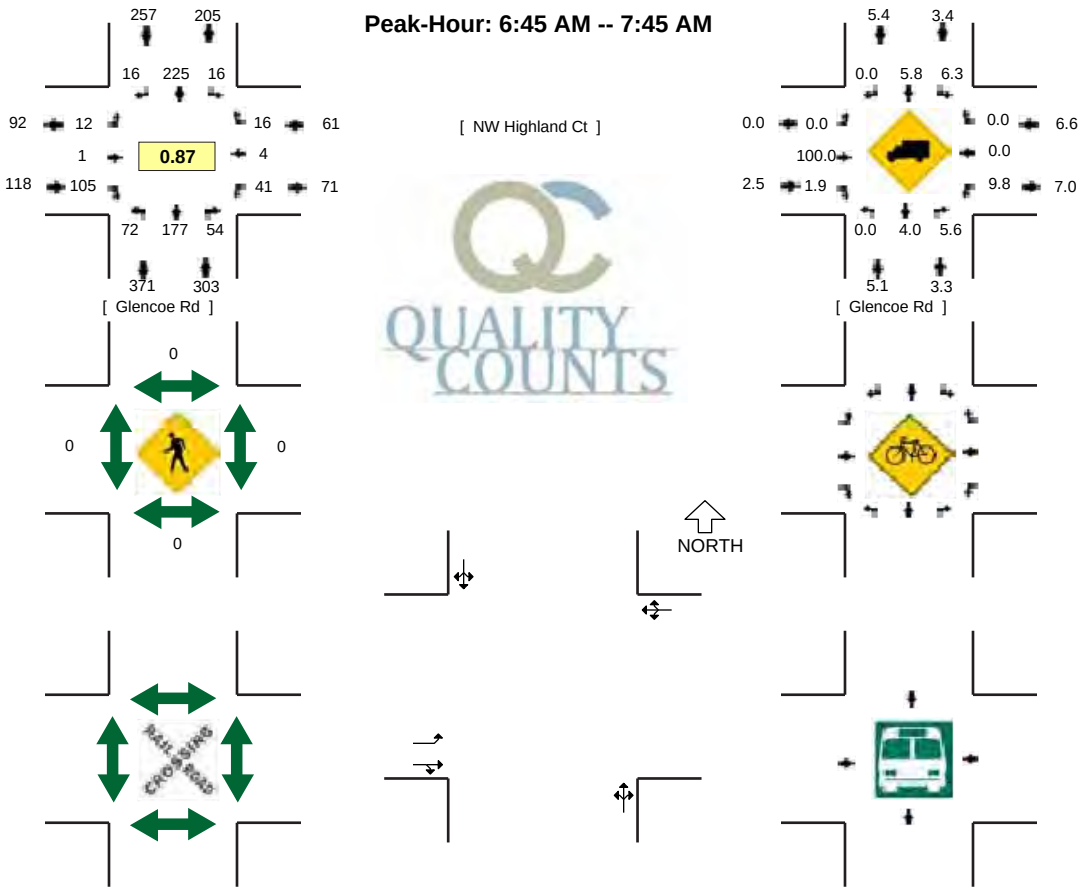
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--NW Highland Ct
WEATHER:

QC JOB #: 10127614
DATE: 11/16/2005

Peak-Hour: 6:45 AM -- 7:45 AM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				NW Highland Ct (Eastbound)				NW Highland Ct (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:15 AM	7	12	3		1	14	0		1	0	5		1	0	0		44	
6:20 AM	8	14	5		1	15	1		1	0	13		1	0	1		60	
6:25 AM	8	14	10		3	8	0		2	0	10		1	0	1		57	
6:30 AM	9	17	6		6	16	3		1	0	21		3	0	4		86	
6:35 AM	5	12	4		1	19	1		2	1	8		12	0	1		66	
6:40 AM	3	19	8		1	9	1		1	0	8		8	0	1		59	
6:45 AM	5	18	6		1	23	1		1	0	10		3	1	1		70	
6:50 AM	8	16	4		2	19	1		1	0	5		2	0	1		59	
6:55 AM	10	14	10		0	10	0		0	0	5		4	0	2		55	671
7:00 AM	8	6	4		1	16	0		2	0	9		3	0	0		49	683
7:05 AM	5	9	6		0	18	0		2	0	11		3	1	2		57	697
7:10 AM	7	8	6		4	17	1		0	0	11		3	1	2		60	722
7:15 AM	7	20	6		0	10	2		0	1	6		3	0	3		58	736
7:20 AM	3	15	1		2	19	4		0	0	10		6	0	2		62	738
7:25 AM	6	17	0		0	20	2		0	0	6		4	0	2		57	738
7:30 AM	4	24	2		3	24	1		3	0	10		2	0	0		73	725
7:35 AM	8	18	4		2	23	1		3	0	9		4	0	1		73	732
7:40 AM	1	12	5		1	26	3		0	0	13		4	1	0		66	739
7:45 AM	9	11	7		0	22	2		0	1	6		2	0	4		64	733
7:50 AM	9	16	7		4	12	3		4	0	7		3	0	2		67	741
7:55 AM	4	16	5		1	13	2		4	2	17		4	0	0		68	754
8:00 AM	8	21	1		4	15	1		1	0	11		3	0	2		67	772
8:05 AM	1	12	3		1	19	2		0	0	10		2	0	0		50	765
8:10 AM	4	8	6		2	14	0		0	0	7		7	0	0		48	753

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	52	216	44		24	292	20		24	0	128		40	4	4		848
Heavy Trucks	0	4	0		4	12	0		0	0	4		4	0	0		28
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

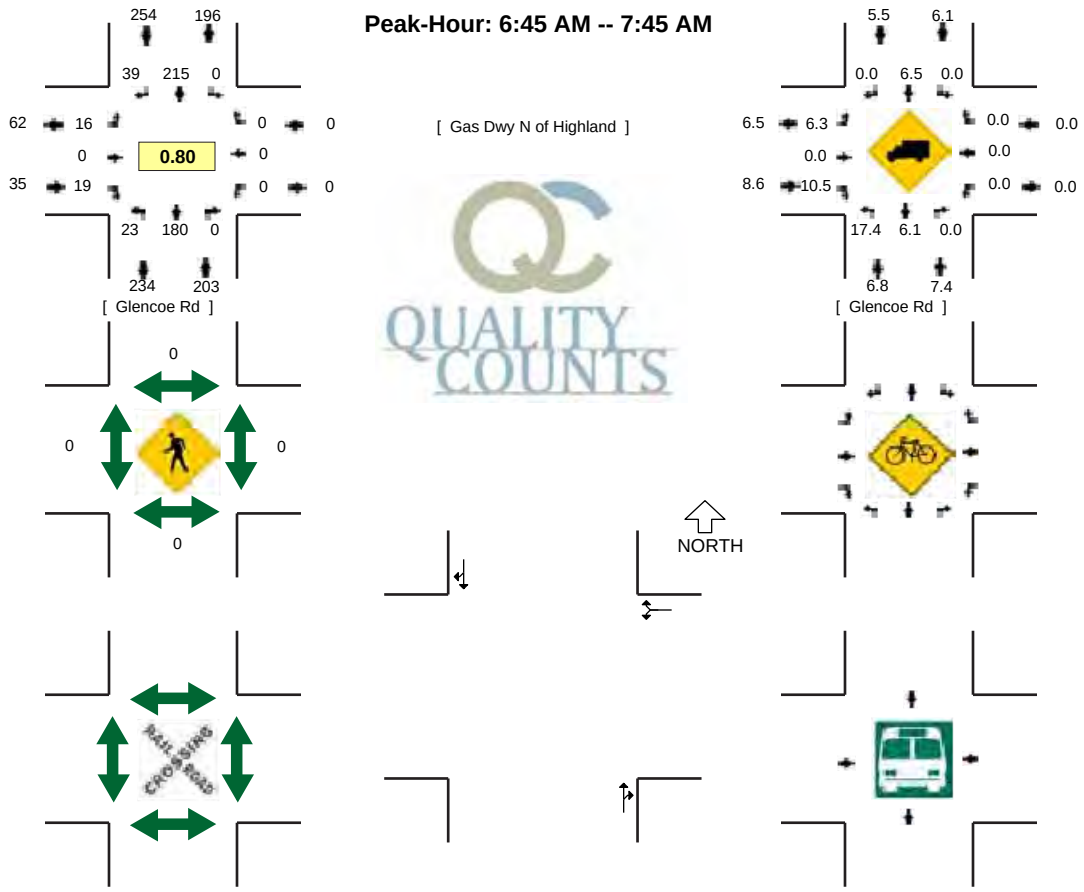
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--Gas Dwy N of Highland
WEATHER:

QC JOB #: 10127615
DATE: 11/16/2005

Peak-Hour: 6:45 AM -- 7:45 AM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				Gas Dwy N of Highland (Eastbound)				Gas Dwy N of Highland (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:15 AM	1	17	0		0	0	6		0	0	2		0	0	0		26	
6:20 AM	5	9	0		0	15	4		0	0	2		0	0	0		35	
6:25 AM	6	7	0		0	6	5		1	0	0		0	0	0		25	
6:30 AM	6	3	0		0	26	1		0	0	2		0	0	0		38	
6:35 AM	1	27	0		0	18	4		5	0	1		0	0	0		56	
6:40 AM	1	26	0		0	3	4		3	0	0		0	0	0		37	
6:45 AM	2	17	0		0	0	4		2	0	1		0	0	0		26	
6:50 AM	1	14	0		0	23	1		2	0	2		0	0	0		43	
6:55 AM	2	19	0		0	9	3		2	0	2		0	0	0		37	431
7:00 AM	1	8	0		0	16	3		1	0	2		0	0	0		31	421
7:05 AM	1	12	0		0	17	3		1	0	2		0	0	0		36	419
7:10 AM	1	7	0		0	24	0		0	0	2		0	0	0		34	424
7:15 AM	2	23	0		0	9	3		3	0	0		0	0	0		40	438
7:20 AM	0	23	0		0	23	4		0	0	2		0	0	0		52	455
7:25 AM	3	11	0		0	22	3		0	0	3		0	0	0		42	472
7:30 AM	3	23	0		0	24	6		2	0	2		0	0	0		60	494
7:35 AM	3	14	0		0	23	4		0	0	1		0	0	0		45	483
7:40 AM	4	9	0		0	25	5		3	0	0		0	0	0		46	492
7:45 AM	1	17	0		0	24	1		2	0	1		0	0	0		46	512
7:50 AM	2	22	0		0	14	6		2	0	1		0	0	0		47	516
7:55 AM	1	22	0		0	13	4		2	0	1		0	0	0		43	522
8:00 AM	2	21	0		0	16	4		1	0	0		0	0	0		44	535
8:05 AM	4	5	0		0	18	6		0	0	1		0	0	0		34	533
8:10 AM	0	16	0		0	16	1		2	0	1		0	0	0		36	535

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	24	228	0		0	276	52		8	0	28		0	0	0		616
Heavy Trucks	4	12	0		0	8	0		0	0	0		0	0	0		24
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

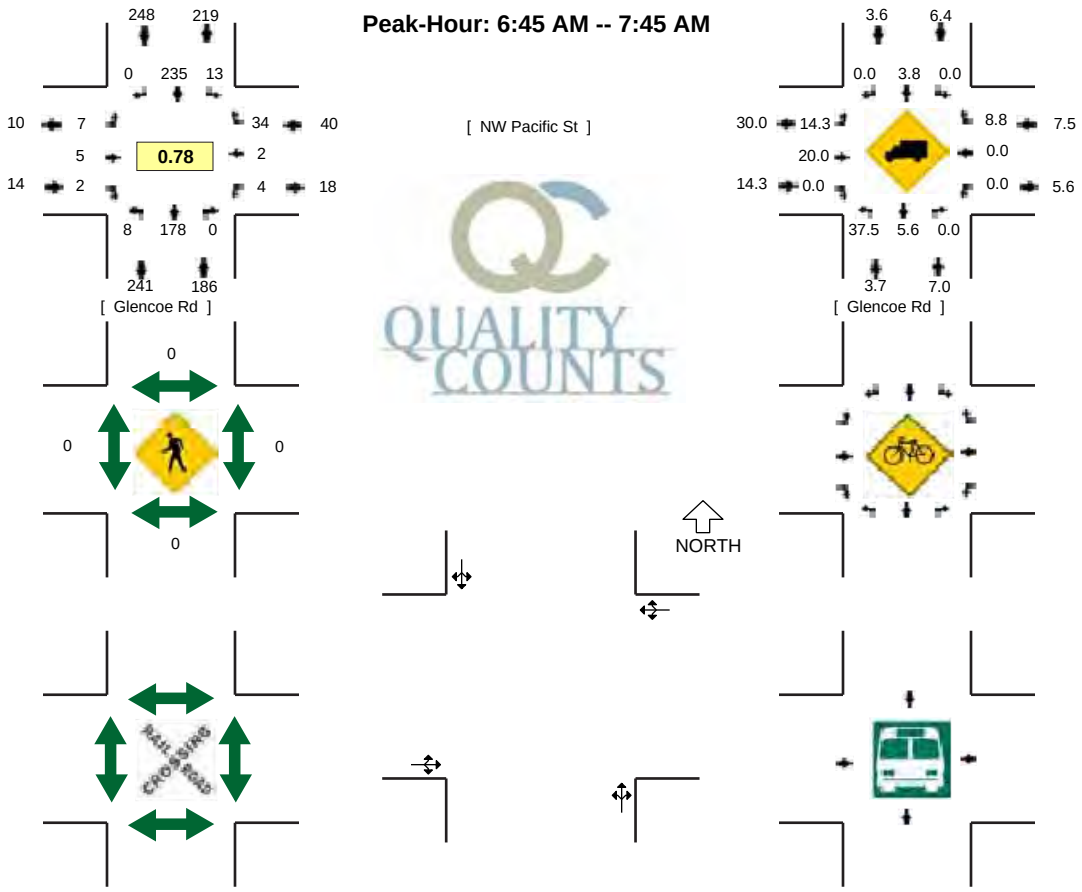
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--NW Pacific St
WEATHER:

QC JOB #: 10127616
DATE: 11/16/2005

Peak-Hour: 6:45 AM -- 7:45 AM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				NW Pacific St (Eastbound)				NW Pacific St (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:15 AM	0	17	0		0	8	0		0	0	0		0	0	3		28	
6:20 AM	0	14	0		0	12	0		0	0	0		0	0	6		32	
6:25 AM	0	12	0		1	8	0		0	0	0		0	0	2		23	
6:30 AM	0	9	0		0	20	0		0	0	0		0	0	2		31	
6:35 AM	1	22	0		0	21	0		0	0	0		0	0	2		46	
6:40 AM	0	22	0		0	15	0		0	0	0		0	0	4		41	
6:45 AM	0	16	0		0	20	0		0	0	0		1	0	8		45	
6:50 AM	0	13	0		0	15	0		1	0	0		1	0	4		34	
6:55 AM	1	18	0		0	15	0		0	0	0		1	0	2		37	398
7:00 AM	0	8	0		2	12	0		2	0	0		0	0	2		26	391
7:05 AM	1	11	0		0	19	0		1	0	0		1	0	1		34	399
7:10 AM	0	8	0		0	17	0		0	0	0		0	0	2		27	404
7:15 AM	2	20	0		0	12	0		0	1	0		0	1	4		40	416
7:20 AM	1	22	0		11	23	0		1	1	1		0	1	3		64	448
7:25 AM	2	12	0		0	19	0		1	0	1		0	0	3		38	463
7:30 AM	1	23	0		0	25	0		0	2	0		0	0	3		54	486
7:35 AM	0	17	0		0	30	0		1	1	0		0	0	1		50	490
7:40 AM	0	10	0		0	28	0		0	0	0		0	0	1		39	488
7:45 AM	0	16	0		1	27	0		0	0	0		0	0	2		46	489
7:50 AM	2	20	0		0	23	0		1	0	0		0	0	2		48	503
7:55 AM	2	19	0		0	17	0		0	0	0		0	0	1		39	505
8:00 AM	2	20	0		2	17	0		0	0	4		0	1	1		47	526
8:05 AM	1	8	0		0	19	1		0	0	3		1	0	0		33	525
8:10 AM	0	14	0		1	17	0		0	0	2		0	0	0		34	532

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	16	228	0		44	268	0		8	12	8		0	4	36		624
Heavy Trucks	4	12	0		0	4	0		0	4	0		0	0	8		32
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

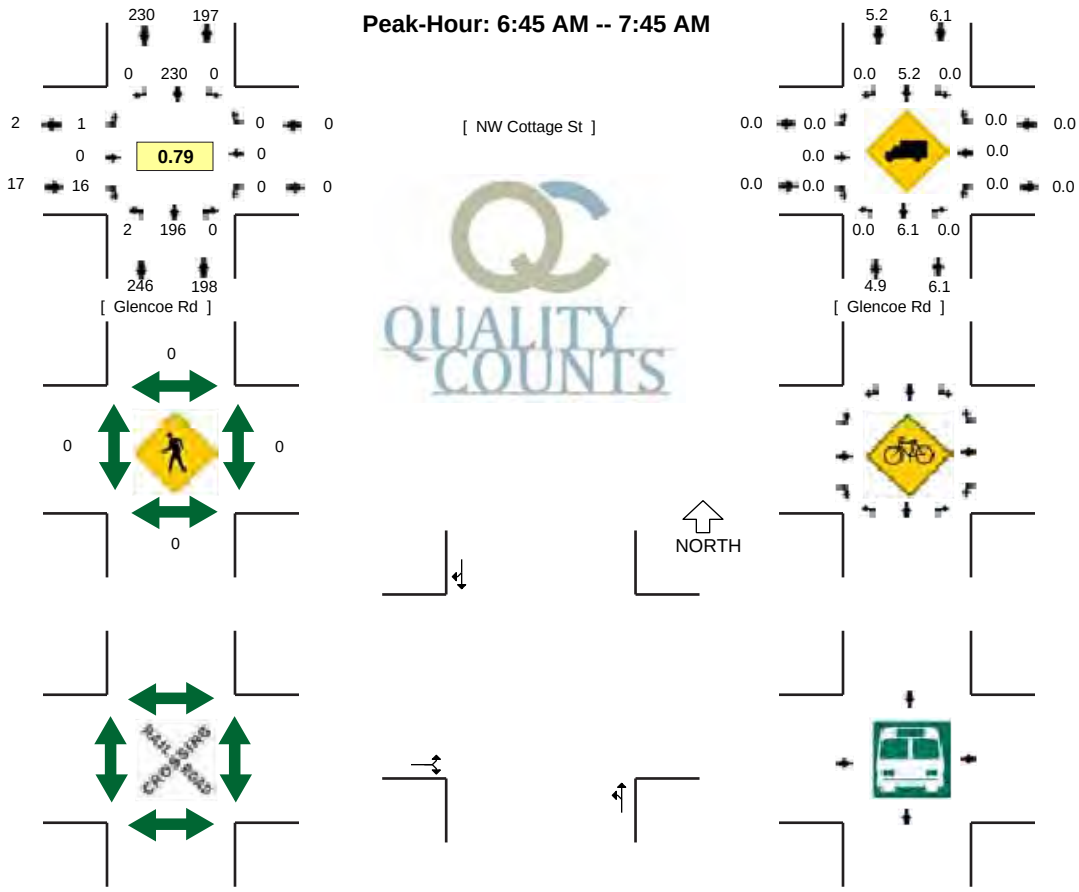
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--NW Cottage St
WEATHER:

QC JOB #: 10127617
DATE: 11/16/2005

Peak-Hour: 6:45 AM -- 7:45 AM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				NW Cottage St (Eastbound)				NW Cottage St (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:15 AM	0	12	0		0	21	0		0	0	1		0	0	0		34	
6:20 AM	0	11	0		0	11	0		0	0	1		0	0	0		23	
6:25 AM	0	9	0		0	13	0		0	0	3		0	0	0		25	
6:30 AM	1	10	0		0	15	0		0	0	0		0	0	0		26	
6:35 AM	0	21	0		0	15	0		0	0	2		0	0	0		38	
6:40 AM	0	25	0		0	14	0		0	0	1		0	0	0		40	
6:45 AM	0	21	0		0	20	0		0	0	1		0	0	0		42	
6:50 AM	0	19	0		0	15	0		0	0	0		0	0	0		34	
6:55 AM	0	20	0		0	14	0		0	0	0		0	0	0		34	368
7:00 AM	0	8	0		0	14	0		0	0	2		0	0	0		24	363
7:05 AM	0	12	0		0	17	0		0	0	0		0	0	0		29	368
7:10 AM	1	6	0		0	17	0		0	0	0		0	0	0		24	373
7:15 AM	0	21	0		0	15	0		1	0	2		0	0	0		39	378
7:20 AM	0	18	0		0	17	0		0	0	3		0	0	0		38	393
7:25 AM	0	18	0		0	22	0		0	0	0		0	0	0		40	408
7:30 AM	0	24	0		0	21	0		0	0	6		0	0	0		51	433
7:35 AM	1	17	0		0	27	0		0	0	1		0	0	0		46	441
7:40 AM	0	12	0		0	31	0		0	0	1		0	0	0		44	445
7:45 AM	1	14	0		0	18	0		0	0	2		0	0	0		35	438
7:50 AM	0	22	0		0	24	0		1	0	1		0	0	0		48	452
7:55 AM	1	18	0		0	17	0		0	0	0		0	0	0		36	454
8:00 AM	1	19	0		0	21	0		0	0	1		0	0	0		42	472
8:05 AM	0	7	0		0	16	0		0	0	2		0	0	0		25	468
8:10 AM	0	10	0		0	16	0		0	0	1		0	0	0		27	471

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	212	0		0	316	0		0	0	32		0	0	0		564
Heavy Trucks	0	16	0		0	16	0		0	0	0		0	0	0		32
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

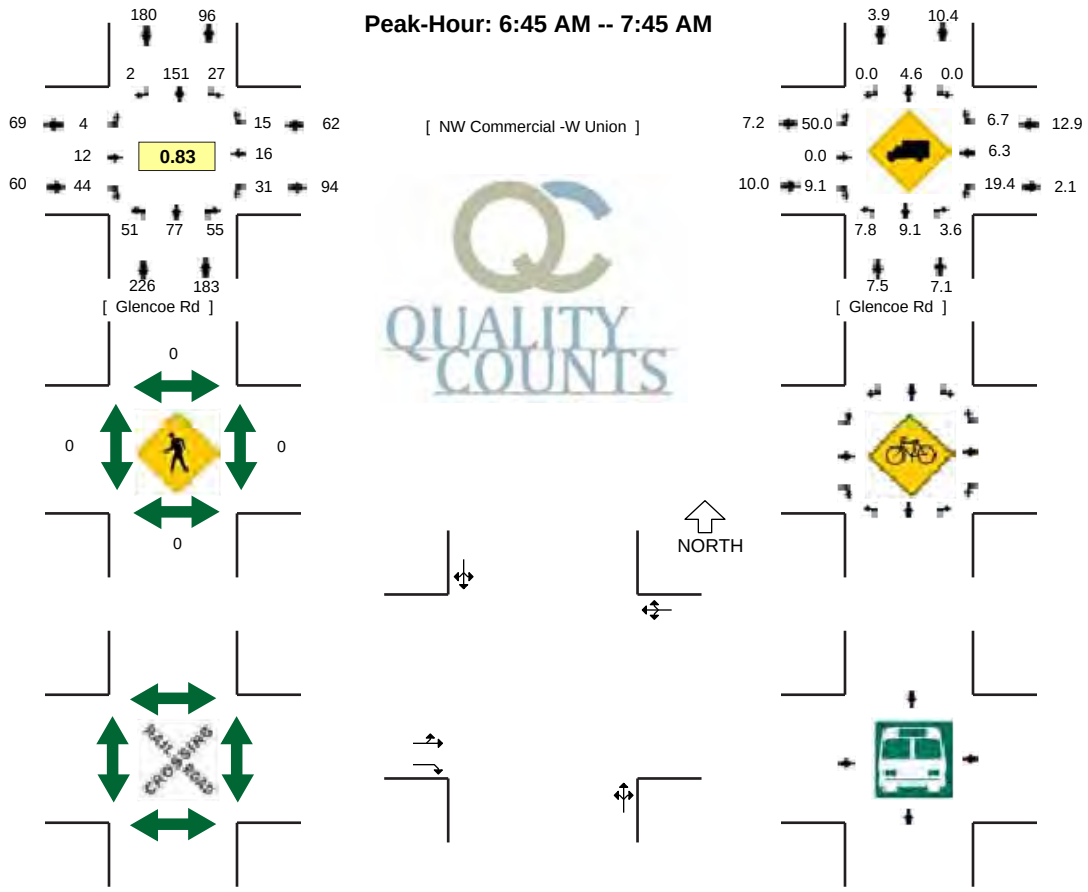
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--NW Commercial -W Union
WEATHER:

QC JOB #: 10127618
DATE: 11/16/2005

Peak-Hour: 6:45 AM -- 7:45 AM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				NW Commercial -W Union (Eastbound)				NW Commercial -W Union (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:15 AM	2	2	5		0	12	0		0	0	5		2	1	0		29	
6:20 AM	6	2	4		2	7	1		0	0	3		1	0	0		26	
6:25 AM	6	2	3		0	7	1		0	2	2		4	0	0		27	
6:30 AM	2	5	3		1	5	0		0	1	9		1	1	0		28	
6:35 AM	13	4	4		2	8	0		1	1	5		0	2	0		40	
6:40 AM	10	5	8		3	4	0		0	2	4		4	0	1		41	
6:45 AM	8	3	8		3	12	0		0	1	7		1	3	0		46	
6:50 AM	5	7	6		1	11	0		1	0	4		0	1	0		36	
6:55 AM	7	5	8		3	7	0		0	1	5		2	1	0		39	385
7:00 AM	1	4	3		2	7	0		1	0	2		6	0	4		30	387
7:05 AM	2	9	1		3	8	1		0	1	5		3	0	1		34	397
7:10 AM	1	5	0		1	13	0		1	0	2		2	0	1		26	402
7:15 AM	4	8	6		2	12	0		0	2	0		2	3	3		42	415
7:20 AM	4	3	4		1	13	0		1	2	2		2	3	1		36	425
7:25 AM	9	9	2		2	14	0		0	1	5		5	2	2		51	449
7:30 AM	3	12	6		2	19	0		0	0	3		0	1	2		48	469
7:35 AM	6	4	5		3	18	1		0	2	2		4	2	0		47	476
7:40 AM	1	8	6		4	17	0		0	2	7		4	0	1		50	485
7:45 AM	0	6	4		5	8	0		0	0	4		6	2	0		35	474
7:50 AM	2	12	7		1	12	0		0	0	5		4	1	1		45	483
7:55 AM	7	7	5		2	9	0		0	2	1		4	4	1		42	486
8:00 AM	6	2	3		0	2	3		6	7	5		1	14	0		49	505
8:05 AM	2	3	1		0	3	4		2	5	4		0	9	1		34	505
8:10 AM	1	0	0		0	4	7		0	6	2		2	7	0		29	508

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	72	100	52		28	204	4		0	12	40		36	20	16		584
Heavy Trucks	4	4	4		0	12	0		0	0	0		4	0	0		28
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

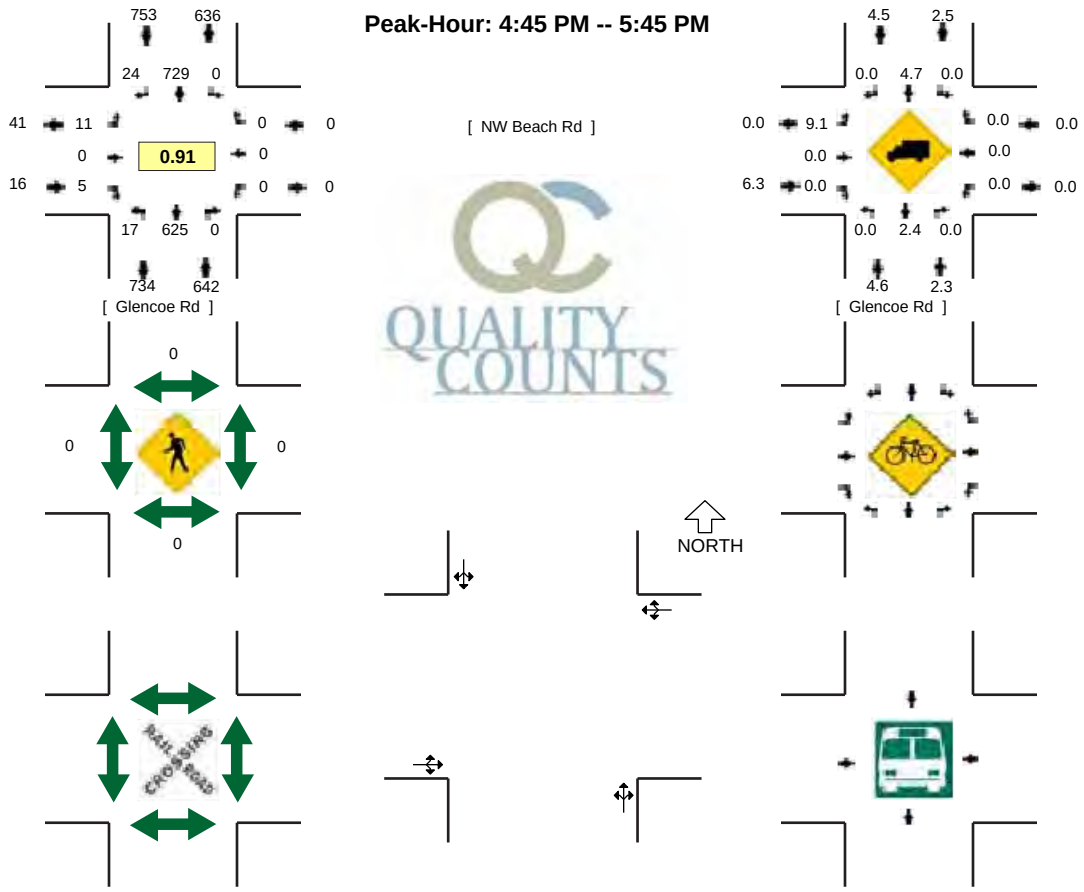
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--NW Beach Rd
WEATHER:

QC JOB #: 10127601
DATE: 11/16/2005

Peak-Hour: 4:45 PM -- 5:45 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				NW Beach Rd (Eastbound)				NW Beach Rd (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	51	0		0	45	1		2	0	0		0	0	0		99	
4:05 PM	1	50	0		0	55	1		0	0	1		0	0	0		108	
4:10 PM	0	44	0		0	61	1		0	0	0		0	0	0		106	
4:15 PM	1	35	0		0	72	2		0	0	0		0	0	0		110	
4:20 PM	0	46	0		0	71	6		0	0	0		0	0	0		123	
4:25 PM	0	43	0		0	51	2		1	0	2		0	0	0		99	
4:30 PM	1	43	0		0	46	8		1	0	0		0	0	0		99	
4:35 PM	0	37	0		1	57	1		0	0	2		0	0	0		98	
4:40 PM	1	31	0		0	67	0		0	0	1		0	0	0		100	
4:45 PM	12	41	0		0	84	1		2	0	0		0	0	0		140	
4:50 PM	0	46	0		0	66	2		0	0	1		0	0	0		115	
4:55 PM	1	61	0		0	62	3		1	0	1		0	0	0		129	1326
5:00 PM	0	40	0		0	54	4		0	0	0		0	0	0		98	1325
5:05 PM	1	49	0		0	59	1		3	0	1		0	0	0		114	1331
5:10 PM	0	44	0		0	66	2		2	0	1		0	0	0		115	1340
5:15 PM	1	55	0		0	50	3		1	0	0		0	0	0		110	1340
5:20 PM	0	82	0		0	66	1		0	0	0		0	0	0		149	1366
5:25 PM	1	62	0		0	60	3		2	0	0		0	0	0		128	1395
5:30 PM	1	51	0		0	52	0		0	0	0		0	0	0		104	1400
5:35 PM	0	54	0		0	50	1		0	0	0		0	0	0		105	1407
5:40 PM	0	40	0		0	60	3		0	0	1		0	0	0		104	1411
5:45 PM	1	37	0		0	51	2		1	0	3		0	0	0		95	1366
5:50 PM	0	45	0		0	46	2		0	0	1		0	0	0		94	1345
5:55 PM	0	40	0		0	52	0		0	0	0		0	0	0		92	1308

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	8	796	0		0	704	28		12	0	0		0	0	0		1548
Heavy Trucks	0	24	0		0	36	0		0	0	0		0	0	0		60
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

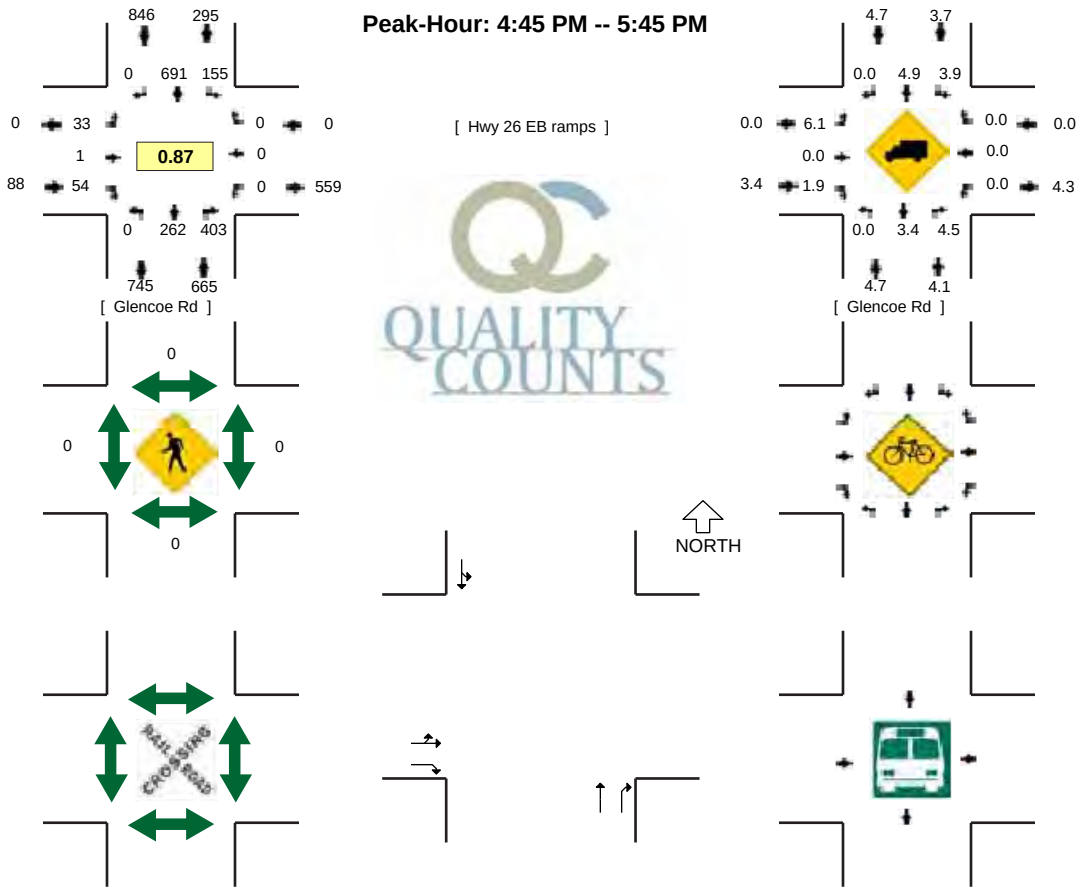
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--Hwy 26 EB ramps
WEATHER:

QC JOB #: 10127602
DATE: 11/16/2005

Peak-Hour: 4:45 PM -- 5:45 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				Hwy 26 EB ramps (Eastbound)				Hwy 26 EB ramps (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	23	29		16	50	0		2	0	3		0	0	0		123	
4:05 PM	0	16	29		15	39	0		6	0	4		0	0	0		109	
4:10 PM	0	22	23		14	70	0		2	0	4		0	0	0		135	
4:15 PM	0	15	20		18	72	0		4	0	6		0	0	0		135	
4:20 PM	0	20	23		11	56	0		3	0	7		0	0	0		120	
4:25 PM	0	14	35		14	57	0		3	0	2		0	0	0		125	
4:30 PM	0	21	31		6	46	0		1	0	5		0	0	0		110	
4:35 PM	0	6	27		14	48	0		2	0	5		0	0	0		102	
4:40 PM	0	18	18		12	73	0		5	0	6		0	0	0		132	
4:45 PM	0	22	16		13	70	0		3	0	9		0	0	0		133	
4:50 PM	0	26	31		14	53	0		2	0	3		0	0	0		129	
4:55 PM	0	28	37		13	64	0		3	0	2		0	0	0		147	1500
5:00 PM	0	20	24		13	58	0		3	0	2		0	0	0		120	1497
5:05 PM	0	18	31		8	57	0		3	0	7		0	0	0		124	1512
5:10 PM	0	21	28		10	60	0		4	0	4		0	0	0		127	1504
5:15 PM	0	23	41		15	57	0		2	0	2		0	0	0		140	1509
5:20 PM	0	32	45		11	66	0		4	0	9		0	0	0		167	1556
5:25 PM	0	24	51		19	53	0		2	0	5		0	0	0		154	1585
5:30 PM	0	20	39		13	51	0		3	0	4		0	0	0		130	1605
5:35 PM	0	11	36		7	52	0		3	1	3		0	0	0		113	1616
5:40 PM	0	17	24		19	50	0		1	0	4		0	0	0		115	1599
5:45 PM	0	14	20		6	42	0		2	0	6		0	0	0		90	1556
5:50 PM	0	19	26		11	48	0		5	0	3		0	0	0		112	1539
5:55 PM	0	21	19		14	48	0		1	0	3		0	0	0		106	1498

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	316	548		180	704	0		32	0	64		0	0	0		1844
Heavy Trucks	0	4	20		8	28	0		0	0	0		0	0	0		60
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

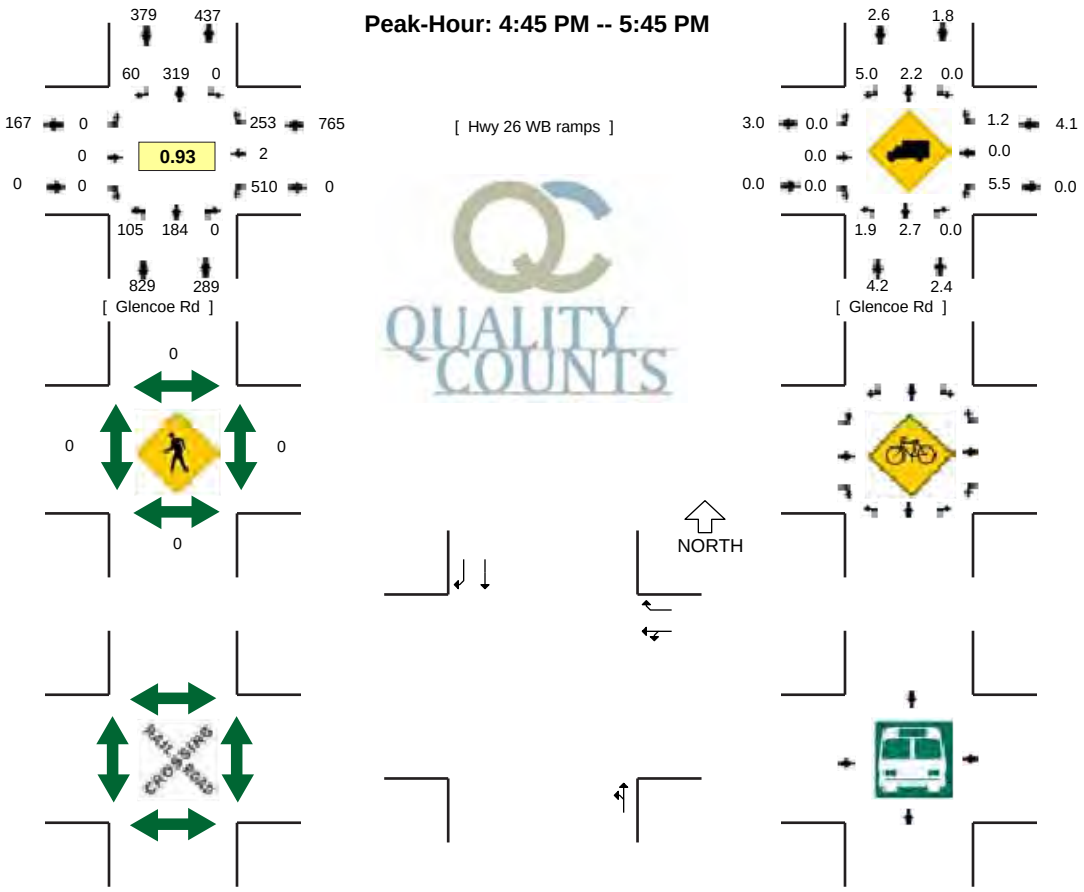
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--Hwy 26 WB ramps
WEATHER:

QC JOB #: 10127603
DATE: 11/16/2005

Peak-Hour: 4:45 PM -- 5:45 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				Hwy 26 WB ramps (Eastbound)				Hwy 26 WB ramps (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	8	16	0		0	27	2		0	0	0		39	0	18		110	
4:05 PM	10	15	0		0	22	0		0	0	0		34	0	22		103	
4:10 PM	8	13	0		0	34	1		0	0	0		46	0	20		122	
4:15 PM	3	21	0		0	39	0		0	0	0		43	0	20		126	
4:20 PM	8	12	0		0	27	0		0	0	0		44	0	14		105	
4:25 PM	4	10	0		0	30	0		0	0	0		39	0	20		103	
4:30 PM	5	12	0		0	19	1		0	0	0		36	0	18		91	
4:35 PM	1	9	0		0	22	3		0	0	0		42	0	19		96	
4:40 PM	4	15	0		0	34	4		0	0	0		47	0	20		124	
4:45 PM	9	20	0		0	23	1		0	0	0		51	0	19		123	
4:50 PM	7	20	0		0	23	2		0	0	0		43	2	20		117	
4:55 PM	7	20	0		0	25	3		0	0	0		49	0	28		132	1352
5:00 PM	7	13	0		0	29	4		0	0	0		43	0	12		108	1350
5:05 PM	8	16	0		0	25	4		0	0	0		40	0	26		119	1366
5:10 PM	12	14	0		0	24	4		0	0	0		46	0	22		122	1366
5:15 PM	12	12	0		0	31	8		0	0	0		40	0	21		124	1364
5:20 PM	13	14	0		0	28	7		0	0	0		51	0	22		135	1394
5:25 PM	10	18	0		0	37	5		0	0	0		37	0	21		128	1419
5:30 PM	10	10	0		0	22	14		0	0	0		33	0	23		112	1440
5:35 PM	5	15	0		0	24	7		0	0	0		41	0	23		115	1459
5:40 PM	5	12	0		0	28	1		0	0	0		36	0	16		98	1433
5:45 PM	2	18	0		0	20	9		0	0	0		28	0	21		98	1408
5:50 PM	7	18	0		0	17	9		0	0	0		41	0	14		106	1397
5:55 PM	6	14	0		0	26	5		0	0	0		33	0	22		106	1371

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	140	176	0		0	384	80		0	0	0		512	0	256		1548
Heavy Trucks	4	0	0		0	8	0		0	0	0		24	0	0		36
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

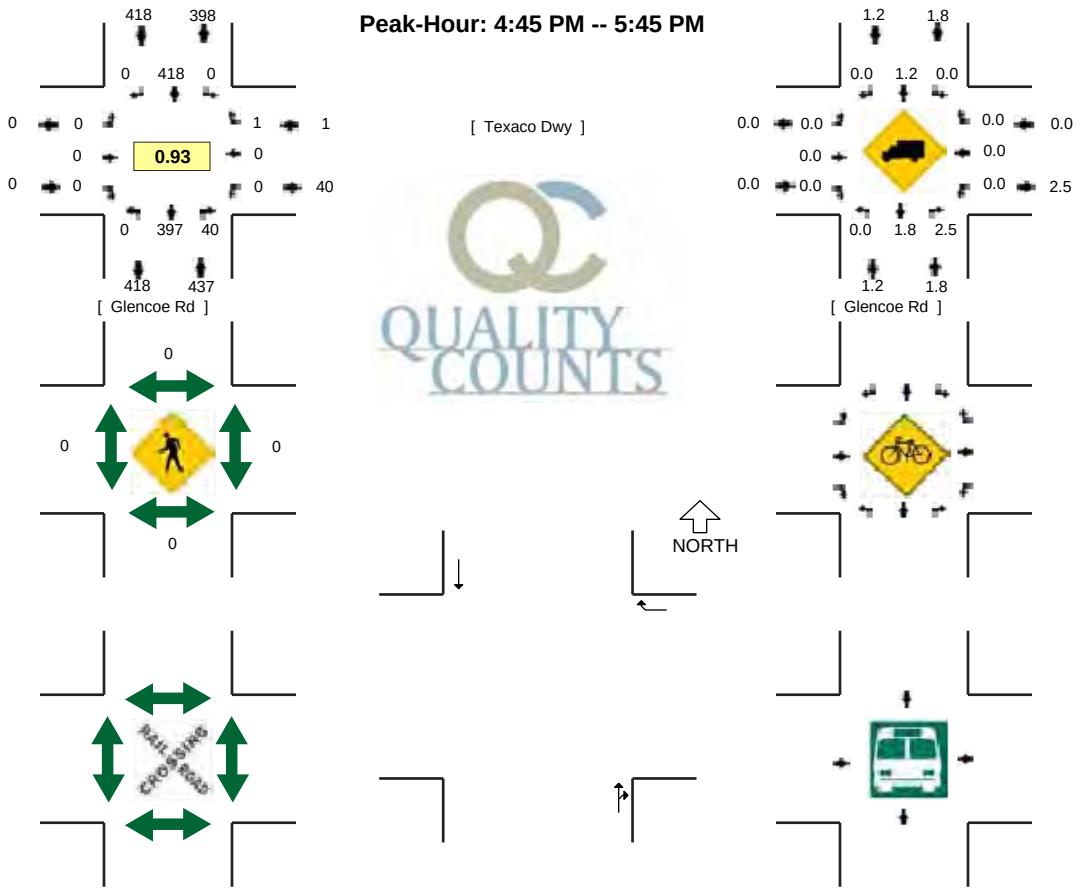
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--Texaco Dwy
WEATHER:

QC JOB #: 10127604
DATE: 11/16/2005

Peak-Hour: 4:45 PM -- 5:45 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				Texaco Dwy (Eastbound)				Texaco Dwy (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	31	3		0	31	0		0	0	0		0	0	0		65	
4:05 PM	0	32	5		0	35	0		0	0	0		0	0	0		72	
4:10 PM	0	28	5		0	47	0		0	0	0		0	0	0		80	
4:15 PM	0	38	3		0	43	0		0	0	0		0	0	0		84	
4:20 PM	0	22	4		0	29	0		0	0	0		0	0	0		55	
4:25 PM	0	28	2		0	42	0		0	0	0		0	0	0		72	
4:30 PM	0	26	4		0	28	0		0	0	0		0	0	0		58	
4:35 PM	0	22	6		0	30	0		0	0	0		0	0	0		58	
4:40 PM	0	32	3		0	41	0		0	0	0		0	0	0		76	
4:45 PM	0	39	0		0	32	0		0	0	0		0	0	0		71	
4:50 PM	0	37	3		0	36	0		0	0	0		0	0	0		76	
4:55 PM	0	44	4		0	28	0		0	0	0		0	0	0		76	843
5:00 PM	0	23	2		0	38	0		0	0	0		0	0	0		63	841
5:05 PM	0	38	4		0	35	0		0	0	0		0	0	0		77	846
5:10 PM	0	29	7		0	32	0		0	0	0		0	0	1		69	835
5:15 PM	0	29	4		0	43	0		0	0	0		0	0	0		76	827
5:20 PM	0	31	5		0	37	0		0	0	0		0	0	0		73	845
5:25 PM	0	37	2		0	43	0		0	0	0		0	0	0		82	855
5:30 PM	0	29	4		0	29	0		0	0	0		0	0	0		62	859
5:35 PM	0	36	2		0	36	0		0	0	0		0	0	0		74	875
5:40 PM	0	25	3		0	29	0		0	0	0		0	0	0		57	856
5:45 PM	0	36	3		0	25	0		0	0	0		0	0	0		64	849
5:50 PM	0	31	1		0	28	0		0	0	0		0	0	1		61	834
5:55 PM	0	34	2		0	30	0		0	0	0		0	0	0		66	824

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	388	44		0	492	0		0	0	0		0	0	0		924
Heavy Trucks	0	0	0		0	4	0		0	0	0		0	0	0		4
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

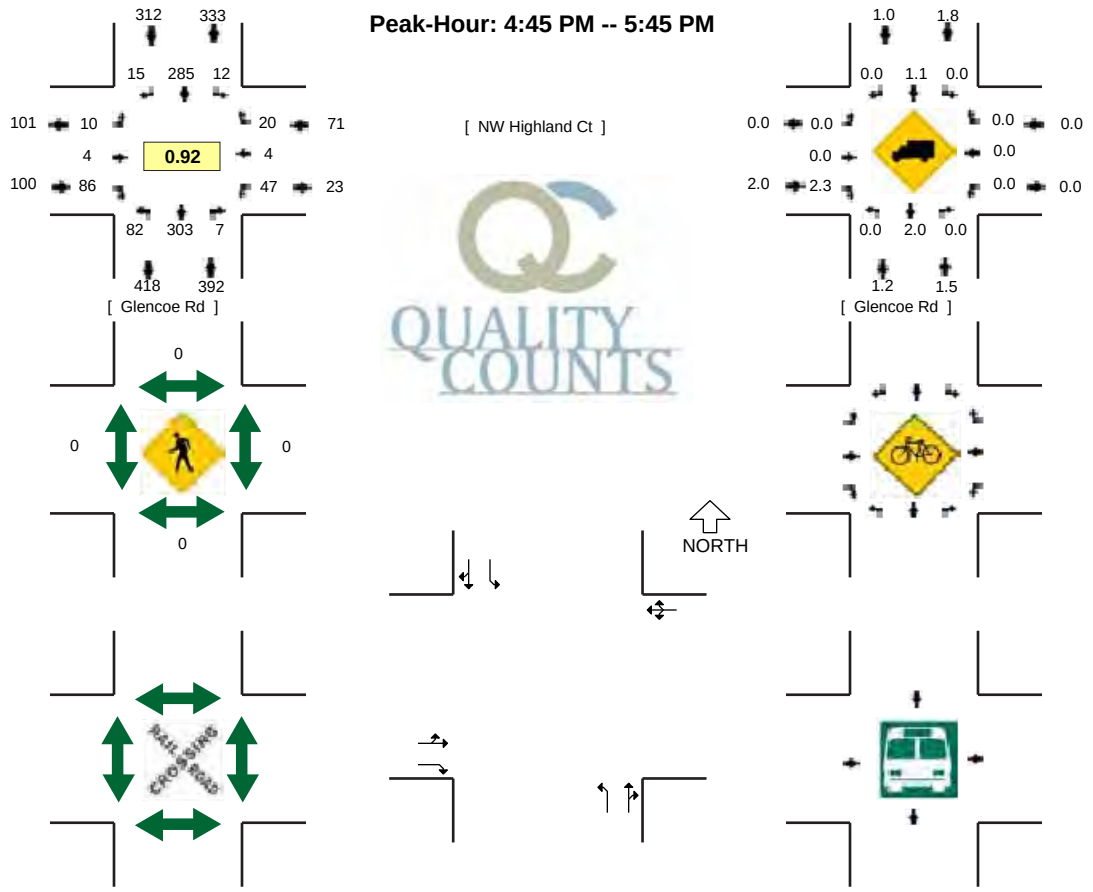
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--NW Highland Ct
WEATHER:

QC JOB #: 10127605
DATE: 11/16/2005

Peak-Hour: 4:45 PM -- 5:45 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				NW Highland Ct (Eastbound)				NW Highland Ct (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	8	24	1		1	18	1		1	0	9		4	0	4		71	
4:05 PM	7	23	1		0	23	3		2	0	10		2	0	4		75	
4:10 PM	8	19	2		4	27	4		2	0	12		8	0	1		87	
4:15 PM	7	30	1		1	24	0		0	1	9		10	0	3		86	
4:20 PM	3	21	0		2	16	0		2	0	8		5	0	2		59	
4:25 PM	6	19	2		4	23	1		0	0	10		9	0	2		76	
4:30 PM	6	22	0		1	16	2		0	0	6		6	0	1		60	
4:35 PM	6	16	0		2	21	1		1	1	7		2	0	6		63	
4:40 PM	5	24	1		0	27	1		0	0	8		6	1	3		76	
4:45 PM	9	30	0		0	23	1		0	0	6		3	0	0		72	
4:50 PM	11	24	1		1	28	0		1	0	6		2	0	0		74	
4:55 PM	6	38	0		1	20	1		1	0	6		2	0	2		77	876
5:00 PM	5	20	0		1	24	3		0	0	8		6	1	2		70	875
5:05 PM	9	28	0		1	25	1		2	1	10		0	1	2		80	880
5:10 PM	7	21	1		1	18	1		1	1	8		6	0	2		67	860
5:15 PM	4	22	1		1	24	1		0	1	12		7	0	2		75	849
5:20 PM	7	26	1		1	24	0		2	0	8		5	0	2		76	866
5:25 PM	8	28	0		3	31	1		0	1	6		6	0	2		86	876
5:30 PM	4	20	3		1	17	2		0	0	9		3	1	1		61	877
5:35 PM	8	26	0		1	27	1		1	0	5		4	1	3		77	891
5:40 PM	4	20	0		0	24	3		2	0	2		3	0	2		60	875
5:45 PM	11	24	1		0	15	1		1	0	5		5	0	1		64	867
5:50 PM	6	28	0		0	13	1		2	0	13		2	0	1		66	859
5:55 PM	5	28	0		2	22	1		2	0	8		0	1	0		69	851

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	76	304	8		20	316	8		8	8	104		72	0	24		948
Heavy Trucks	0	0	0		0	0	0		0	0	4		0	0	0		4
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

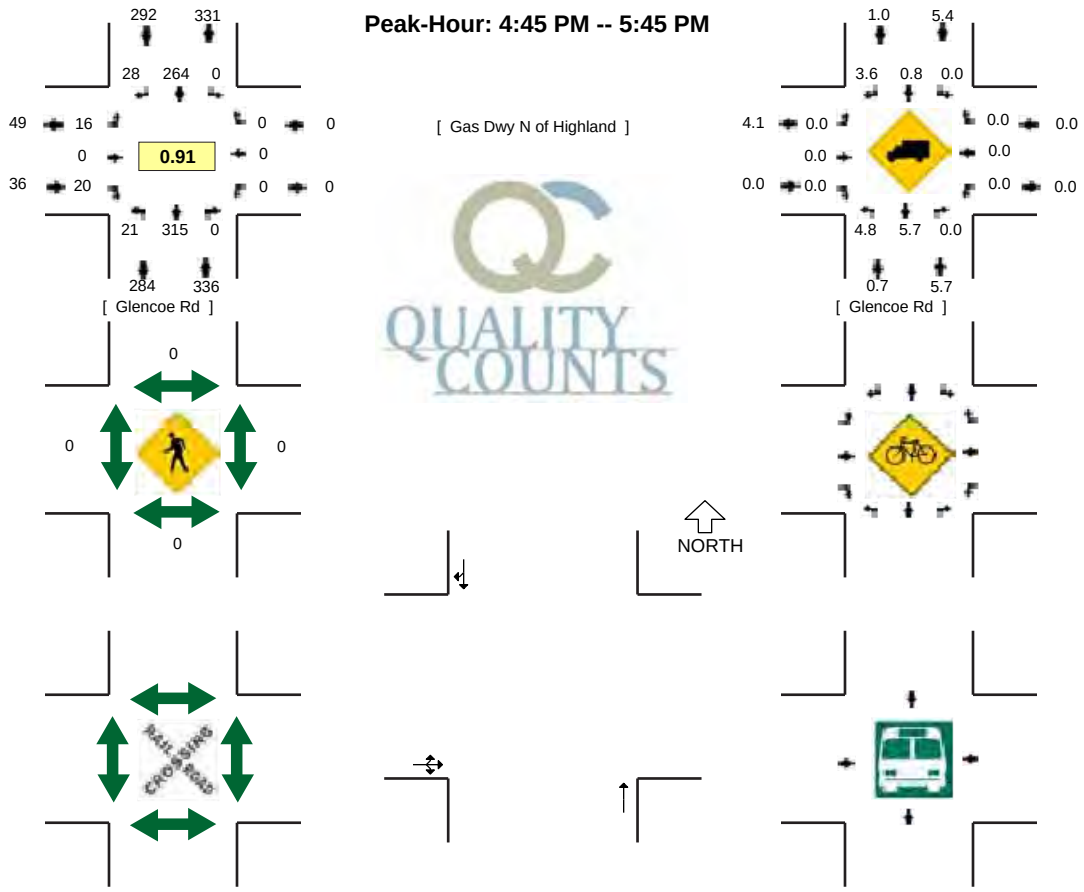
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--Gas Dwy N of Highland
WEATHER:

QC JOB #: 10127606
DATE: 11/16/2005

Peak-Hour: 4:45 PM -- 5:45 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				Gas Dwy N of Highland (Eastbound)				Gas Dwy N of Highland (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	36	0		0	15	5		2	0	0		0	0	0		59	
4:05 PM	1	32	0		0	22	3		2	0	1		0	0	0		61	
4:10 PM	1	30	0		0	29	4		2	0	2		0	0	0		68	
4:15 PM	6	21	0		0	23	2		2	0	0		0	0	0		54	
4:20 PM	3	16	0		0	12	4		0	0	2		0	0	0		37	
4:25 PM	1	23	0		0	23	1		1	0	4		0	0	0		53	
4:30 PM	4	21	0		0	17	2		2	0	0		0	0	0		46	
4:35 PM	0	23	0		0	22	2		1	0	0		0	0	0		48	
4:40 PM	3	13	0		0	25	0		1	0	3		0	0	0		45	
4:45 PM	1	30	0		0	21	2		1	0	1		0	0	0		56	
4:50 PM	2	23	0		0	25	1		2	0	3		0	0	0		56	
4:55 PM	4	41	0		0	19	2		3	0	1		0	0	0		70	653
5:00 PM	3	22	0		0	23	3		2	0	2		0	0	0		55	649
5:05 PM	3	24	0		0	24	3		2	0	0		0	0	0		56	644
5:10 PM	0	25	0		0	16	2		1	0	2		0	0	0		46	622
5:15 PM	2	24	0		0	23	2		0	0	1		0	0	0		52	620
5:20 PM	1	33	0		0	22	2		2	0	1		0	0	0		61	644
5:25 PM	1	31	0		0	27	4		0	0	4		0	0	0		67	658
5:30 PM	1	22	0		0	16	2		1	0	2		0	0	0		44	656
5:35 PM	0	28	0		0	25	2		1	0	2		0	0	0		58	666
5:40 PM	3	12	0		0	23	3		1	0	1		0	0	0		43	664
5:45 PM	0	25	0		0	13	2		1	0	1		0	0	0		42	650
5:50 PM	0	31	0		0	13	0		0	0	1		0	0	0		45	639
5:55 PM	2	27	0		0	23	2		0	0	0		0	0	0		54	623

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	28	376	0		0	260	20		24	0	20		0	0	0		728
Heavy Trucks	4	28	0		0	4	0		0	0	0		0	0	0		36
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

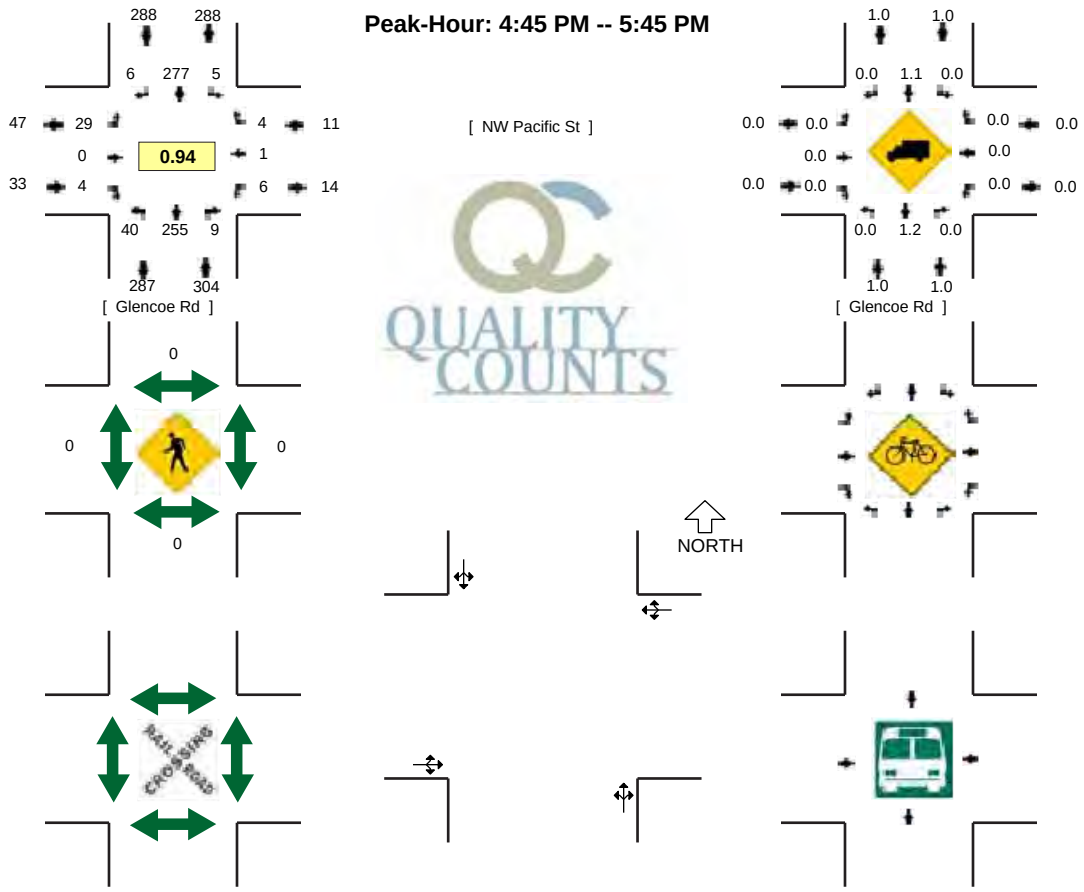
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--NW Pacific St
WEATHER:

QC JOB #: 10127607
DATE: 11/16/2005

Peak-Hour: 4:45 PM -- 5:45 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				NW Pacific St (Eastbound)				NW Pacific St (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	32	0		0	28	1		0	0	0		0	0	0		62	
4:05 PM	2	27	0		0	28	0		4	0	0		0	0	1		62	
4:10 PM	1	26	0		0	34	0		2	0	0		0	0	2		65	
4:15 PM	1	21	1		2	26	0		1	0	0		0	0	0		52	
4:20 PM	0	19	0		1	15	1		1	0	0		0	0	0		37	
4:25 PM	2	20	0		0	20	0		4	0	0		0	0	0		46	
4:30 PM	6	15	0		0	20	0		3	0	1		1	1	2		49	
4:35 PM	5	14	2		0	23	0		2	0	0		0	0	0		46	
4:40 PM	0	14	0		0	22	1		3	0	0		0	0	0		40	
4:45 PM	3	26	0		1	21	1		3	0	0		0	0	1		56	
4:50 PM	2	18	1		0	24	0		1	0	0		3	0	0		49	
4:55 PM	7	31	1		0	20	1		1	0	0		0	1	0		62	626
5:00 PM	3	17	1		0	25	0		3	0	1		0	0	0		50	614
5:05 PM	3	20	0		0	29	0		1	0	2		0	0	1		56	608
5:10 PM	3	20	0		0	21	0		4	0	1		0	0	1		50	593
5:15 PM	4	22	0		0	18	1		3	0	0		0	0	0		48	589
5:20 PM	4	25	1		0	26	1		1	0	0		0	0	0		58	610
5:25 PM	3	28	1		0	28	0		3	0	0		0	0	0		63	627
5:30 PM	2	17	2		1	18	0		2	0	0		0	0	0		42	620
5:35 PM	4	20	2		0	27	0		5	0	0		0	0	0		58	632
5:40 PM	2	11	0		3	20	2		2	0	0		3	0	1		44	636
5:45 PM	3	19	1		0	12	0		2	0	0		0	0	1		38	618
5:50 PM	4	27	0		0	10	1		3	0	0		0	0	1		46	615
5:55 PM	4	25	0		0	21	0		4	0	0		1	0	0		55	608

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	44	300	8		0	288	8		28	0	0		0	0	0		676
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

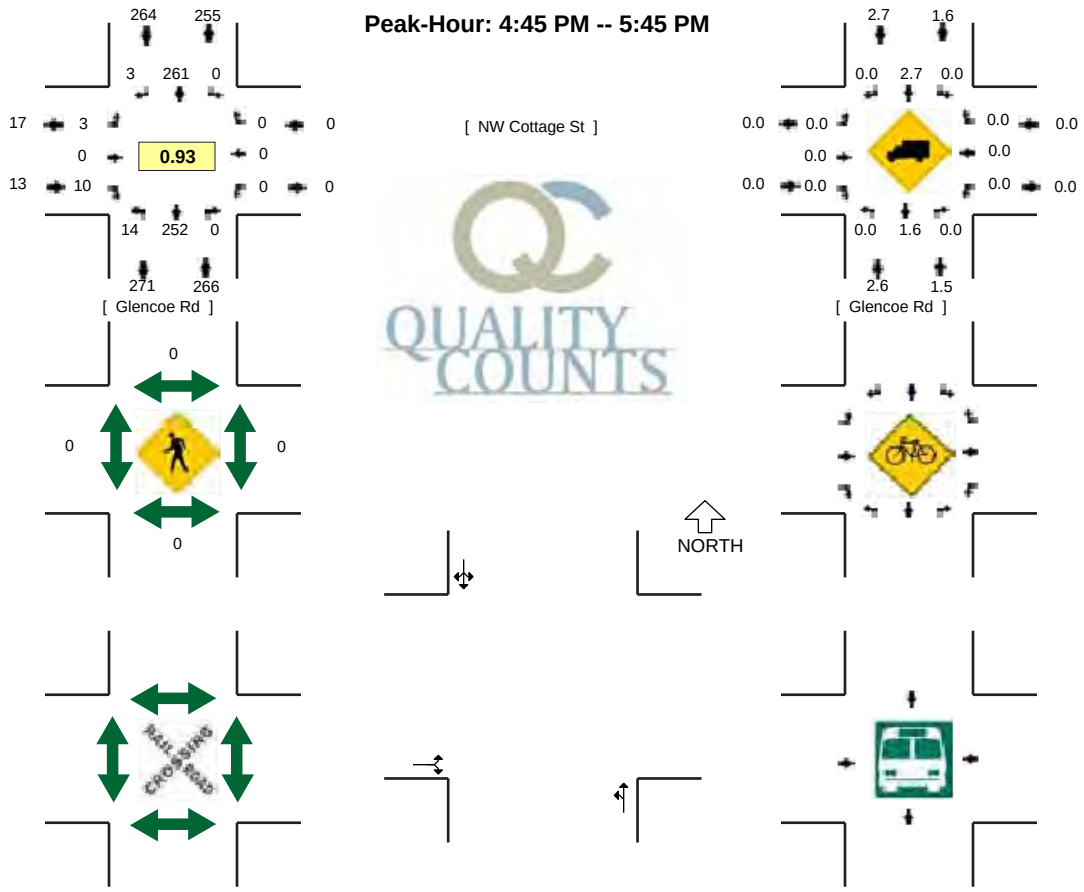
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--NW Cottage St
WEATHER:

QC JOB #: 10127608
DATE: 11/16/2005

Peak-Hour: 4:45 PM -- 5:45 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				NW Cottage St (Eastbound)				NW Cottage St (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	31	0		0	27	0		0	0	0		0	0	0		59	
4:05 PM	4	21	0		0	26	0		0	0	0		0	0	0		51	
4:10 PM	3	14	0		0	28	0		1	0	1		0	0	0		47	
4:15 PM	2	25	0		0	27	0		0	0	0		0	0	0		54	
4:20 PM	0	24	0		0	22	0		0	0	0		0	0	0		46	
4:25 PM	2	16	0		0	17	0		0	0	0		0	0	0		35	
4:30 PM	0	18	0		0	18	0		0	0	1		0	0	0		37	
4:35 PM	0	17	0		0	22	0		0	0	1		0	0	0		40	
4:40 PM	4	23	0		0	21	1		1	0	0		0	0	0		50	
4:45 PM	1	26	0		0	22	0		0	0	1		0	0	0		50	
4:50 PM	0	17	0		0	22	0		0	0	1		0	0	0		40	
4:55 PM	1	29	0		0	16	0		0	0	0		0	0	0		46	555
5:00 PM	0	21	0		0	24	0		0	0	1		0	0	0		46	542
5:05 PM	2	23	0		0	26	0		0	0	0		0	0	0		51	542
5:10 PM	1	21	0		0	18	1		0	0	0		0	0	0		41	536
5:15 PM	0	16	0		0	21	0		0	0	0		0	0	0		37	519
5:20 PM	2	24	0		0	26	0		0	0	1		0	0	0		53	526
5:25 PM	2	23	0		0	23	2		0	0	1		0	0	0		51	542
5:30 PM	2	15	0		0	22	0		2	0	1		0	0	0		42	547
5:35 PM	2	23	0		0	18	0		0	0	2		0	0	0		45	552
5:40 PM	1	14	0		0	23	0		1	0	2		0	0	0		41	543
5:45 PM	2	17	0		0	10	0		1	0	1		0	0	0		31	524
5:50 PM	0	27	0		0	8	0		0	0	4		0	0	0		39	523
5:55 PM	3	24	0		0	17	0		0	0	1		0	0	0		45	522

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	24	248	0		0	284	8		8	0	12		0	0	0		584
Heavy Trucks	0	4	0		0	0	0		0	0	0		0	0	0		4
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

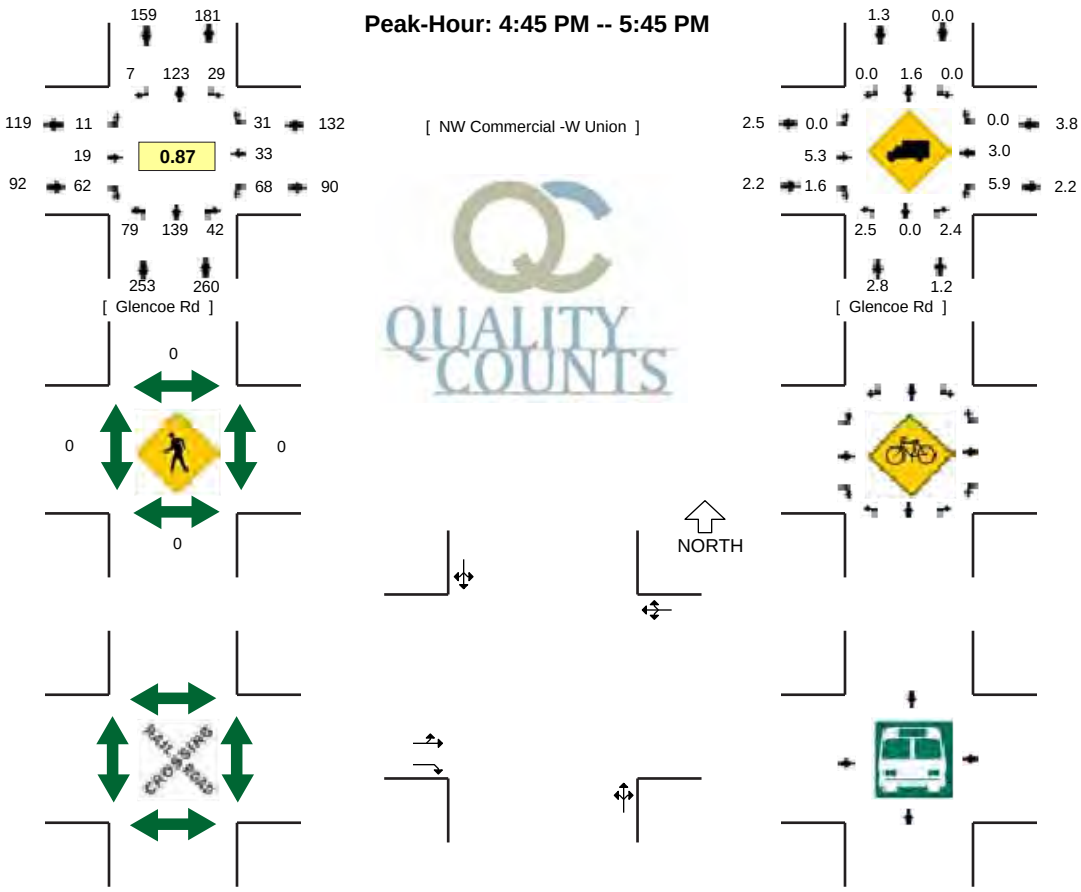
Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

INTERSECTION: Glencoe Rd--NW Commercial -W Union
WEATHER:

QC JOB #: 10127609
DATE: 11/16/2005

Peak-Hour: 4:45 PM -- 5:45 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Glencoe Rd (Northbound)				Glencoe Rd (Southbound)				NW Commercial -W Union (Eastbound)				NW Commercial -W Union (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	13	9	1		1	10	1		0	6	6		9	2	2		60	
4:05 PM	7	16	6		2	11	1		2	4	6		3	0	0		58	
4:10 PM	0	11	2		2	14	0		0	1	10		4	2	2		48	
4:15 PM	11	9	5		2	6	0		0	1	12		9	2	2		59	
4:20 PM	7	11	3		4	8	1		0	1	8		4	3	2		52	
4:25 PM	12	8	0		2	6	1		1	1	2		8	6	2		49	
4:30 PM	7	4	3		1	7	0		1	0	7		5	4	2		41	
4:35 PM	4	11	7		3	8	0		3	1	12		2	1	2		54	
4:40 PM	5	11	4		0	12	0		1	0	5		5	2	4		49	
4:45 PM	8	13	8		2	14	0		0	1	4		5	3	1		59	
4:50 PM	6	12	3		4	7	1		2	1	4		8	6	1		55	
4:55 PM	9	18	1		0	10	1		0	2	3		3	3	4		54	638
5:00 PM	4	12	4		4	15	2		0	4	3		7	5	3		63	641
5:05 PM	10	11	3		1	8	1		5	3	8		6	2	2		60	643
5:10 PM	9	10	6		3	10	1		1	3	7		5	1	5		61	656
5:15 PM	5	9	1		2	11	1		0	2	4		5	4	2		46	643
5:20 PM	11	11	2		6	13	0		1	1	10		5	4	2		66	657
5:25 PM	8	8	7		2	8	0		0	1	6		8	0	4		52	660
5:30 PM	2	13	2		2	7	0		0	1	7		7	3	2		46	665
5:35 PM	6	12	4		3	9	0		0	0	4		4	1	2		45	656
5:40 PM	1	10	1		0	11	0		2	0	2		5	1	3		36	643
5:45 PM	4	11	2		4	8	1		2	2	3		2	0	2		41	625
5:50 PM	8	11	5		2	2	0		0	2	2		2	6	1		41	611
5:55 PM	10	11	4		2	10	0		0	3	5		2	0	1		48	605

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	92	132	52		32	132	16		24	40	72		72	32	40		736
Heavy Trucks	0	0	0		0	4	0		0	0	4		8	0	0		16
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 2/17/2006

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132204
Station ID: Glencoe
Glencoe Rd S of Hwy 26

NB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/03/05	0	32	10	1	3	0	0	3	0	**1**	0	0	0	50
01:00	0	26	3	0	0	0	0	0	0	0	0	0	0	29
02:00	0	17	5	1	1	0	0	0	0	0	0	0	0	24
03:00	0	17	6	1	2	1	0	0	0	0	0	0	0	27
04:00	0	30	12	2	1	0	0	0	0	0	0	0	0	45
05:00	1	64	26	3	8	1	0	3	1	0	0	0	0	107
06:00	0	122	53	1	9	0	0	2	0	0	0	0	0	187
07:00	1	165	78	**4**	17	**3**	0	2	1	0	0	0	0	271
08:00	**4**	209	89	2	21	2	0	**7**	1	0	0	0	0	335
09:00	3	260	91	2	27	0	0	4	**2**	0	0	0	0	389
10:00	4	286	120	3	**31**	0	0	7	2	1	0	0	0	454
11:00	2	**311**	**121**	4	28	0	0	6	1	0	0	0	0	**473**
12 PM	5	302	111	**3**	**40**	0	0	5	0	0	0	0	0	**466**
13:00	2	290	**118**	2	27	0	0	4	**2**	0	0	0	0	445
14:00	4	303	110	0	24	2	0	5	1	0	0	0	0	449
15:00	0	**306**	95	3	31	1	0	**6**	2	**1**	0	0	0	445
16:00	**7**	285	89	0	19	1	0	1	0	0	0	0	0	402
17:00	2	298	108	0	26	**4**	0	1	1	0	0	0	0	440
18:00	4	237	79	0	12	1	0	0	1	0	0	0	0	334
19:00	3	160	49	0	9	0	0	1	0	0	0	0	0	222
20:00	0	124	35	0	3	0	0	2	0	0	0	0	0	164
21:00	3	125	36	0	4	0	0	0	0	0	0	0	0	168
22:00	0	104	31	0	5	1	0	0	0	0	0	0	0	141
23:00	0	73	25	2	2	0	0	0	0	0	0	0	0	102
Day Total	45	4146	1500	34	350	17	0	59	15	3	0	0	0	6169
Percent	0.7%	67.2%	24.3%	0.6%	5.7%	0.3%	0.0%	1.0%	0.2%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	11:00	11:00	07:00	10:00	07:00		08:00	09:00	00:00				11:00
Vol.	4	311	121	4	31	3	7		2	1				473
PM Peak	16:00	15:00	13:00	12:00	12:00	17:00		15:00	13:00	15:00				12:00
Vol.	7	306	118	3	40	4	6		2	1				466

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NB

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Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/04/05	0	38	10	0	2	0	0	0	0	0	0	0	0	50
01:00	0	26	2	0	2	0	0	0	0	0	0	0	0	30
02:00	0	21	6	0	2	0	0	0	0	0	0	0	0	29
03:00	0	18	4	0	2	0	0	0	0	0	0	0	0	24
04:00	1	23	3	0	1	0	0	0	0	0	0	0	0	28
05:00	1	32	13	0	9	0	0	0	0	0	0	0	0	55
06:00	1	65	31	0	8	0	0	0	0	0	0	0	0	105
07:00	1	85	40	0	6	1	0	**3**	0	0	0	0	0	136
08:00	**2**	146	46	0	18	**4**	0	2	0	0	0	0	0	218
09:00	0	166	54	**1**	**22**	2	0	3	1	0	0	0	0	249
10:00	0	229	86	0	18	1	0	3	**2**	0	0	0	0	339
11:00	2	**277**	**98**	1	22	4	0	1	0	0	0	0	0	**405**
12 PM	3	237	**115**	0	20	0	0	3	0	0	0	0	0	378
13:00	2	**310**	114	0	**22**	0	0	**5**	0	0	0	0	**1**	**454**
14:00	4	266	87	1	18	0	0	3	**1**	0	**1**	0	0	381
15:00	2	270	90	0	15	0	0	2	0	0	0	0	0	379
16:00	**5**	288	81	0	18	0	0	2	0	0	0	0	0	394
17:00	3	276	64	**2**	6	0	0	2	0	0	0	0	0	353
18:00	2	188	56	0	15	**1**	0	2	0	0	0	0	0	264
19:00	1	152	37	1	7	0	0	0	0	0	0	0	0	198
20:00	2	119	34	0	1	1	0	0	0	0	0	0	0	157
21:00	0	100	21	0	5	0	0	2	0	0	0	0	0	128
22:00	2	54	8	1	1	0	0	1	0	0	0	0	0	67
23:00	0	30	11	0	1	1	0	1	0	**1**	0	0	0	45
Day Total	34	3416	1111	7	241	15	0	35	4	1	1	0	1	4866
Percent	0.7%	70.2%	22.8%	0.1%	5.0%	0.3%	0.0%	0.7%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	11:00	11:00	09:00	09:00	08:00		07:00	10:00					11:00
Vol.	2	277	98	1	22	4		3	2					405
PM Peak	16:00	13:00	12:00	17:00	13:00	18:00		13:00	14:00	23:00	14:00		13:00	13:00
Vol.	5	310	115	2	22	1	5		1	1	1		1	454

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Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/05/05	0	16	2	1	0	0	0	0	0	0	0	0	0	19
01:00	0	11	2	0	0	0	0	1	0	0	0	0	0	14
02:00	0	17	4	0	1	0	0	2	0	0	0	0	0	24
03:00	0	17	10	1	3	0	0	0	0	0	0	0	0	31
04:00	1	67	25	0	13	1	0	2	2	0	0	0	0	111
05:00	2	213	100	2	23	6	0	3	0	0	0	0	0	349
06:00	4	372	**146**	5	**51**	7	0	16	6	2	0	0	0	**609**
07:00	**8**	**392**	132	4	39	7	0	16	5	2	0	0	0	605
08:00	2	307	105	**11**	33	**8**	0	14	5	1	0	**2**	0	488
09:00	1	209	100	6	31	3	0	8	**7**	0	0	0	0	365
10:00	0	192	88	3	36	4	**1**	**19**	1	**5**	0	1	0	350
11:00	0	231	86	7	34	3	1	14	5	0	0	0	**3**	384
12 PM	**3**	239	105	5	34	5	0	10	5	1	0	**1**	3	411
13:00	2	221	98	**8**	**43**	7	**2**	**15**	**10**	2	**1**	0	**4**	413
14:00	1	258	108	6	28	5	0	6	5	2	0	0	0	419
15:00	2	305	108	4	31	2	1	7	5	**4**	0	0	3	472
16:00	2	357	98	2	30	**9**	0	6	3	1	0	0	0	508
17:00	2	**376**	**112**	3	31	2	0	5	3	0	1	0	0	**535**
18:00	2	258	65	0	19	1	0	5	0	0	0	0	0	350
19:00	0	185	42	2	11	0	0	1	1	0	1	0	0	243
20:00	1	106	40	0	6	4	0	3	1	0	0	0	0	161
21:00	2	88	20	0	4	1	0	0	0	0	0	0	0	115
22:00	0	61	14	0	5	1	0	1	0	0	0	0	0	82
23:00	0	33	5	1	0	1	0	2	1	0	0	0	0	43
Day Total	35	4531	1615	71	506	77	5	156	65	20	3	4	13	7101
Percent	0.5%	63.8%	22.7%	1.0%	7.1%	1.1%	0.1%	2.2%	0.9%	0.3%	0.0%	0.1%	0.2%	
AM Peak	07:00	07:00	06:00	08:00	06:00	08:00	10:00	10:00	09:00	10:00		08:00	11:00	06:00
Vol.	8	392	146	11	51	8	1	19	7	5	2		3	609
PM Peak	12:00	17:00	17:00	13:00	13:00	16:00	13:00	13:00	13:00	15:00	13:00	12:00	13:00	17:00
Vol.	3	376	112	8	43	9	2	15	10	4	1	1	4	535

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Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/06/05	0	16	6	0	0	0	0	0	0	0	0	0	0	22
01:00	0	12	3	0	1	1	0	1	1	1	0	0	0	20
02:00	0	16	3	0	1	0	0	0	0	0	0	0	0	20
03:00	0	24	8	2	1	1	0	1	0	0	0	0	0	37
04:00	3	61	19	1	7	0	0	2	1	1	0	0	0	95
05:00	1	202	74	1	20	3	0	8	1	0	0	0	0	310
06:00	1	**380**	**144**	5	37	2	0	10	**7**	**3**	0	0	0	**589**
07:00	3	321	116	4	34	**8**	0	11	7	1	**1**	**1**	0	507
08:00	3	300	96	8	41	4	0	8	7	2	0	0	**3**	472
09:00	**5**	257	102	5	25	3	0	**15**	6	1	0	1	2	422
10:00	1	207	85	**9**	**45**	2	**1**	8	7	2	1	0	0	368
11:00	0	210	104	5	30	6	1	8	7	3	0	1	2	377
12 PM	1	254	100	5	26	4	0	**15**	8	**4**	0	0	1	418
13:00	1	265	71	6	34	**5**	0	9	**16**	1	0	**1**	**3**	412
14:00	1	254	102	**8**	21	1	0	9	12	0	0	0	1	409
15:00	3	314	107	5	33	4	0	6	3	2	0	0	0	477
16:00	**6**	334	**110**	2	**35**	1	0	5	2	1	**1**	0	2	499
17:00	4	**416**	92	1	17	5	0	3	1	1	0	0	0	**540**
18:00	2	262	85	1	19	1	0	3	0	0	1	0	0	374
19:00	3	194	57	0	10	3	0	1	2	0	0	0	0	270
20:00	4	152	30	1	8	1	0	1	1	0	0	0	0	198
21:00	0	152	34	1	5	3	0	0	1	0	0	0	0	196
22:00	1	55	18	0	3	2	**1**	0	2	0	0	0	0	82
23:00	1	31	7	1	0	0	0	1	0	0	0	0	0	41
Day Total	44	4689	1573	71	453	60	3	125	92	23	4	4	14	7155
Percent	0.6%	65.5%	22.0%	1.0%	6.3%	0.8%	0.0%	1.7%	1.3%	0.3%	0.1%	0.1%	0.2%	
AM Peak	09:00	06:00	06:00	10:00	10:00	07:00	10:00	09:00	06:00	06:00	07:00	07:00	08:00	06:00
Vol.	5	380	144	9	45	8	1	15	7	3	1	1	3	589
PM Peak	16:00	17:00	16:00	14:00	16:00	13:00	22:00	12:00	13:00	12:00	16:00	13:00	13:00	17:00
Vol.	6	416	110	8	35	5	1	15	16	4	1	1	3	540

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Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/07/05	0	21	2	0	4	0	0	0	0	1	0	0	1	29
01:00	1	13	2	0	1	0	0	0	0	0	**1**	0	0	18
02:00	0	14	5	1	2	0	0	1	1	0	0	0	0	24
03:00	0	22	9	1	4	0	0	3	0	0	0	0	0	39
04:00	1	62	20	2	9	2	0	0	1	2	0	0	0	99
05:00	3	221	82	3	20	**9**	0	3	2	0	0	1	0	344
06:00	3	**405**	**174**	**10**	**48**	4	**1**	**18**	2	1	1	0	0	**667**
07:00	**4**	391	126	8	29	7	0	18	7	2	0	0	1	593
08:00	2	291	139	10	41	4	1	17	1	1	0	1	**3**	511
09:00	2	250	126	5	37	5	1	12	2	3	0	1	2	446
10:00	0	223	84	6	33	4	0	13	**10**	4	0	**2**	1	380
11:00	1	218	74	7	38	5	0	13	4	**6**	0	0	1	367
12 PM	3	250	91	3	30	4	0	**14**	9	**2**	0	0	**2**	408
13:00	3	245	91	**5**	20	**8**	0	9	8	2	0	0	1	392
14:00	1	235	94	5	33	5	0	10	**14**	2	0	0	0	399
15:00	0	302	**134**	4	39	5	0	9	7	2	**1**	0	0	503
16:00	4	385	114	3	**42**	2	0	6	8	0	0	0	1	565
17:00	**8**	**395**	122	4	36	2	0	10	2	1	1	0	1	**582**
18:00	3	271	84	0	15	0	0	1	0	0	0	0	0	374
19:00	1	157	49	2	13	0	0	7	0	0	0	0	0	229
20:00	0	173	40	0	6	1	0	0	0	0	0	0	0	220
21:00	1	137	23	1	9	3	0	0	0	0	0	0	0	174
22:00	0	54	20	1	2	3	0	1	0	0	0	0	0	81
23:00	0	35	12	1	1	0	0	0	0	0	0	0	0	49
Day Total	41	4770	1717	82	512	73	3	165	78	29	4	5	14	7493
Percent	0.5%	63.7%	22.9%	1.1%	6.8%	1.0%	0.0%	2.2%	1.0%	0.4%	0.1%	0.1%	0.2%	
AM Peak	07:00	06:00	06:00	06:00	06:00	05:00	06:00	06:00	10:00	11:00	01:00	10:00	08:00	06:00
Vol.	4	405	174	10	48	9	1	18	10	6	1	2	3	667
PM Peak	17:00	17:00	15:00	13:00	16:00	13:00		12:00	14:00	12:00	15:00		12:00	17:00
Vol.	8	395	134	5	42	8	14		14	2	1		2	582

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Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/08/05	1	14	11	0	3	0	0	3	0	0	1	0	0	33
01:00	0	5	6	0	1	0	0	0	0	0	0	0	0	12
02:00	0	11	5	1	0	1	0	0	0	1	0	0	0	19
03:00	0	25	13	1	2	3	0	2	0	0	1	0	0	47
04:00	0	54	23	1	4	1	0	6	0	0	0	0	0	89
05:00	0	208	66	2	25	3	0	2	1	0	0	0	0	307
06:00	1	346	**132**	7	39	**9**	0	20	4	1	1	0	0	560
07:00	**2**	**391**	128	6	27	6	0	13	0	1	1	**1**	2	**578**
08:00	0	296	107	**13**	**40**	8	0	16	5	1	**2**	0	2	490
09:00	2	222	107	8	39	3	0	**21**	6	1	0	1	1	411
10:00	1	179	74	6	36	4	0	11	6	0	0	0	0	317
11:00	0	213	87	6	21	6	0	6	**12**	**4**	0	0	**3**	358
12 PM	2	226	96	2	28	**10**	1	6	11	**5**	**1**	0	2	390
13:00	1	196	77	3	38	8	**2**	8	**14**	1	0	0	**4**	352
14:00	2	264	121	**8**	30	7	1	**11**	11	1	0	0	2	458
15:00	2	315	112	8	32	6	1	11	5	1	0	0	0	493
16:00	2	**397**	113	3	**39**	3	0	8	4	1	0	0	0	**570**
17:00	**3**	342	**122**	2	29	1	0	8	0	1	0	0	0	508
18:00	3	270	83	1	16	3	0	0	0	2	0	0	0	378
19:00	1	163	49	0	10	1	0	3	2	0	0	0	0	229
20:00	0	127	40	0	9	1	0	1	1	1	0	0	0	180
21:00	0	106	31	0	3	4	0	0	0	0	0	0	0	144
22:00	0	52	15	2	2	3	0	1	1	0	0	0	0	76
23:00	0	38	6	0	2	0	0	0	0	0	0	0	0	46
Day Total	23	4460	1624	80	475	91	5	157	83	22	7	2	16	7045
Percent	0.3%	63.3%	23.1%	1.1%	6.7%	1.3%	0.1%	2.2%	1.2%	0.3%	0.1%	0.0%	0.2%	
AM Peak	07:00	07:00	06:00	08:00	08:00	06:00		09:00	11:00	11:00	08:00	07:00	11:00	07:00
Vol.	2	391	132	13	40	9	21		12	4	2	1	3	578
PM Peak	17:00	16:00	17:00	14:00	16:00	12:00	13:00	14:00	13:00	12:00	12:00		13:00	16:00
Vol.	3	397	122	8	39	10	2	11	14	5	1	4		570

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132204
Station ID: Glencoe
Glencoe Rd S of Hwy 26

NB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/09/05	0	16	4	1	0	1	0	1	0	0	0	0	0	23
01:00	0	17	6	0	1	0	0	0	1	0	0	0	0	25
02:00	1	24	8	1	1	1	0	2	0	1	0	0	0	39
03:00	0	23	9	1	3	0	0	1	2	0	0	0	0	39
04:00	1	62	14	1	12	1	0	3	0	0	0	0	0	94
05:00	1	184	85	4	26	4	0	3	2	0	0	0	0	309
06:00	1	334	140	5	33	7	0	13	4	0	0	0	0	537
07:00	**4**	**372**	**141**	2	**48**	6	0	14	5	**2**	**1**	0	1	**596**
08:00	1	282	86	**10**	30	**13**	**2**	**22**	6	2	0	**2**	2	458
09:00	4	267	95	6	30	8	0	10	1	1	0	0	1	423
10:00	1	209	111	5	42	4	0	12	6	2	1	1	1	395
11:00	3	232	85	4	36	5	2	5	**10**	0	0	1	**3**	386
12 PM	**4**	249	85	4	36	7	0	6	**14**	**5**	0	0	**4**	414
13:00	0	238	96	5	29	**8**	0	10	13	3	**2**	1	1	406
14:00	3	252	**122**	5	**44**	5	0	9	2	4	0	0	1	447
15:00	1	326	115	**8**	29	3	0	8	4	3	1	1	0	499
16:00	1	343	104	3	27	3	0	**12**	5	0	1	**2**	0	501
17:00	3	**349**	117	1	30	1	0	6	2	0	0	0	0	**509**
18:00	3	322	103	0	19	2	0	9	0	0	0	0	1	459
19:00	1	204	59	0	12	0	0	1	1	0	1	0	0	279
20:00	0	160	47	0	12	2	0	1	1	0	0	0	0	223
21:00	1	118	40	0	8	4	0	0	1	0	0	0	0	172
22:00	1	108	30	0	7	2	**1**	2	0	0	0	0	0	151
23:00	0	77	22	1	5	2	0	0	0	1	0	0	0	108
Day Total	35	4768	1724	67	520	89	5	150	80	24	7	8	15	7492
Percent	0.5%	63.6%	23.0%	0.9%	6.9%	1.2%	0.1%	2.0%	1.1%	0.3%	0.1%	0.1%	0.2%	
AM Peak	07:00	07:00	07:00	08:00	07:00	08:00	08:00	08:00	11:00	07:00	07:00	08:00	11:00	07:00
Vol.	4	372	141	10	48	13	2	22	10	2	1	2	3	596
PM Peak	12:00	17:00	14:00	15:00	14:00	13:00	22:00	16:00	12:00	12:00	13:00	16:00	12:00	17:00
Vol.	4	349	122	8	44	8	1	12	14	5	2	2	4	509
Grand Total	257	30780	10864	412	3057	422	21	847	417	122	26	23	73	47321
Percent	0.5%	65.0%	23.0%	0.9%	6.5%	0.9%	0.0%	1.8%	0.9%	0.3%	0.1%	0.0%	0.2%	

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132204
Station ID: Glencoe
Glencoe Rd S of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/03/05	0	81	24	0	3	0	0	0	0	0	0	0	0	108
01:00	0	50	7	0	2	1	0	0	0	0	0	0	0	60
02:00	0	34	7	0	1	1	0	0	0	0	0	0	0	43
03:00	0	20	7	0	0	1	0	0	0	0	0	0	0	28
04:00	0	21	8	0	1	0	**2**	0	2	0	0	0	0	34
05:00	0	47	19	0	5	2	0	**3**	1	0	0	0	0	77
06:00	0	79	24	1	6	**3**	1	3	2	0	0	0	0	119
07:00	0	134	45	1	13	2	0	2	3	0	0	0	0	200
08:00	0	149	43	**4**	16	2	1	0	3	**1**	0	0	0	219
09:00	0	213	82	2	24	0	1	0	**4**	0	0	0	0	326
10:00	**1**	211	87	2	25	2	0	3	1	0	0	0	0	332
11:00	0	**313**	**113**	2	**29**	0	0	3	2	1	0	0	0	**463**
12 PM	**1**	319	113	2	29	0	0	**9**	3	0	0	0	0	476
13:00	0	315	122	4	22	0	0	1	4	0	0	0	0	468
14:00	1	293	112	**5**	**37**	**1**	0	3	**7**	0	0	0	0	459
15:00	1	286	102	4	31	0	0	4	1	**1**	0	0	0	430
16:00	0	**354**	**135**	2	20	0	0	1	2	1	0	0	0	**515**
17:00	0	336	115	3	20	1	0	4	1	0	0	0	0	480
18:00	0	310	85	0	18	0	0	3	0	0	0	0	0	416
19:00	1	203	51	0	15	0	0	2	0	0	0	0	0	272
20:00	0	189	54	0	10	0	0	0	0	0	0	0	0	253
21:00	0	169	43	0	9	0	0	0	0	0	0	0	0	221
22:00	0	155	45	0	6	0	0	2	0	0	0	0	0	208
23:00	0	112	43	0	2	0	0	0	0	0	0	0	0	157
Day Total	5	4393	1486	32	344	16	5	43	36	4	0	0	0	6364
Percent	0.1%	69.0%	23.4%	0.5%	5.4%	0.3%	0.1%	0.7%	0.6%	0.1%	0.0%	0.0%	0.0%	
AM Peak	10:00	11:00	11:00	08:00	11:00	06:00	04:00	05:00	09:00	08:00				11:00
Vol.	1	313	113	4	29	3	2	3	4	1				463
PM Peak	12:00	16:00	16:00	14:00	14:00	14:00		12:00	14:00	15:00				16:00
Vol.	1	354	135	5	37	1	9		7	1				515

Quality Counts, LLC
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Tigard, Oregon 97224

Site Code: 10132204
Station ID: Glencoe
Glencoe Rd S of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/04/05	0	68	18	0	1	0	0	0	0	0	0	0	0	87
01:00	0	39	8	0	3	**1**	0	1	0	0	0	0	0	52
02:00	0	30	8	0	3	0	0	0	0	0	0	0	0	41
03:00	0	21	5	0	1	0	0	0	0	0	0	0	0	27
04:00	0	24	7	0	2	0	0	0	0	0	0	0	0	33
05:00	0	34	8	0	1	0	0	0	0	0	0	0	0	43
06:00	0	54	15	0	4	0	0	0	1	0	0	0	0	74
07:00	0	99	23	0	5	1	0	0	0	0	0	0	0	128
08:00	0	131	31	0	10	1	0	0	0	0	0	0	0	173
09:00	0	159	46	**3**	12	0	0	**2**	**2**	0	0	0	0	224
10:00	0	207	75	0	**17**	1	0	1	0	0	0	0	0	301
11:00	0	**216**	**82**	0	16	0	0	1	0	0	0	0	0	**315**
12 PM	0	261	77	1	21	**2**	0	0	0	0	0	0	0	362
13:00	**2**	290	**90**	0	**22**	0	0	0	0	0	0	0	0	404
14:00	2	258	88	0	17	0	0	1	0	0	0	0	0	366
15:00	0	294	88	**2**	21	2	0	**6**	1	0	0	0	0	**414**
16:00	0	**307**	84	0	18	1	0	2	0	0	0	0	0	412
17:00	1	269	82	0	16	0	0	2	1	0	0	0	0	371
18:00	0	228	63	0	16	1	0	1	0	0	0	0	0	309
19:00	0	178	63	0	11	0	0	2	**2**	0	0	0	0	256
20:00	0	162	55	0	8	1	0	0	0	0	0	0	0	226
21:00	0	138	22	2	7	0	0	0	0	0	0	0	0	169
22:00	0	96	24	0	1	0	0	2	0	0	0	0	0	123
23:00	0	48	12	0	3	0	0	0	0	0	0	0	0	63
Day Total	5	3611	1074	8	236	11	0	21	7	0	0	0	0	4973
Percent	0.1%	72.6%	21.6%	0.2%	4.7%	0.2%	0.0%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak		11:00	11:00	09:00	10:00	01:00		09:00	09:00					11:00
Vol.		216	82	3	17	1		2	2					315
PM Peak	13:00	16:00	13:00	15:00	13:00	12:00		15:00	19:00					15:00
Vol.	2	307	90	2	22	2		6	2					414

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Tigard, Oregon 97224

Site Code: 10132204
Station ID: Glencoe
Glencoe Rd S of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/05/05	0	27	7	0	4	0	0	0	1	0	0	0	0	39
01:00	0	9	6	0	1	0	0	1	0	0	0	0	0	17
02:00	0	10	7	0	0	0	0	0	0	0	0	0	0	17
03:00	0	4	4	1	0	0	0	0	1	0	0	0	0	10
04:00	0	31	7	0	1	1	**2**	0	2	0	0	0	0	44
05:00	0	63	38	0	11	1	0	1	2	2	0	0	0	118
06:00	0	177	71	0	25	3	1	2	3	0	0	0	**2**	284
07:00	0	**354**	98	7	31	3	2	6	10	2	0	0	2	**515**
08:00	0	301	83	**11**	**37**	4	1	5	11	2	**1**	0	2	458
09:00	0	209	**116**	8	13	**10**	0	8	**13**	4	1	0	0	382
10:00	0	224	82	4	26	7	0	**9**	8	1	1	0	2	364
11:00	0	206	91	4	32	8	2	8	9	**5**	0	0	2	367
12 PM	**2**	211	81	**6**	40	5	**1**	5	**18**	3	0	0	1	373
13:00	0	257	100	5	33	6	0	**8**	12	2	0	0	**3**	426
14:00	0	290	119	5	31	**11**	0	0	11	**5**	0	0	3	475
15:00	1	426	152	2	39	10	0	3	10	2	0	0	1	646
16:00	0	478	**168**	6	**66**	8	0	7	11	4	0	**1**	3	**752**
17:00	0	**482**	167	6	48	3	0	4	2	0	0	0	3	715
18:00	0	317	116	1	21	1	0	4	2	0	0	0	0	462
19:00	0	206	59	2	14	0	0	1	4	0	0	0	0	286
20:00	0	157	48	1	5	1	0	0	0	0	0	0	0	212
21:00	0	169	35	0	5	0	0	0	2	0	0	0	0	211
22:00	0	92	30	0	7	3	0	0	1	0	0	0	0	133
23:00	0	40	12	0	2	1	0	1	2	0	0	0	0	58
Day Total	3	4740	1697	69	492	86	9	73	135	32	3	1	24	7364
Percent	0.0%	64.4%	23.0%	0.9%	6.7%	1.2%	0.1%	1.0%	1.8%	0.4%	0.0%	0.0%	0.3%	
AM Peak		07:00	09:00	08:00	08:00	09:00	04:00	10:00	09:00	11:00	08:00		06:00	07:00
Vol.	354		116	11	37	10	2	9	13	5	1		2	515
PM Peak	12:00	17:00	16:00	12:00	16:00	14:00	12:00	13:00	12:00	14:00		16:00	13:00	16:00
Vol.	2	482	168	6	66	11	1	8	18	5	1		3	752

Quality Counts, LLC
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Tigard, Oregon 97224

Site Code: 10132204
Station ID: Glencoe
Glencoe Rd S of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/06/05	0	42	9	0	4	1	0	0	1	0	0	0	0	57
01:00	0	19	7	0	0	0	0	0	1	0	0	0	0	27
02:00	0	19	5	0	0	0	0	0	1	0	0	0	0	25
03:00	0	9	3	0	2	2	0	0	2	0	0	0	0	18
04:00	0	28	5	1	1	0	1	2	1	0	0	0	0	39
05:00	0	71	32	0	8	5	0	1	3	1	0	0	**2**	123
06:00	0	184	76	3	27	3	**3**	4	7	2	0	0	0	309
07:00	0	**379**	**104**	6	30	5	0	3	6	**4**	0	0	2	**539**
08:00	0	300	98	**8**	**35**	7	1	2	5	3	0	0	2	461
09:00	0	202	96	7	33	**12**	0	**10**	11	3	0	0	1	375
10:00	0	210	83	6	30	12	0	5	**15**	3	0	0	1	365
11:00	**1**	277	84	4	26	5	0	9	11	2	0	0	2	421
12 PM	0	280	80	4	30	5	0	**9**	**12**	1	0	0	0	421
13:00	**1**	214	81	**13**	21	4	0	4	6	1	0	0	0	345
14:00	0	326	92	9	36	7	0	7	8	**2**	0	0	1	488
15:00	1	414	**178**	1	35	9	0	7	6	0	0	0	0	651
16:00	0	**496**	176	11	**61**	**11**	0	9	6	1	0	**1**	**4**	**776**
17:00	0	488	165	2	37	7	0	6	1	1	0	0	0	707
18:00	0	337	112	0	19	2	0	4	3	1	0	0	1	479
19:00	0	218	58	2	15	0	0	0	1	0	0	0	0	294
20:00	1	173	37	1	5	0	0	0	1	0	0	0	0	218
21:00	0	195	39	3	5	0	0	0	5	0	0	0	1	248
22:00	0	118	27	1	3	0	0	0	0	0	0	0	0	149
23:00	0	62	18	0	3	1	0	0	0	0	0	0	0	84
Day Total	4	5061	1665	82	466	98	5	82	113	25	0	1	17	7619
Percent	0.1%	66.4%	21.9%	1.1%	6.1%	1.3%	0.1%	1.1%	1.5%	0.3%	0.0%	0.0%	0.2%	
AM Peak	11:00	07:00	07:00	08:00	08:00	09:00	06:00	09:00	10:00	07:00			05:00	07:00
Vol.	1	379	104	8	35	12	3	10	15	4			2	539
PM Peak	13:00	16:00	15:00	13:00	16:00	16:00		12:00	12:00	14:00		16:00	16:00	16:00
Vol.	1	496	178	13	61	11	9		12	2	1		4	776

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Site Code: 10132204
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Glencoe Rd S of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/07/05	0	49	9	0	1	1	0	0	2	0	0	0	0	62
01:00	0	17	8	0	0	0	0	0	1	0	0	0	0	26
02:00	0	14	6	0	0	1	0	0	1	0	0	0	0	22
03:00	0	11	6	1	0	2	0	1	2	0	0	0	0	23
04:00	0	31	6	0	2	2	**1**	0	2	0	0	0	0	44
05:00	0	58	39	4	10	6	1	3	2	1	0	0	0	124
06:00	0	188	84	2	33	3	1	3	3	1	0	0	0	318
07:00	0	**338**	**104**	3	**49**	**7**	1	**7**	6	**6**	0	0	**4**	**525**
08:00	0	271	80	**9**	22	6	0	5	**13**	1	0	0	0	407
09:00	0	4	3	1	0	0	0	0	0	0	0	0	0	8
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 M P	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	**1**	233	101	**3**	21	**5**	0	5	0	0	**1**	**1**	1	372
17:00	0	**495**	**162**	2	**36**	2	0	4	1	0	0	0	**2**	**704**
18:00	1	344	98	2	27	1	0	**8**	1	0	0	0	0	482
19:00	0	254	54	0	13	1	0	0	**2**	0	0	1	0	325
20:00	0	189	58	0	8	0	0	1	2	0	0	0	0	258
21:00	0	185	41	1	12	0	0	0	2	0	0	0	0	241
22:00	0	127	42	0	5	0	0	0	0	0	0	0	0	174
23:00	0	59	19	0	0	1	0	1	1	0	0	0	0	81
Day Total	2	2867	920	28	239	38	4	38	41	9	1	2	7	4196
Percent	0.0%	68.3%	21.9%	0.7%	5.7%	0.9%	0.1%	0.9%	1.0%	0.2%	0.0%	0.0%	0.2%	
AM Peak		07:00	07:00	08:00	07:00	07:00	04:00	07:00	08:00	07:00			07:00	07:00
Vol.	338		104	9	49	7	1	7	13	6			4	525
PM Peak	16:00	17:00	17:00	16:00	17:00	16:00		18:00	19:00		16:00	16:00	17:00	17:00
Vol.	1	495	162	3	36	5	8		2	1		1	2	704

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132204
Station ID: Glencoe
Glencoe Rd S of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/08/05	0	50	12	0	1	0	0	0	3	0	0	0	0	66
01:00	0	16	9	0	4	0	0	0	0	0	0	0	0	29
02:00	0	26	7	1	1	0	0	0	0	0	0	0	0	35
03:00	0	6	4	1	1	1	0	0	2	0	0	0	0	15
04:00	0	29	10	0	2	2	1	0	0	0	0	0	0	44
05:00	0	56	29	3	11	3	0	3	1	1	0	0	1	108
06:00	0	188	80	3	25	2	2	2	11	**2**	1	0	0	316
07:00	0	**337**	**96**	7	**43**	4	**3**	3	4	0	0	0	2	**499**
08:00	**1**	313	93	**11**	33	8	3	2	6	1	0	0	2	473
09:00	0	224	91	3	28	**21**	1	1	**13**	1	0	0	1	384
10:00	1	206	80	7	28	14	2	6	12	2	**2**	0	2	362
11:00	0	211	81	1	28	5	3	**8**	11	1	0	0	**3**	352
12 PM	1	245	82	4	33	**12**	**2**	7	11	**3**	0	0	1	401
13:00	**2**	260	109	8	23	7	0	6	9	2	0	0	**2**	428
14:00	0	288	127	**12**	46	10	1	12	**13**	0	0	**1**	0	510
15:00	0	400	151	6	40	10	0	**13**	7	1	0	0	1	629
16:00	0	472	**169**	7	**50**	4	0	10	3	1	0	1	2	**719**
17:00	1	**483**	165	4	44	7	0	2	1	0	0	0	0	707
18:00	0	343	121	3	18	0	0	4	2	0	0	0	0	491
19:00	0	253	70	0	11	3	0	0	2	0	0	0	0	339
20:00	0	185	52	0	15	0	0	0	3	0	0	0	0	255
21:00	0	188	38	0	13	0	0	1	2	0	0	0	0	242
22:00	0	118	31	0	1	2	1	0	2	0	0	0	0	155
23:00	0	91	24	0	4	1	0	0	0	0	0	0	0	120
Day Total	6	4988	1731	81	503	116	19	80	118	15	3	2	17	7679
Percent	0.1%	65.0%	22.5%	1.1%	6.6%	1.5%	0.2%	1.0%	1.5%	0.2%	0.0%	0.0%	0.2%	
AM Peak	08:00	07:00	07:00	08:00	07:00	09:00	07:00	11:00	09:00	06:00	10:00		11:00	07:00
Vol.	1	337	96	11	43	21	3	8	13	2	2	3		499
PM Peak	13:00	17:00	16:00	14:00	16:00	12:00	12:00	15:00	14:00	12:00		14:00	13:00	16:00
Vol.	2	483	169	12	50	12	2	13	13	3	1		2	719

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132204
Station ID: Glencoe
Glencoe Rd S of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/09/05	0	54	9	0	1	0	0	0	3	0	0	0	0	67
01:00	0	23	12	0	1	1	0	0	1	0	0	0	0	38
02:00	0	19	3	0	1	0	0	1	0	0	0	0	0	24
03:00	0	11	4	0	3	0	1	0	3	0	0	0	0	22
04:00	0	21	10	0	2	4	1	0	0	0	0	0	1	39
05:00	0	51	23	4	7	3	**3**	4	4	**4**	0	0	1	104
06:00	0	180	74	0	29	2	1	5	10	2	1	0	1	305
07:00	0	**357**	96	6	**41**	16	1	**7**	9	1	0	0	2	**536**
08:00	0	319	**102**	**8**	31	5	0	2	4	1	0	0	1	473
09:00	0	208	93	2	25	**17**	0	5	13	3	0	**1**	0	367
10:00	0	224	89	3	33	14	0	4	**17**	0	**2**	0	3	389
11:00	0	269	94	2	33	14	1	2	10	3	0	1	**4**	433
12 PM	0	258	104	8	41	3	0	8	**15**	**5**	0	0	**3**	445
13:00	0	253	91	5	33	7	0	5	9	2	0	0	0	405
14:00	2	289	116	7	37	**14**	0	9	10	0	0	0	1	485
15:00	**3**	393	176	4	38	9	**1**	**11**	8	2	0	0	2	647
16:00	1	487	**182**	**11**	**54**	7	0	9	12	1	0	0	1	**765**
17:00	1	**496**	162	3	45	5	0	6	2	1	0	**1**	0	722
18:00	0	365	115	0	21	2	0	0	1	1	0	0	0	505
19:00	0	261	82	2	6	0	0	2	1	0	0	0	0	354
20:00	1	178	57	0	6	0	0	2	5	0	0	0	0	249
21:00	1	192	57	0	11	1	0	0	4	0	0	0	0	266
22:00	2	189	45	1	10	0	0	1	2	0	0	0	0	250
23:00	0	143	26	0	10	0	0	0	0	0	0	0	0	179
Day Total	11	5240	1822	66	519	124	9	83	143	26	3	3	20	8069
Percent	0.1%	64.9%	22.6%	0.8%	6.4%	1.5%	0.1%	1.0%	1.8%	0.3%	0.0%	0.0%	0.2%	
AM Peak		07:00	08:00	08:00	07:00	09:00	05:00	07:00	10:00	05:00	10:00	09:00	11:00	07:00
Vol.	357		102	8	41	17	3	7	17	4	2	1	4	536
PM Peak	15:00	17:00	16:00	16:00	16:00	14:00	15:00	15:00	12:00	12:00		17:00	12:00	16:00
Vol.	3	496	182	11	54	14	1	11	15	5	1		3	765
Grand Total	36	30900	10395	366	2799	489	51	420	593	111	10	9	85	46264
Percent	0.1%	66.8%	22.5%	0.8%	6.1%	1.1%	0.1%	0.9%	1.3%	0.2%	0.0%	0.0%	0.2%	

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code:
Station ID:
Hwy 26 EB On Ramp

EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/14/05	0	21	2	0	1	1	0	1	0	0	0	0	0	26
01:00	1	11	1	0	0	1	0	1	0	0	0	0	0	15
02:00	2	7	0	0	0	0	0	1	0	0	0	0	0	10
03:00	0	20	7	0	2	4	0	1	2	0	0	0	0	36
04:00	3	67	9	0	11	8	0	0	2	0	0	0	0	100
05:00	4	223	26	1	11	15	0	3	7	2	0	0	1	293
06:00	11	460	**93**	0	**40**	20	0	3	6	**5**	**1**	0	5	644
07:00	**18**	**543**	74	3	36	**27**	0	8	12	4	0	0	4	**729**
08:00	5	406	46	**5**	32	19	0	**14**	12	5	0	0	**9**	553
09:00	6	289	50	2	30	18	**1**	10	11	3	0	0	2	422
10:00	5	256	39	4	26	11	0	5	**14**	3	0	0	6	369
11:00	7	250	34	0	24	20	1	7	9	1	0	0	8	361
12 PM	6	256	34	3	22	15	0	6	12	**6**	1	**1**	6	368
13:00	7	262	43	0	21	16	0	5	**14**	2	0	0	4	374
14:00	8	221	38	**4**	23	19	**2**	5	11	6	0	0	**11**	348
15:00	6	281	45	3	22	15	1	7	6	1	0	0	6	393
16:00	**10**	315	**52**	2	**27**	**26**	0	**8**	10	1	0	0	3	**454**
17:00	7	**347**	34	1	13	22	0	7	5	1	**2**	0	2	441
18:00	9	229	27	1	12	16	0	1	1	0	0	0	0	296
19:00	6	187	17	0	9	11	0	3	2	1	0	0	0	236
20:00	5	114	12	0	5	10	0	0	2	0	0	0	1	149
21:00	4	110	6	0	4	11	0	1	0	0	0	0	1	137
22:00	2	65	1	0	2	7	1	1	1	0	0	0	0	80
23:00	3	23	0	0	0	2	0	0	1	0	0	0	3	32
Day Total	135	4963	690	29	373	314	6	98	140	41	4	1	72	6866
Percent	2.0%	72.3%	10.0%	0.4%	5.4%	4.6%	0.1%	1.4%	2.0%	0.6%	0.1%	0.0%	1.0%	
AM Peak	07:00	07:00	06:00	08:00	06:00	07:00	09:00	08:00	10:00	06:00	06:00		08:00	07:00
Vol.	18	543	93	5	40	27	1	14	14	5	1	9		729
PM Peak	16:00	17:00	16:00	14:00	16:00	16:00	14:00	16:00	13:00	12:00	17:00	12:00	14:00	16:00
Vol.	10	347	52	4	27	26	2	8	14	6	2	1	11	454

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code:
Station ID:
Hwy 26 EB On Ramp

EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/15/05	1	16	3	0	0	2	0	1	1	1	0	0	0	25
01:00	0	12	0	0	0	0	0	0	0	0	0	0	0	12
02:00	1	19	0	0	0	0	0	1	0	0	0	0	0	21
03:00	1	20	5	0	1	3	0	0	1	0	0	0	2	33
04:00	3	65	7	1	11	8	0	0	3	0	0	0	0	98
05:00	7	221	23	1	18	15	0	1	6	1	0	0	1	294
06:00	9	464	**89**	1	41	17	0	6	7	5	0	0	2	641
07:00	5	**545**	85	1	27	22	0	12	12	3	0	**1**	3	**716**
08:00	9	463	58	**5**	**48**	**24**	**1**	12	9	**7**	0	0	**8**	644
09:00	**14**	303	55	0	22	13	1	6	12	4	0	0	7	437
10:00	5	232	36	0	26	17	0	5	10	2	**1**	0	7	341
11:00	7	292	42	2	21	11	0	**13**	**15**	6	0	0	6	415
12 PM	3	264	48	**6**	21	15	0	8	**16**	3	0	0	4	388
13:00	12	228	46	3	25	11	0	**9**	8	**5**	0	0	**8**	355
14:00	10	255	41	4	23	19	1	9	8	1	0	0	5	376
15:00	6	283	35	2	17	13	0	1	5	3	0	0	5	370
16:00	8	334	46	2	**34**	23	0	5	4	1	0	0	4	461
17:00	9	**352**	**51**	1	16	**26**	0	2	4	2	0	0	4	**467**
18:00	**18**	261	37	1	11	22	1	5	2	1	0	0	2	361
19:00	12	184	24	0	8	8	0	5	0	0	0	0	0	241
20:00	7	125	10	0	6	1	0	0	0	0	0	0	1	150
21:00	3	115	7	1	2	11	0	4	1	0	0	0	0	144
22:00	0	59	7	0	1	3	**2**	2	2	1	0	0	1	78
23:00	3	35	3	1	1	1	0	1	0	0	0	0	2	47
Day Total	153	5147	758	32	380	285	6	108	126	46	1	1	72	7115
Percent	2.2%	72.3%	10.7%	0.4%	5.3%	4.0%	0.1%	1.5%	1.8%	0.6%	0.0%	0.0%	1.0%	
AM Peak	09:00	07:00	06:00	08:00	08:00	08:00	08:00	11:00	11:00	08:00	10:00	07:00	08:00	07:00
Vol.	14	545	89	5	48	24	1	13	15	7	1	1	8	716
PM Peak	18:00	17:00	17:00	12:00	16:00	17:00	22:00	13:00	12:00	13:00			13:00	17:00
Vol.	18	352	51	6	34	26	2	9	16	5			8	467

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code:
Station ID:
Hwy 26 EB On Ramp

EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/16/05	0	18	2	0	0	3	0	1	1	0	0	0	0	25
01:00	0	17	2	0	0	0	0	0	0	1	0	0	1	21
02:00	1	17	1	0	0	2	0	0	0	0	0	0	2	23
03:00	1	22	3	1	2	4	1	0	1	1	0	0	0	36
04:00	4	77	11	0	9	7	0	1	2	1	0	0	1	113
05:00	7	208	30	1	12	13	0	2	3	4	0	0	1	281
06:00	21	480	**93**	0	**38**	**29**	1	13	7	3	0	0	5	690
07:00	**23**	**575**	66	**6**	35	19	0	8	13	2	0	0	6	**753**
08:00	12	384	55	4	38	20	0	**18**	13	4	**1**	0	**9**	558
09:00	12	283	59	2	30	17	0	8	9	**8**	0	0	5	433
10:00	9	213	44	3	34	20	**2**	9	**15**	3	0	0	9	361
11:00	8	242	42	1	27	10	0	4	12	3	0	0	5	354
12 PM	10	260	35	2	26	13	0	**11**	8	**5**	0	0	**14**	384
13:00	8	254	39	1	27	**17**	**1**	6	**12**	3	0	0	8	376
14:00	6	270	42	**3**	26	14	0	7	8	4	0	0	10	390
15:00	12	309	47	3	**30**	14	0	7	12	3	0	0	3	440
16:00	13	353	51	1	23	14	0	7	8	4	0	**1**	6	481
17:00	**20**	**410**	**56**	0	28	13	0	2	2	4	0	0	3	**538**
18:00	14	310	24	0	12	12	0	3	3	0	0	0	0	378
19:00	4	151	16	1	13	6	0	1	3	0	0	0	0	195
20:00	4	113	17	0	3	12	0	0	0	0	0	0	1	150
21:00	6	108	12	0	4	13	0	1	0	0	0	0	1	145
22:00	4	61	9	0	5	6	0	0	0	0	0	0	0	85
23:00	2	21	0	1	1	3	0	0	3	0	0	0	2	33
Day Total	201	5156	756	30	423	281	5	109	135	53	1	1	92	7243
Percent	2.8%	71.2%	10.4%	0.4%	5.8%	3.9%	0.1%	1.5%	1.9%	0.7%	0.0%	0.0%	1.3%	
AM Peak	07:00	07:00	06:00	07:00	06:00	06:00	10:00	08:00	10:00	09:00	08:00		08:00	07:00
Vol.	23	575	93	6	38	29	2	18	15	8	1	9		753
PM Peak	17:00	17:00	17:00	14:00	15:00	13:00	13:00	12:00	13:00	12:00		16:00	12:00	17:00
Vol.	20	410	56	3	30	17	1	11	12	5	1		14	538

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code:
Station ID:
Hwy 26 EB On Ramp

EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/17/05	0	26	3	0	3	3	0	0	0	0	0	0	0	35
01:00	0	11	2	0	0	0	0	0	1	0	0	0	0	14
02:00	0	14	2	0	0	1	0	0	2	0	0	0	3	22
03:00	1	22	5	0	1	2	1	2	2	1	0	0	3	40
04:00	3	67	8	0	13	9	0	0	5	3	0	0	0	108
05:00	8	224	29	2	11	15	0	3	5	0	0	0	1	298
06:00	8	522	**87**	0	**41**	**30**	**3**	8	10	2	**1**	0	3	715
07:00	12	**568**	73	4	41	29	0	7	9	2	0	0	3	**748**
08:00	**19**	427	58	2	38	24	1	**17**	11	2	0	0	**16**	615
09:00	6	319	55	**6**	32	13	0	8	**12**	6	0	0	7	464
10:00	13	266	43	3	18	22	1	6	6	2	0	0	3	383
11:00	13	250	47	4	34	21	2	7	11	**10**	0	0	5	404
12 PM	3	266	**55**	4	20	15	0	**11**	8	3	0	0	5	390
13:00	7	241	52	1	29	14	0	5	**11**	2	0	0	3	365
14:00	10	256	52	3	26	**22**	0	9	10	**5**	0	**1**	**6**	400
15:00	**15**	304	42	**5**	**31**	16	**1**	8	4	1	0	1	4	432
16:00	14	367	43	1	28	12	0	8	8	4	0	0	6	**491**
17:00	8	**373**	46	0	23	22	1	6	2	1	0	0	2	484
18:00	8	292	15	0	17	15	0	5	3	0	0	0	1	356
19:00	4	163	18	0	10	11	0	3	0	1	0	0	2	212
20:00	4	156	16	0	6	10	0	1	0	0	0	0	0	193
21:00	7	107	9	1	4	12	0	1	1	1	0	0	1	144
22:00	2	62	6	0	1	11	0	0	0	0	0	1	2	85
23:00	1	42	5	0	3	2	0	0	2	1	0	0	0	56
Day Total	166	5345	771	36	430	331	10	115	123	47	1	3	76	7454
Percent	2.2%	71.7%	10.3%	0.5%	5.8%	4.4%	0.1%	1.5%	1.7%	0.6%	0.0%	0.0%	1.0%	
AM Peak	08:00	07:00	06:00	09:00	06:00	06:00	06:00	08:00	09:00	11:00	06:00		08:00	07:00
Vol.	19	568	87	6	41	30	3	17	12	10	1	1	6	748
PM Peak	15:00	17:00	12:00	15:00	15:00	14:00	15:00	12:00	13:00	14:00		14:00	14:00	16:00
Vol.	15	373	55	5	31	22	1	11	11	5	1		6	491

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code:
Station ID:
Hwy 26 EB On Ramp

EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/18/05	1	28	1	0	2	3	0	0	1	0	0	0	1	37
01:00	0	12	3	0	0	1	0	0	0	0	0	0	0	16
02:00	1	16	1	1	0	2	0	0	0	0	0	0	3	24
03:00	0	18	3	0	2	5	0	1	3	0	0	0	0	32
04:00	3	70	6	1	12	9	0	0	3	0	0	0	0	104
05:00	7	222	34	2	16	17	0	1	2	1	0	0	2	304
06:00	20	**468**	**78**	0	30	**28**	1	12	4	5	0	0	4	650
07:00	**21**	466	73	1	37	27	**2**	**14**	**15**	2	0	0	8	**666**
08:00	16	420	54	3	**38**	19	0	12	13	**6**	0	0	11	592
09:00	12	294	49	1	27	17	1	9	5	5	0	0	7	427
10:00	10	285	52	1	30	13	1	9	9	6	0	0	**12**	428
11:00	5	249	39	**4**	30	25	0	12	6	1	0	0	11	382
12 PM	6	272	27	1	23	16	0	10	**11**	**10**	0	0	7	383
13:00	13	287	50	1	16	16	0	6	6	5	0	0	7	407
14:00	6	271	50	3	**25**	15	0	8	10	2	0	0	**9**	399
15:00	14	310	**54**	**5**	24	16	0	8	10	2	0	0	2	445
16:00	**16**	364	33	0	22	**24**	0	**11**	10	3	0	0	2	485
17:00	11	**404**	25	1	13	23	0	5	2	0	0	**1**	1	**486**
18:00	16	329	28	0	14	17	0	4	1	1	0	0	3	413
19:00	4	210	17	0	8	10	0	2	2	0	0	0	2	255
20:00	6	126	12	0	13	9	**1**	1	1	0	0	0	2	171
21:00	2	148	18	1	8	11	0	1	2	0	0	0	0	191
22:00	8	116	5	0	2	9	0	1	1	0	0	0	2	144
23:00	1	54	7	0	4	3	1	0	3	1	0	0	2	76
Day Total	199	5439	719	26	396	335	7	127	120	50	0	1	98	7517
Percent	2.6%	72.4%	9.6%	0.3%	5.3%	4.5%	0.1%	1.7%	1.6%	0.7%	0.0%	0.0%	1.3%	
AM Peak	07:00	06:00	06:00	11:00	08:00	06:00	07:00	07:00	07:00	08:00			10:00	07:00
Vol.	21	468	78	4	38	28	2	14	15	6			12	666
PM Peak	16:00	17:00	15:00	15:00	14:00	16:00	20:00	16:00	12:00	12:00		17:00	14:00	17:00
Vol.	16	404	54	5	25	24	1	11	11	10	1		9	486

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code:
Station ID:
Hwy 26 EB On Ramp

EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/19/05	4	28	6	0	3	6	0	0	0	0	0	0	1	48
01:00	3	16	2	0	1	1	0	0	1	1	0	0	0	25
02:00	0	19	0	0	0	0	0	0	0	1	0	0	0	20
03:00	1	19	1	0	2	3	0	0	0	1	0	0	0	27
04:00	0	37	5	1	4	3	0	0	0	0	0	0	0	50
05:00	2	69	9	0	6	4	0	3	2	1	0	0	0	96
06:00	4	133	30	2	16	**17**	0	3	0	0	0	0	0	205
07:00	6	213	30	1	19	7	1	5	**6**	**2**	0	0	1	291
08:00	7	255	31	0	**21**	12	**2**	**6**	2	0	0	0	**3**	339
09:00	10	308	44	0	15	16	2	5	3	1	0	0	0	404
10:00	18	**325**	44	0	20	15	1	3	5	1	0	0	2	434
11:00	**23**	324	**45**	**3**	17	14	0	3	3	2	0	0	3	**437**
12 M	P 9	311	32	1	19	11	0	1	2	**1**	0	0	**1**	388
13:00	12	**339**	43	1	12	9	0	**5**	**4**	0	0	0	1	426
14:00	**35**	271	35	2	13	12	0	1	2	0	0	0	1	372
15:00	11	268	40	**3**	**25**	15	0	5	2	0	**1**	0	0	370
16:00	12	333	**46**	2	13	18	0	5	0	0	0	0	1	**430**
17:00	21	320	36	0	14	**20**	0	3	1	0	0	0	0	415
18:00	18	302	27	0	13	15	0	3	2	0	0	0	1	381
19:00	9	189	19	1	12	16	0	2	0	0	0	0	0	248
20:00	8	124	8	0	7	3	0	2	1	0	0	0	1	154
21:00	11	145	17	0	3	9	0	1	1	0	0	0	0	187
22:00	7	96	8	0	3	6	0	0	0	0	0	0	0	120
23:00	8	81	3	0	2	4	0	0	0	0	0	0	0	98
Day Total	239	4525	561	17	260	236	6	56	37	11	1	0	16	5965
Percent	4.0%	75.9%	9.4%	0.3%	4.4%	4.0%	0.1%	0.9%	0.6%	0.2%	0.0%	0.0%	0.3%	
AM Peak	11:00	10:00	11:00	11:00	08:00	06:00	08:00	08:00	07:00	07:00			08:00	11:00
Vol.	23	325	45	3	21	17	2	6	6	2			3	437
PM Peak	14:00	13:00	16:00	15:00	15:00	17:00		13:00	13:00	12:00	15:00		12:00	16:00
Vol.	35	339	46	3	25	20	5		4	1	1		1	430

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code:
Station ID:
Hwy 26 EB On Ramp

EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/20/05	0	28	6	0	1	5	0	0	0	0	0	0	0	40
01:00	4	33	0	0	2	2	0	0	0	0	0	0	0	41
02:00	0	21	3	0	1	0	0	0	0	0	0	0	**2**	27
03:00	1	10	2	0	1	1	0	0	0	0	0	0	0	15
04:00	2	25	4	0	3	2	0	0	0	0	0	0	0	36
05:00	1	35	2	0	6	1	0	1	0	0	0	0	0	46
06:00	3	84	11	0	9	5	0	1	0	0	0	0	0	113
07:00	5	87	10	0	6	4	0	3	0	0	0	0	1	116
08:00	10	153	20	**2**	**14**	6	0	0	1	0	0	0	0	206
09:00	7	234	30	0	13	**15**	0	1	**2**	0	0	0	1	303
10:00	**15**	282	26	1	12	8	0	3	1	0	0	0	0	348
11:00	5	**293**	**31**	1	11	8	0	**4**	0	0	0	0	2	**355**
12 PM	10	271	**38**	0	14	10	0	2	1	0	0	0	0	346
13:00	12	267	29	0	13	12	0	**6**	0	0	0	0	**2**	341
14:00	6	284	29	**1**	14	12	0	3	0	0	0	0	0	349
15:00	16	270	29	0	4	12	0	3	**2**	**1**	0	0	1	338
16:00	10	**327**	29	0	12	**14**	0	4	1	0	0	0	0	**397**
17:00	**17**	316	16	1	11	14	0	2	1	0	0	0	0	378
18:00	9	224	30	0	**15**	7	0	2	0	0	0	0	2	289
19:00	8	156	11	0	6	8	0	0	2	0	0	0	0	191
20:00	4	144	5	0	5	8	0	2	2	0	0	0	1	171
21:00	2	76	4	0	3	10	0	1	0	1	0	0	0	97
22:00	4	63	5	0	1	3	0	1	0	0	0	0	0	77
23:00	2	30	1	0	1	3	0	0	0	0	0	0	1	38
Day Total	153	3713	371	6	178	170	0	39	13	2	0	0	13	4658
Percent	3.3%	79.7%	8.0%	0.1%	3.8%	3.6%	0.0%	0.8%	0.3%	0.0%	0.0%	0.0%	0.3%	
AM Peak	10:00	11:00	11:00	08:00	08:00	09:00		11:00	09:00				02:00	11:00
Vol.	15	293	31	2	14	15		4	2				2	355
PM Peak	17:00	16:00	12:00	14:00	18:00	16:00		13:00	15:00	15:00			13:00	16:00
Vol.	17	327	38	1	15	14	6		2	1			2	397
Grand Total	1246	34288	4626	176	2440	1952	40	652	694	250	8	7	439	46818
Percent	2.7%	73.2%	9.9%	0.4%	5.2%	4.2%	0.1%	1.4%	1.5%	0.5%	0.0%	0.0%	0.9%	

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132203
Station ID:
Hwy 26 EB Off Ramp

EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/14/05	1	4	0	0	0	1	0	0	0	0	0	0	0	6
01:00	1	2	0	0	0	0	0	0	0	0	0	0	0	3
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	1	0	0	0	3	0	0	0	0	0	0	0	4
04:00	1	2	0	0	0	1	0	0	0	0	0	0	0	4
05:00	8	19	1	0	1	6	1	0	0	0	0	0	0	36
06:00	18	32	7	0	**7**	12	0	0	0	1	0	0	0	77
07:00	**24**	42	6	**1**	4	**21**	0	**1**	1	**2**	0	0	0	102
08:00	23	**69**	**9**	0	2	16	0	1	0	0	0	0	0	**120**
09:00	11	48	4	0	3	20	0	1	1	1	0	0	0	89
10:00	12	45	7	0	1	12	**3**	1	**2**	0	0	0	**1**	84
11:00	21	27	7	0	4	8	2	0	0	1	0	0	0	70
12 PM	14	29	9	0	**12**	13	**2**	0	**1**	**2**	0	0	1	83
13:00	9	34	**14**	0	5	11	1	0	0	1	0	0	**2**	77
14:00	16	31	5	**1**	3	8	2	**1**	1	0	0	0	1	69
15:00	**22**	43	6	0	4	14	0	1	0	0	0	0	0	**90**
16:00	20	**44**	4	1	4	14	1	0	1	0	0	0	0	89
17:00	16	31	3	0	3	12	0	0	0	0	0	0	0	65
18:00	7	22	9	0	5	**15**	0	1	0	0	0	0	0	59
19:00	7	12	2	0	0	10	0	0	0	0	0	0	0	31
20:00	5	6	2	0	0	3	0	0	0	0	0	0	0	16
21:00	5	5	2	0	1	2	0	0	0	0	0	0	0	15
22:00	1	8	0	0	0	1	0	0	0	0	0	0	0	10
23:00	0	7	0	0	0	0	0	0	0	0	0	0	0	7
Day Total	242	564	97	3	59	203	12	7	7	8	0	0	5	1207
Percent	20.0%	46.7%	8.0%	0.2%	4.9%	16.8%	1.0%	0.6%	0.6%	0.7%	0.0%	0.0%	0.4%	
AM Peak	07:00	08:00	08:00	07:00	06:00	07:00	10:00	07:00	10:00	07:00			10:00	08:00
Vol.	24	69	9	1	7	21	3	1	2	2			1	120
PM Peak	15:00	16:00	13:00	14:00	12:00	18:00	12:00	14:00	12:00	12:00			13:00	15:00
Vol.	22	44	14	1	12	15	2	1	1	2			2	90

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132203
Station ID:
Hwy 26 EB Off Ramp

EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/15/05	0	0	0	0	0	1	0	0	0	0	0	0	0	1
01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
02:00	3	1	0	0	0	0	0	0	0	0	0	0	0	4
03:00	2	2	0	0	0	2	0	0	0	0	0	0	0	6
04:00	2	4	0	0	2	1	0	0	0	0	0	0	0	9
05:00	6	13	3	0	0	6	1	0	0	0	0	0	0	29
06:00	17	38	4	0	3	14	0	0	0	**1**	0	0	**1**	78
07:00	20	**49**	6	0	**10**	**23**	1	0	0	0	0	0	0	109
08:00	**34**	45	**13**	0	5	17	1	1	**1**	0	0	0	1	**118**
09:00	18	42	7	0	2	19	**2**	1	0	1	0	0	0	92
10:00	12	35	8	0	3	11	2	0	0	0	0	0	0	71
11:00	18	29	6	0	6	17	0	**2**	1	0	0	0	1	80
12 PM	23	37	2	0	4	**20**	**1**	0	0	**2**	0	0	0	89
13:00	20	30	10	0	**6**	17	0	0	0	0	0	0	0	83
14:00	16	35	10	0	6	18	1	**1**	**1**	0	0	0	**1**	89
15:00	**26**	**42**	11	1	5	10	0	1	0	2	0	0	1	**99**
16:00	16	37	**12**	**2**	3	16	1	0	0	0	0	0	0	87
17:00	12	29	8	0	3	10	0	1	1	0	0	0	0	64
18:00	24	26	11	0	2	12	0	1	0	1	0	0	0	77
19:00	10	19	4	0	2	10	0	0	0	0	0	0	0	45
20:00	9	8	2	0	0	5	0	0	0	0	0	0	0	24
21:00	5	12	0	0	2	5	0	0	1	0	0	0	0	25
22:00	4	6	0	0	0	4	0	0	1	0	0	0	0	15
23:00	2	2	0	0	0	3	0	0	0	0	0	0	0	7
Day Total	299	543	117	3	64	241	10	8	6	7	0	0	5	1303
Percent	22.9%	41.7%	9.0%	0.2%	4.9%	18.5%	0.8%	0.6%	0.5%	0.5%	0.0%	0.0%	0.4%	
AM Peak	08:00	07:00	08:00		07:00	07:00	09:00	11:00	08:00	06:00			06:00	08:00
Vol.	34	49	13		0	23	2	2	1	1			1	118
PM Peak	15:00	15:00	16:00	16:00	13:00	12:00	12:00	14:00	14:00	12:00			14:00	15:00
Vol.	26	42	12	2	6	20	1	1	1	2			1	99

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132203
Station ID:
Hwy 26 EB Off Ramp

EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/16/05	0	1	0	0	0	0	0	0	0	0	0	0	0	1
01:00	3	1	0	0	0	1	0	0	0	0	0	0	0	5
02:00	1	4	0	0	0	0	0	0	0	0	0	0	0	5
03:00	0	2	0	0	0	3	0	0	0	0	0	0	0	5
04:00	4	3	0	0	0	1	0	0	0	0	0	0	0	8
05:00	6	14	2	0	1	14	**2**	0	0	0	0	0	0	39
06:00	21	30	5	0	7	11	0	0	0	0	0	0	0	74
07:00	**29**	53	4	0	**11**	17	0	0	0	**1**	0	0	0	**115**
08:00	20	**59**	**10**	0	4	14	1	0	0	0	0	0	**1**	109
09:00	25	33	6	0	4	15	2	**1**	0	0	0	0	0	86
10:00	17	30	4	0	3	14	2	1	**2**	0	0	0	1	74
11:00	16	41	4	**1**	2	**18**	0	1	0	0	0	0	0	83
12 PM	**24**	**48**	4	0	2	7	1	1	0	**2**	0	0	0	**89**
13:00	10	28	6	0	7	12	**2**	1	0	2	0	0	0	68
14:00	11	37	7	0	2	15	1	1	0	1	0	0	0	75
15:00	14	36	4	1	**8**	**16**	0	**2**	**2**	1	0	0	**1**	85
16:00	21	41	8	**2**	1	12	0	1	0	1	0	0	0	87
17:00	10	29	**9**	0	3	11	0	0	1	1	0	0	0	64
18:00	19	32	5	1	4	14	0	2	0	0	0	0	0	77
19:00	4	15	1	0	3	5	0	0	0	0	0	0	0	28
20:00	6	14	0	0	1	3	0	0	0	0	0	0	0	24
21:00	4	7	0	0	1	2	0	0	0	0	0	0	0	14
22:00	4	3	2	0	1	2	0	0	0	0	0	0	0	12
23:00	3	3	0	0	1	2	0	0	0	0	0	0	0	9
Day Total	272	564	81	5	66	209	11	11	5	9	0	0	3	1236
Percent	22.0%	45.6%	6.6%	0.4%	5.3%	16.9%	0.9%	0.9%	0.4%	0.7%	0.0%	0.0%	0.2%	
AM Peak	07:00	08:00	08:00	11:00	07:00	11:00	05:00	09:00	10:00	07:00			08:00	07:00
Vol.	29	59	10	1	11	18	2	1	2	1			1	115
PM Peak	12:00	12:00	17:00	16:00	15:00	15:00	13:00	15:00	15:00	12:00			15:00	12:00
Vol.	24	48	9	2	8	16	2	2	2	2			1	89

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132203
Station ID:
Hwy 26 EB Off Ramp

EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/17/05	1	2	0	0	1	1	**1**	0	0	0	0	0	0	6
01:00	0	3	0	0	0	2	0	0	0	0	0	0	**1**	6
02:00	1	1	1	0	0	0	0	0	0	0	0	0	0	3
03:00	0	3	0	0	0	2	0	0	0	**1**	0	0	0	6
04:00	0	1	0	0	1	3	0	0	0	0	0	0	0	5
05:00	7	11	5	0	1	6	1	0	0	0	0	0	0	31
06:00	14	46	**10**	0	3	**28**	0	0	**1**	0	0	0	1	103
07:00	25	47	4	**2**	**8**	19	1	1	0	1	0	0	1	109
08:00	18	**61**	7	0	8	17	1	1	0	1	0	0	1	**115**
09:00	**28**	41	10	0	5	14	0	**2**	0	1	0	0	0	101
10:00	16	38	4	0	3	10	1	1	0	1	0	0	0	74
11:00	20	31	7	0	4	10	1	1	0	1	0	0	0	75
12 PM	16	26	**12**	0	**4**	**22**	1	0	**1**	**2**	0	0	0	84
13:00	11	23	3	0	2	11	1	0	1	0	0	0	0	52
14:00	**17**	29	6	0	2	9	1	2	0	0	0	0	0	66
15:00	17	**39**	9	**1**	1	17	1	**3**	0	0	0	0	**2**	**90**
16:00	11	33	7	1	4	12	**2**	3	1	0	0	0	0	74
17:00	15	30	10	0	4	16	0	0	1	0	0	0	2	78
18:00	11	20	6	0	3	15	0	2	0	0	0	0	0	57
19:00	5	16	6	0	1	14	0	0	0	0	0	0	0	42
20:00	5	15	1	0	0	5	0	0	0	0	0	0	0	26
21:00	3	11	2	0	0	2	0	0	0	0	0	0	0	18
22:00	4	10	1	0	0	2	0	1	0	0	0	0	0	18
23:00	2	2	0	0	1	1	0	0	0	0	0	0	0	6
Day Total	247	539	111	4	56	238	12	17	5	8	0	0	8	1245
Percent	19.8%	43.3%	8.9%	0.3%	4.5%	19.1%	1.0%	1.4%	0.4%	0.6%	0.0%	0.0%	0.6%	
AM Peak	09:00	08:00	06:00	07:00	07:00	06:00	00:00	09:00	06:00	03:00			01:00	08:00
Vol.	28	61	10	2	8	28	1	2	1	1			1	115
PM Peak	14:00	15:00	12:00	15:00	12:00	12:00	16:00	15:00	12:00	12:00			15:00	15:00
Vol.	17	39	12	1	4	22	2	3	1	2			2	90

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132203
Station ID:
Hwy 26 EB Off Ramp

EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/18/05	0	2	0	0	0	2	0	1	0	0	0	0	0	5
01:00	0	0	1	0	0	0	1	0	0	0	0	0	0	2
02:00	2	1	0	**1**	0	2	0	0	0	0	0	0	0	6
03:00	1	2	0	0	0	1	0	0	0	0	0	0	0	4
04:00	0	0	1	0	2	2	0	0	0	0	0	0	0	5
05:00	6	13	4	0	2	5	0	0	0	0	0	0	0	30
06:00	16	40	7	0	6	14	2	0	0	0	0	0	0	85
07:00	**29**	46	2	1	6	18	1	0	0	0	0	0	0	103
08:00	29	**60**	**9**	0	**8**	**20**	3	**2**	0	0	0	0	0	**131**
09:00	27	30	6	0	5	14	2	1	0	0	0	0	**1**	86
10:00	16	36	9	0	2	12	**4**	1	0	0	0	0	1	81
11:00	13	41	6	0	6	17	1	2	0	0	0	0	0	86
12 PM	10	29	6	0	1	17	**2**	1	0	**1**	0	0	0	67
13:00	16	33	4	**1**	2	8	0	1	0	1	0	0	1	67
14:00	12	41	3	0	4	8	0	1	0	0	0	0	0	69
15:00	14	33	**10**	1	**7**	15	2	1	0	0	0	0	**2**	85
16:00	**25**	41	7	1	4	**25**	0	1	0	0	0	0	0	**104**
17:00	12	**48**	4	0	5	18	0	**2**	0	0	0	0	0	89
18:00	15	36	3	0	4	17	0	1	0	0	0	0	0	76
19:00	7	18	3	0	0	11	0	0	0	0	0	0	0	39
20:00	9	17	0	0	2	6	0	2	0	0	0	0	0	36
21:00	6	14	1	0	3	8	0	1	0	0	0	0	0	33
22:00	5	11	0	0	0	2	0	0	0	0	0	0	0	18
23:00	1	4	2	0	2	2	0	0	0	0	0	0	0	11
Day Total	271	596	88	5	71	244	18	18	0	2	0	0	5	1318
Percent	20.6%	45.2%	6.7%	0.4%	5.4%	18.5%	1.4%	1.4%	0.0%	0.2%	0.0%	0.0%	0.4%	
AM Peak	07:00	08:00	08:00	02:00	08:00	08:00	10:00	08:00					09:00	08:00
Vol.	29	60	9	1	8	20	4	2					1	131
PM Peak	16:00	17:00	15:00	13:00	15:00	16:00	12:00	17:00		12:00			15:00	16:00
Vol.	25	48	10	1	7	25	2	2	1			2		104

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132203
Station ID:
Hwy 26 EB Off Ramp

EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/19/05	2	3	1	0	1	2	0	0	0	0	0	0	0	9
01:00	3	1	0	0	0	1	0	0	0	0	0	0	0	5
02:00	2	1	0	0	0	1	0	0	0	0	0	0	0	4
03:00	1	2	0	0	0	0	0	0	0	0	0	0	0	3
04:00	2	1	0	0	1	1	0	0	0	0	0	0	0	5
05:00	2	6	1	0	0	3	0	0	0	0	0	0	0	12
06:00	4	18	3	0	0	3	0	0	0	0	0	0	0	28
07:00	8	19	6	0	**6**	4	**1**	**2**	0	0	0	0	0	46
08:00	13	19	4	0	3	9	1	0	0	0	0	0	0	49
09:00	**24**	**46**	6	**1**	3	10	1	0	0	0	0	0	0	**91**
10:00	24	30	**9**	0	3	**15**	0	1	**1**	0	0	0	0	83
11:00	17	44	6	1	4	12	0	0	0	0	0	0	0	84
12 PM	**30**	**51**	7	0	2	21	0	**3**	1	0	0	0	0	**115**
13:00	17	35	7	0	4	9	0	2	**3**	0	0	0	0	77
14:00	14	44	8	0	**6**	8	0	0	0	0	0	0	0	80
15:00	9	43	7	0	2	13	0	1	1	**1**	0	0	0	77
16:00	25	47	**9**	0	4	19	0	3	0	0	0	0	0	107
17:00	16	51	7	0	3	16	0	1	1	0	0	0	0	95
18:00	16	37	7	0	3	**26**	0	3	0	0	0	0	0	92
19:00	13	27	4	0	2	6	0	1	0	0	0	0	0	53
20:00	8	19	0	0	1	4	0	1	0	0	0	0	0	33
21:00	10	16	0	0	0	4	0	0	0	0	0	0	0	30
22:00	6	11	3	0	1	6	0	0	0	0	0	0	0	27
23:00	4	6	2	0	0	3	0	0	0	0	0	0	0	15
Day Total	270	577	97	2	49	196	3	18	7	1	0	0	0	1220
Percent	22.1%	47.3%	8.0%	0.2%	4.0%	16.1%	0.2%	1.5%	0.6%	0.1%	0.0%	0.0%	0.0%	
AM Peak	09:00	09:00	10:00	09:00	07:00	10:00	07:00	07:00	10:00					09:00
Vol.	24	46	9	1	6	15	1	2	1					91
PM Peak	12:00	12:00	16:00		14:00	18:00		12:00	13:00	15:00				12:00
Vol.	30	51	9	6		26	3		3	1				115

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132203
Station ID:
Hwy 26 EB Off Ramp

EB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/20/05	2	4	1	0	1	1	0	0	0	0	0	0	0	9
01:00	1	3	0	0	0	1	0	0	0	0	0	0	0	5
02:00	1	4	0	0	0	0	0	0	0	0	0	0	0	5
03:00	1	0	0	0	0	1	0	0	0	**1**	0	0	0	3
04:00	0	2	1	0	0	2	0	0	0	0	0	0	0	5
05:00	1	2	0	0	1	0	0	0	0	0	0	0	0	4
06:00	1	6	0	0	1	5	0	**1**	0	0	0	0	0	14
07:00	4	12	2	0	0	5	0	0	0	0	0	0	0	23
08:00	8	14	1	0	3	4	0	0	**1**	1	0	0	0	32
09:00	16	27	5	0	3	8	0	1	0	0	0	0	**1**	61
10:00	**19**	31	**6**	0	2	9	0	0	0	0	0	0	0	67
11:00	13	**41**	3	0	**6**	**12**	**1**	0	0	0	0	0	0	**76**
12 M	P 14	45	4	0	0	11	0	1	0	0	0	0	0	75
13:00	23	40	5	0	4	13	0	1	0	0	0	0	0	86
14:00	21	44	8	0	3	10	0	0	1	0	0	0	0	87
15:00	**25**	40	13	0	5	12	0	0	1	0	0	0	0	96
16:00	20	38	13	0	2	15	**1**	**3**	0	0	0	0	0	92
17:00	24	**46**	**15**	0	4	**18**	0	2	1	0	0	0	0	**110**
18:00	12	44	4	0	**7**	15	0	0	**2**	0	0	0	0	84
19:00	9	10	3	0	1	5	0	2	0	0	0	0	0	30
20:00	4	14	3	0	1	7	1	0	0	0	0	0	0	30
21:00	6	12	0	0	0	6	0	0	0	0	0	0	0	24
22:00	1	6	1	0	0	1	0	0	0	0	0	0	0	9
23:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
Day Total	226	487	88	0	44	161	3	11	6	2	0	0	1	1029
Percent	22.0%	47.3%	8.6%	0.0%	4.3%	15.6%	0.3%	1.1%	0.6%	0.2%	0.0%	0.0%	0.1%	
AM Peak	10:00	11:00	10:00		11:00	11:00	11:00	06:00	08:00	03:00			09:00	11:00
Vol.	19	41	6		6	12	1	1	1	1			1	76
PM Peak	15:00	17:00	17:00		18:00	17:00	16:00	16:00	18:00					17:00
Vol.	25	46	15		7	18	1	3	2					110
Grand Total	1827	3870	679	22	409	1492	69	90	36	37	0	0	27	8558
Percent	21.3%	45.2%	7.9%	0.3%	4.8%	17.4%	0.8%	1.1%	0.4%	0.4%	0.0%	0.0%	0.3%	

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132206
Station ID:
Hwy 26 WB On Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/14/05	0	4	0	0	0	0	0	0	0	1	0	0	0	5
01:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
02:00	0	4	1	0	0	0	0	0	0	0	0	0	0	5
03:00	1	6	0	0	0	1	0	0	0	1	0	0	0	9
04:00	3	6	7	0	0	0	0	0	0	0	0	0	0	16
05:00	3	38	15	0	7	3	0	1	**2**	0	0	0	0	69
06:00	**7**	48	**18**	**1**	**11**	2	0	2	0	1	0	0	0	90
07:00	7	47	7	0	8	1	**1**	0	1	**3**	0	0	2	77
08:00	4	54	13	1	9	7	0	1	0	0	0	0	1	90
09:00	5	53	13	0	7	**9**	0	**4**	0	2	0	0	0	**93**
10:00	6	62	11	0	7	4	0	0	0	2	0	0	1	93
11:00	1	**63**	14	1	6	3	0	0	0	0	0	0	**4**	92
12 PM	**12**	53	**20**	0	7	4	**2**	1	0	**2**	0	0	0	101
13:00	8	72	15	**1**	6	**7**	1	**4**	**2**	2	0	0	**1**	119
14:00	5	85	10	0	8	6	0	2	0	2	0	0	1	119
15:00	6	101	9	0	7	6	1	3	0	1	0	0	0	134
16:00	10	96	16	0	**9**	7	0	2	0	2	0	0	0	142
17:00	12	**123**	19	0	7	4	0	0	0	0	0	0	0	**165**
18:00	5	98	11	0	6	2	0	1	0	0	0	0	0	123
19:00	5	64	10	0	4	2	0	1	0	0	0	0	0	86
20:00	1	47	4	0	2	2	0	0	1	0	0	0	0	57
21:00	1	41	3	0	5	1	0	0	0	0	0	0	0	51
22:00	1	30	4	0	0	3	0	0	0	0	0	0	1	39
23:00	2	11	1	0	0	0	0	0	0	0	0	0	0	14
Day Total	105	1209	221	4	116	74	5	22	6	19	0	0	11	1792
Percent	5.9%	67.5%	12.3%	0.2%	6.5%	4.1%	0.3%	1.2%	0.3%	1.1%	0.0%	0.0%	0.6%	
AM Peak	06:00	11:00	06:00	06:00	06:00	09:00	07:00	09:00	05:00	07:00			11:00	09:00
Vol.	7	63	18	1	11	9	1	4	2	3			4	93
PM Peak	12:00	17:00	12:00	13:00	16:00	13:00	12:00	13:00	13:00	12:00			13:00	17:00
Vol.	12	123	20	1	9	7	2	4	2	2			1	165

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132206
Station ID:
Hwy 26 WB On Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/15/05	1	11	0	0	0	0	0	0	0	0	0	0	0	12
01:00	1	4	0	0	0	1	0	0	0	0	0	0	0	6
02:00	1	2	0	0	0	0	0	1	0	0	0	0	0	4
03:00	0	4	1	0	0	0	**1**	0	0	0	0	0	0	6
04:00	0	11	3	0	1	1	0	0	0	0	0	0	0	16
05:00	4	36	**17**	0	1	5	0	2	0	0	0	0	0	65
06:00	8	29	12	**1**	5	1	0	**3**	0	0	0	0	0	59
07:00	2	43	14	0	**11**	4	1	3	1	0	0	0	0	79
08:00	2	50	11	0	8	5	0	1	0	1	0	0	0	78
09:00	5	53	15	1	5	2	0	1	0	**2**	0	0	**2**	86
10:00	**11**	57	12	1	7	5	1	1	0	1	0	0	0	96
11:00	11	**69**	16	0	3	**7**	0	2	**2**	2	0	0	2	**114**
12 PM	10	62	16	0	1	4	0	0	**1**	**2**	0	0	1	97
13:00	6	61	**22**	0	6	6	**2**	1	0	1	0	0	**2**	107
14:00	8	97	13	0	10	**11**	0	1	0	1	0	0	1	142
15:00	5	99	22	0	10	11	1	3	0	0	0	0	0	151
16:00	14	133	19	0	9	6	1	0	0	1	0	0	0	183
17:00	**17**	**134**	17	0	**11**	7	1	1	0	0	0	0	0	**188**
18:00	4	118	8	0	7	2	0	**4**	0	1	0	0	0	144
19:00	3	51	6	0	3	3	0	1	1	0	0	0	0	68
20:00	1	47	2	0	2	1	0	0	0	0	0	0	0	53
21:00	2	53	2	0	3	0	1	1	0	0	0	0	0	62
22:00	0	26	4	0	2	1	0	0	0	0	0	0	0	33
23:00	0	13	1	0	1	0	0	0	0	1	0	0	0	16
Day Total	116	1263	233	3	106	83	9	26	5	13	0	0	8	1865
Percent	6.2%	67.7%	12.5%	0.2%	5.7%	4.5%	0.5%	1.4%	0.3%	0.7%	0.0%	0.0%	0.4%	
AM Peak	10:00	11:00	05:00	06:00	07:00	11:00	03:00	06:00	11:00	09:00			09:00	11:00
Vol.	11	69	17	1	11	7	1	3	2	2			2	114
PM Peak	17:00	17:00	13:00		17:00	14:00	13:00	18:00	12:00	12:00			13:00	17:00
Vol.	17	134	22		**1**	11	2	4	1	2			2	188

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132206
Station ID:
Hwy 26 WB On Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/16/05	0	8	1	0	1	0	0	0	0	1	0	0	0	11
01:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5
02:00	0	6	1	0	0	0	0	0	0	0	**1**	0	0	8
03:00	0	2	0	0	0	1	0	0	0	0	0	0	0	3
04:00	0	7	0	0	1	1	1	1	0	0	0	0	0	11
05:00	0	18	7	0	2	2	0	2	0	1	0	0	0	32
06:00	3	39	9	**1**	6	4	0	**5**	0	**4**	0	0	0	71
07:00	6	35	9	0	**9**	**7**	0	0	0	3	0	0	**3**	72
08:00	7	48	14	0	6	5	0	2	**1**	0	0	0	0	83
09:00	7	**66**	12	0	8	2	**2**	2	0	4	0	0	2	**105**
10:00	3	52	8	0	7	2	2	2	0	2	0	0	1	79
11:00	**12**	56	**16**	0	7	4	1	0	1	1	0	0	1	99
12 M P	8	69	9	0	9	**9**	0	0	**1**	0	0	0	0	105
13:00	9	65	20	0	3	5	**2**	**2**	1	0	0	0	**3**	110
14:00	**19**	76	13	0	10	5	2	2	0	**4**	0	0	0	131
15:00	11	81	**24**	0	3	5	0	0	1	0	0	0	3	128
16:00	8	116	17	0	**11**	6	1	1	0	0	0	0	0	160
17:00	10	**139**	19	0	10	8	0	1	1	0	0	0	0	**188**
18:00	2	101	16	0	9	4	0	1	0	0	0	0	0	133
19:00	3	69	15	0	5	4	0	0	0	0	0	0	0	96
20:00	3	56	6	0	6	0	0	1	0	0	0	0	0	72
21:00	0	50	4	0	3	0	0	0	0	1	0	0	0	58
22:00	3	31	3	0	2	1	0	0	0	0	0	0	0	40
23:00	1	23	2	0	1	1	0	0	0	0	0	0	0	28
Day Total	115	1218	225	1	119	76	11	22	6	21	1	0	13	1828
Percent	6.3%	66.6%	12.3%	0.1%	6.5%	4.2%	0.6%	1.2%	0.3%	1.1%	0.1%	0.0%	0.7%	
AM Peak	11:00	09:00	11:00	06:00	07:00	07:00	09:00	06:00	08:00	06:00	02:00		07:00	09:00
Vol.	12	66	16	1	9	7	2	5	1	4	1		3	105
PM Peak	14:00	17:00	15:00		16:00	12:00	13:00	13:00	12:00	14:00			13:00	17:00
Vol.	19	139	24		**1**	9	2	2	1	4			3	188

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132206
Station ID:
Hwy 26 WB On Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/17/05	1	14	0	0	0	0	0	0	0	0	0	0	0	15
01:00	0	6	0	0	0	1	0	0	0	0	0	0	0	7
02:00	0	1	1	0	0	0	0	0	**1**	0	0	0	0	3
03:00	1	4	0	0	0	0	**1**	0	0	0	0	0	0	6
04:00	1	10	1	0	2	0	0	1	0	0	0	0	0	15
05:00	1	22	6	0	3	1	0	2	0	0	0	0	0	35
06:00	2	34	12	**1**	6	2	1	0	0	0	0	0	1	59
07:00	4	46	11	0	12	0	0	1	0	1	0	0	0	75
08:00	2	55	15	1	12	2	0	1	1	3	0	0	1	93
09:00	**8**	59	**22**	0	**16**	**6**	0	0	0	**4**	0	0	0	**115**
10:00	3	59	18	1	4	3	0	1	1	1	0	0	1	92
11:00	4	**62**	12	0	11	3	0	**3**	1	1	0	0	**3**	100
12 PM	10	56	19	**1**	9	6	1	**2**	**1**	1	0	0	1	107
13:00	11	70	13	1	**13**	6	0	1	1	0	0	0	1	117
14:00	**15**	77	13	1	8	7	**2**	2	0	**3**	0	0	**2**	130
15:00	11	97	15	0	8	4	2	1	0	1	0	0	0	139
16:00	8	114	**26**	1	8	**10**	0	2	0	0	0	0	0	169
17:00	11	**131**	19	0	10	7	0	1	1	0	0	0	0	**180**
18:00	11	104	10	0	9	4	0	2	0	0	0	0	0	140
19:00	2	61	10	0	5	2	0	2	0	0	0	0	0	82
20:00	6	67	12	0	5	4	0	0	0	0	0	0	0	94
21:00	3	58	5	0	4	4	0	0	1	0	0	0	0	75
22:00	5	33	4	0	4	0	0	1	0	1	0	0	0	48
23:00	2	16	1	0	2	0	0	0	0	0	0	0	0	21
Day Total	122	1256	245	7	151	72	7	23	8	16	0	0	10	1917
Percent	6.4%	65.5%	12.8%	0.4%	7.9%	3.8%	0.4%	1.2%	0.4%	0.8%	0.0%	0.0%	0.5%	
AM Peak	09:00	11:00	09:00	06:00	09:00	09:00	03:00	11:00	02:00	09:00			11:00	09:00
Vol.	8	62	22	1	16	6	1	3	1	4			3	115
PM Peak	14:00	17:00	16:00	12:00	13:00	16:00	14:00	12:00	12:00	14:00			14:00	17:00
Vol.	15	131	26	1	13	10	2	2	1	3			2	180

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132206
Station ID:
Hwy 26 WB On Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/18/05	0	4	0	0	3	1	0	0	0	0	0	0	0	8
01:00	0	9	3	0	2	0	0	0	0	0	0	0	0	14
02:00	0	5	1	0	0	0	0	0	0	0	0	0	0	6
03:00	0	3	0	0	0	0	**1**	0	0	0	0	0	0	4
04:00	0	8	1	**1**	0	1	0	0	0	0	0	0	0	11
05:00	2	21	10	0	6	2	0	2	0	0	0	0	0	43
06:00	3	40	13	1	7	4	0	1	0	1	0	0	0	70
07:00	3	49	9	0	5	6	0	0	1	2	0	0	0	75
08:00	4	54	16	0	10	3	0	3	0	2	0	0	**2**	94
09:00	**7**	53	13	0	**14**	3	1	2	0	**4**	0	0	2	99
10:00	6	**76**	8	0	7	3	1	**7**	1	2	0	0	1	**112**
11:00	4	63	**17**	0	14	**7**	1	2	**2**	1	0	0	0	111
12 PM	11	69	15	0	5	7	**1**	2	0	0	0	0	**3**	113
13:00	**21**	73	11	0	10	9	0	**4**	0	**2**	0	0	0	130
14:00	11	111	17	0	14	8	0	3	2	2	0	0	2	170
15:00	11	141	19	0	**19**	9	1	1	1	0	0	0	1	203
16:00	15	140	14	0	14	10	0	3	1	1	0	0	0	198
17:00	12	**159**	20	0	15	**11**	1	4	0	0	0	0	1	**223**
18:00	12	143	**25**	0	15	10	1	3	**3**	0	0	0	0	212
19:00	3	103	9	0	9	1	1	2	1	0	0	0	0	129
20:00	4	68	14	0	7	5	0	0	0	0	0	0	0	98
21:00	6	65	11	0	4	4	0	0	1	0	0	0	1	92
22:00	2	47	8	0	4	3	1	0	1	1	0	0	0	67
23:00	0	23	5	0	2	3	0	0	0	0	0	0	0	33
Day Total	137	1527	259	2	186	110	10	39	14	18	0	0	13	2315
Percent	5.9%	66.0%	11.2%	0.1%	8.0%	4.8%	0.4%	1.7%	0.6%	0.8%	0.0%	0.0%	0.6%	
AM Peak	09:00	10:00	11:00	04:00	09:00	11:00	03:00	10:00	11:00	09:00			08:00	10:00
Vol.	7	76	17	1	14	7	1	7	2	4			2	112
PM Peak	13:00	17:00	18:00		15:00	17:00	12:00	13:00	18:00	13:00			12:00	17:00
Vol.	21	159	25		9	11	1	4	3	2			3	223

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132206
Station ID:
Hwy 26 WB On Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/19/05	3	20	1	0	1	1	0	0	0	0	0	0	0	26
01:00	0	17	1	0	1	1	0	1	0	0	0	0	0	21
02:00	0	12	1	0	1	1	0	1	0	0	0	0	0	16
03:00	1	4	2	0	1	0	0	0	0	0	0	0	0	8
04:00	1	9	7	0	2	1	0	0	0	0	0	0	0	20
05:00	3	38	**20**	0	**12**	0	**1**	4	0	0	0	0	0	78
06:00	8	40	11	0	12	1	0	**6**	1	0	0	0	0	79
07:00	4	47	13	0	7	3	0	3	0	0	0	0	**1**	78
08:00	8	67	18	0	12	5	0	4	0	0	0	0	0	114
09:00	6	79	8	0	6	**7**	0	4	0	0	0	0	1	111
10:00	**11**	92	18	0	5	6	0	4	0	0	0	0	0	136
11:00	11	**96**	17	0	9	7	1	5	**2**	0	0	0	0	**148**
12 PM	11	101	**26**	0	9	3	0	**4**	0	**1**	0	0	0	155
13:00	17	**116**	16	0	4	4	0	2	0	0	0	0	0	**159**
14:00	**18**	94	12	0	8	4	0	1	0	0	0	0	0	137
15:00	9	86	9	0	**10**	4	0	0	**1**	0	0	0	0	119
16:00	7	100	9	0	6	**6**	0	1	0	0	0	0	0	129
17:00	10	91	10	0	3	3	0	1	0	0	0	0	0	118
18:00	4	81	13	0	5	3	0	1	0	0	0	0	0	107
19:00	3	62	9	0	7	1	0	3	0	0	0	0	0	85
20:00	8	75	6	0	5	2	0	1	0	0	0	0	0	97
21:00	1	37	7	0	1	2	0	1	0	1	0	0	0	50
22:00	2	36	1	0	0	4	0	1	0	0	0	0	0	44
23:00	2	31	2	0	0	0	0	0	0	0	0	0	0	35
Day Total	148	1431	237	0	127	69	2	48	4	2	0	0	2	2070
Percent	7.1%	69.1%	11.4%	0.0%	6.1%	3.3%	0.1%	2.3%	0.2%	0.1%	0.0%	0.0%	0.1%	
AM Peak	10:00	11:00	05:00		05:00	09:00	05:00	06:00	11:00				07:00	11:00
Vol.	11	96	20		12	7	1	6	2				1	148
PM Peak	14:00	13:00	12:00		15:00	16:00		12:00	15:00	12:00				13:00
Vol.	18	116	26	10		6		4	1	1				159

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132206
Station ID:
Hwy 26 WB On Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/20/05	4	17	2	0	1	0	0	0	0	0	0	0	0	24
01:00	0	15	0	0	0	0	0	0	0	0	0	0	0	15
02:00	0	6	2	0	0	0	0	0	0	0	0	0	0	8
03:00	0	2	0	0	1	1	0	0	0	0	0	0	0	4
04:00	0	7	2	0	2	0	0	0	0	0	0	0	0	11
05:00	3	24	7	0	3	3	0	2	0	0	0	0	0	42
06:00	6	30	17	0	8	3	0	1	0	0	0	0	0	65
07:00	2	33	11	0	2	1	0	5	0	0	0	0	0	54
08:00	4	50	16	0	3	1	0	4	0	**1**	0	0	0	79
09:00	6	70	18	0	**13**	4	0	**6**	**1**	0	0	0	0	118
10:00	7	60	17	0	6	5	**1**	3	0	0	0	0	**1**	100
11:00	**8**	**96**	**19**	0	12	**7**	0	2	0	0	0	0	0	**144**
12 PM	**20**	**113**	12	0	7	**6**	0	**5**	0	0	0	0	0	**163**
13:00	7	91	**16**	0	1	5	0	1	**1**	0	0	0	0	122
14:00	9	74	13	0	6	5	**1**	2	1	0	0	0	**1**	112
15:00	5	58	11	0	**11**	3	0	0	0	0	0	0	0	88
16:00	5	74	9	0	4	5	0	1	0	0	0	0	0	98
17:00	8	61	7	0	5	4	0	0	0	0	0	0	0	85
18:00	4	66	9	0	5	4	0	0	0	0	0	0	0	88
19:00	2	46	9	0	2	2	0	1	1	**1**	0	0	0	64
20:00	2	38	2	0	1	3	0	1	0	0	0	0	0	47
21:00	0	37	7	0	2	1	0	1	0	0	0	0	0	48
22:00	0	21	1	0	1	0	0	0	0	1	0	0	1	25
23:00	0	13	0	0	2	0	0	0	0	0	0	0	0	15
Day Total	102	1102	207	0	98	63	2	35	4	3	0	0	3	1619
Percent	6.3%	68.1%	12.8%	0.0%	6.1%	3.9%	0.1%	2.2%	0.2%	0.2%	0.0%	0.0%	0.2%	
AM Peak	11:00	11:00	11:00		09:00	11:00	10:00	09:00	09:00	08:00			10:00	11:00
Vol.	8	96	19		**3**	7	1	6	1	1			1	144
PM Peak	12:00	12:00	13:00		15:00	12:00	14:00	12:00	13:00	19:00			14:00	12:00
Vol.	20	113	16		**1**	6	1	5	1	1			1	163
Grand Total	845	9006	1627	17	903	547	46	215	47	92	1	0	60	13406
Percent	6.3%	67.2%	12.1%	0.1%	6.7%	4.1%	0.3%	1.6%	0.4%	0.7%	0.0%	0.0%	0.4%	

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132205
Station ID:
Hwy 26 WB Off Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/14/05	0	35	4	0	1	0	0	2	0	1	0	0	0	43
01:00	0	31	4	0	2	0	0	2	0	0	0	0	0	39
02:00	0	13	0	0	1	0	0	0	2	0	0	0	0	16
03:00	0	13	0	1	2	3	0	0	1	0	0	0	0	20
04:00	0	32	9	0	4	3	3	1	8	0	0	0	0	60
05:00	0	91	19	0	17	7	0	3	0	1	0	0	2	140
06:00	0	212	49	1	**39**	1	1	5	4	1	0	0	3	316
07:00	1	**306**	45	**3**	25	18	2	7	9	2	0	0	2	**420**
08:00	1	272	39	3	28	9	**6**	5	13	2	0	0	1	379
09:00	**2**	217	**52**	3	36	8	1	4	**14**	**4**	0	**2**	3	346
10:00	0	238	52	2	18	**20**	3	**9**	8	3	0	0	5	358
11:00	0	263	52	2	28	8	2	7	13	3	**1**	0	**11**	390
12 PM	2	294	50	3	23	9	1	9	13	3	0	0	3	410
13:00	2	292	49	**7**	39	2	1	7	10	**4**	0	0	4	417
14:00	4	302	51	3	45	7	**3**	11	**16**	4	0	0	4	450
15:00	4	430	80	4	**54**	11	0	5	8	3	0	0	4	603
16:00	**7**	481	**98**	1	32	**16**	1	10	6	3	0	0	0	655
17:00	2	**519**	88	1	43	10	0	10	7	2	0	0	4	**686**
18:00	3	403	47	4	28	6	0	**14**	4	2	0	0	**10**	521
19:00	3	276	38	1	16	2	0	3	2	0	0	0	1	342
20:00	2	223	22	2	18	3	0	1	3	0	0	0	1	275
21:00	1	197	25	0	8	3	0	0	2	0	0	0	0	236
22:00	2	148	18	0	3	1	0	0	1	0	0	0	3	176
23:00	1	90	10	0	4	2	0	2	2	0	0	0	0	111
Day Total	37	5378	901	41	514	149	24	117	146	38	1	2	61	7409
Percent	0.5%	72.6%	12.2%	0.6%	6.9%	2.0%	0.3%	1.6%	2.0%	0.5%	0.0%	0.0%	0.8%	
AM Peak	09:00	07:00	09:00	07:00	06:00	10:00	08:00	10:00	09:00	09:00	11:00	09:00	11:00	07:00
Vol.	2	306	52	3	39	20	6	9	14	4	1	2	11	420
PM Peak	16:00	17:00	16:00	13:00	15:00	16:00	14:00	18:00	14:00	13:00			18:00	17:00
Vol.	7	519	98	7	54	16	3	14	16	4			10	686

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132205
Station ID:
Hwy 26 WB Off Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/15/05	0	60	1	0	0	0	0	0	0	1	0	0	1	63
01:00	0	26	2	0	1	3	0	1	0	0	0	0	0	33
02:00	0	20	3	0	2	1	0	1	1	1	0	0	0	29
03:00	0	15	3	0	2	1	0	0	3	1	0	0	0	25
04:00	0	24	13	0	3	5	**2**	1	3	0	0	0	2	53
05:00	1	80	26	0	15	6	1	4	0	1	0	0	1	135
06:00	**3**	192	40	2	26	6	2	4	3	1	0	0	1	280
07:00	2	**322**	49	4	25	9	1	3	10	**7**	0	0	1	**433**
08:00	1	269	49	**6**	27	8	1	**7**	9	1	0	0	4	382
09:00	0	229	**50**	3	**39**	14	2	5	10	5	0	0	4	361
10:00	3	243	49	5	30	**19**	0	7	**15**	2	2	0	**10**	385
11:00	2	221	48	6	32	13	2	6	8	3	**4**	0	6	351
12 PM	3	294	45	2	27	8	**1**	**11**	8	**3**	0	0	4	406
13:00	3	251	46	**6**	22	9	0	6	8	3	1	0	2	357
14:00	2	311	68	4	41	12	1	7	**12**	3	0	0	5	466
15:00	1	415	88	3	**50**	**15**	1	4	12	1	0	0	5	595
16:00	3	530	**91**	3	40	8	1	9	6	2	0	0	3	696
17:00	3	**552**	84	4	40	6	0	10	2	1	1	0	4	**707**
18:00	4	445	57	4	30	7	0	7	4	1	**2**	0	**8**	569
19:00	**5**	328	44	0	22	2	0	1	6	1	0	0	0	409
20:00	1	253	30	2	8	1	0	0	3	0	0	0	1	299
21:00	2	260	28	1	10	1	0	1	3	0	0	0	1	307
22:00	0	162	27	0	4	0	0	1	0	0	0	0	2	196
23:00	0	77	13	0	2	0	1	0	3	0	0	0	0	96
Day Total	39	5579	954	55	498	154	16	96	129	38	10	0	65	7633
Percent	0.5%	73.1%	12.5%	0.7%	6.5%	2.0%	0.2%	1.3%	1.7%	0.5%	0.1%	0.0%	0.9%	
AM Peak	06:00	07:00	09:00	08:00	09:00	10:00	04:00	08:00	10:00	07:00	11:00		10:00	07:00
Vol.	3	322	50	6	39	19	2	7	15	7	4	1	0	433
PM Peak	19:00	17:00	16:00	13:00	15:00	15:00	12:00	12:00	14:00	12:00	18:00		18:00	17:00
Vol.	5	552	91	6	50	15	1	11	12	3	2	8		707

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132205
Station ID:
Hwy 26 WB Off Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/16/05	1	59	8	0	5	0	0	0	4	1	0	0	0	78
01:00	0	20	1	0	0	2	0	0	0	0	1	0	1	25
02:00	0	21	5	0	2	0	1	0	1	0	0	0	0	30
03:00	0	21	2	1	3	1	0	0	2	0	0	0	0	30
04:00	1	32	4	0	2	5	2	4	1	0	0	0	0	51
05:00	0	72	16	0	9	2	2	4	3	0	0	0	1	109
06:00	1	183	45	1	33	11	2	7	7	0	0	0	3	293
07:00	**2**	**324**	54	2	32	14	2	2	11	3	0	**1**	2	**449**
08:00	2	269	46	3	21	7	4	3	10	3	0	0	5	373
09:00	2	242	44	**7**	**39**	17	2	7	10	**6**	0	0	6	382
10:00	1	255	54	2	33	**19**	0	10	**16**	2	0	0	6	398
11:00	2	260	**55**	4	34	12	**5**	**11**	12	4	**3**	0	**8**	410
12 PM	2	299	50	3	40	9	**3**	9	**14**	2	1	0	6	438
13:00	1	285	54	**6**	26	**13**	2	10	13	2	1	0	7	420
14:00	4	316	55	2	45	8	1	**12**	14	**3**	0	**1**	5	466
15:00	2	397	84	2	45	13	2	9	9	2	1	0	5	571
16:00	4	**538**	**102**	2	**48**	8	0	11	6	1	**2**	0	5	**727**
17:00	**5**	504	69	4	37	9	1	10	8	1	0	0	**8**	656
18:00	1	497	71	0	25	6	0	2	3	2	0	0	0	607
19:00	3	323	50	1	24	2	0	2	4	2	0	0	2	413
20:00	1	253	34	1	17	6	0	1	1	0	0	0	1	315
21:00	3	254	36	0	14	1	0	1	2	0	0	0	1	312
22:00	2	185	27	0	8	4	0	0	2	0	0	0	1	229
23:00	1	79	13	0	4	1	0	0	3	1	0	0	0	102
Day Total	41	5688	979	41	546	170	29	115	156	35	9	2	73	7884
Percent	0.5%	72.1%	12.4%	0.5%	6.9%	2.2%	0.4%	1.5%	2.0%	0.4%	0.1%	0.0%	0.9%	
AM Peak	07:00	07:00	11:00	09:00	09:00	10:00	11:00	11:00	10:00	09:00	11:00	07:00	11:00	07:00
Vol.	2	324	55	7	39	19	5	11	16	6	3	1	8	449
PM Peak	17:00	16:00	16:00	13:00	16:00	13:00	12:00	14:00	12:00	14:00	16:00	14:00	17:00	16:00
Vol.	5	538	102	6	48	13	3	12	14	3	2	1	8	727

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132205
Station ID:
Hwy 26 WB Off Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/17/05	0	73	6	0	1	1	0	0	0	0	0	0	0	81
01:00	2	33	4	0	4	0	0	1	6	0	0	0	0	50
02:00	0	17	2	0	0	2	1	0	0	0	0	0	0	22
03:00	0	19	4	0	2	0	0	0	0	1	0	0	0	26
04:00	1	28	6	0	4	7	1	1	5	0	0	0	0	53
05:00	0	78	12	0	17	6	1	4	0	2	0	0	0	120
06:00	0	199	44	2	25	3	0	4	7	1	0	0	3	288
07:00	1	**327**	52	3	36	4	1	6	10	3	0	0	3	**446**
08:00	**5**	266	48	2	24	11	0	5	10	**5**	0	0	3	379
09:00	1	261	54	**7**	**42**	**16**	1	4	7	4	0	0	4	401
10:00	3	232	53	5	26	8	**2**	**11**	**12**	5	0	0	**5**	362
11:00	3	246	**60**	4	34	13	1	8	12	4	0	0	4	389
12 PM	3	321	54	3	35	7	1	7	**14**	**4**	0	0	6	455
13:00	1	278	49	**9**	45	11	**2**	**12**	9	3	0	0	5	424
14:00	**6**	333	67	3	42	13	1	12	9	2	1	0	4	493
15:00	1	411	74	6	38	17	0	7	14	4	0	0	9	581
16:00	3	494	**99**	3	**57**	**18**	1	11	7	1	1	0	3	**698**
17:00	5	**533**	69	2	37	16	0	9	4	3	**4**	0	**10**	692
18:00	4	479	74	4	31	6	0	4	2	1	0	0	2	607
19:00	3	383	45	2	23	7	0	2	5	1	0	0	0	471
20:00	5	256	34	0	17	4	0	1	2	0	0	0	3	322
21:00	4	273	25	1	12	3	0	2	2	0	0	0	2	324
22:00	1	157	18	0	9	2	0	1	4	0	0	0	1	193
23:00	0	93	14	0	5	3	0	0	0	0	0	0	0	115
Day Total	52	5790	967	56	566	178	13	112	141	44	6	0	67	7992
Percent	0.7%	72.4%	12.1%	0.7%	7.1%	2.2%	0.2%	1.4%	1.8%	0.6%	0.1%	0.0%	0.8%	
AM Peak	08:00	07:00	11:00	09:00	09:00	09:00	10:00	10:00	10:00	08:00			10:00	07:00
Vol.	5	327	60	7	42	16	2	11	12	5			5	446
PM Peak	14:00	17:00	16:00	13:00	16:00	16:00	13:00	13:00	12:00	12:00	17:00		17:00	16:00
Vol.	6	533	99	9	57	18	2	12	14	4	4	1	0	698

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132205
Station ID:
Hwy 26 WB Off Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/18/05	0	63	7	0	5	0	0	1	0	1	0	0	0	77
01:00	0	41	5	0	2	0	0	1	0	0	0	0	1	50
02:00	0	29	5	0	1	2	0	0	0	1	0	0	0	38
03:00	0	26	3	1	2	4	1	0	1	1	0	0	0	39
04:00	0	34	5	0	1	4	0	0	4	0	0	0	0	48
05:00	1	67	16	0	9	0	3	5	1	0	0	0	1	103
06:00	3	186	45	1	26	10	1	0	7	7	0	0	1	287
07:00	**5**	**318**	48	1	25	**17**	**4**	2	5	5	**1**	0	7	**438**
08:00	1	313	37	4	21	7	3	3	11	2	0	0	**9**	411
09:00	4	233	39	**5**	24	13	1	6	**16**	**8**	0	0	7	356
10:00	2	255	**50**	2	33	17	3	6	12	3	1	0	9	393
11:00	2	258	50	2	**40**	15	3	**8**	5	5	0	**1**	7	396
12 M P	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Day Total	18	1823	310	16	189	89	19	32	62	33	2	1	42	2636
Percent	0.7%	69.2%	11.8%	0.6%	7.2%	3.4%	0.7%	1.2%	2.4%	1.3%	0.1%	0.0%	1.6%	
AM Peak	07:00	07:00	10:00	09:00	11:00	07:00	07:00	11:00	09:00	09:00	07:00	11:00	08:00	07:00
Vol.	5	318	50	5	40	17	4	8	16	8	1	1	9	438
PM Peak Vol.														

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132205
Station ID:
Hwy 26 WB Off Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/19/05	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 M	P 0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	**30**	231	30	0	16	21	0	2	**1**	0	0	0	0	331
18:00	21	**316**	26	**1**	**17**	**27**	0	1	0	0	0	0	0	**409**
19:00	27	254	**31**	1	14	11	0	2	0	0	0	0	0	340
20:00	16	224	23	0	9	15	0	**3**	0	0	0	0	**1**	291
21:00	13	221	24	0	9	5	0	3	0	**1**	0	0	0	276
22:00	13	188	18	0	2	19	0	1	0	0	0	0	0	241
23:00	8	115	8	0	2	6	**1**	1	0	0	0	0	0	141
Day Total	128	1549	160	2	69	104	1	13	1	1	0	0	1	2029
Percent	6.3%	76.3%	7.9%	0.1%	3.4%	5.1%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak Vol.														
PM Peak Vol.	17:00 30	18:00 316	19:00 31	18:00 1	18:00 17	18:00 27	23:00 1	20:00 3	17:00 1	21:00 1			20:00 1	18:00 409

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132205
Station ID:
Hwy 26 WB Off Ramp

WB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/20/05	7	95	13	0	4	4	0	0	0	0	0	0	0	123
01:00	6	47	7	0	3	3	0	1	0	0	0	0	0	67
02:00	1	47	2	0	3	3	0	0	0	**1**	0	0	0	57
03:00	2	22	1	0	1	1	0	0	1	0	0	0	0	28
04:00	2	30	2	0	0	0	0	0	0	0	0	0	0	34
05:00	3	44	9	0	4	7	0	1	0	0	0	0	0	68
06:00	8	73	16	0	6	4	0	1	0	0	0	0	0	108
07:00	9	68	11	0	4	5	0	**5**	0	0	0	0	0	102
08:00	10	110	15	**1**	7	4	0	5	1	0	0	0	0	153
09:00	12	156	26	0	**14**	11	0	5	**2**	0	0	0	0	226
10:00	16	175	21	0	12	12	**1**	1	1	0	0	0	**1**	240
11:00	**25**	**246**	**29**	1	9	**15**	1	2	2	1	0	0	0	**331**
12 PM	20	285	27	0	11	17	0	3	**3**	**1**	0	0	0	367
13:00	28	288	**41**	1	10	19	0	3	0	0	0	0	0	390
14:00	26	310	35	0	7	**21**	0	2	2	0	0	**1**	0	404
15:00	18	273	22	**2**	10	17	0	**4**	0	0	0	0	0	346
16:00	**40**	276	24	0	**20**	19	**1**	2	0	1	0	0	0	383
17:00	27	**321**	30	0	16	19	0	3	0	0	0	0	**1**	**417**
18:00	26	297	41	0	10	14	0	3	0	0	0	0	0	391
19:00	23	212	25	0	11	9	0	2	1	0	0	0	0	283
20:00	11	221	20	0	7	5	0	0	0	0	0	0	0	264
21:00	10	135	11	0	6	7	0	1	0	0	0	0	0	170
22:00	8	99	7	0	4	5	0	0	1	0	0	0	1	125
23:00	3	58	3	0	1	5	0	0	1	0	0	0	0	71
Day Total	341	3888	438	5	180	226	3	44	15	4	0	1	3	5148
Percent	6.6%	75.5%	8.5%	0.1%	3.5%	4.4%	0.1%	0.9%	0.3%	0.1%	0.0%	0.0%	0.1%	
AM Peak	11:00	11:00	11:00	08:00	09:00	11:00	10:00	07:00	09:00	02:00			10:00	11:00
Vol.	25	246	29	1	14	15	1	5	2	1			1	331
PM Peak	16:00	17:00	13:00	15:00	16:00	14:00	16:00	15:00	12:00	12:00		14:00	17:00	17:00
Vol.	40	321	41	2	20	21	1	4	3	1		1	1	417
Grand Total	656	29695	4709	216	2562	1070	105	529	650	193	28	6	312	40731
Percent	1.6%	72.9%	11.6%	0.5%	6.3%	2.6%	0.3%	1.3%	1.6%	0.5%	0.1%	0.0%	0.8%	

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

NB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/03/05	0	28	17	0	5	0	0	0	0	0	0	0	0	50
01:00	0	24	5	0	1	0	0	0	0	0	0	0	0	30
02:00	0	16	4	0	0	0	0	0	1	0	0	0	0	21
03:00	0	14	5	0	0	0	0	0	0	0	0	0	0	19
04:00	0	12	7	0	0	0	0	0	1	0	0	0	0	20
05:00	0	24	17	0	3	0	0	2	0	0	0	0	0	46
06:00	0	62	24	0	9	1	0	2	1	0	0	0	0	99
07:00	0	93	43	0	16	1	0	4	**2**	0	0	0	0	159
08:00	**1**	118	59	**2**	21	0	0	3	2	0	**1**	0	0	207
09:00	0	193	91	1	29	**2**	0	**6**	1	0	0	0	0	323
10:00	0	217	123	0	29	0	0	5	1	**1**	0	0	0	376
11:00	0	**226**	**125**	2	**38**	1	0	4	0	0	0	0	0	**396**
12 PM	0	**265**	103	0	**37**	0	0	**5**	**2**	0	**1**	0	0	**413**
13:00	1	215	100	**2**	21	0	0	3	0	0	0	0	0	342
14:00	1	226	**114**	1	29	**1**	0	2	0	0	0	0	0	374
15:00	**2**	210	86	2	31	0	0	3	0	0	0	0	0	334
16:00	0	184	77	1	15	0	0	2	1	0	0	0	0	280
17:00	0	176	67	0	16	0	0	4	0	0	0	0	0	263
18:00	1	172	60	0	10	0	0	3	0	0	0	0	0	246
19:00	0	126	50	0	7	0	0	2	0	0	0	0	0	185
20:00	0	110	38	0	10	1	0	0	0	0	0	0	0	159
21:00	0	95	35	0	9	0	0	1	1	0	0	0	0	141
22:00	1	97	26	0	10	1	0	1	0	0	0	0	0	136
23:00	0	55	21	0	1	0	0	0	0	0	0	0	0	77
Day Total	7	2958	1297	11	347	8	0	52	13	1	2	0	0	4696
Percent	0.1%	63.0%	27.6%	0.2%	7.4%	0.2%	0.0%	1.1%	0.3%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	11:00	11:00	08:00	11:00	09:00		09:00	07:00	10:00	08:00			11:00
Vol.	1	226	125	2	38	2	6		2	1	1			396
PM Peak	15:00	12:00	14:00	13:00	12:00	14:00		12:00	12:00		12:00			12:00
Vol.	2	265	114	2	37	1	5		2	1				413

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

NB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/04/05	0	27	9	0	1	0	0	0	0	0	0	0	0	37
01:00	0	27	10	**1**	1	0	0	0	0	0	0	0	0	39
02:00	0	23	5	0	2	0	0	0	0	0	0	0	0	30
03:00	0	8	3	0	0	0	0	0	0	0	0	0	0	11
04:00	0	13	2	0	0	0	0	1	0	0	0	0	0	16
05:00	0	16	8	0	2	0	0	1	0	0	0	0	0	27
06:00	0	38	23	1	7	0	0	2	0	0	0	0	0	71
07:00	0	55	24	0	12	0	0	3	0	0	0	0	0	94
08:00	0	95	43	1	16	**1**	0	3	**1**	0	0	0	0	160
09:00	0	131	53	0	18	0	0	**4**	0	0	0	0	0	206
10:00	**1**	181	83	0	18	0	0	3	0	0	0	0	**1**	287
11:00	0	**198**	**107**	0	**25**	0	0	2	1	0	**1**	0	0	**334**
12 PM	**1**	196	**113**	0	**33**	0	0	6	0	**1**	0	0	0	350
13:00	0	**248**	103	**1**	25	0	0	**7**	0	0	0	0	0	**384**
14:00	0	190	88	1	19	0	0	5	0	1	0	0	0	304
15:00	0	206	81	0	16	0	0	5	0	0	0	0	0	308
16:00	0	200	63	0	12	0	0	0	0	0	0	0	0	275
17:00	0	164	73	0	15	0	0	6	0	0	0	0	0	258
18:00	0	128	45	0	11	0	0	2	0	0	0	0	0	186
19:00	0	111	44	0	7	**1**	0	1	0	0	0	0	0	164
20:00	1	103	24	0	11	1	0	2	0	0	0	0	0	142
21:00	0	85	12	0	5	0	0	0	0	0	0	0	0	102
22:00	0	41	16	0	2	0	0	0	0	0	0	0	0	59
23:00	0	20	10	0	0	0	0	0	0	0	0	0	0	30
Day Total	3	2504	1042	5	258	3	0	53	2	2	1	0	1	3874
Percent	0.1%	64.6%	26.9%	0.1%	6.7%	0.1%	0.0%	1.4%	0.1%	0.1%	0.0%	0.0%	0.0%	
AM Peak	10:00	11:00	11:00	01:00	11:00	08:00		09:00	08:00		11:00		10:00	11:00
Vol.	1	198	107	1	25	1	4		1	1			1	334
PM Peak	12:00	13:00	12:00	13:00	12:00	19:00		13:00		12:00				13:00
Vol.	1	248	113	1	33	1	7			1				384

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

NB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/05/05	0	13	7	0	0	0	0	0	0	0	0	0	0	20
01:00	0	6	3	0	0	0	0	0	0	0	0	0	0	9
02:00	0	5	1	0	0	1	0	0	1	0	0	0	0	8
03:00	0	13	6	1	2	0	0	0	0	0	0	0	0	22
04:00	0	15	9	0	4	6	0	1	1	0	0	0	0	36
05:00	0	59	32	0	11	1	0	2	0	0	0	0	0	105
06:00	2	157	69	**5**	29	5	0	4	2	0	0	0	1	274
07:00	**3**	146	63	0	25	4	**1**	4	5	0	0	0	1	252
08:00	1	129	81	2	19	**9**	0	3	1	0	**1**	0	**2**	248
09:00	0	134	**89**	1	27	7	1	**6**	6	0	0	0	0	271
10:00	2	122	62	2	**32**	5	1	4	**8**	1	0	**1**	2	242
11:00	3	**161**	83	3	19	9	1	6	4	**4**	0	1	1	**295**
12 M P	0	181	81	1	28	2	0	7	4	0	0	0	0	304
13:00	**3**	190	75	3	35	**9**	0	4	**12**	1	0	0	0	332
14:00	2	170	79	4	24	3	0	4	4	**2**	0	0	**1**	293
15:00	1	224	101	**6**	**45**	2	**1**	**9**	7	0	0	0	1	397
16:00	0	**276**	103	3	36	3	0	5	1	0	0	0	1	**428**
17:00	1	260	**111**	1	28	3	0	2	2	0	0	0	0	408
18:00	0	202	80	0	25	1	0	1	0	2	0	0	0	311
19:00	0	122	48	0	15	0	0	2	0	0	0	**1**	0	188
20:00	1	101	38	0	5	0	0	3	0	0	0	0	0	148
21:00	0	93	26	0	5	0	0	0	1	0	0	0	0	125
22:00	0	62	13	0	2	0	0	0	0	0	0	0	0	77
23:00	0	33	10	0	2	0	0	0	0	0	0	0	0	45
Day Total	19	2874	1270	32	418	70	5	67	59	10	1	3	10	4838
Percent	0.4%	59.4%	26.3%	0.7%	8.6%	1.4%	0.1%	1.4%	1.2%	0.2%	0.0%	0.1%	0.2%	
AM Peak	07:00	11:00	09:00	06:00	10:00	08:00	07:00	09:00	10:00	11:00	08:00	10:00	08:00	11:00
Vol.	3	161	89	5	32	9	1	6	8	4	1	1	2	295
PM Peak	13:00	16:00	17:00	15:00	15:00	13:00	15:00	15:00	13:00	14:00		19:00	14:00	16:00
Vol.	3	276	111	6	45	9	1	9	12	2	1		1	428

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

NB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/06/05	0	16	5	0	0	0	0	0	0	0	0	0	0	21
01:00	0	9	2	0	1	0	0	0	1	0	0	0	0	13
02:00	0	13	1	0	0	0	0	0	1	1	0	0	0	16
03:00	0	8	3	0	1	3	0	0	1	0	0	0	0	16
04:00	0	16	5	1	2	2	0	0	1	0	0	0	0	27
05:00	0	56	34	3	10	3	0	2	2	0	0	0	1	111
06:00	1	155	68	3	33	1	2	2	0	0	0	0	0	265
07:00	0	150	76	1	**35**	6	1	3	3	1	0	0	0	276
08:00	1	159	71	2	21	4	0	2	5	2	**1**	0	1	269
09:00	0	139	69	**7**	35	7	**3**	**9**	0	0	0	0	**2**	271
10:00	2	129	63	2	34	5	0	4	**6**	1	0	0	2	248
11:00	**3**	**175**	**89**	4	24	**8**	0	5	3	**3**	0	0	0	**314**
12 PM	**2**	174	81	4	**30**	**4**	0	4	**5**	0	0	**1**	0	305
13:00	1	163	61	**9**	27	3	0	10	5	**3**	0	0	0	282
14:00	1	168	73	2	22	2	0	**12**	5	0	0	0	**1**	286
15:00	1	236	94	5	20	3	0	6	1	1	0	0	0	367
16:00	1	228	**116**	1	25	2	0	3	3	1	0	0	0	380
17:00	0	**290**	97	1	19	0	0	4	2	1	0	0	0	**414**
18:00	0	209	93	0	21	1	0	4	2	0	0	0	0	330
19:00	0	144	38	0	16	0	0	1	0	0	0	0	0	199
20:00	0	104	35	0	9	0	0	0	0	0	0	0	0	148
21:00	0	108	23	1	5	0	0	0	0	0	0	0	0	137
22:00	0	54	18	0	1	1	**1**	0	1	0	0	0	1	77
23:00	0	31	7	0	2	0	0	0	0	0	0	0	0	40
Day Total	13	2934	1222	46	393	55	7	71	47	14	1	1	8	4812
Percent	0.3%	61.0%	25.4%	1.0%	8.2%	1.1%	0.1%	1.5%	1.0%	0.3%	0.0%	0.0%	0.2%	
AM Peak	11:00	11:00	11:00	09:00	07:00	11:00	09:00	09:00	10:00	11:00	08:00		09:00	11:00
Vol.	3	175	89	7	35	8	3	9	6	3	1		2	314
PM Peak	12:00	17:00	16:00	13:00	12:00	12:00	22:00	14:00	12:00	13:00		12:00	14:00	17:00
Vol.	2	290	116	9	30	4	1	12	5	3	1		1	414

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

NB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/07/05	0	20	4	0	1	0	0	0	1	0	0	0	0	26
01:00	0	7	1	0	1	0	0	0	0	0	0	0	0	9
02:00	0	12	5	0	0	0	0	0	0	0	0	0	0	17
03:00	0	11	2	0	1	1	**1**	0	1	0	0	0	0	17
04:00	1	16	9	1	3	8	0	1	0	0	0	0	0	39
05:00	0	65	35	2	11	1	0	2	2	0	0	0	0	118
06:00	1	143	62	2	28	3	1	3	3	1	0	0	0	247
07:00	0	**154**	71	3	**37**	6	0	5	3	2	0	0	0	281
08:00	0	118	69	3	25	**9**	0	5	2	**3**	0	0	1	235
09:00	1	144	**88**	**4**	33	3	0	2	3	3	0	0	0	281
10:00	2	124	64	4	17	6	0	**6**	**10**	1	0	1	1	236
11:00	**3**	148	73	3	35	8	0	5	7	3	0	**2**	**2**	**289**
12 PM	1	177	90	**8**	32	**6**	0	**6**	3	1	0	0	0	324
13:00	1	175	91	5	17	3	0	1	3	**2**	0	0	0	298
14:00	0	198	97	5	28	4	0	6	**5**	1	0	0	**1**	345
15:00	1	236	110	4	30	5	0	4	3	0	0	0	0	393
16:00	**3**	265	**124**	1	**41**	2	0	6	4	1	0	0	0	**447**
17:00	2	**282**	106	0	26	1	0	0	1	1	0	0	0	419
18:00	0	216	71	0	22	0	0	3	3	0	0	0	0	315
19:00	1	129	52	0	13	1	0	2	2	1	0	0	0	201
20:00	0	107	43	0	9	0	0	1	1	0	0	0	0	161
21:00	0	109	27	0	5	0	0	0	0	0	0	0	0	141
22:00	0	54	22	0	5	0	0	0	0	0	0	**1**	0	82
23:00	0	38	13	0	1	0	0	0	0	0	0	0	0	52
Day Total	17	2948	1329	45	421	67	2	58	57	20	0	4	5	4973
Percent	0.3%	59.3%	26.7%	0.9%	8.5%	1.3%	0.0%	1.2%	1.1%	0.4%	0.0%	0.1%	0.1%	
AM Peak	11:00	07:00	09:00	09:00	07:00	08:00	03:00	10:00	10:00	08:00		11:00	11:00	11:00
Vol.	3	154	88	4	37	9	1	6	10	3	2		2	289
PM Peak	16:00	17:00	16:00	12:00	16:00	12:00		12:00	14:00	13:00		22:00	14:00	16:00
Vol.	3	282	124	8	41	6	6		5	2	1		1	447

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

NB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/08/05	0	20	3	0	1	0	0	0	0	**1**	0	0	0	25
01:00	0	11	9	0	1	0	0	0	0	0	0	0	0	21
02:00	0	7	3	0	0	0	0	0	1	0	0	0	0	11
03:00	0	15	4	0	1	0	0	0	3	0	0	0	0	23
04:00	0	19	6	**4**	3	6	0	0	1	0	0	0	1	40
05:00	0	60	35	1	11	3	0	2	0	0	0	**1**	0	113
06:00	0	135	65	4	22	1	**2**	5	5	0	0	0	**3**	242
07:00	0	141	54	1	28	7	1	2	4	0	0	0	1	239
08:00	0	146	**72**	1	**35**	7	0	**9**	3	0	0	0	1	274
09:00	**1**	116	70	2	29	**8**	0	4	2	1	0	0	1	234
10:00	1	127	66	2	27	3	0	7	**8**	0	**1**	0	0	242
11:00	0	**163**	72	2	19	6	2	5	4	0	0	0	2	**275**
12 PM	0	188	70	**5**	28	**9**	1	7	**8**	**4**	0	0	**2**	322
13:00	0	186	88	5	28	4	1	8	4	0	0	0	0	324
14:00	0	193	78	2	35	3	0	**12**	7	1	0	0	0	331
15:00	**2**	271	89	5	28	4	**2**	9	2	0	0	0	1	413
16:00	0	268	**123**	1	**39**	0	0	3	0	0	**1**	**1**	0	436
17:00	0	**294**	112	2	31	1	0	1	1	0	0	0	0	**442**
18:00	2	216	82	1	18	3	0	2	1	0	1	0	0	326
19:00	1	150	52	1	19	1	0	3	1	0	0	0	0	228
20:00	0	124	41	0	13	0	0	1	1	0	0	0	1	181
21:00	1	99	44	0	3	1	0	0	0	0	0	0	0	148
22:00	0	79	21	0	4	1	0	0	1	0	0	0	0	106
23:00	0	43	12	0	0	0	0	0	0	0	0	0	0	55
Day Total	8	3071	1271	39	423	68	9	80	57	7	3	2	13	5051
Percent	0.2%	60.8%	25.2%	0.8%	8.4%	1.3%	0.2%	1.6%	1.1%	0.1%	0.1%	0.0%	0.3%	
AM Peak	09:00	11:00	08:00	04:00	08:00	09:00	06:00	08:00	10:00	00:00	10:00	05:00	06:00	11:00
Vol.	1	163	72	4	35	8	2	9	8	1	1	1	3	275
PM Peak	15:00	17:00	16:00	12:00	16:00	12:00	15:00	14:00	12:00	12:00	16:00	16:00	12:00	17:00
Vol.	2	294	123	5	39	9	2	12	8	4	1	1	2	442

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

NB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/09/05	0	26	4	0	1	0	0	0	1	0	0	0	0	32
01:00	0	8	2	0	0	0	0	0	1	0	0	0	0	11
02:00	0	11	4	0	1	0	0	0	0	0	0	0	0	16
03:00	0	11	8	0	0	0	0	0	2	0	0	0	0	21
04:00	0	18	6	1	5	5	0	0	1	0	0	0	0	36
05:00	0	56	31	1	9	4	0	2	1	1	0	0	0	105
06:00	0	146	65	**4**	**37**	1	**1**	0	0	1	0	0	**3**	258
07:00	0	152	63	0	31	5	0	2	3	2	0	0	2	260
08:00	1	135	63	3	26	**9**	0	**7**	2	0	0	0	0	246
09:00	0	143	71	4	25	7	1	6	3	1	0	**2**	0	263
10:00	**2**	**170**	68	1	25	7	1	2	2	**3**	0	0	1	282
11:00	1	165	**89**	2	35	7	0	5	**5**	1	0	0	2	**312**
12 PM	1	204	74	3	**33**	5	0	8	**5**	**4**	0	0	**2**	339
13:00	1	191	89	5	27	**8**	0	4	4	1	0	0	2	332
14:00	**3**	249	95	2	30	3	0	**10**	1	0	0	0	0	393
15:00	2	257	114	**7**	22	3	0	7	4	1	0	0	1	418
16:00	1	**276**	**117**	2	32	0	0	4	1	0	0	0	0	**433**
17:00	0	270	109	0	30	1	0	5	1	0	0	0	0	416
18:00	0	215	70	1	16	1	0	7	0	0	0	0	2	312
19:00	0	133	54	0	7	0	0	4	1	0	0	0	0	199
20:00	1	114	40	0	13	0	0	1	2	0	0	0	0	171
21:00	0	91	40	0	12	1	0	1	0	0	0	0	0	145
22:00	0	105	29	1	4	0	0	2	0	0	0	0	0	141
23:00	0	56	22	0	3	0	0	0	0	0	0	0	0	81
Day Total	13	3202	1327	37	424	67	3	77	40	15	0	2	15	5222
Percent	0.2%	61.3%	25.4%	0.7%	8.1%	1.3%	0.1%	1.5%	0.8%	0.3%	0.0%	0.0%	0.3%	
AM Peak	10:00	10:00	11:00	06:00	06:00	08:00	06:00	08:00	11:00	10:00		09:00	06:00	11:00
Vol.	2	170	89	4	37	9	1	7	5	3		2	3	312
PM Peak	14:00	16:00	16:00	15:00	12:00	13:00		14:00	12:00	12:00			12:00	16:00
Vol.	3	276	117	7	33	8	10		5	4			2	433
Grand Total	80	20491	8758	215	2684	338	26	458	275	69	8	12	52	33466
Percent	0.2%	61.2%	26.2%	0.6%	8.0%	1.0%	0.1%	1.4%	0.8%	0.2%	0.0%	0.0%	0.2%	

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/03/05	0	27	16	0	2	0	0	0	1	0	0	0	0	46
01:00	0	19	7	0	2	0	0	0	0	0	0	0	0	28
02:00	0	8	4	0	0	0	0	0	1	0	0	0	0	13
03:00	0	11	5	0	0	0	0	0	0	0	0	0	0	16
04:00	0	16	7	0	1	0	0	0	0	0	0	0	0	24
05:00	0	23	17	0	5	0	0	1	1	0	0	0	0	47
06:00	0	67	24	0	11	**2**	0	2	**3**	0	0	0	0	109
07:00	0	88	49	1	17	0	0	4	0	0	0	0	**1**	160
08:00	**1**	138	67	**3**	23	1	0	**6**	1	0	0	0	0	240
09:00	0	175	88	0	24	2	0	4	2	0	0	0	0	295
10:00	1	**233**	109	2	28	1	0	3	2	0	0	0	0	379
11:00	0	224	**120**	1	**30**	0	0	3	2	0	0	0	0	**380**
12 PM	**2**	**264**	**115**	**2**	**34**	0	0	**4**	0	0	0	0	0	**421**
13:00	1	244	109	2	23	**1**	0	3	0	0	0	0	0	383
14:00	1	228	100	1	28	0	0	3	**2**	0	0	**1**	0	364
15:00	0	190	93	2	27	0	0	4	0	0	0	0	0	316
16:00	0	241	103	0	18	0	0	3	0	0	0	0	0	365
17:00	0	195	72	0	17	0	0	0	0	0	0	0	0	284
18:00	0	166	53	0	14	0	0	1	0	0	0	0	0	234
19:00	0	115	34	0	9	0	0	3	0	0	0	0	0	161
20:00	0	87	28	0	5	1	0	0	0	0	0	0	0	121
21:00	0	83	31	0	5	0	0	1	0	0	0	0	**1**	121
22:00	1	79	25	0	9	0	0	2	0	0	0	0	0	116
23:00	0	56	18	0	1	0	0	0	0	0	0	0	0	75
Day Total	7	2977	1294	14	333	8	0	47	15	0	0	1	2	4698
Percent	0.1%	63.4%	27.5%	0.3%	7.1%	0.2%	0.0%	1.0%	0.3%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	10:00	11:00	08:00	11:00	06:00		08:00	06:00				07:00	11:00
Vol.	1	233	120	3	30	2		6	3				1	380
PM Peak	12:00	12:00	12:00	12:00	12:00	13:00		12:00	14:00			14:00	21:00	12:00
Vol.	2	264	115	2	34	1	4		2		1		1	421

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/04/05	0	26	9	0	1	0	0	0	0	0	0	0	0	36
01:00	0	15	9	**1**	1	0	0	0	0	0	0	0	0	26
02:00	0	8	6	0	2	0	0	0	0	0	0	0	**1**	17
03:00	0	17	2	0	0	0	0	0	0	0	0	0	0	19
04:00	0	7	1	0	1	0	0	1	0	0	0	0	0	10
05:00	0	15	13	0	0	0	0	1	0	0	0	0	0	29
06:00	0	38	19	1	6	0	0	1	0	0	0	0	0	65
07:00	0	53	18	0	8	0	0	**5**	0	0	0	0	0	84
08:00	0	91	50	1	13	0	0	4	0	0	0	0	0	159
09:00	0	158	54	0	18	0	0	1	0	0	0	0	1	232
10:00	**1**	**190**	65	0	**20**	0	0	4	**1**	0	0	0	0	**281**
11:00	0	170	**71**	0	18	0	0	2	0	0	0	0	1	262
12 PM	0	223	**115**	0	25	0	0	2	**1**	0	0	0	0	366
13:00	**1**	**241**	111	**1**	**35**	0	0	3	0	0	0	0	0	**392**
14:00	1	213	95	1	20	**1**	0	**4**	0	0	0	0	0	335
15:00	1	213	83	0	26	0	0	4	1	0	0	0	0	328
16:00	0	207	76	0	23	0	0	2	0	0	0	0	0	308
17:00	0	162	87	0	13	0	0	3	0	0	0	0	0	265
18:00	0	129	41	0	11	0	0	0	0	0	0	0	0	181
19:00	0	108	35	0	9	1	0	0	0	0	0	0	0	153
20:00	0	75	19	0	11	1	0	0	0	0	0	0	0	106
21:00	0	59	13	0	6	0	0	1	0	0	0	0	0	79
22:00	0	32	11	0	1	0	0	1	0	0	0	0	0	45
23:00	0	12	11	0	1	0	0	0	1	0	0	0	0	25
Day Total	4	2462	1014	5	269	3	0	39	4	0	0	0	3	3803
Percent	0.1%	64.7%	26.7%	0.1%	7.1%	0.1%	0.0%	1.0%	0.1%	0.0%	0.0%	0.0%	0.1%	
AM Peak	10:00	10:00	11:00	01:00	10:00			07:00	10:00				02:00	10:00
Vol.	1	190	71	1	20			5	1				1	281
PM Peak	13:00	13:00	12:00	13:00	13:00	14:00		14:00	12:00					13:00
Vol.	1	241	115	1	35	1		4	1					392

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/05/05	0	7	8	0	0	0	0	0	0	0	0	0	0	15
01:00	0	6	2	0	1	0	0	0	0	0	0	0	0	9
02:00	0	3	2	0	0	0	0	0	1	0	0	0	0	6
03:00	0	8	4	1	1	1	0	0	0	0	0	0	0	15
04:00	0	28	17	0	6	2	0	0	1	1	0	0	0	55
05:00	0	73	36	0	15	0	0	1	2	1	0	0	1	129
06:00	1	172	73	0	30	3	**1**	3	4	**3**	0	0	0	290
07:00	**4**	**204**	81	2	30	**7**	1	**6**	5	2	0	0	0	**342**
08:00	4	169	89	**4**	**36**	4	1	2	4	0	0	0	1	314
09:00	0	156	76	2	26	3	0	4	3	3	0	0	0	273
10:00	1	175	72	2	31	1	0	6	**8**	2	**1**	**1**	**2**	302
11:00	4	170	**91**	4	23	5	1	5	4	2	0	0	1	310
12 PM	1	162	77	1	28	6	0	5	**11**	1	0	0	1	293
13:00	1	193	93	1	25	1	**1**	0	3	**2**	0	0	0	320
14:00	**5**	216	85	3	28	**7**	1	7	6	1	0	0	**2**	361
15:00	0	235	102	3	29	3	0	5	5	0	0	0	0	382
16:00	5	**256**	76	**5**	**43**	2	0	**9**	3	1	0	0	1	**401**
17:00	1	226	**116**	1	24	0	0	1	1	0	0	0	0	370
18:00	0	157	58	0	15	1	0	0	0	1	0	0	1	233
19:00	0	81	51	0	13	0	0	2	0	0	0	0	0	147
20:00	0	73	27	2	3	0	0	0	0	0	0	0	0	105
21:00	1	53	14	1	4	0	0	0	0	0	0	0	0	73
22:00	0	54	13	0	3	1	0	0	0	0	0	0	0	71
23:00	0	24	5	0	5	1	0	0	0	0	0	0	0	35
Day Total	28	2901	1268	32	419	48	6	56	61	20	1	1	10	4851
Percent	0.6%	59.8%	26.1%	0.7%	8.6%	1.0%	0.1%	1.2%	1.3%	0.4%	0.0%	0.0%	0.2%	
AM Peak	07:00	07:00	11:00	08:00	08:00	07:00	06:00	07:00	10:00	06:00	10:00	10:00	10:00	07:00
Vol.	4	204	91	4	36	7	1	6	8	3	1	1	2	342
PM Peak	14:00	16:00	17:00	16:00	16:00	14:00	13:00	16:00	12:00	13:00			14:00	16:00
Vol.	5	256	116	5	43	7	1	9	11	2			2	401

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/06/05	0	18	4	0	1	1	0	0	0	0	0	0	0	24
01:00	0	8	1	0	0	0	0	0	1	0	0	0	0	10
02:00	1	13	2	0	0	0	0	0	1	0	0	0	0	17
03:00	0	7	2	0	1	0	0	0	0	0	0	0	0	10
04:00	0	33	13	0	6	0	0	0	1	0	0	0	0	53
05:00	0	72	39	0	9	2	**1**	0	1	3	0	0	0	127
06:00	1	159	70	0	26	2	1	1	3	3	0	**1**	0	267
07:00	1	**191**	89	2	27	3	1	5	3	4	0	0	**1**	**327**
08:00	**4**	181	77	4	32	6	0	4	2	1	0	0	0	311
09:00	1	150	90	**7**	33	4	0	**9**	3	2	0	0	0	299
10:00	1	170	67	2	**41**	**7**	1	5	**7**	1	0	0	0	302
11:00	2	176	**107**	1	19	2	0	3	2	**5**	0	0	1	318
12 PM	3	185	72	3	28	**7**	**1**	7	3	1	0	0	1	311
13:00	1	153	66	**5**	16	2	0	2	2	**2**	0	0	0	249
14:00	**4**	169	65	2	24	1	1	8	**7**	0	0	0	**2**	283
15:00	0	212	**94**	0	25	4	0	**11**	2	1	0	0	0	349
16:00	1	235	84	1	**36**	1	0	5	1	0	0	0	0	**364**
17:00	1	**244**	68	1	20	1	0	1	2	0	0	0	0	338
18:00	1	186	65	0	21	1	0	1	2	0	0	0	0	277
19:00	0	109	37	0	9	0	0	2	0	0	0	0	0	157
20:00	0	82	26	0	9	0	0	0	1	0	0	0	0	118
21:00	0	72	24	1	5	0	0	0	0	0	0	0	0	102
22:00	0	36	16	0	2	0	0	0	1	0	0	0	0	55
23:00	1	24	8	0	1	1	0	0	0	0	0	0	0	35
Day Total	23	2885	1186	29	391	45	6	64	45	23	0	1	5	4703
Percent	0.5%	61.3%	25.2%	0.6%	8.3%	1.0%	0.1%	1.4%	1.0%	0.5%	0.0%	0.0%	0.1%	
AM Peak	08:00	07:00	11:00	09:00	10:00	10:00	05:00	09:00	10:00	11:00		06:00	07:00	07:00
Vol.	4	191	107	7	41	7	1	9	7	5		1	1	327
PM Peak	14:00	17:00	15:00	13:00	16:00	12:00	12:00	15:00	14:00	13:00			14:00	16:00
Vol.	4	244	94	5	36	7	1	11	7	2			2	364

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/07/05	1	15	2	0	1	1	0	0	0	0	0	0	0	20
01:00	0	12	1	0	0	0	0	0	0	0	0	0	0	13
02:00	0	9	3	0	0	0	0	1	0	0	0	0	0	13
03:00	0	9	4	0	0	2	0	0	0	0	0	0	0	15
04:00	0	29	17	1	5	1	0	1	0	1	0	0	0	55
05:00	0	79	41	1	11	3	0	3	3	**3**	0	0	0	144
06:00	**3**	181	82	0	**38**	5	**2**	4	4	1	0	0	0	320
07:00	3	**198**	**90**	4	33	4	1	2	1	3	**1**	0	1	**341**
08:00	2	185	82	**9**	21	2	1	**8**	6	2	0	0	1	319
09:00	0	162	77	3	34	2	1	4	4	3	0	0	0	290
10:00	0	145	88	1	20	**6**	0	6	2	1	0	0	**2**	271
11:00	0	182	83	1	38	2	0	3	**10**	2	0	**1**	1	323
12 PM	**2**	178	88	**5**	32	5	**1**	**5**	4	0	0	**1**	0	321
13:00	2	169	85	3	24	**6**	0	3	**7**	**3**	0	0	0	302
14:00	1	211	93	4	23	4	0	2	4	2	0	0	0	344
15:00	0	212	**104**	0	29	2	0	3	3	0	0	0	0	353
16:00	2	**235**	104	3	**37**	4	0	2	3	0	0	1	0	**391**
17:00	2	220	99	1	27	0	0	0	0	0	0	0	0	349
18:00	1	156	56	1	16	0	0	1	1	0	0	0	0	232
19:00	0	118	42	0	12	0	0	2	0	0	0	0	0	174
20:00	1	89	38	0	13	1	0	0	1	0	0	0	0	143
21:00	0	70	18	0	4	0	0	0	1	1	0	0	0	94
22:00	0	29	17	0	1	0	0	1	0	0	0	0	0	48
23:00	0	16	12	0	2	1	0	0	0	0	0	0	**1**	32
Day Total	20	2909	1326	37	421	51	6	51	54	22	1	3	6	4907
Percent	0.4%	59.3%	27.0%	0.8%	8.6%	1.0%	0.1%	1.0%	1.1%	0.4%	0.0%	0.1%	0.1%	
AM Peak	06:00	07:00	07:00	08:00	06:00	10:00	06:00	08:00	11:00	05:00	07:00	11:00	10:00	07:00
Vol.	3	198	90	9	38	6	2	8	10	3	1	1	2	341
PM Peak	12:00	16:00	15:00	12:00	16:00	13:00	12:00	12:00	13:00	13:00		12:00	23:00	16:00
Vol.	2	235	104	5	37	6	1	5	7	3		1	1	391

Quality Counts, LLC
16285 SW 85th Ave., Suite 105
Tigard, Oregon 97224

Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/08/05	0	10	5	0	2	0	0	0	0	0	0	0	0	17
01:00	0	7	7	0	1	0	0	0	0	0	0	0	0	15
02:00	0	14	3	0	0	0	0	0	1	0	0	0	0	18
03:00	0	7	4	0	2	1	0	0	2	0	0	0	**1**	17
04:00	0	31	13	0	6	1	0	0	2	1	0	0	0	54
05:00	0	73	39	1	11	2	0	3	0	**3**	0	**1**	0	133
06:00	2	169	67	0	26	3	**2**	1	6	2	0	0	0	278
07:00	2	**213**	**101**	4	**37**	3	2	4	2	3	0	0	0	**371**
08:00	**3**	186	68	**7**	36	4	1	**8**	3	0	0	0	1	317
09:00	1	178	74	2	29	**8**	0	3	5	0	0	0	1	301
10:00	2	137	72	0	29	3	0	8	**8**	2	0	0	1	262
11:00	0	149	73	0	19	4	2	8	5	1	0	0	0	261
12 PM	1	204	74	2	21	**5**	**2**	5	5	**2**	0	0	0	321
13:00	**3**	187	78	2	20	4	0	**8**	7	1	0	0	**1**	311
14:00	1	190	80	**3**	**40**	2	1	5	**9**	1	**1**	0	1	334
15:00	2	233	85	1	29	4	0	6	4	1	0	0	0	365
16:00	0	238	93	3	36	1	0	6	0	0	0	**1**	0	**378**
17:00	0	**242**	**102**	2	31	0	0	1	0	0	0	0	0	378
18:00	1	191	69	1	14	1	0	3	1	0	0	0	0	281
19:00	2	122	50	0	18	2	0	1	1	0	0	0	0	196
20:00	0	86	42	0	9	0	0	0	0	0	0	0	0	137
21:00	0	89	23	0	8	0	0	0	0	0	0	0	0	120
22:00	1	47	15	0	2	1	1	0	1	0	0	0	0	68
23:00	0	26	6	0	1	1	0	0	0	0	0	0	0	34
Day Total	21	3029	1243	28	427	50	11	70	62	17	1	2	6	4967
Percent	0.4%	61.0%	25.0%	0.6%	8.6%	1.0%	0.2%	1.4%	1.2%	0.3%	0.0%	0.0%	0.1%	
AM Peak	08:00	07:00	07:00	08:00	07:00	09:00	06:00	08:00	10:00	05:00		05:00	03:00	07:00
Vol.	3	213	101	7	37	8	2	8	8	3		1	1	371
PM Peak	13:00	17:00	17:00	14:00	14:00	12:00	12:00	13:00	14:00	12:00	14:00	16:00	13:00	16:00
Vol.	3	242	102	3	40	5	2	8	9	2	1	1	1	378

Quality Counts, LLC
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Site Code: 10132201
Station ID: Glencoe Rd
Glencoe Rd N of Hwy 26

SB

Latitude: 0' 0.000 Undefined

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12/09/05	0	12	5	0	0	0	0	0	2	0	0	0	0	19
01:00	0	10	1	0	0	0	0	0	0	0	0	0	0	11
02:00	0	15	6	0	0	0	0	0	1	0	0	0	0	22
03:00	1	8	5	0	0	1	0	0	0	0	0	0	0	15
04:00	0	29	12	0	8	2	0	0	1	0	0	0	0	52
05:00	2	66	36	2	8	5	0	1	4	**3**	0	0	0	127
06:00	2	170	65	0	32	4	**3**	1	1	3	0	0	**2**	283
07:00	2	**205**	84	4	**37**	1	2	**6**	4	0	0	0	2	**347**
08:00	1	195	80	**5**	27	2	1	5	2	0	0	0	0	318
09:00	2	173	**92**	4	20	5	0	3	4	0	0	**1**	1	305
10:00	0	174	84	0	29	**6**	1	1	**5**	1	0	0	0	301
11:00	**4**	190	86	3	36	6	2	3	2	2	0	0	0	334
12 PM	2	223	96	1	**39**	3	**1**	**11**	2	**2**	0	0	**2**	382
13:00	1	190	81	3	28	4	0	4	**5**	2	0	0	1	319
14:00	2	234	76	3	22	**6**	0	10	4	1	0	0	2	360
15:00	**4**	255	87	1	28	2	0	10	4	0	0	0	0	391
16:00	2	**265**	**110**	**4**	36	1	0	4	1	0	**1**	0	0	**424**
17:00	0	241	88	0	26	1	0	4	0	0	0	0	0	360
18:00	0	183	72	0	19	0	0	1	1	0	0	0	0	276
19:00	0	143	48	0	6	0	0	4	1	0	0	0	0	202
20:00	0	73	25	0	8	0	0	0	0	0	0	0	0	106
21:00	0	65	19	0	8	0	0	1	0	0	0	0	0	93
22:00	3	80	22	0	4	1	0	2	0	0	0	0	0	112
23:00	0	56	16	0	4	1	0	0	1	0	0	0	0	78
Day Total	28	3255	1296	30	425	51	10	71	45	14	1	1	10	5237
Percent	0.5%	62.2%	24.7%	0.6%	8.1%	1.0%	0.2%	1.4%	0.9%	0.3%	0.0%	0.0%	0.2%	
AM Peak	11:00	07:00	09:00	08:00	07:00	10:00	06:00	07:00	10:00	05:00		09:00	06:00	07:00
Vol.	4	205	92	5	37	6	3	6	5	3		1	2	347
PM Peak	15:00	16:00	16:00	16:00	12:00	14:00	12:00	12:00	13:00	12:00	16:00		12:00	16:00
Vol.	4	265	110	4	39	6	1	11	5	2	1	2		424
Grand Total	131	20418	8627	175	2685	256	39	398	286	96	4	9	42	33166
Percent	0.4%	61.6%	26.0%	0.5%	8.1%	0.8%	0.1%	1.2%	0.9%	0.3%	0.0%	0.0%	0.1%	

Appendix B

Existing Conditions
Operations
Worksheets

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Scenario Report

Scenario:	exam
Command:	exam
Volume:	exam
Geometry:	exam
Impact Fee:	Default Impact Fee
Trip Generation:	Default Trip Generation
Trip Distribution:	Default Trip Distribution
Paths:	Default Paths
Routes:	Default Routes
Configuration:	Default Configuration

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 NW Beach Rd/Glencoe Rd	D	25.4	0.000	D	25.4	0.000	+ 0.000 D/V
# 4 Texaco Dwy/Glencoe Rd	B	11.0	0.000	B	11.0	0.000	+ 0.000 D/V
# 5 NW Highland Ct/Glencoe Rd	C	21.9	0.000	C	21.9	0.000	+ 0.000 D/V
# 6 Chevron Dwy/Glencoe Rd	B	11.2	0.000	B	11.2	0.000	+ 0.000 D/V
# 7 NW Pacific St/Glencoe Rd	B	14.5	0.000	B	14.5	0.000	+ 0.000 D/V
# 8 NW Cottage St/Glencoe Rd	B	10.1	0.000	B	10.1	0.000	+ 0.000 D/V
# 9 NW Commercial/Glencoe Rd	A	9.1	0.285	A	9.1	0.285	+ 0.000 V/C

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #1 NW Beach Rd/Glencoe Rd

Average Delay (sec/veh): 0.5 Worst Case Level Of Service: D[25.4]

```
Street Name:            Glencoe Rd                    NW Beach Rd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  1  0  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:       4  655     0     0  459     8    17    0     3     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    4  655     0     0  459     8    17    0     3     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:     5  744     0     0  522     9    19    0     3     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     5  744     0     0  522     9    19    0     3     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.2 xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx   6.3 xxxxx xxxx xxxxx
FollowUpTim:  2.3 xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  531 xxxx xxxxx  xxxx xxxx xxxxx  1282 xxxx   526  xxxx xxxx xxxxx
Potent Cap.: 1017 xxxx xxxxx  xxxx xxxx xxxxx   179 xxxx   546  xxxx xxxx xxxxx
Move Cap.:   1017 xxxx xxxxx  xxxx xxxx xxxxx   179 xxxx   546  xxxx xxxx xxxxx
Volume/Cap:  0.00 xxxx  xxxx  xxxx xxxx  xxxx  0.11 xxxx  0.01  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  8.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  199 xxxxx  xxxx    0 xxxxx
SharedQueue:  0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.4 xxxxx xxxxx xxxx xxxxx
Shrd StpDel:  8.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 25.4 xxxxx xxxxx xxxx xxxxx
Shared LOS:    A    *     *     *    *     *     *    D     *     *    *     *
ApproachDel:    xxxxxx          xxxxxx             25.4            xxxxxx
ApproachLOS:        *               *               D                 *
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #1 NW Beach Rd/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             6%               7%               5%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:                        #2
Dist(miles):                       0.123
Speed (mph):                       45.00
SignalIndex:                       #2
Cycle Time:                           72 secs
InitVolume:                      0   410
Saturation:                      0  1089
ArrivalType:                     0     3
G/C:                          0.00  0.77
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:                           0.000 0.768
gq1:                          0.00  6.28
gq2:                          0.00  3.79
gq:                           0.00 10.07
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:                             0.550
beta:                              0.645
ta (secs):                         9.840
F:                                 0.223
f:                           1.000 1.000
vcmax:                           0  1003
vcg:                             0   410
vcmin:                        1000  1000
tp:                            0.0   0.1
p:                                 0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.002/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 531 xxxxx xxxxx    0 xxxxx xxxxx 1280     0   526    0     0     0
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 0.998 1.000 1.00 0.998 0.998
ConflictVol: 531 xxxxx xxxxx    0 xxxxx xxxxx 1282     0   526    0     0     0
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap: 1017 xxxxx xxxxx  900 xxxxx xxxxx  180   900   546  900   900   900
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 0.998 1.000 1.00 0.998 0.998
PotentCap:  1017 xxxxx xxxxx  898 xxxxx xxxxx  179   898   546  898   898   898
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #4 Texaco Dwy/Glencoe Rd

Average Delay (sec/veh): 0.2 Worst Case Level Of Service: B[11.0]

```
Street Name:            Glencoe Rd                          Texaco Dwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  0  0  1  0    0  0  1  0  0    0  0  0  0  0    0  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:       0  288    44     0  386     0     0    0     0     0    0    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  288    44     0  386     0     0    0     0     0    0    10
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91
PHF Volume:     0  316    48     0  424     0     0    0     0     0    0    11
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     0  316    48     0  424     0     0    0     0     0    0    11
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   6.5
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   3.5
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   355
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   614
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   614
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  0.02
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   0.1
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  11.0
LOS by Move:   *    *     *     *    *     *     *    *     *     *    *     B
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:    *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx           xxxxxx             11.0
ApproachLOS:        *                *                *                 B
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #4 Texaco Dwy/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             5%               8%               0%              25%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:       #5
Dist(miles):      0.071
Speed (mph):      35.00
SignalIndex:      #3
Cycle Time:          72 secs
InitVolume:     0   189
Saturation:     0  1492
ArrivalType:    0     3
G/C:         0.00  0.51
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.506
gq1:         0.00  4.50
gq2:         0.00  0.65
gq:          0.00  5.15
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.450
beta:             0.690
ta (secs):        7.303
F:                0.306
f:          1.000 1.000
vcmax:          0  1265
vcg:            0   189
vcmin:       1000  1000
tp:           0.0   2.9
p:                0.040
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.040/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol:   0 xxxxx xxxxx    0 xxxxx xxxxx    0     0     0    0     0   341
UpstreamAdj:1.00 x.xxx x.xxx 0.96 x.xxx x.xxx 0.96 0.960 1.000 0.96 0.960 0.960
ConflictVol:   0 xxxxx xxxxx    0 xxxxx xxxxx    0     0     0    0     0   355
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:  900 xxxxx xxxxx  900 xxxxx xxxxx  900   900   900  900   900   640
UpstreamAdj:1.00 x.xxx x.xxx 0.96 x.xxx x.xxx 0.96 0.960 1.000 0.96 0.960 0.960
PotentCap:   900 xxxxx xxxxx  864 xxxxx xxxxx  864   864   900  864   864   614
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #5 NW Highland Ct/Glencoe Rd

Average Delay (sec/veh): 4.9 Worst Case Level Of Service: C[21.9]

```
Street Name:            Glencoe Rd                    NW Highland Ct
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:      71  177    50    16  222    16    12    1   116    48    4    16
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   71  177    50    16  222    16    12    1   116    48    4    16
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87
PHF Volume:    82  203    57    18  255    18    14    1   133    55    5    18
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    82  203    57    18  255    18    14    1   133    55    5    18
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.2  6.6   6.3
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.6  4.1   3.4
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  274 xxxx xxxxx   264 xxxx xxxxx   716  733   264   772  713   235
Potent Cap.: 1284 xxxx xxxxx  1270 xxxx xxxxx   342  344   774   307  347   784
Move Cap.:   1284 xxxx xxxxx  1270 xxxx xxxxx   311  318   774   239  320   784
Volume/Cap:  0.06 xxxx  xxxx  0.01 xxxx  xxxx  0.04 0.00  0.17  0.23 0.01  0.02
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.2 xxxx xxxxx   0.0 xxxx xxxxx   0.1 xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  8.0 xxxx xxxxx   7.9 xxxx xxxxx  17.1 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     A    *     *     C    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   765  xxxx  291 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   0.6 xxxxx  1.1 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  10.7 xxxxx 21.9 xxxxx
Shared LOS:    *    *     *     *    *     *     *    *     B     *    C     *
ApproachDel:    xxxxxx          xxxxxx             11.3             21.9
ApproachLOS:        *               *                B                C
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #5 NW Highland Ct/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             3%               5%               2%               7%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.071 ( 0.031)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:          72 secs
InitVolume:     0   189
Saturation:     0  1492
ArrivalType:    0     3
G/C:         0.00  0.51
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.506
gq1:         0.00  4.50
gq2:         0.00  0.65
gq:          0.00  5.15
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.550
beta:             0.645
ta (secs):       10.491
F:                0.212
f:          1.000 1.000
vcmax:          0  1054
vcg:            0   190
vcmin:       1000  1000
tp:           0.0   0.8
p:                0.011
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.011/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 274 xxxxx xxxxx  261 xxxxx xxxxx  708   725   264  764   706   232
UpstreamAdj:1.00 x.xxx x.xxx 0.99 x.xxx x.xxx 0.99 0.989 1.000 0.99 0.989 0.989
ConflictVol: 274 xxxxx xxxxx  264 xxxxx xxxxx  716   733   264  772   713   235
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap: 1284 xxxxx xxxxx 1283 xxxxx xxxxx  345   348   774  311   351   792
UpstreamAdj:1.00 x.xxx x.xxx 0.99 x.xxx x.xxx 0.99 0.989 1.000 0.99 0.989 0.989
PotentCap:  1284 xxxxx xxxxx 1270 xxxxx xxxxx  342   344   774  307   347   784
```

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Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #6 Chevron Dwy/Glencoe Rd

Average Delay (sec/veh): 1.2 Worst Case Level Of Service: B[11.2]

```
Street Name:            Glencoe Rd                    Chevron Dwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  1  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:      25  180     0     0  229    39    16    0    23     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   25  180     0     0  229    39    16    0    23     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.80 0.80  0.80  0.80 0.80  0.80  0.80 0.80  0.80  0.80 0.80  0.80
PHF Volume:    31  225     0     0  286    49    20    0    29     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    31  225     0     0  286    49    20    0    29     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.2 xxxx xxxxx xxxxx xxxx xxxxx   6.5 xxxx   6.3 xxxxx xxxx xxxxx
FollowUpTim:  2.3 xxxx xxxxx xxxxx xxxx xxxxx   3.6 xxxx   3.4 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  335 xxxx xxxxx  xxxx xxxx xxxxx   598 xxxx   311  xxxx xxxx xxxxx
Potent Cap.: 1197 xxxx xxxxx  xxxx xxxx xxxxx   454 xxxx   713  xxxx xxxx xxxxx
Move Cap.:   1197 xxxx xxxxx  xxxx xxxx xxxxx   445 xxxx   713  xxxx xxxx xxxxx
Total Cap:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   535    0 xxxxx     0    0 xxxxx
Volume/Cap:  0.03 xxxx  xxxx  xxxx xxxx  xxxx  0.04 xxxx  0.04  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  8.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  627 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.3 xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 11.2 xxxxx xxxxx xxxx xxxxx
Shared LOS:    *    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             11.2           xxxxxx
ApproachLOS:        *                *                B               *
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #6 Chevron Dwy/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             7%               6%               9%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.071 ( 0.601)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 335 xxxxx xxxxx    0 xxxxx xxxxx  598     0   311    0     0     0
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 335 xxxxx xxxxx    0 xxxxx xxxxx  598     0   311    0     0     0
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap: 1197 xxxxx xxxxx  900 xxxxx xxxxx  454   900   713  900   900   900
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:  1197 xxxxx xxxxx  900 xxxxx xxxxx  454   900   713  900   900   900
```

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Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

```
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance [Median Type: TWLTL][Median Storage: 1 car ]
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage One Module:
InitCfltVol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  311     0 xxxxx    0     0 xxxxx
UpstreamSat:xxxx xxxxx xxxxx xxxx xxxxx xxxxx    0     0 xxxxx    0     0 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Cnflict Vol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  311     0 xxxxx    0     0 xxxxx
InitPotCap: xxxx xxxxx xxxxx xxxx xxxxx xxxxx  728   900 xxxxx  900   900 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Potent Cap.:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  728   900 xxxxx  900   900 xxxxx
Move Cap.:  xxxx xxxxx xxxxx xxxx xxxxx xxxxx  728   900 xxxxx  876   876 xxxxx
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage Two Module:
InitCfltVol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  288     0 xxxxx    0     0 xxxxx
UpstreamSat:xxxx xxxxx xxxxx xxxx xxxxx xxxxx    0     0 xxxxx    0     0 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Cnflict Vol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  288     0 xxxxx    0     0 xxxxx
InitPotCap: xxxx xxxxx xxxxx xxxx xxxxx xxxxx  746   900 xxxxx  900   900 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Potent Cap.:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  746   900 xxxxx  900   900 xxxxx
Move Cap.:  xxxx xxxxx xxxxx xxxx xxxxx xxxxx  726   876 xxxxx  864   900 xxxxx
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

```
*******************************************************************************
Intersection #7 NW Pacific St/Glencoe Rd
*******************************************************************************
Average Delay (sec/veh):      1.6   Worst Case Level Of Service:       B[ 14.5]
*******************************************************************************
Street Name:            Glencoe Rd                    NW Pacific St
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  1  0  0  0    0  1  0  0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:       8  178     0    13  245     0     7    5     2     4    2    34
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    8  178     0    13  245     0     7    5     2     4    2    34
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.78 0.78  0.78  0.78 0.78  0.78  0.78 0.78  0.78  0.78 0.78  0.78
PHF Volume:    10  228     0    17  314     0     9    6     3     5    3    44
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    10  228     0    17  314     0     9    6     3     5    3    44
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.2 xxxx xxxxx   4.1 xxxx xxxxx   7.2  6.6   6.3   7.2  6.6   6.3
FollowUpTim:  2.3 xxxx xxxxx   2.2 xxxx xxxxx   3.6  4.1   3.4   3.6  4.1   3.4
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  314 xxxx xxxxx   228 xxxx xxxxx   619  596   314   601  596   228
Potent Cap.: 1218 xxxx xxxxx  1328 xxxx xxxxx   384  401   699   404  409   796
Move Cap.:   1218 xxxx xxxxx  1328 xxxx xxxxx   356  393   699   391  400   796
Volume/Cap:  0.01 xxxx  xxxx  0.01 xxxx  xxxx  0.03 0.02  0.00  0.01 0.01  0.05
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.0 xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  8.0 xxxx xxxxx   7.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  397 xxxxx  xxxx  691 xxxxx
SharedQueue:  0.0 xxxx xxxxx   0.0 xxxx xxxxx xxxxx  0.1 xxxxx xxxxx  0.2 xxxxx
Shrd StpDel:  8.0 xxxx xxxxx   7.7 xxxx xxxxx xxxxx 14.5 xxxxx xxxxx 10.6 xxxxx
Shared LOS:    A    *     *     A    *     *     *    B     *     *    B     *
ApproachDel:    xxxxxx           xxxxxx             14.5             10.6
ApproachLOS:        *                *                B                B
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #7 NW Pacific St/Glencoe Rd

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
HevVeh:	7%	4%	14%	8%
Grade:	0%	0%	0%	0%
Peds/Hour:	0	0	0	0
LaneWidth:	12 feet	12 feet	12 feet	12 feet

Pedestrian Walk Speed: 4.00 feet/sec
Time Period: 0.25 hour

```
Upstream Signals:
Link Index:       #5
Dist(miles):  0.071 ( 0.681)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 314 xxxxx xxxxx  228 xxxxx xxxxx  619   596   314  601   596   228
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 314 xxxxx xxxxx  228 xxxxx xxxxx  619   596   314  601   596   228
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap: 1218 xxxxx xxxxx 1328 xxxxx xxxxx  384   401   699  404   409   796
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:  1218 xxxxx xxxxx 1328 xxxxx xxxxx  384   401   699  404   409   796
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #8 NW Cottage St/Glencoe Rd

Average Delay (sec/veh): 0.4 Worst Case Level Of Service: B[10.1]

Street Name:	Glencoe Rd		NW Cottage St	
Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Rights:	Include	Include	Include	Include
Lanes:	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0	0 0 0 0 0

```
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:       2  196     0     0  230     1     1    0    16     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    2  196     0     0  230     1     1    0    16     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.79 0.79  0.79  0.79 0.79  0.79  0.79 0.79  0.79  0.79 0.79  0.79
PHF Volume:     3  248     0     0  291     1     1    0    20     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     3  248     0     0  291     1     1    0    20     0    0     0
Critical Gap Module:
Critical Gp:  4.2 xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.3 xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx   3.3 xxxxx xxxx xxxxx
Capacity Module:
Cnflict Vol:  292 xxxx xxxxx  xxxx xxxx xxxxx   545 xxxx   292  xxxx xxxx xxxxx
Potent Cap.: 1247 xxxx xxxxx  xxxx xxxx xxxxx   503 xxxx   752  xxxx xxxx xxxxx
Move Cap.:   1247 xxxx xxxxx  xxxx xxxx xxxxx   502 xxxx   752  xxxx xxxx xxxxx
Volume/Cap:  0.00 xxxx  xxxx  xxxx xxxx  xxxx  0.00 xxxx  0.03  xxxx xxxx  xxxx
Level Of Service Module:
Queue:        0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  7.9 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  731 xxxxx  xxxx xxxx xxxxx
SharedQueue:  0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.1 xxxxx xxxxx xxxx xxxxx
Shrd StpDel:  7.9 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 10.1 xxxxx xxxxx xxxx xxxxx
Shared LOS:    A    *     *     *    *     *     B     *     *    *     *
ApproachDel:    xxxxxx          xxxxxx            10.1          xxxxxx
ApproachLOS:         *               *               B               *
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #8 NW Cottage St/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
HevVeh:             6%               5%               0%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
-----------|----------------|----------------|----------------|----------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.071 ( 0.681)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 292 xxxxx xxxxx    0 xxxxx xxxxx  545     0   292    0     0     0
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 292 xxxxx xxxxx    0 xxxxx xxxxx  545     0   292    0     0     0
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap: 1247 xxxxx xxxxx  900 xxxxx xxxxx  503   900   752  900   900   900
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:  1247 xxxxx xxxxx  900 xxxxx xxxxx  503   900   752  900   900   900
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #9 NW Commercial/Glencoe Rd

```
Cycle (sec):        100                Critical Vol./Cap. (X):        0.285
Loss Time (sec):      0 (Y+R =  4 sec) Average Delay (sec/veh):        9.1
Optimal Cycle:        0                Level Of Service:                A
Street Name:            Glencoe Rd                NW Commercial/West Union
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:      51   77    55    27  151     2     4   12    44    31   16    15
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   51   77    55    27  151     2     4   12    44    31   16    15
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.83 0.83  0.83  0.83 0.83  0.83  0.83 0.83  0.83  0.83 0.83  0.83
PHF Volume:    61   93    66    33  182     2     5   14    53    37   19    18
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   61   93    66    33  182     2     5   14    53    37   19    18
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:    61   93    66    33  182     2     5   14    53    37   19    18
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.28 0.42  0.30  0.15 0.84  0.01  0.07 0.20  0.73  0.50 0.26  0.24
Final Sat.:   216  326   233   114  638     8    47  140   514   325  168   157
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.28 0.28  0.28  0.29 0.29  0.29  0.10 0.10  0.10  0.12 0.12  0.12
Crit Moves:  ****                          ****  ****             ****
Delay/Veh:    9.2  9.2   9.2   9.3  9.3   9.3   8.2  8.2   8.2   8.7  8.7   8.7
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   9.2  9.2   9.2   9.3  9.3   9.3   8.2  8.2   8.2   8.7  8.7   8.7
LOS by Move:   A    A     A     A    A     A     A    A     A     A    A     A
ApproachDel:       9.2              9.3              8.2              8.7
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:        9.2              9.3              8.2              8.7
LOS by Appr:        A                A                A                A
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM 4-Way Stop Method
Base Volume Alternative

Intersection #9 NW Commercial/Glencoe Rd

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Time Period: 0.25 hour				
HevVeh:	7%	4%	10%	13%
Alpha Value: 0.01				
GroupType:	1	1	1	1
P[C1]:	0.59	0.59	0.47	0.47
P[C2]:	0.22	0.22	0.06	0.05
P[C3]:	0.13	0.13	0.36	0.36
P[C4]:	0.06	0.06	0.11	0.11
P[C5]:	0.00	0.00	0.01	0.01
Padj[C1]:	0.007	0.007	0.011	0.011
Padj[C2]:	0.000	0.000	0.005	0.005
Padj[C3]:	-0.003	-0.003	-0.009	-0.010
Padj[C4]:	-0.003	-0.003	-0.007	-0.006
Padj[C5]:	-0.000	-0.000	-0.001	-0.001
Lane:	L1	L1	L1	L1
LaneType:	LEFTTHRURITE	LEFTTHRURITE	LEFTTHRURITE	LEFTTHRURITE
HeadwayAdj:	-0.006	0.091	-0.257	0.176
Volume:	220	217	72	75
Capacity:	776	761	701	649
DegOfUtil:	0.28	0.28	0.09	0.11
DepHeadway:	4.50	4.59	4.72	5.14
ServiceTime:	2.5	2.6	2.7	3.1
Delay:	9.2	9.3	8.2	8.7

Approach:	North Bound	South Bound	East Bound	West Bound
ApproachDel:	9.2	9.3	8.2	8.7
Delay Adj:	1.00	1.00	1.00	1.00
ApprAdjDel:	9.2	9.3	8.2	8.7
LOS by Appr:	A	A	A	A

OverallDel: 9.1
OverallLOS: A

HCM Signalized Intersection Capacity Analysis
2: US 26 EB Ramps & NW Glencoe Road

5/4/2006

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)		0%			0%			2%			-2%	
Total Lost time (s)		3.0	3.0					3.0	3.0		3.0	
Lane Util. Factor		1.00	1.00					1.00	1.00		1.00	
Frt		1.00	0.85					1.00	0.85		1.00	
Flt Protected		0.95	1.00					1.00	1.00		0.98	
Satd. Flow (prot)		1682	1500					1610	1368		1600	
Flt Permitted		0.95	1.00					1.00	1.00		0.98	
Satd. Flow (perm)		1682	1500					1610	1368		1600	
Volume (vph)	45	1	112	0	0	0	0	170	590	213	410	0
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	56	1	138	0	0	0	0	210	728	263	506	0
Lane Group Flow (vph)	0	57	138	0	0	0	0	210	728	0	769	0
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	7%	7%	7%	8%	8%	8%
Turn Type	Split		Prot						Prot	pm+pt		
Protected Phases	4	4	4					2	2	1	6	
Permitted Phases								2		6	6	
Actuated Green, G (s)		9.5	9.5					54.0	54.0		54.0	
Effective Green, g (s)		10.5	10.5					55.5	55.5		55.5	
Actuated g/C Ratio		0.15	0.15					0.77	0.77		0.77	
Clearance Time (s)		4.0	4.0					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		245	219					1241	1055		1233	
v/s Ratio Prot		0.03	c0.09					0.13	c0.53		0.48	
v/s Ratio Perm												
v/c Ratio		0.23	0.63					0.17	0.69		0.62	
Uniform Delay, d1		27.2	28.9					2.2	4.0		3.6	
Progression Factor		1.00	1.00					1.00	1.00		3.89	
Incremental Delay, d2		2.2	13.0					0.3	3.7		1.7	
Delay (s)		29.4	41.9					2.5	7.7		15.8	
Level of Service		C	D					A	A		B	
Approach Delay (s)		38.3			0.0			6.6			15.8	
Approach LOS		D			A			A			B	

Intersection Summary			
HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	72.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	104.4%	ICU Level of Service	F

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)		0%			2%			-2%			2%	
Total Lost time (s)				3.0	3.0			3.0			3.0	3.0
Lane Util. Factor				1.00	1.00			1.00			1.00	1.00
Frt				1.00	0.85			1.00			1.00	0.85
Flt Protected				0.95	1.00			0.99			1.00	1.00
Satd. Flow (prot)				1498	1342			1633			1580	1343
Flt Permitted				0.95	1.00			0.94			1.00	1.00
Satd. Flow (perm)				1498	1342			1538			1580	1343
Volume (vph)	0	0	0	290	1	143	25	189	0	0	333	53
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	0	0	0	362	1	179	31	236	0	0	416	66
Lane Group Flow (vph)	0	0	0	362	180	0	0	267	0	0	416	66
Heavy Vehicles (%)	0%	0%	0%	13%	13%	13%	7%	7%	7%	9%	9%	9%
Turn Type				Split			pm+pt					Prot
Protected Phases				8	8		5	2			6	6
Permitted Phases							2					
Actuated Green, G (s)				20.5	20.5			43.0			43.0	43.0
Effective Green, g (s)				21.5	21.5			44.5			44.5	44.5
Actuated g/C Ratio				0.30	0.30			0.62			0.62	0.62
Clearance Time (s)				4.0	4.0			4.5			4.5	4.5
Vehicle Extension (s)				3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)				447	401			951			977	830
v/s Ratio Prot				c0.24	0.13						c0.26	0.05
v/s Ratio Perm								0.17				
v/c Ratio				0.81	0.45			0.28			0.43	0.08
Uniform Delay, d1				23.4	20.5			6.4			7.1	5.5
Progression Factor				1.00	1.00			0.75			1.00	1.00
Incremental Delay, d2				14.6	3.6			0.2			1.4	0.2
Delay (s)				38.0	24.1			4.9			8.5	5.7
Level of Service				D	C			A			A	A
Approach Delay (s)		0.0			33.4			4.9			8.1	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	18.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	72.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	55.3%	ICU Level of Service	A

c Critical Lane Group

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday PM Peak Hour

Scenario Report

Scenario:	expm
Command:	expm
Volume:	expm
Geometry:	expm
Impact Fee:	Default Impact Fee
Trip Generation:	Default Trip Generation
Trip Distribution:	Default Trip Distribution
Paths:	Default Paths
Routes:	Default Routes
Configuration:	Default Configuration

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday PM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 NW Beach Rd/Glencoe Rd	F	56.4	0.000	F	56.4	0.000	+ 0.000 D/V
# 4 Texaco Dwy/Glencoe Rd	B	11.2	0.000	B	11.2	0.000	+ 0.000 D/V
# 5 NW Highland Ct/Glencoe Rd	C	24.9	0.000	C	24.9	0.000	+ 0.000 D/V
# 6 Chevron Dwy/Glencoe Rd	B	11.2	0.000	B	11.2	0.000	+ 0.000 D/V
# 7 NW Pacific St/Glencoe Rd	C	15.4	0.000	C	15.4	0.000	+ 0.000 D/V
# 8 NW Cottage St/Glencoe Rd	B	10.5	0.000	B	10.5	0.000	+ 0.000 D/V
# 9 NW Commercial/Glencoe Rd	A	10.0	0.411	A	10.0	0.411	+ 0.000 V/C

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #1 NW Beach Rd/Glencoe Rd

Average Delay (sec/veh): 0.8 Worst Case Level Of Service: F[56.4]

```
Street Name:            Glencoe Rd                    NW Beach Rd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  1  0  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:      17  625     0     0  715    24    11    0     5     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   17  625     0     0  715    24    11    0     5     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91
PHF Volume:    19  687     0     0  786    26    12    0     5     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    19  687     0     0  786    26    12    0     5     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.5 xxxx   6.3 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.6 xxxx   3.4 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  812 xxxx xxxxx  xxxx xxxx xxxxx  1849 xxxx   799  xxxx xxxx xxxxx
Potent Cap.:  814 xxxx xxxxx  xxxx xxxx xxxxx    66 xxxx   379  xxxx xxxx xxxxx
Move Cap.:    814 xxxx xxxxx  xxxx xxxx xxxxx    65 xxxx   379  xxxx xxxx xxxxx
Volume/Cap:  0.02 xxxx  xxxx  xxxx xxxx  xxxx  0.19 xxxx  0.01  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  9.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx   87 xxxxx  xxxx xxxx xxxxx
SharedQueue:  0.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.7 xxxxx xxxxx xxxx xxxxx
Shrd StpDel:  9.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 56.4 xxxxx xxxxx xxxx xxxxx
Shared LOS:    A    *     *     *    *     *     *    F     *     *    *     *
ApproachDel:    xxxxxx          xxxxxx             56.4           xxxxxx
ApproachLOS:        *               *               F               *
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #1 NW Beach Rd/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             2%               5%               6%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:                        #2
Dist(miles):                       0.123
Speed (mph):                       45.00
SignalIndex:                       #2
Cycle Time:                           72 secs
InitVolume:                      0   691
Saturation:                      0  1398
ArrivalType:                     0     3
G/C:                          0.00  0.79
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:                           0.000 0.793
gq1:                          0.00  7.38
gq2:                          0.00  7.22
gq:                           0.00 14.60
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:                             0.550
beta:                              0.645
ta (secs):                         9.840
F:                                 0.223
f:                           1.000 1.000
vcmax:                           0  1362
vcg:                             0   691
vcmin:                        1000  1000
tp:                            0.0  12.7
p:                                 0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.176/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 812 xxxxx xxxxx    0 xxxxx xxxxx 1523     0   799    0     0     0
UpstreamAdj:1.00 x.xxx x.xxx 0.82 x.xxx x.xxx 0.82 0.824 1.000 0.82 0.824 0.824
ConflictVol: 812 xxxxx xxxxx    0 xxxxx xxxxx 1849     0   799    0     0     0
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:  814 xxxxx xxxxx  900 xxxxx xxxxx   80   900   379  900   900   900
UpstreamAdj:1.00 x.xxx x.xxx 0.82 x.xxx x.xxx 0.82 0.824 1.000 0.82 0.824 0.824
PotentCap:   814 xxxxx xxxxx  741 xxxxx xxxxx   66   741   379  741   741   741
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #4 Texaco Dwy/Glencoe Rd

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: B[11.2]

```
Street Name:            Glencoe Rd                      Texaco Dwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  0  0  1  0    0  0  1  0  0    0  0  0  0  0    0  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:       0  399    49     0  399     0     0    0     0     0    0     1
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  399    49     0  399     0     0    0     0     0    0     1
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93
PHF Volume:     0  429    53     0  429     0     0    0     0     0    0     1
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     0  429    53     0  429     0     0    0     0     0    0     1
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   470
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   578
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   578
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   0.0
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  11.2
LOS by Move:   *    *     *     *    *     *     *    *     *     *    *     B
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:    *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx           xxxxxx             11.2
ApproachLOS:        *                *                *                 B
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #4 Texaco Dwy/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             2%               1%               2%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:       #5
Dist(miles):      0.071
Speed (mph):      35.00
SignalIndex:      #3
Cycle Time:          72 secs
InitVolume:     0   186
Saturation:     0  1111
ArrivalType:    0     3
G/C:         0.00  0.42
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.419
gq1:         0.00  7.00
gq2:         0.00  1.41
gq:          0.00  8.41
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.450
beta:             0.690
ta (secs):        7.303
F:                0.306
f:          1.000 1.000
vcmax:          0  1059
vcg:            0   186
vcmin:       1000  1000
tp:           0.0   2.3
p:                0.032
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.032/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol:   0 xxxxx xxxxx    0 xxxxx xxxxx    0     0     0    0     0   455
UpstreamAdj:1.00 x.xxx x.xxx 0.97 x.xxx x.xxx 0.97 0.968 1.000 0.97 0.968 0.968
ConflictVol:   0 xxxxx xxxxx    0 xxxxx xxxxx    0     0     0    0     0   470
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:  900 xxxxx xxxxx  900 xxxxx xxxxx  900   900   900  900   900   597
UpstreamAdj:1.00 x.xxx x.xxx 0.97 x.xxx x.xxx 0.97 0.968 1.000 0.97 0.968 0.968
PotentCap:   900 xxxxx xxxxx  871 xxxxx xxxxx  871   871   900  871   871   578
```

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Existing Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #5 NW Highland Ct/Glencoe Rd

Average Delay (sec/veh): 4.6 Worst Case Level Of Service: C[24.9]

```
Street Name:            Glencoe Rd                    NW Highland Ct
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:      97  293    10    12  261    15    10    4    87    51    4    20
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   97  293    10    12  261    15    10    4    87    51    4    20
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.92 0.92  0.92  0.92 0.92  0.92  0.92 0.92  0.92  0.92 0.92  0.92
PHF Volume:   105  318    11    13  284    16    11    4    95    55    4    22
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:   105  318    11    13  284    16    11    4    95    55    4    22
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  300 xxxx xxxxx   329 xxxx xxxxx   866  858   292   902  861   324
Potent Cap.: 1261 xxxx xxxxx  1236 xxxx xxxxx   274  294   747   261  295   722
Move Cap.:   1261 xxxx xxxxx  1236 xxxx xxxxx   243  267   747   209  268   722
Volume/Cap:  0.08 xxxx  xxxx  0.01 xxxx  xxxx  0.04 0.02  0.13  0.27 0.02  0.03
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.3 xxxx xxxxx   0.0 xxxx xxxxx   0.1 xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  8.1 xxxx xxxxx   7.9 xxxx xxxxx  20.5 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     A    *     *     C    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   693  xxxx  261 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   0.5 xxxxx  1.3 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  11.1 xxxxx 24.9 xxxxx
Shared LOS:    *    *     *     *    *     *     *    *     B     *    C     *
ApproachDel:    xxxxxx           xxxxxx             12.0             24.9
ApproachLOS:        *                *                B                C
```


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Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #5 NW Highland Ct/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             2%               1%               2%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.071 ( 0.031)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:          72 secs
InitVolume:     0   186
Saturation:     0  1111
ArrivalType:    0     3
G/C:         0.00  0.42
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.419
gq1:         0.00  7.00
gq2:         0.00  1.41
gq:          0.00  8.41
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.550
beta:             0.645
ta (secs):       10.491
F:                0.212
f:          1.000 1.000
vcmax:          0   961
vcg:            0   190
vcmin:       1000  1000
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 300 xxxxx xxxxx  329 xxxxx xxxxx  866   858   292  902   861   324
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 300 xxxxx xxxxx  329 xxxxx xxxxx  866   858   292  902   861   324
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap: 1261 xxxxx xxxxx 1236 xxxxx xxxxx  274   294   747  261   295   722
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:  1261 xxxxx xxxxx 1236 xxxxx xxxxx  274   294   747  261   295   722
```

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Existing Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #6 Chevron Dwy/Glencoe Rd

Average Delay (sec/veh): 0.9 Worst Case Level Of Service: B[11.2]

```
Street Name:            Glencoe Rd                    Chevron Dwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  1  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:      23  300     0     0  266    28    16    0    22     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   23  300     0     0  266    28    16    0    22     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91
PHF Volume:    25  330     0     0  292    31    18    0    24     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    25  330     0     0  292    31    18    0    24     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.2 xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.3 xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  323 xxxx xxxxx  xxxx xxxx xxxxx   688 xxxx   308  xxxx xxxx xxxxx
Potent Cap.: 1214 xxxx xxxxx  xxxx xxxx xxxxx   415 xxxx   737  xxxx xxxx xxxxx
Move Cap.:   1214 xxxx xxxxx  xxxx xxxx xxxxx   409 xxxx   737  xxxx xxxx xxxxx
Total Cap:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   511    0 xxxxx     0    0 xxxxx
Volume/Cap:  0.02 xxxx  xxxx  xxxx xxxx  xxxx  0.03 xxxx  0.03  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  8.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  621 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.2 xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 11.2 xxxxx xxxxx xxxx xxxxx
Shared LOS:    *    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             11.2           xxxxxx
ApproachLOS:        *                *                B               *
```


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Glencoe Road Interchange Area Management Plan - North Plains, Oregon
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Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #6 Chevron Dwy/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             6%               1%               0%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.071 ( 0.601)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 323 xxxxx xxxxx    0 xxxxx xxxxx  688     0   308    0     0     0
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 323 xxxxx xxxxx    0 xxxxx xxxxx  688     0   308    0     0     0
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap: 1214 xxxxx xxxxx  900 xxxxx xxxxx  415   900   737  900   900   900
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:  1214 xxxxx xxxxx  900 xxxxx xxxxx  415   900   737  900   900   900
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday PM Peak Hour

```
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance [Median Type: TWLTL][Median Storage: 1 car ]
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage One Module:
InitCfltVol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  308     0 xxxxx    0     0 xxxxx
UpstreamSat:xxxx xxxxx xxxxx xxxx xxxxx xxxxx    0     0 xxxxx    0     0 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Cnflict Vol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  308     0 xxxxx    0     0 xxxxx
InitPotCap: xxxx xxxxx xxxxx xxxx xxxxx xxxxx  750   900 xxxxx  900   900 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Potent Cap.:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  750   900 xxxxx  900   900 xxxxx
Move Cap.:  xxxx xxxxx xxxxx xxxx xxxxx xxxxx  750   900 xxxxx  881   881 xxxxx
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage Two Module:
InitCfltVol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  380     0 xxxxx    0     0 xxxxx
UpstreamSat:xxxx xxxxx xxxxx xxxx xxxxx xxxxx    0     0 xxxxx    0     0 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Cnflict Vol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  380     0 xxxxx    0     0 xxxxx
InitPotCap: xxxx xxxxx xxxxx xxxx xxxxx xxxxx  696   900 xxxxx  900   900 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Potent Cap.:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  696   900 xxxxx  900   900 xxxxx
Move Cap.:  xxxx xxxxx xxxxx xxxx xxxxx xxxxx  681   881 xxxxx  870   900 xxxxx
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

```
*******************************************************************************
Intersection #7 NW Pacific St/Glencoe Rd
*******************************************************************************
Average Delay (sec/veh):      1.6   Worst Case Level Of Service:       C[ 15.4]
*******************************************************************************
Street Name:            Glencoe Rd                    NW Pacific St
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:      40  255     9     5  277     6    29    0     4     6    1     4
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   40  255     9     5  277     6    29    0     4     6    1     4
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.94 0.94  0.94  0.94 0.94  0.94  0.94 0.94  0.94  0.94 0.94  0.94
PHF Volume:    43  271    10     5  295     6    31    0     4     6    1     4
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    43  271    10     5  295     6    31    0     4     6    1     4
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1 xxxx   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5 xxxx   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  301 xxxx xxxxx   281 xxxx xxxxx   672 xxxx   298   672  673   276
Potent Cap.: 1266 xxxx xxxxx  1287 xxxx xxxxx   372 xxxx   746   372  379   768
Move Cap.:   1266 xxxx xxxxx  1287 xxxx xxxxx   358 xxxx   746   359  365   768
Volume/Cap:  0.03 xxxx  xxxx  0.00 xxxx  xxxx  0.09 xxxx  0.01  0.02 0.00  0.01
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.1 xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  7.9 xxxx xxxxx   7.8 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  382 xxxxx  xxxx  446 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.3 xxxxx xxxxx  0.1 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 15.4 xxxxx xxxxx 13.3 xxxxx
Shared LOS:    *    *     *     *    *     *     *    C     *     *    B     *
ApproachDel:    xxxxxx           xxxxxx             15.4             13.3
ApproachLOS:        *                *                C                B
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #7 NW Pacific St/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
HevVeh:             1%               1%               0%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
-----------|----------------|----------------|----------------|----------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.071 ( 0.681)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 301 xxxxx xxxxx  281 xxxxx xxxxx  672     0   298  672   673   276
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 301 xxxxx xxxxx  281 xxxxx xxxxx  672     0   298  672   673   276
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap: 1266 xxxxx xxxxx 1287 xxxxx xxxxx  372   900   746  372   379   768
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:  1266 xxxxx xxxxx 1287 xxxxx xxxxx  372   900   746  372   379   768
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #8 NW Cottage St/Glencoe Rd

Average Delay (sec/veh): 0.5 Worst Case Level Of Service: B[10.5]

```
Street Name:            Glencoe Rd                    NW Cottage St
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------||----------------||----------------||----------------||----------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  1  0  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  0  0  0
-----------||----------------||----------------||----------------||----------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:      14  252     0     0  261     3     3    0    10     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   14  252     0     0  261     3     3    0    10     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93
PHF Volume:    15  271     0     0  281     3     3    0    11     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    15  271     0     0  281     3     3    0    11     0    0     0
-----------||----------------||----------------||----------------||----------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx   3.3 xxxxx xxxx xxxxx
-----------||----------------||----------------||----------------||----------------|
Capacity Module:
Cnflict Vol:  284 xxxx xxxxx  xxxx xxxx xxxxx   583 xxxx   282  xxxx xxxx xxxxx
Potent Cap.: 1278 xxxx xxxxx  xxxx xxxx xxxxx   478 xxxx   761  xxxx xxxx xxxxx
Move Cap.:   1278 xxxx xxxxx  xxxx xxxx xxxxx   473 xxxx   761  xxxx xxxx xxxxx
Volume/Cap:  0.01 xxxx  xxxx  xxxx xxxx  xxxx  0.01 xxxx  0.01  xxxx xxxx  xxxx
-----------||----------------||----------------||----------------||----------------|
Level Of Service Module:
Queue:        0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:  7.8 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  668 xxxxx  xxxx xxxx xxxxx
SharedQueue:  0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.1 xxxxx xxxxx xxxx xxxxx
Shrd StpDel:  7.8 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 10.5 xxxxx xxxxx xxxx xxxxx
Shared LOS:    A    *     *     *    *     *     B     *     *    *     *
ApproachDel:    xxxxxx          xxxxxx            10.5          xxxxxx
ApproachLOS:        *               *               B               *
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Base Volume Alternative

Intersection #8 NW Cottage St/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
HevVeh:             2%               3%               0%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
-----------|----------------|----------------|----------------|----------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.071 ( 0.681)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 284 xxxxx xxxxx    0 xxxxx xxxxx  583     0   282    0     0     0
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 284 xxxxx xxxxx    0 xxxxx xxxxx  583     0   282    0     0     0
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap: 1278 xxxxx xxxxx  900 xxxxx xxxxx  478   900   761  900   900   900
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:  1278 xxxxx xxxxx  900 xxxxx xxxxx  478   900   761  900   900   900
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #9 NW Commercial/Glencoe Rd

```
Cycle (sec):        100                Critical Vol./Cap. (X):        0.411
Loss Time (sec):      0 (Y+R =  4 sec) Average Delay (sec/veh):        10.0
Optimal Cycle:        0                Level Of Service:                 A
Street Name:            Glencoe Rd                NW Commercial/West Union
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:      79  139    42    29  123     7    11   19    62    68   33    31
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   79  139    42    29  123     7    11   19    62    68   33    31
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87
PHF Volume:    91  160    48    33  141     8    13   22    71    78   38    36
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   91  160    48    33  141     8    13   22    71    78   38    36
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:    91  160    48    33  141     8    13   22    71    78   38    36
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.30 0.54  0.16  0.18 0.78  0.04  0.12 0.21  0.67  0.52 0.25  0.23
Final Sat.:   221  389   117   126  534    30    80  138   449   330  160   150
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.41 0.41  0.41  0.26 0.26  0.26  0.16 0.16  0.16  0.24 0.24  0.24
Crit Moves:  ****                 ****        ****                 ****
Delay/Veh:   10.8 10.8  10.8   9.6  9.6   9.6   8.7  8.7   8.7   9.7  9.7   9.7
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  10.8 10.8  10.8   9.6  9.6   9.6   8.7  8.7   8.7   9.7  9.7   9.7
LOS by Move:   B    B     B     A    A     A     A    A     A     A    A     A
ApproachDel:      10.8              9.6              8.7              9.7
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       10.8              9.6              8.7              9.7
LOS by Appr:        B                A                A                A
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Existing Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM 4-Way Stop Method
Base Volume Alternative

Intersection #9 NW Commercial/Glencoe Rd

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Time Period: 0.25 hour				
HevVeh:	1%	1%	2%	4%
Alpha Value: 0.01				
GroupType:	1	1	1	1
P[C1]:	0.50	0.40	0.35	0.39
P[C2]:	0.17	0.26	0.10	0.07
P[C3]:	0.22	0.18	0.35	0.38
P[C4]:	0.10	0.14	0.18	0.15
P[C5]:	0.01	0.01	0.02	0.01
Padj[C1]:	0.009	0.011	0.014	0.013
Padj[C2]:	0.003	0.002	0.007	0.007
Padj[C3]:	-0.006	-0.004	-0.008	-0.010
Padj[C4]:	-0.006	-0.008	-0.010	-0.009
Padj[C5]:	-0.001	-0.001	-0.002	-0.001
Lane:	L1	L1	L1	L1
LaneType:	LEFTTHRURITE	LEFTTHRURITE	LEFTTHRURITE	LEFTTHRURITE
HeadwayAdj:	-0.019	0.027	-0.346	0.030
Volume:	299	183	106	152
Capacity:	727	691	667	640
DegOfUtil:	0.40	0.25	0.14	0.22
DepHeadway:	4.76	4.94	4.91	5.21
ServiceTime:	2.8	2.9	2.9	3.2
Delay:	10.8	9.6	8.7	9.7

Approach:	North Bound	South Bound	East Bound	West Bound
ApproachDel:	10.8	9.6	8.7	9.7
Delay Adj:	1.00	1.00	1.00	1.00
ApprAdjDel:	10.8	9.6	8.7	9.7
LOS by Appr:	B	A	A	A

OverallDel: 10.0
OverallLOS: A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)		0%			0%			2%			-2%	
Total Lost time (s)		3.0	3.0					3.0	3.0		3.0	
Lane Util. Factor		1.00	1.00					1.00	1.00		1.00	
Frt		1.00	0.85					1.00	0.85		1.00	
Flt Protected		0.95	1.00					1.00	1.00		0.99	
Satd. Flow (prot)		1666	1485					1656	1408		1658	
Flt Permitted		0.95	1.00					1.00	1.00		0.99	
Satd. Flow (perm)		1666	1485					1656	1408		1658	
Volume (vph)	35	1	59	0	0	0	0	258	408	157	691	0
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	40	1	68	0	0	0	0	297	469	180	794	0
Lane Group Flow (vph)	0	41	68	0	0	0	0	297	469	0	974	0
Heavy Vehicles (%)	3%	3%	3%	0%	0%	0%	4%	4%	4%	5%	5%	5%
Turn Type	Split		Prot						Prot	pm+pt		
Protected Phases	4	4	4					2	2	1	6	
Permitted Phases								2		6	6	
Actuated Green, G (s)		7.5	7.5					56.0	56.0		56.0	
Effective Green, g (s)		8.5	8.5					57.5	57.5		57.5	
Actuated g/C Ratio		0.12	0.12					0.80	0.80		0.80	
Clearance Time (s)		4.0	4.0					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		197	175					1323	1124		1324	
v/s Ratio Prot		0.02	c0.05					0.18	0.33		c0.59	
v/s Ratio Perm												
v/c Ratio		0.21	0.39					0.22	0.42		0.74	
Uniform Delay, d1		28.7	29.3					1.8	2.2		3.5	
Progression Factor		1.00	1.00					1.00	1.00		1.98	
Incremental Delay, d2		2.4	6.4					0.4	1.1		2.7	
Delay (s)		31.1	35.7					2.2	3.3		9.8	
Level of Service		C	D					A	A		A	
Approach Delay (s)		34.0			0.0			2.9			9.8	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	8.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	72.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	98.6%	ICU Level of Service	E

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)		0%			2%			-2%			2%	
Total Lost time (s)				3.0	3.0			3.0			3.0	3.0
Lane Util. Factor				1.00	1.00			1.00			1.00	1.00
Frt				1.00	0.85			1.00			1.00	0.85
Flt Protected				0.95	1.00			0.98			1.00	1.00
Satd. Flow (prot)				1628	1458			1692			1672	1422
Flt Permitted				0.95	1.00			0.76			1.00	1.00
Satd. Flow (perm)				1628	1458			1316			1672	1422
Volume (vph)	0	0	0	520	2	262	107	186	0	0	328	71
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	559	2	282	115	200	0	0	353	76
Lane Group Flow (vph)	0	0	0	559	284	0	0	315	0	0	353	76
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	2%	2%	2%	3%	3%	3%
Turn Type				Split			pm+pt					Prot
Protected Phases				8	8		5	2			6	6
Permitted Phases							2					
Actuated Green, G (s)				28.5	28.5			35.0			35.0	35.0
Effective Green, g (s)				29.5	29.5			36.5			36.5	36.5
Actuated g/C Ratio				0.41	0.41			0.51			0.51	0.51
Clearance Time (s)				4.0	4.0			4.5			4.5	4.5
Vehicle Extension (s)				3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)				667	597			667			848	721
v/s Ratio Prot				c0.34	0.19						0.21	0.05
v/s Ratio Perm								c0.24				
v/c Ratio				0.84	0.48			0.47			0.42	0.11
Uniform Delay, d1				19.1	15.6			11.5			11.1	9.2
Progression Factor				1.00	1.00			0.80			1.00	1.00
Incremental Delay, d2				12.0	2.7			0.5			1.5	0.3
Delay (s)				31.1	18.3			9.7			12.6	9.5
Level of Service				C	B			A			B	A
Approach Delay (s)		0.0			26.8			9.7			12.1	
Approach LOS		A			C			A			B	

Intersection Summary			
HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	72.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	80.1%	ICU Level of Service	D

c Critical Lane Group

Appendix G2

Technical Memorandum #2 – Year 2030 Forecast Future Conditions

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TRANSPORTATION PLANNING/TRAFFIC ENGINEERING
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TECHNICAL MEMORANDUM

Glencoe Interchange Area Management Plan
Technical Memorandum #2
Year 2030 Forecast Future Conditions

Date: May 26, 2006 **Project** #: 7191

To: PMT / SWG Committees

From: Matt Hughart, AICP, Andrew Ooms, Marc Butorac, P.E., P.T.O.E.

cc: Glencoe Project Team

This technical memorandum is the second in a series of memorandums that are being prepared to support the development of the Glencoe Interchange Area Management Plan (IAMP) and the subsequent environmental analysis work. This memorandum documents the future baseline traffic conditions analysis under a "no-build" scenario. Specifically, this memorandum identifies how the 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[1] and no improvements to the transportation network beyond those currently identified in the adopted Washington County or City of North Plains Transportation System Plans.

Included in this memorandum is a description of future planned transportation infrastructure improvements within the study area, an assessment of forecast traffic growth through the year 2030, and an assessment of how the resulting traffic growth will impact the operations along the roadways and intersections located within the Glencoe IAMP study area.

FUTURE CONDITIONS STUDY AREA

The future conditions study area can be divided into the local study area, the regional study area, and the IAMP study area. The local study area is comprised of those land uses located within ½

[1] Year 2030 was selected as the planning horizon year for the Glencoe IAMP. This horizon year reflects the need to prepare a minimum twenty-year analysis as required by Oregon's Transportation Planning Rule and other federal regulations. Since the funds to construct improvements to the Highway 26/Glencoe interchange are not secure at this time, the four additional analysis years offer some flexibility and allow the plan to maintain its long-term standing while formal interchange improvement funding is being secured.

mile of the existing Glencoe interchange south of Highway 26 and those land uses located within the City of North Plain's urban growth boundary (UGB).

In addition to the local study area, 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.

The final study area is the Glencoe IAMP study area. While the focus of the local and regional study area is primarily concerned with future land use and the resulting traffic impacts of that land use, the IAMP study area is focused on the specific traffic impacts and property access conditions within the immediate vicinity of the interchange. At this stage of the planning process, the IAMP study area is not specifically defined as different interchange forms have not yet been developed. However, the basic parameters of the IAMP study area include all roadway infrastructure located within 1,320 feet of the interchange ramp terminals. This distance corresponds to the 1/4-mile spacing standard outlined in Oregon's OAR 734-051 Division 51 rules for interchange ramps. From these general parameters, Figure 2-1 illustrates the study area boundaries utilized in the future conditions analysis.

PLANNED TRANSPORTATION IMPROVEMENTS

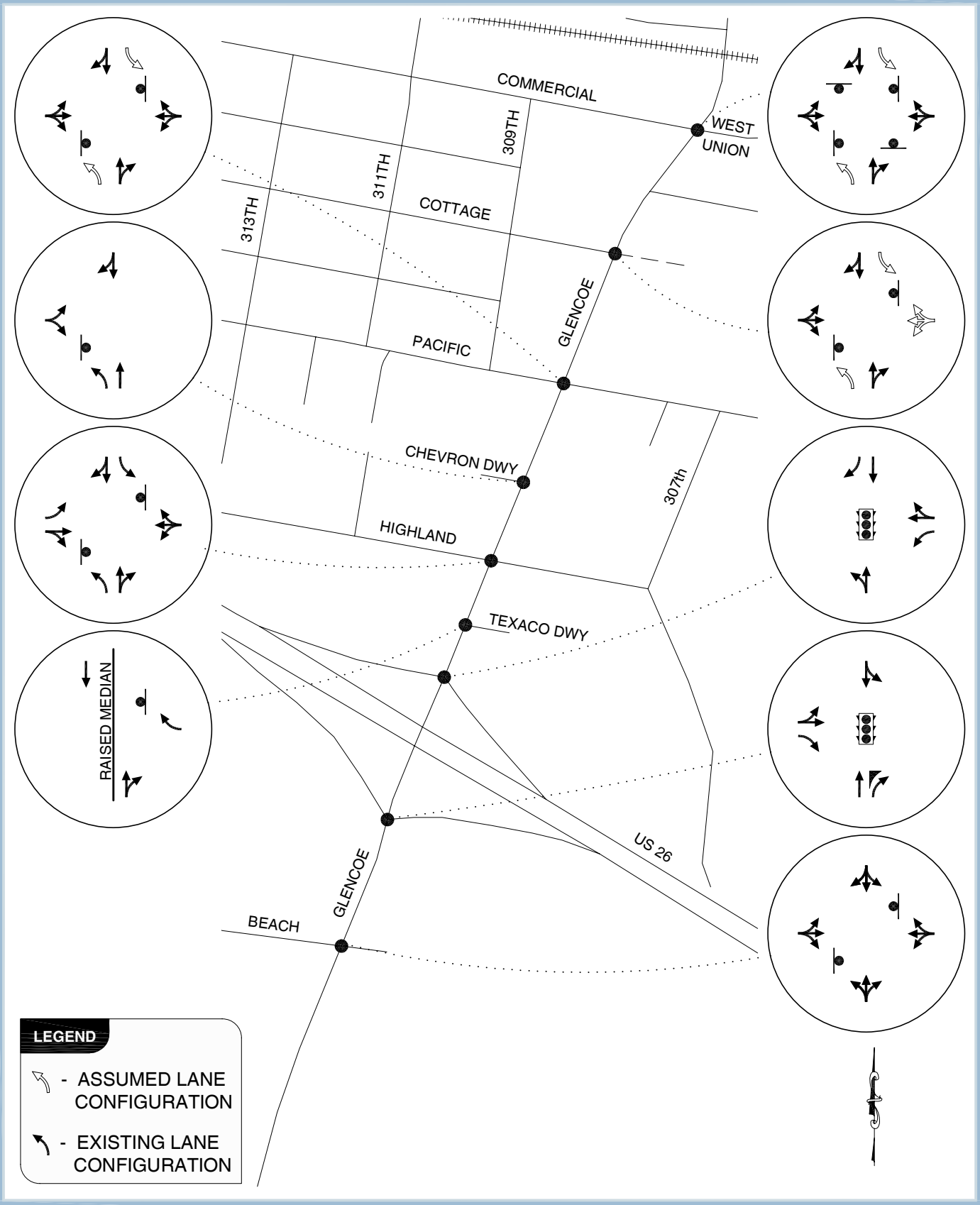
As documented in the City of North Plains and Washington County Transportation System Plans (TSP), there are a number of transportation improvement projects that have been identified within the Glencoe IAMP study area. These projects include overall improvements to the Highway 26/Glencoe Road interchange and ramps, widening improvements to Glencoe Road north of the Highway 26 interchange to the West Union Road/Commercial Street corridor, and intersection based improvements to several of the major roadway intersections along Glencoe Road north of the interchange. Of these projects, only Washington County's Glencoe Road widening project is funded at this time. The Highway 26/Glencoe Road interchange improvements will be re-evaluated as part of this IAMP project and the noted intersection improvement projects along Glencoe Road are likely to come about as a result of future development along the Glencoe Road corridor. As such, only the Glencoe Road widening project will be assumed as part of the future 2030 "no-build" traffic conditions analysis. Specific details regarding the scope of this project are outlined below.

The Glencoe Road widening project is a Washington County generated project that has been funded as part of the Major Streets Transportation Improvement Projects (MSTIP). This project involves a widening of Glencoe Road to a full three-lane cross section that includes one travel lane in each direction, a center left-turn lane, and sidewalks and bicycle lanes on both sides of the roadway. This widening is planned to occur along the section of Glencoe Road north of Highway 26 to just beyond the West Union Road/Commercial Street intersection. Figure 2-2 illustrates the resulting intersection configurations that are assumed to be in place for the "no-build" assessment of future traffic conditions.

GLENCOE RD

Glencoe Road IAMP
Study Area Boundary

Figure 2-1



Glencoe Road IAMP

Assumed Future Lane Configurations & Traffic Control Devices

Figure 2-2

Forest Grove/Cornelius-Sunset Highway Connection

In response to several comments regarding the issue of travel to/from Forest Grove/Cornelius and Highway 26, the following paragraphs provide a brief summary of Washington County's 1988 *Forest Grove/Cornelius-Sunset Highway Connection Study*.

Washington County's MSTIP program identifies and funds capital improvements to the County's transportation system. In order to determine the most effective use of MSTIP funds for improving a route from Cornelius and Forest Grove to Highway 26, Washington County completed the *Forest Grove/Cornelius-Sunset Highway Connection Study* in 1988. This study, which included technical and citizen advisory committees, identified eleven build alternatives for connecting these areas to Highway 26.

The results of the study, which were subsequently incorporated into Washington County's 1988 Transportation Plan, ended up focusing on the Glencoe interchange as the primary access point to Highway 26 and identified Glencoe Road, Zion Church Road, Cornelius/Schefflin Road and Martin Road as the most appropriate roads for arterial improvements to provide connections to Cornelius and Forest Grove from Highway 26.

With the inclusion of this study in the Transportation Plan and MSTIP program, the County invested in the Glencoe, Zion Church, Cornelius-Schefflin and Martin Roads corridor for capital improvements. Nearly all of these projects have been completed to date, with the exception of the widening of Cornelius-Schefflin Road (scheduled to begin in 2006). At this point in time, identification of an alternative route to provide primary access for Cornelius and Forest Grove would not be economically feasible nor responsive to previous formalized planning efforts that included extensive community participation.

FUTURE 2030 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 the UGB expansion areas.
- Future traffic related to regional growth in the larger study area vicinity which includes among others 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 utilized 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 planned land uses in the North Plains UGB expansion areas. To account for traffic growth in the larger regional vicinity, the Washington County Regional Transportation Planning Model was utilized to develop growth rates for those movements that impact the Glencoe interchange and surrounding roadway network. A detailed explanation of the local and regional growth assessment areas is provided in the following sections.

Local Traffic Growth in the City of North Plains

Local traffic growth in the City of North Plains is anticipated to come from in-process developments, infill developments, and future developments in the UGB expansion areas. For the purposes of this study, it is assumed that the City will achieve a reasonable level of maximum buildout in each of these areas as described in the following sections.

Approved/In-Process Development Traffic Growth

Through consultation with staff from the City of North Plains, a number of near-term development projects have been identified that are approved but not yet built within the existing city limits. These projects include six separate residential developments totaling 130 housing units, a large public storage unit, and a commercial retail development along Glencoe Road.

Using this information, a trip generation estimate was prepared for these in-process developments and the expected site-generated traffic was assigned to the study area roadways. Additional details regarding these development projects, trip generation estimates, and the resulting weekday a.m. and p.m. peak hour site-generated traffic volumes are provided in Appendix "A".

Infill Development Traffic Growth

Consistent with the North Plains TSP, this analysis effort recognizes that the potential exists for a significant number of additional housing units to be developed within the existing city limits in the form of infill development. Based on a review of the *North Plains Comprehensive Plan*, conversations with City staff, and building upon the analysis utilized in the North Plains TSP, it was determined that the City can accommodate an additional 270 housing units (not including the 130 in-process homes previously discussed) within the existing city limits[2]. Based on this assessment, a trip generation estimate was prepared for an assumed buildout of infill housing. Specific details regarding the infill residential development assumptions, trip generation estimates, and the resulting peak hour site-generated traffic volumes are provided in Appendix "B".

In addition to an anticipated increase in infill housing development within the existing city limits, this traffic forecasting effort also investigated the potential for commercial infill development, particularly along the Glencoe Road corridor. This commercially zoned corridor from Highway 26 to West Union Road is the main commercial hub for local residents and is also a major service provider for travelers along the Highway 26 corridor. To account for commercial infill growth, an analysis was performed along the Glencoe Road study corridor to determine a reasonable maximum buildout potential of those vacant or underutilized lands. To complete this analysis, information was obtained from aerial maps, tax lot records, and field visits. Based on this data, a review of the applicable zoning maps and development codes, and consultation with City staff, a conceptual future buildout map was developed for the commercially zoned properties along Glencoe Road that have the greatest potential for future development or redevelopment. Copies of these maps are also included in Appendix "B" along with the specific development assumptions, trip generation estimates, and peak hour site-generated traffic volumes.

[2] According to the City of North Plains Comprehensive Plan, there were 662 housing units located within the existing City limits in 2004 with room for an additional 400 infill housing units.

Along with an anticipated increase in infill housing and commercial development within the existing city limits, this traffic forecasting effort also investigated the potential for industrial infill development. Although difficult to accurately quantify the amount of industrial land that may be developed over the course of the planning horizon, a review of employment projections from recent studies and consultation with City staff suggests that the City could experience an additional 34.4 acres of new industrial development through the year 2030. Based on this projection, it was assumed that new industrial development would occur in the City's west and east side industrial corridors. Specific details regarding the infill industrial development assumptions, trip generation estimates, and the resulting peak hour site-generated traffic volumes are provided in Appendix "B".

Traffic Generated by Planned Land Uses within the UGB Expansion Areas

In 2002, the City of North Plains expanded its UGB to ensure a 20-year land supply for primarily residential uses. The expansion occurred in two separate areas. The first area is located north of NW North Avenue on 76.5 acres. The second area is located east of the main part of the city along the south side of West Union Road and consists of 72.5 acres. Although the City has not officially annexed these areas, it is assumed for the purposes of the future traffic forecast that all of the land in the UGB expansion areas will be developed over the course of the 2030 planning horizon according to the planned land uses and acreages in the Comprehensive Plan. Specific details regarding the location of the UGB expansion areas, development assumptions, trip generation estimates, and peak hour site-generated traffic volumes are provided in Appendix "C".

Background Growth in Regional Through Traffic

As previously mentioned, the second form of traffic growth that will impact the US 26/Glencoe interchange and supporting roadway network is related to growth occurring in the larger regional vicinity. It is recognized that a portion of the residents in these surrounding communities utilize the Glencoe interchange for travel to/from the Highway 26 corridor. To account for this traffic growth in the larger regional vicinity, the Washington County Regional Transportation Planning model was utilized to help determine long-term growth rates for those movements that are primarily influenced by the presence of these regional urban environments.

Based on a review of the model outputs, it was determined that traffic volumes on Glencoe Road south of Highway 26 are estimated to grow at approximately 2 percent per year[3]. Other regional supporting roadways such as NW Mountaindale Road and NW Shadybrook Road were determined to grow at a more nominal 1 percent per year given that they primarily serve rural areas that are not anticipated to grow significantly. Using these growth rates, the existing weekday a.m. and p.m. peak hour turning movement counts at the appropriate US 26/Glencoe Road interchange terminals were factored accordingly.

[3] These growth rate assumptions include the impact of the new Jackson School Road interchange. Based on the model results, it is anticipated that the Jackson School Road interchange will serve as a significant alternative to the Glencoe interchange for regional travel between the central/westerly portions of the City of Hillsboro.

FUTURE PEAK HOUR TRAFFIC VOLUMES

Future year 2030 weekday a.m. and p.m. peak hour traffic volumes were determined by adding the estimated new traffic volumes from the known in-process developments, assumed infill developments, assumed planned expansion of the UGB areas, and regional growth to existing counts to account for overall traffic growth. The resulting 2030 forecast weekday a.m. and p.m. peak hour traffic volumes are shown in Figures 2-3 and 2-4. It should be noted that these forecasts are somewhat conservative due to some overlap in traffic assignments between the residential and commercial/industrial developments assumed within the City of North Plains.

Intersection Operations Analysis

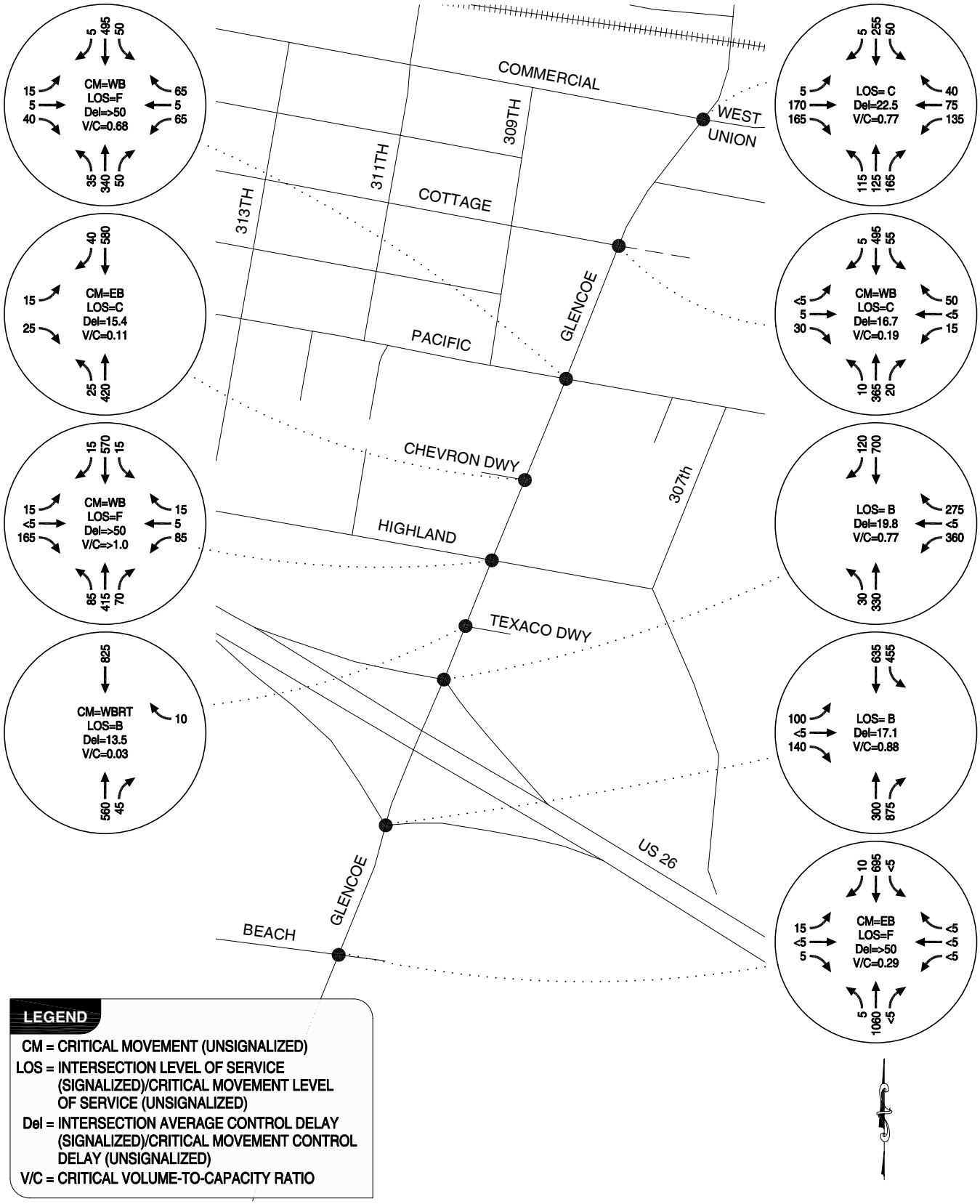
A traffic operations analysis was performed for the study intersections using the forecast traffic volumes shown in Figure 2-3 and 2-4. Table 2-1 summarizes the resulting traffic operations analysis for each of the study intersections. As shown in the table, by the year 2030, assuming no transportation 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 a.m. and p.m. peak hours.

Table 2-1
Future Year Traffic Conditions, 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	0.77	0.41	1.17
NW Cottage Street/ NW Glencoe Road	Unsignalized	0.03	0.19	0.02	1.30
NW Pacific Street/ NW Glencoe Road	Unsignalized	0.05	0.69	0.09	1.44
Chevron Driveway/ NW Glencoe Road	Unsignalized	0.08	0.11	0.07	0.12
NW Highland Court/ NW Glencoe Road	Unsignalized	0.27	1.75	0.31	3.13
Texaco Driveway/ NW Glencoe Road	Unsignalized	0.02	0.03	0.01	0.01
US 26 WB Ramps/ NW Glencoe Road	Signalized	0.55	0.77	0.64	1.31
US 26 EB Ramps/ NW Glencoe Road	Signalized	0.68	0.88	0.69	1.11
NW Beach Road/ NW Glencoe Road	Unsignalized	0.11	0.29	0.20	0.36

[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.

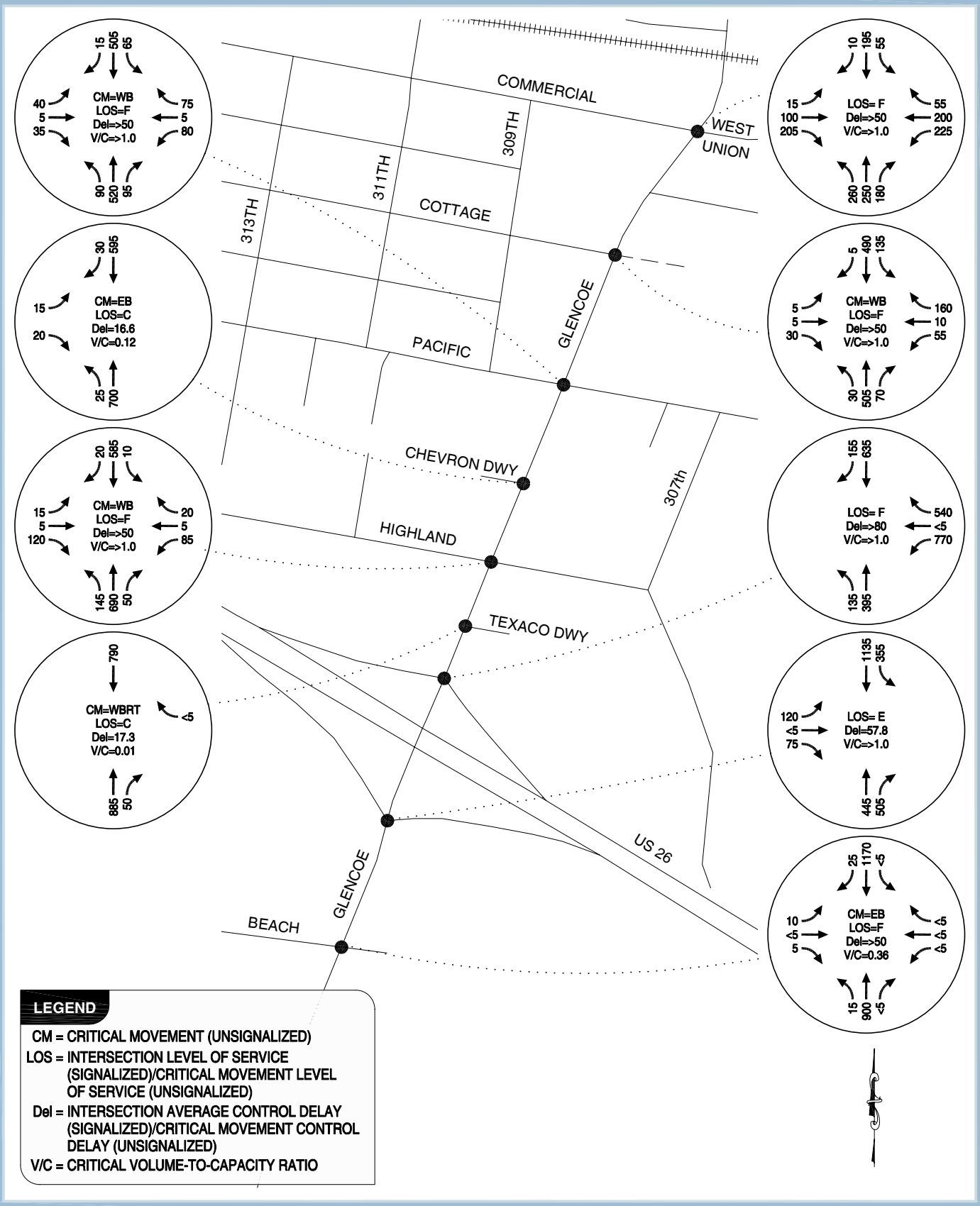
The Highway 26 interchange ramp terminals are required to operate at a volume-to-capacity ratio of 0.85 or better during the weekday a.m. and p.m. peak periods. The critical side-street movements at all other study intersections should operate at a volume-to-capacity ratio of 0.90 or better during the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



Glencoe Road IAMP

2030 Total Traffic Conditions
Weekday AM Peak Hour

Figure 2-3



Glencoe Road IAMP

2030 Total Traffic Conditions
Weekday PM Peak Hour

Figure 2-4

NW Glencoe Road/NW Commercial Street/NW West Union Road

As shown in Table 2-1, the NW Glencoe Road/NW Commercial Street/NW West Union Road intersection is forecast to operate above capacity during the weekday p.m. peak hour. These findings are consistent with the TSP which indicates an operational failure of this intersection within the 20-year planning horizon. This operational deficiency is primarily associated with the additional residential and commercial growth within the City of North Plains and the assumed development of the two UGB expansion areas. To improve this intersection, the TSP noted that it would need to be signalized and include a westbound left-turn lane and an eastbound right-turn lane. These noted improvement projects will be considered in context to the different interchange alternatives and access alternatives to be investigated as part of the Glencoe Road IAMP project.

NW Glencoe Road/NW Cottage Street

As previously stated in the commercial infill development section, it was assumed that several parcels of land located east of NW Glencoe Road and north of NW Pacific Street could potentially be developed as a 120,000 square foot shopping center. It was further assumed based on conversations with City staff that the main access driveway to the potential development of this property would likely occur as a driveway connection forming a fourth leg to the NW Glencoe Road/NW Cottage Street intersection. As a result of the additional commercial traffic, the critical westbound side street movements at the NW Glencoe Road/NW Cottage Street intersection is forecast to operate above capacity during the weekday p.m. peak hour. To mitigate the impact of new commercial traffic at this intersection, a traffic signal could be installed. As different interchange and access alternatives are investigated as part of the Glencoe IAMP, this intersection mitigation measure will be evaluated in greater detail.

NW Glencoe Road/NW Pacific Street

The critical eastbound side-street movement at the NW Glencoe Road/NW Pacific Street intersection is forecast to operate above capacity during the weekday p.m. peak hour. This finding is consistent with the TSP which indicates an operational failure of this intersection within the 20-year planning horizon. This failure can be primarily attributed to an assumption of additional commercial and residential development on vacant or underutilized properties located along the east side of NW Glencoe Road. To improve this intersection, the TSP has included a long-term signalization project at this intersection. This noted improvement project will be considered in context to the different interchange alternatives and access alternatives to be investigated as part of the Glencoe Road IAMP project.

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 a.m. and p.m. 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 to occur within the area. As stated in the TSP, signalization and protected northbound and southbound left-turn movements are recommended at this intersection. Given the close proximity of this intersection to the Glencoe interchange, this mitigation measure will be investigated in context with the various interchange and access alternatives that will be developed as part of the Glencoe IAMP.

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 a.m. and p.m. 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.

Next Steps

The next phase of the Glencoe IAMP, *Alternatives Evaluation*, will investigate potential transportation improvement alternatives that will address these deficiencies and ensure that the overall transportation network will meet the needs of the study area through the 2030 horizon year.

Appendix A

In-Process
Developments

Appendix A

APPROVED/IN-PROCESS DEVELOPMENT TRAFFIC GROWTH

Through consultation with City staff, the following development projects have been approved but not yet built within the City of North Plains. These projects include a number of small to medium sized residential projects located throughout the City, and a commercial retail project located off of NW Glencoe Road. The specific size and location of each identified in-process development is outlined below.

- 10-unit single-family development located on the southwest corner of the NW Glencoe Road/NW North Avenue intersection.
- 12-unit single-family development located near the intersection of NW North Avenue/NW Main Street.
- 12-unit single-family attached development located near the corner of the NW 321st Avenue/NW Cottage Street intersection.
- 15-unit single-family development located along NW Highland Court midway between NW Glencoe Road and NW 313th Avenue.
- 26-unit single-family development located on the south side of NW West Union Road and east of NW Glencoe Road.
- 7,500 square-foot commercial retail development located west of NW Glencoe Road and between NW Pacific Street and NW Cottage Street. Of the 7,500 square feet, 2,500 will consist of a bank and the remainder will be miscellaneous commercial retail. To date, no specific tenants have been identified for the 5,000 square foot retail component.
- An 84,395 square-foot/430 unit public store development located in the east side of the city and north of West Union Road.
- 55-unit single-family residential development to be located in the northwest portion of the city near NW Gordon Road/NW North Avenue. It should be noted that this project is not yet formally approved by the City. However, it is being included in the in-process development list based on conversations with City staff.

Figure A-1 identifies the in-process developments and their respective locations within the City of North Plains. Though consultation with City staff, all of these projects are anticipated to be built within the immediate near-term future.

IN-PROCESS DEVELOPMENT KEY

- A 10 UNITS SINGLE FAMILY
- B 12 UNITS SINGLE FAMILY
- C 12 UNITS SINGLE FAMILY
- D 15 UNITS SINGLE FAMILY
- E 26 UNITS SINGLE FAMILY
- F 55 UNITS SINGLE FAMILY
- G 7,500 SQ FT SHOPPING CENTER / BANK
- H 84,395 SQ FT PUBLIC STORAGE

CITY OF NORTH PLAINS IN-PROCESS DEVELOPMENTS
NORTH PLAINS, OREGON

FIGURE **A-1**

Kittelson & Associates, Inc.
Transportation Engineering / Planning

To assess the cumulative impact of the in-process developments on the Glencoe interchange and study area intersections, estimates of daily, weekday a.m. and weekday p.m. peak hour trip ends were developed based on empirical observations at similar land uses. These observations are summarized in the standard reference Trip Generation 7th Edition, published by the Institute of Transportation Engineers. Table 2-2 summarizes the estimated trip generation for each of these in-process development projects.

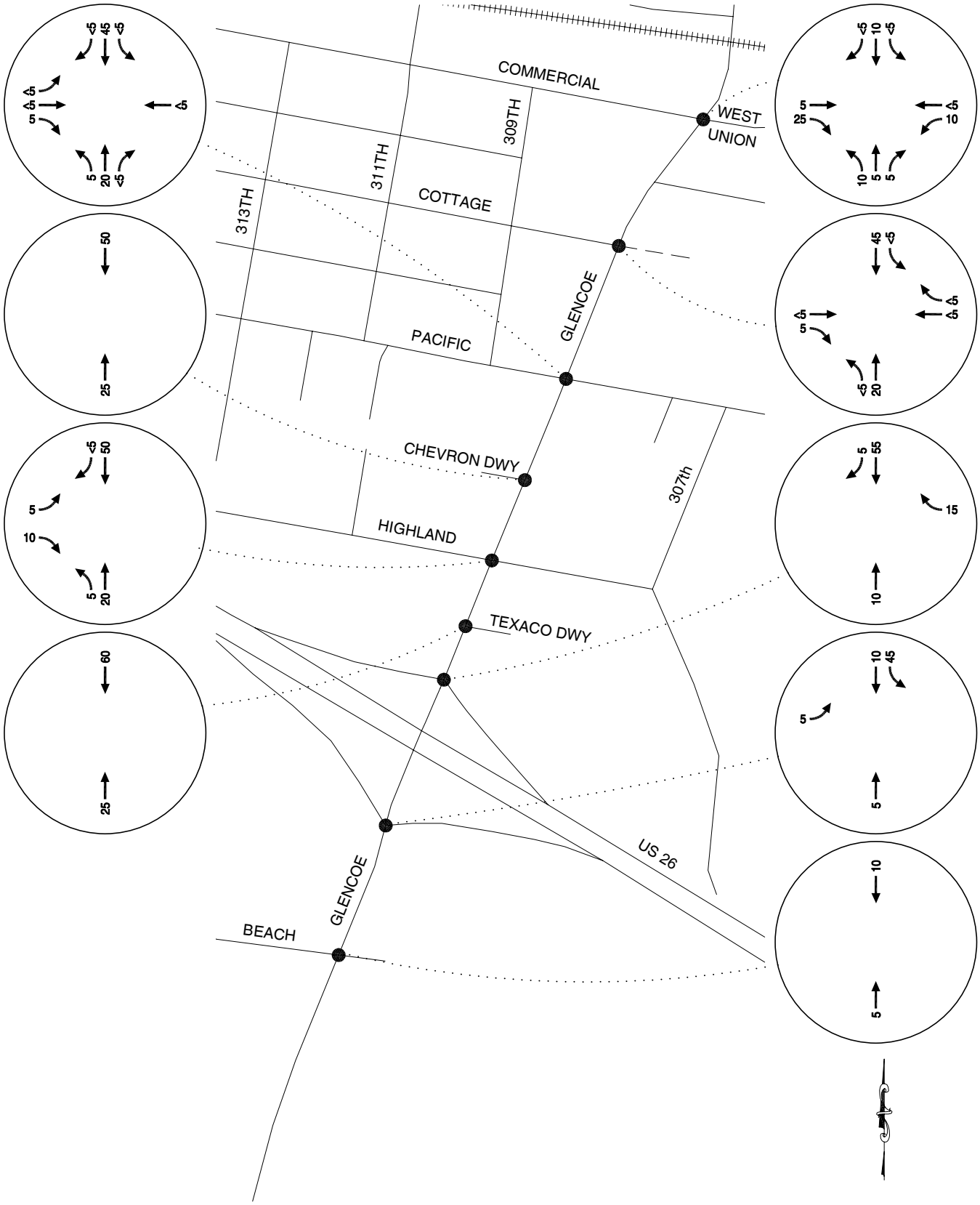
Table 2-2
In-Process Development Trip Generation Estimates

Land Use	ITE Code	Size (Units/ Sq. Ft.)	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Single-family residential	210	10	120	15	5	10	15	10	5
Single-family residential	210	12	150	20	5	15	15	10	5
Townhomes[1]	230	12	110	10	5	5	10	5	5
Single-family residential	210	15	180	20	5	15	20	10	10
Townhomes[1]	230	26	200	20	5	15	20	15	5
Single-family residential	210	55	600	45	10	35	60	40	20
Mini-Warehouse (Public Storage Unit)	151	84,395	210	15	10	5	20	10	10
Drive-thru Bank	912	2,500	620	30	15	15	115	55	60
Pass-By (47%)			*(290)*	*(10)*	*(5)*	*(5)*	*(50)*	*(25)*	*(25)*
Shopping Center	820	5,000	210	5	5	0	20	10	10
Total			**1,900**	**165**	**55**	**110**	**225**	**130**	**95**

[1] These residential development projects consist of single-family attached homes. For the purposes of the trip generation assessment, they were analyzed using the Townhome land use designation in the Trip Generation manual.

As shown in the table above, the identified in-process developments are anticipated to generate 1,900 net new daily trips of which 165 are estimated to occur during the weekday a.m. peak hour and 225 are estimated to occur during the weekday p.m. peak hour.

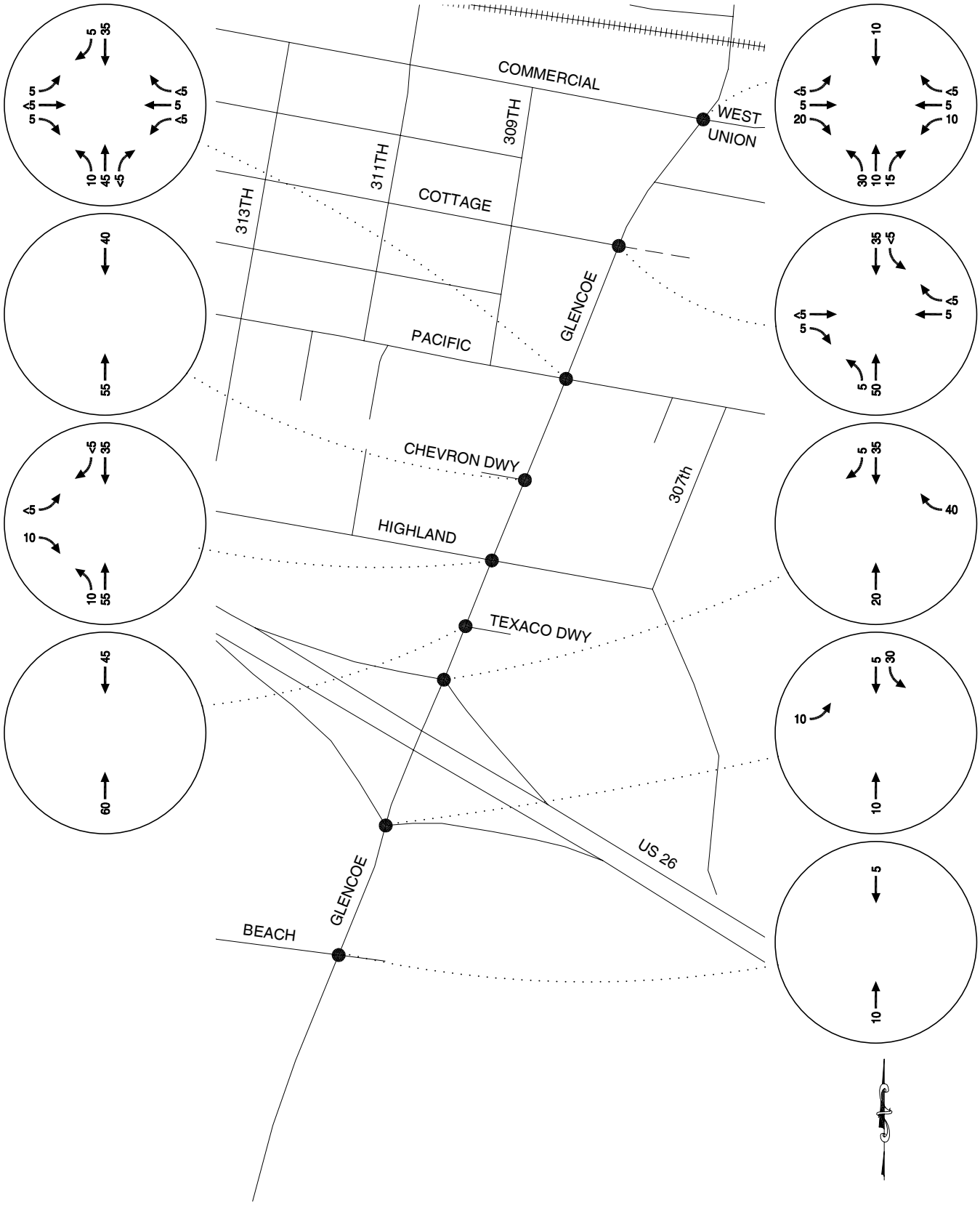
The estimated distribution pattern of site-generated trips associated with the in-process developments was determined through a review of existing traffic patterns, a review of the surrounding roadway network, and a select zone output from the Washington County Regional Transportation Planning model. The resulting in-process traffic volumes at the study area intersections during the weekday a.m. and p.m. peak hours are illustrated in Figures A-2 and A-3, respectively.



Glencoe Road IAMP

In-Process Site Generated Traffic Volumes
Weekday AM Peak Hour

Figure A-2



Glencoe Road IAMP

In-Process Site Generated Traffic Volumes
Weekday PM Peak Hour

Figure A-3

Appendix B

Residential,
Commercial, and
Industrial Infill
Development

Appendix B

Residential Infill Development

It is recognized that there is the potential for infill housing development within the existing North Plains city limits. A review of the North Plains Comprehensive Plan, conversations with City staff, and building upon the analysis utilized in the North Plains TSP, it was determined that the City can potentially accommodate an additional 270 housing units (not including the previously noted 130 in-process single-family homes) within the existing city limits through the horizon year of the plan. This figure is based on a review of the housing inventory information contained in the City's Comprehensive Plan.

Infill housing development can occur in the form of planned subdivisions on larger land parcels or in the form of small individual lots capable of supporting only a limited number of homes. Based on a review of tax lots and vacant/underdeveloped land parcels (obtained from a review of aerial photographs), assumptions have been made regarding the percentage of infill housing that can potentially take place within the existing City limits by different quadrants. These quadrants and housing infill development percentages are illustrated in Figure B-1. For conservative purposes, it was assumed that all new infill housing would occur in the form of single-family detached homes.

From this assessment, estimates of daily, weekday a.m., and weekday p.m. peak hour trip ends were developed based on empirical observations at similar residential land uses. These observations are summarized in the standard reference Trip Generation 7th Edition. Table 2-3 summarizes the estimated trip generation for each quadrant of infill housing as referenced in Figure B-1.

Table 2-3
Infill Housing Trip Generation Estimates

Land Use	ITE Code	Size (Units)	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Northwest Quadrant Single-family Residential	210	62	670	50	15	35	70	45	25
Northeast Quadrant Single-family Residential	210	10	100	10	0	10	10	5	5
Southeast Quadrant Single-family Residential	210	90	960	75	20	55	100	65	35
Southwest Quadrant Single-family Residential	210	108	1,120	85	20	65	115	70	45
Total Residential Infill			**2,850**	**220**	**55**	**165**	**295**	**185**	**110**

As shown in the table above, the assumed housing infill developments are anticipated to generate 2,850 net new daily trips of which 220 are estimated to occur during the weekday a.m. peak hour and 295 are estimated to occur during the weekday p.m. peak hour.

LEGEND

% ASSUMED PERCENTAGE OF INFILL HOMES

⟷ ASSUMED INGRESS/EGRESS POINTS

HOUSING INFILL DEVELOPMENT
NORTH PLAINS, OREGON

FIGURE **B-1**

Kittelson & Associates, Inc.
Transportation Engineering / Planning

Commercial Infill Development

The traffic forecasting effort also investigated the potential for commercial infill development along the Glencoe Road corridor from Highway 26 to West Union Road. This commercially zoned corridor is the main commercial hub for local residents and is also a major highway service area for travelers along the Highway 26 corridor.

To account for commercial infill growth, an analysis was performed along the Glencoe Road study corridor to determine a reasonable maximum buildout potential of any vacant or underdeveloped commercially zoned property. To complete this analysis, information was obtained from aerial maps, tax lot records, and field visits. Based on this data, a review of the applicable zoning maps and development codes, and consultation with City staff, a conceptual future buildout map was developed for the commercially zoned properties along Glencoe Road that have the greatest potential for future development or redevelopment. This map is illustrated in Figure B-2. As shown on the map, it was assumed for the purposes of this study that there could be the potential for a number of new commercial developments along the Glencoe study corridor that would serve both the existing and future residents of North Plains and highway travelers along Highway 26. These development assumptions include single-family sit-down restaurants, a motel, a large 120,000 shopping center that could potentially include a grocery store, a smaller 20,000 square foot shopping center, and a medical/dental office building[4].

[4] For the purposes of this study, it was assumed that the two sit-down restaurants would access off of Pacific Street. The 120,000 square foot shopping center would have access to Glencoe Road via a driveway connection at the Glencoe Road/NW Cottage Street intersection. In addition, it was also assumed that there would be an access driveway to NW Pacific Street and an access to an assumed improvement to NW Kaybern Street. The 20,000 square foot shopping center was also assumed to have access to NW Kaybern Street. The motel was assumed to have access to both Pacific Street and Highland Court while the medical/dental office was assumed to have access to Cottage Street. These access assumptions are consistent with Washington County's access spacing requirement of 600 feet along roadways such as Glencoe Road.

COMMERCIAL INFILL REDEVELOPMENT
NORTH PLAINS, OREGON

FIGURE **B-2**

Kittelson & Associates, Inc.
Transportation Engineering / Planning

Using these assumptions, estimates of daily, weekday a.m., and weekday p.m. peak hour trip ends of the infill commercial were developed based on empirical observations at similar land uses. These observations are summarized in the standard reference Trip Generation 7th Edition. Table 2-4 summarizes the estimated trip generation for each assumed commercial development.

Table 2-4
Infill Commercial Trip Generation Estimates

Land Use	ITE Code	Size (sq. ft.)	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Shopping Center	820	20,000	860	20	15	5	75	35	40
Pass-By (34%)			*(290)*	*(0)*	*(0)*	*(0)*	*(20)*	*(10)*	*(10)*
Shopping Center	820	120,000	5,150	125	75	50	450	215	235
Pass-By (34%)			*(1,750)*	*(40)*	*(20)*	*(20)*	*(150)*	*(75)*	*(75)*
High-Turnover Restaurant	932	5,000	640	55	30	25	55	35	20
Pass-By (50%)			*(320)*	*(0)*	*(0)*	*(0)*	*(30)*	*(15)*	*(15)*
Medical Dental Office	720	5,000	180	10	8	2	20	5	15
High-Turnover Restaurant	932	6,000	765	70	35	35	65	40	25
Pass-By (50%)			*(380)*	*(0)*	*(0)*	*(0)*	*(35)*	*(20)*	*(15)*
Motel	320	100 rooms	575	45	15	30	60	30	30
Total Commercial Infill			**5,430**	**285**	**158**	**127**	**490**	**240**	**250**

As shown in the table above, the assumed commercial infill developments are anticipated to generate 5,430 net new daily trips of which 285 are estimated to occur during the weekday a.m. peak hour and 490 are estimated to occur during the weekday p.m. peak hour.

Industrial Development

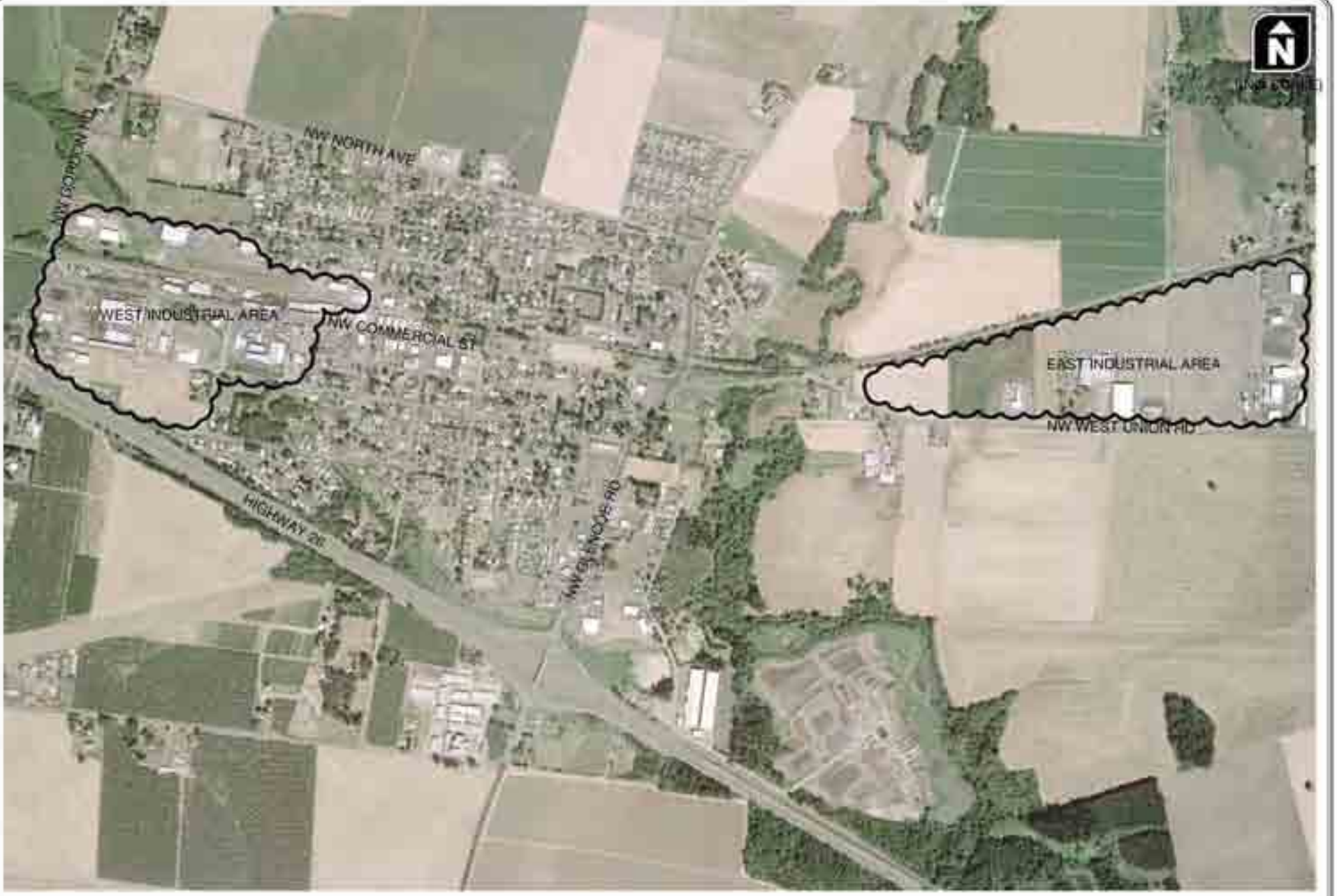
Due to varying market and land value conditions, it is difficult to forecast the amount of industrial land that may be developed over a long-term horizon year such as 2030. However, employment projections from recent studies[5] can be used in estimating industrial land need for the long-term planning horizon of this project. Based on this methodology, it has been determined that industrial development needs will grow at a rate of approximately 0.73 acres per year. At that rate, roughly 17.5 acres of industrial land could potentially be developed within the City through the 2030 planning horizon. In review of this methodology, City staff felt that there could be an additional 17 acres of industrial development when considering past trends, recent development proposals, and the presence of large undeveloped vacant parcels that have good regional access to Highway 26 via both Glencoe Road and Jackson School Road. For conservative purposes, it was subsequently assumed that there could be approximately 34.5 acres of new industrial development through the 2030 horizon year.

For the purposes of this study, it was assumed that 25 percent of the future industrial development would occur in the City's west side industrial zone. The other 75 percent was assumed to develop in the City's east side industrial zone. These assumptions were based in part on direction from City staff who indicated that the majority of large contiguous industrial zoned property is located in the east side industrial area. Figure B-3 conceptually illustrates the location of the assumed industrial growth within the City of North Plains.

After determining the approximate location of future industrial development within the City, additional assumptions were made regarding the size and type of industrial development. These assumptions include the following:

- Industrial development would consist of a mix of general light industrial and manufacturing uses as defined in the ITE Trip Generation manual.
- The size of future light industrial and manufacturing uses would be comparable in size and scale to existing industrial related uses currently located in the City (buildings less than 50,000 square feet in size).
- Industrial related uses would develop at a floor-to-area ratio (FAR) of approximately 30 percent.
- The size of vacant or underutilized parcels in the City's west side industrial zone would accommodate smaller industrial related uses on the order of 25,000 – 30,000 square feet.
- The size of vacant parcels in the City's east side industrial zone would accommodate larger industrial related uses on the order of 40,000 – 45,000 square feet.

[5] Employment growth in the City of North Plains was estimated based on population projections as outlined in the City's Comprehensive Plan. The determination of future industrial land needs to support the employment growth was based estimates prepared by Leland Consulting Group as part of the North Plains Neighboring Cities Study in 1997.



INDUSTRIAL INFILL DEVELOPMENT
NORTH PLAINS, OREGON

FIGURE **B-3**

Kittelson & Associates, Inc.
Transportation Engineering / Planning

Using this information, estimates of daily, weekday a.m., and weekday p.m. peak hour trip ends of industrial uses were developed based on empirical observations at similar land uses. These observations are summarized in the standard reference Trip Generation 7th Edition. Table 2-5 summarizes the estimated trip generation for each assumed industrial use.

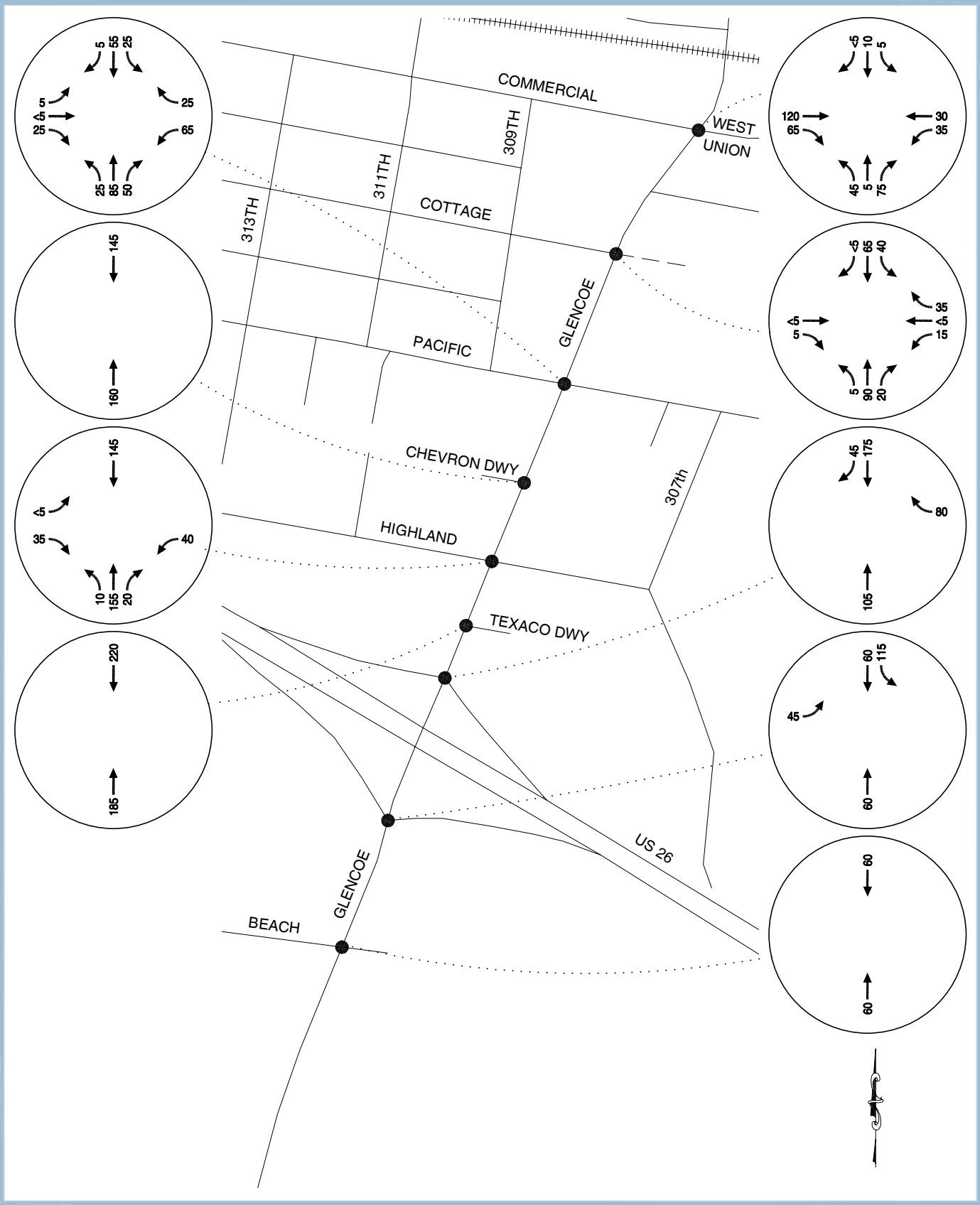
Table 2-5
Infill Industrial Trip Generation Estimates

Land Use	ITE Code	Size (sq. ft.)	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
West Side									
General Light Industrial	110	30,000	200	30	25	5	30	5	25
Manufacturing	140	25,000	100	20	15	5	20	5	15
East Side									
General Light Industrial	110	40,000	280	35	30	5	40	5	35
Manufacturing	140	45,000	170	30	25	5	35	10	25
Manufacturing	140	40,000	150	30	25	5	30	10	20
General Light Industrial	110	45,000	310	40	35	5	45	5	40
General Light Industrial	110	40,000	280	35	30	5	40	5	35
Manufacturing	140	45,000	170	30	25	5	35	10	25
Manufacturing	140	40,000	150	30	25	5	30	10	20
General Light Industrial	110	45,000	310	40	35	5	45	5	40
Total			**2,120**	**320**	**270**	**50**	**350**	**70**	**280**

As shown in the table above, the assumed industrial infill developments are anticipated to generate 2,120 net new daily trips of which 320 are estimated to occur during the weekday a.m. peak hour and 350 are estimated to occur during the weekday p.m. peak hour.

TOTAL INFILL TRAFFIC

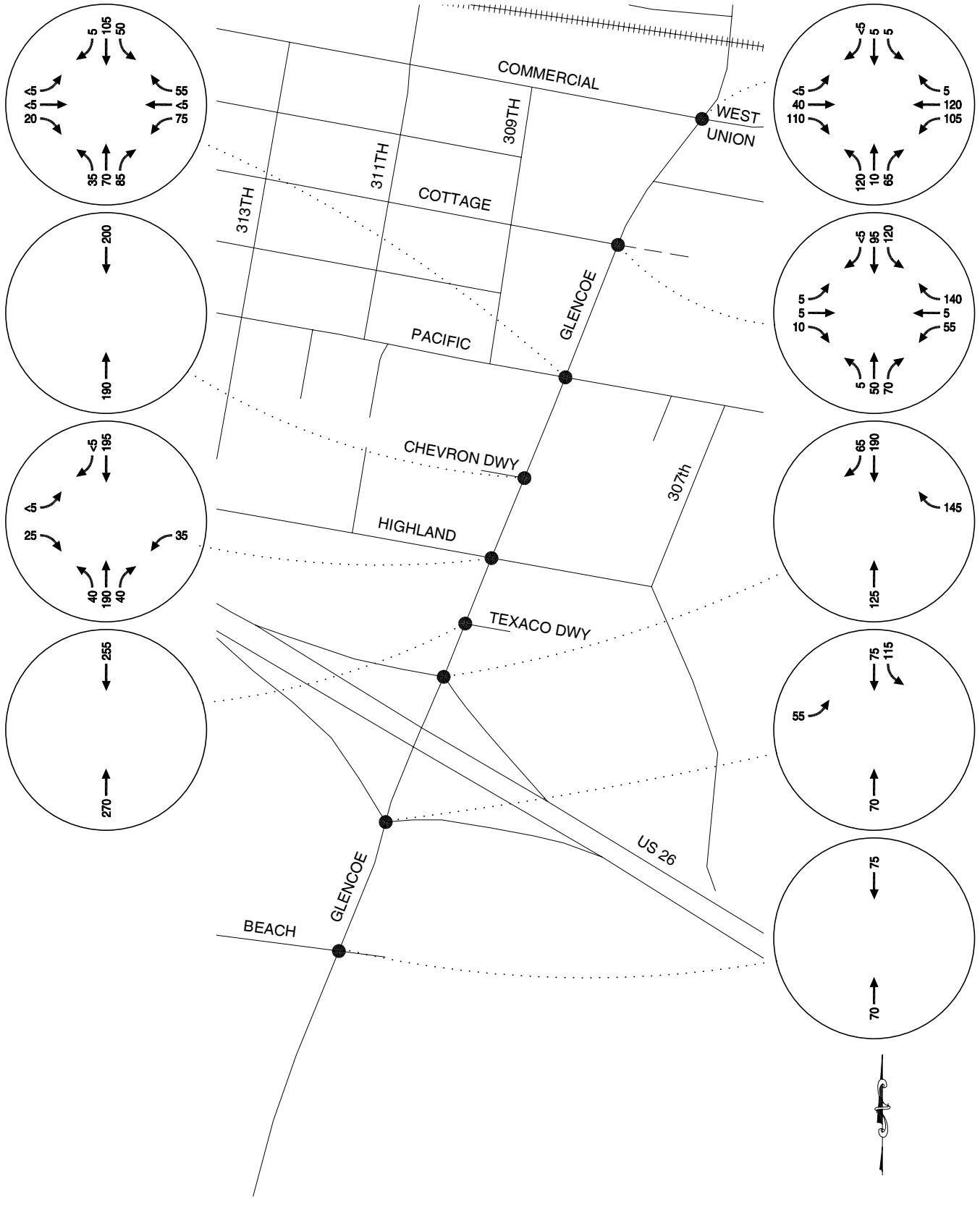
The previous sections outlined the future year development assumptions for residential, commercial, and industrial development within the City of North Plains. Based on these development assumptions and the estimated trip generation potential of each, Figures B-4 and B-5 illustrate the future site-generated traffic volumes at the study area intersections during the weekday a.m. and p.m. peak periods.



Glencoe Road IAMP

Infill Site Generated Traffic Volumes
Weekday AM Peak Hour

Figure B-4



Glencoe Road IAMP

Infill Site Generated Traffic Volumes
Weekday PM Peak Hour

Figure B-5

Appendix C

UGB Expansion
Development

Appendix C

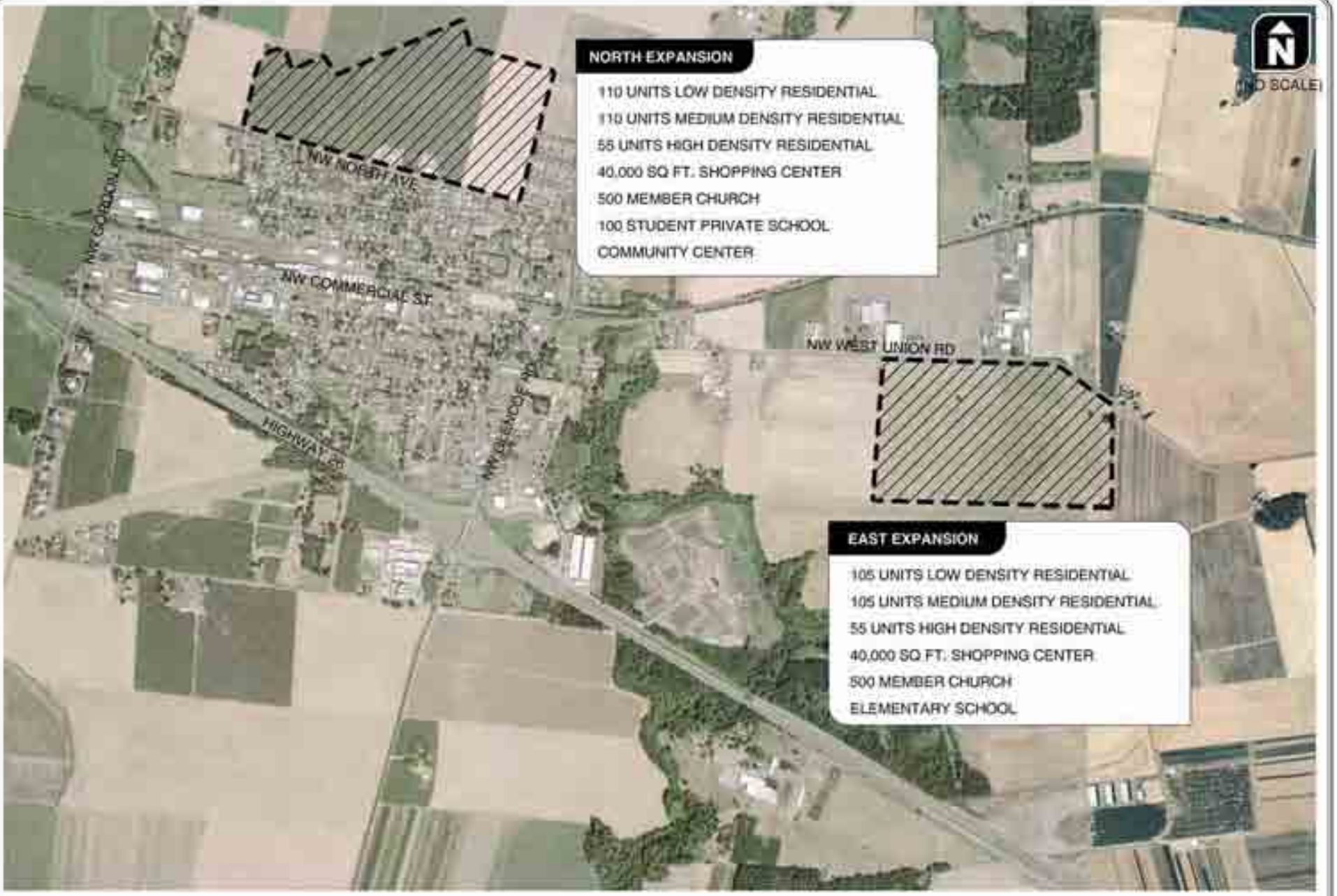
In 2002, the City of North Plains expanded its UGB to ensure a 20-year land supply for primarily residential uses. The expansion occurred in two separate areas. The first area is located north of NW North Avenue on 76.5 acres. The second area is located east of the main part of the city along the south side of West Union Road and consists of 72.5 acres. Figure C-1 illustrates the locations of the two UGB expansion areas.

This analysis assumed development in the UGB expansion areas consistent with the City of North Plains Comprehensive Plan and Transportation System Plan. Table 2-6 shows the planned land uses and acreages in the UGB expansion areas.

Table 2-6
Planned Land Uses in UGB Expansion Areas

Land Use	Size (Acres)
East Expansion Area	
Streets, Parks, and Housing	38.1 acres
Commercial	3.9 acres
Institutional	5.4 acres
Elementary Schools	11.1 acres
Municipal Parks	11.4 acres
Exception Land not in Flood Plain	2.6 acres
Total	72.5 acres
North Expansion Area	
Streets, Parks, Greenways, and Housing	52.3 acres
Commercial	3.9 acres
Institutional	7.1 acres
Municipal Parks	10.8 acres
Exception Land not in Flood Plain	2.4 acres
Total	76.5 acres
UGB Expansion Area Total	**149 acres**

Source: City of North Plains Comprehensive Plan (City of North Plains, 2004)



URBAN GROWTH BOUNDARY EXPANSION AREAS
NORTH PLAINS, OREGON

FIGURE **C-1**

Kittelson & Associates, Inc.
Transportation Engineering / Planning

Based on the planned land uses identified in Table 2-7, an attempt was made to determine the specific amount of residential, commercial, and institutional development that could be developed in each UGB expansion area.

For residential development, it was first assumed that the total number of needed housing units identified in the Comprehensive Plan (538) would be fully built out in the year 2030. The number of dwelling units in the North and East expansion areas was assumed to be proportionate to the overall size of each sub-area (North 51%, East 49%). The different types of housing units was then calculated using the total number of assumed buildout units (538) and proportioning them out into the three density categories of Low Density Residential (LDR), Medium Density Residential (MDR), and High Density Residential (HDR). The Comprehensive Plan indicates a planned split of 40% LDR, 40% MDR, and 20% HDR. For the purposes of this study, it was assumed that LDR would consist of single-family detached homes, MDR would consist of single-family attached (townhomes), and HDR would consist of apartments.

For commercial development, the UGB expansion areas support a limited amount of commercial development that is assumed to be developed in the form of a small neighborhood oriented uses. Consistent with the assumptions utilized in the TSP, it was assumed that each expansion area would accommodate 40,000 square feet of commercial retail uses.

The remaining land uses in the UGB expansion areas consist of institutional uses (schools, churches, community center). For consistency purposes, the land use assumptions and size of developments assumed in the TSP were utilized in this analysis.

Using the UGB expansion details and assumptions, estimates of daily, weekday a.m., and weekday p.m. peak hour trip ends were developed based on empirical observations at similar land uses. These observations are summarized in the standard reference Trip Generation 7th Edition. Tables 2-7 and 2-8 summarize the estimated trip generation for each expansion area.

Table 2-7
North UGB Expansion Area Trip Generation Estimates

Land Use	ITE Code	Size (Units/ Sq. Ft.)	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Single-Family Homes	210	110	1,130	85	20	65	115	75	40
Residential Townhouse	230	110	700	55	10	45	65	45	20
Apartment	220	55	370	30	5	25	35	20	15
Shopping Center Pass-By (34%)	820	40,000	1,720 (580)	40 (10)	25 (5)	15 (5)	150 (50)	70 (25)	80 (25)
Church[1]		500	N/A	10	5	5	10	5	5
Private School[1]		100	N/A	90	55	35	20	10	10
Community Center[1]		N/A	N/A	20	15	5	25	10	15
Total North Expansion			**3,340**	**320**	**130**	**190**	**370**	**210**	**160**

[1]Land use and sizes assumed in the City of North Plains Transportation System Plan

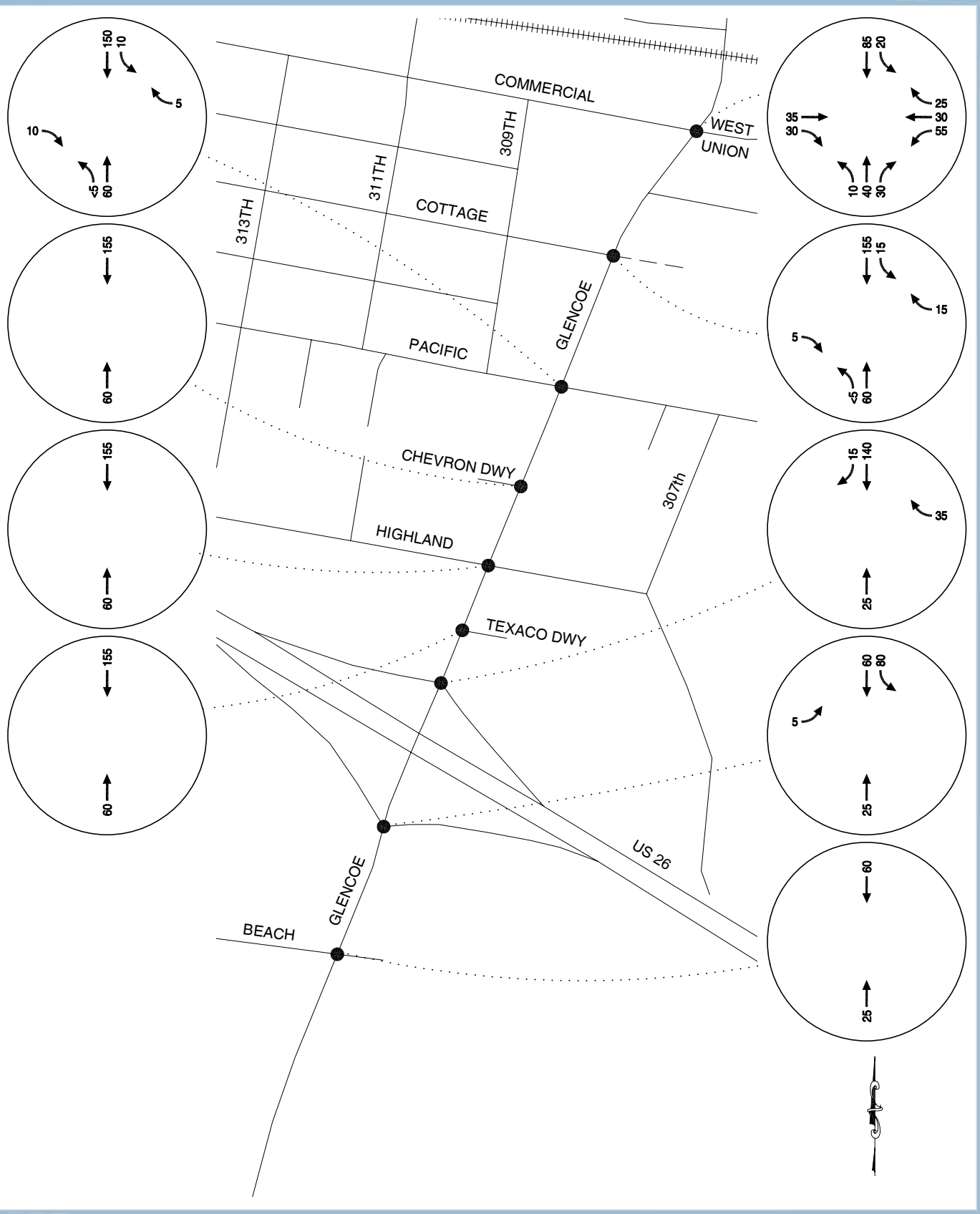
Table 2-8
East UGB Expansion Area Trip Generation Estimates

Land Use	ITE Code	Size (Units/ Sq. Ft.)	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Single-Family Homes	210	105	1,090	80	20	60	110	70	40
Residential Townhouse	230	105	670	55	10	45	65	45	20
Apartment	220	55	370	30	5	25	35	20	15
Shopping Center	820	40,000	1,720	40	25	15	150	70	80
Pass-By (34%)			*(580)*	*(10)*	*(5)*	*(5)*	*(50)*	*(25)*	*(25)*
Church[1]		500	N/A	10	5	5	10	5	5
Elementary School[1]		100	N/A	85	50	35	30	10	20
Total North Expansion			**3,270**	**290**	**110**	**180**	**350**	**195**	**155**

[1]Land use and sizes assumed in the City of North Plains Transportation System Plan

As shown in the two tables, the assumed UGB expansion areas are anticipated to generate 3,340 net new daily trips in the North expansion area and 3,270 trips in the East expansion area. Of these trips, each expansion area is estimated to generate on the order of 300 net new trips during the weekday a.m. peak hour and 360 net new trips during the weekday p.m. peak hour.

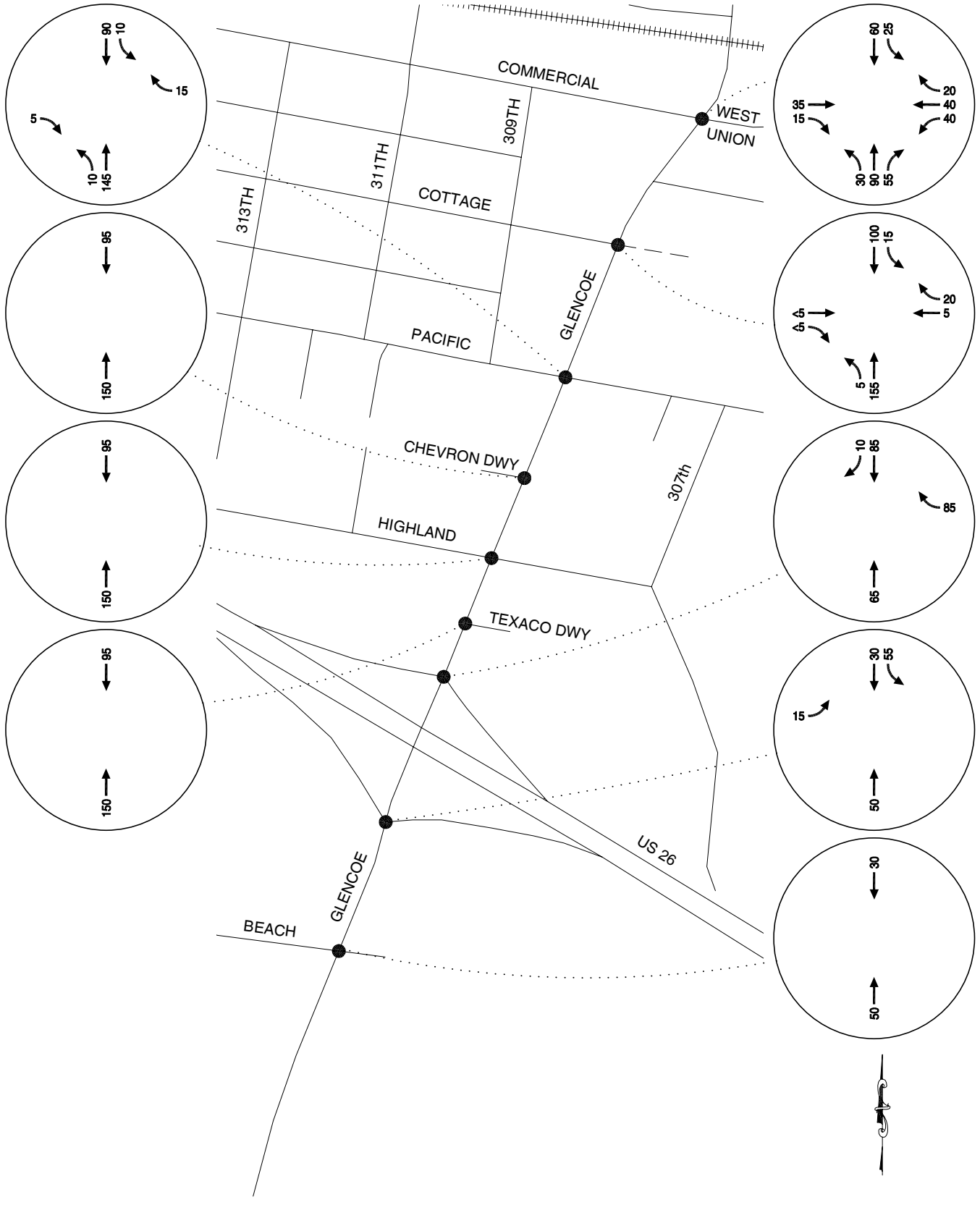
Based on these development assumptions and the estimated trip generation potential of each, Figures C-2 and C-3 illustrate the future site-generated traffic volumes at the study area intersections during the weekday a.m. and p.m. peak periods.



Glencoe Road IAMP

UGB Expansion Site Generated Traffic Volumes
Weekday AM Peak Hour

Figure C-2



Glencoe Road IAMP

UGB Expansion Site Generated Traffic Volumes
Weekday PM Peak Hour

Figure C-3

Appendix D

2030 Operational
Analysis Worksheets

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Scenario Report

Scenario:	am
Command:	am
Volume:	am
Geometry:	am
Impact Fee:	Default Impact Fee
Trip Generation:	am
Trip Distribution:	am
Paths:	Default Paths
Routes:	Default Routes
Configuration:	Default Configuration

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 NW Beach Rd/Glencoe Rd	E	46.3	0.000	F	69.3	0.000	+23.007 D/V
# 2 Hwy 26 EB ramps/Glencoe Rd	F	123.8	1.276	F	171.1	1.378	+47.368 D/V
# 3 Hwy 26 WB ramps/Glencoe Rd	C	23.1	0.752	E	73.0	1.107	+49.882 D/V
# 4 Texaco Dwy/Glencoe Rd	B	10.6	0.000	B	13.5	0.000	+ 2.895 D/V
# 5 NW Highland Ct/Glencoe Rd	C	20.2	0.000	F	492.4	0.000	+472.150 D/V
# 6 Chevron Dwy/Glencoe Rd	B	10.8	0.000	C	15.4	0.000	+ 4.542 D/V
# 7 NW Pacific St/Glencoe Rd	B	13.3	0.000	F	51.1	0.000	+37.740 D/V
# 8 NW Cottage St/Glencoe Rd	A	9.8	0.000	C	16.7	0.000	+ 6.894 D/V
# 9 NW Commercial/Glencoe Rd	A	8.9	0.245	C	22.5	0.773	+ 0.528 V/C

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 NW Beach Rd/Glencoe Rd

Average Delay (sec/veh): 0.8 Worst Case Level Of Service: F[69.3]

```
Street Name:            Glencoe Rd                    NW Beach Rd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  1  0  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:       4  655     0     0  459     8    17    0     3     0    0     0
Growth Adj:  1.00 1.48  1.00  1.00 1.24  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    4  969     0     0  569     8    17    0     3     0    0     0
Added Vol:      0   89     0     0  128     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    4 1058     0     0  697     8    17    0     3     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     4 1176     0     0  775     9    19    0     3     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     4 1176     0     0  775     9    19    0     3     0    0     0
Critical Gap Module:
Critical Gp:  4.2 xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx   6.3 xxxxx xxxx xxxxx
FollowUpTim:  2.3 xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  784 xxxx xxxxx  xxxx xxxx xxxxx  1964 xxxx   779  xxxx xxxx xxxxx
Potent Cap.:  817 xxxx xxxxx  xxxx xxxx xxxxx    68 xxxx   391  xxxx xxxx xxxxx
Move Cap.:    817 xxxx xxxxx  xxxx xxxx xxxxx    68 xxxx   391  xxxx xxxx xxxxx
Volume/Cap:  0.01 xxxx  xxxx  xxxx xxxx  xxxx  0.28 xxxx  0.01  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  9.4 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx   77 xxxxx  xxxx    0 xxxxx
SharedQueue:  0.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.0 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:  9.4 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 69.3 xxxxx xxxxx xxxx xxxxx
Shared LOS:    A    *     *     *    *     *     *    F     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             69.3           xxxxxx
ApproachLOS:        *                *                F                *
```

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #1 NW Beach Rd/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             6%               7%               5%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:                        #2
Dist(miles):                       0.000
Speed (mph):                       45.00
SignalIndex:                       #2
Cycle Time:                            0 secs
InitVolume:                      0     0
Saturation:                      0     0
ArrivalType:                     0     0
G/C:                          0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:                           0.000 0.000
gq1:                          0.00  0.00
gq2:                          0.00  0.00
gq:                           0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:                             0.000
beta:                              0.000
ta (secs):                         0.000
F:                                 0.000
f:                           0.000 0.000
vcmax:                           0     0
vcg:                             0     0
vcmin:                           0     0
tp:                           0.0   0.0
p:                                 0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 784 xxxxx xxxxx    0 xxxxx xxxxx 1964     0   779    0     0     0
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 784 xxxxx xxxxx    0 xxxxx xxxxx 1964     0   779    0     0     0
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:  817 xxxxx xxxxx  900 xxxxx xxxxx   68   900   391  900   900   900
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:   817 xxxxx xxxxx  900 xxxxx xxxxx   68   900   391  900   900   900
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #2 Hwy 26 EB ramps/Glencoe Rd

Cycle (sec):	72	Critical Vol./Cap.(X):	1.378
Loss Time (sec):	12 (Y+R=4.0 sec)	Average Delay (sec/veh):	171.1
Optimal Cycle:	180	Level Of Service:	F

Street Name:	Glencoe Rd							Hwy 26 EB ramps							
Approach:	North Bound				South Bound				East Bound				West Bound		
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected					Prot+Permit					Protected				
Rights:	Include					Include					Include				
Min. Green:	0	0	0			0	0	0			0	0	0		
Lanes:	0	0	1	0	1	0	1	0	0	0	0	1	0	0	1
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM															
Base Vol:	0	170	590	213	410	0	45	1	112	0	0	0			
Growth Adj:	1.00	1.24	1.48	1.00	1.24	1.00	1.00	1.00	1.24	1.00	1.00	1.00			
Initial Bse:	0	211	873	213	508	0	45	1	139	0	0	0			
Added Vol:	0	89	0	241	128	0	54	0	0	0	0	0			
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0			
Initial Fut:	0	300	873	454	636	0	99	1	139	0	0	0			
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
PHF Volume:	0	316	919	478	670	0	104	1	146	0	0	0			
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0			
Reduced Vol:	0	316	919	478	670	0	104	1	146	0	0	0			
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Final Vol.:	0	316	919	478	670	0	104	1	146	0	0	0			
Saturation Flow Module:															
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800			
Adjustment:	1.00	0.93	0.79	0.68	0.92	1.00	0.92	0.92	0.83	1.00	1.00	1.00			
Lanes:	0.00	1.00	1.00	0.42	0.58	0.00	0.99	0.01	1.00	0.00	0.00	0.00			
Final Sat.:	0	1666	1416	517	963	0	1638	17	1499	0	0	0			
Capacity Analysis Module:															
Vol/Sat:	0.00	0.19	0.65	0.92	0.70	0.00	0.06	0.06	0.10	0.00	0.00	0.00			
Crit Moves:			****	****					****						
Green/Cycle:	0.00	0.38	0.38	0.83	0.78	0.00	0.06	0.06	0.06	0.00	0.00	0.00			
Volume/Cap:	0.00	0.51	1.73	1.08	0.90	0.00	1.13	1.13	1.73	0.00	0.00	0.00			
Delay/Veh:	0.0	18.0	359.1	59.3	14.4	0.0	166.3	166	407.2	0.0	0.0	0.0			
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
AdjDel/Veh:	0.0	18.0	359.1	59.3	14.4	0.0	166.3	166	407.2	0.0	0.0	0.0			
LOS by Move:	A	B	F	E	B	A	F	F	F	A	A	A			
HCM2kAvgQ:	0	6	69	41	23	0	7	7	13	0	0	0			

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Operations Method
Future Volume Alternative

Intersection #2 Hwy 26 EB ramps/Glencoe Rd

Approach:	North Bound				South Bound				East Bound				West Bound		
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
HCM Ops Adjusted Lane Utilization Module:															
Lanes:	0	0	1	0	1	0	1	0	0	0	0	1	0	0	1
Lane Group:	xxxx		T		R	LT	LT	xxxx	LT	LT		R	xxxx	xxxx	xxxx
#LnsInGrps:	0		1		1	1	1	0	1	1		1	0	0	0
HCM Ops Input Saturation Adj Module:															
Lane Width:	12		12		12	12	12	12	12	12		12	12	12	12
CrosswalkWid			8				8			8				8	
% Hev Veh:			7				8			2				0	
Grade:			+2%				-2%			0%				0%	
Parking/Hr:			No				No			No				No	
Bus Stp/Hr:			0				0			0				0	
Area Type:	< < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > > >														
Cnft Ped/Hr:			0				0			0				0	
ExclusiveRT:			Include				Include			Include				Include	
% RT Prtct:			0				0			0				0	
HCM Ops f(lt) Adj Case Module:															
f(lt) Case:	xxxx	xxxx	xxxx			4	4	xxxx	5r	5r	xxxx	xxxx	xxxx	xxxx	
HCM Ops Saturation Adj Module:															
Ln Wid Adj:	xxxx	1.00	1.00	1.00	1.00	xxxxx	1.00	1.00	1.00	xxxx	xxxx	xxxxx			
Hev Veh Adj:	xxxx	0.94	0.94	0.93	0.93	xxxxx	0.98	0.98	0.98	xxxx	xxxx	xxxxx			
Grade Adj:	xxxx	0.99	0.99	1.01	1.01	xxxxx	1.00	1.00	1.00	xxxx	xxxx	xxxxx			
Parking Adj:	xxxx	xxxx	1.00	1.00	1.00	xxxxx	xxxx	xxxx	1.00	xxxx	xxxx	xxxxx			
Bus Stp Adj:	xxxx	xxxx	1.00	1.00	1.00	xxxxx	xxxx	xxxx	1.00	xxxx	xxxx	xxxxx			
Area Adj:	xxxx	1.00	1.00	1.00	1.00	xxxxx	1.00	1.00	1.00	xxxx	xxxx	xxxxx			
RT Adj:	xxxx	xxxx	0.85	xxxx	xxxx	xxxxx	xxxx	xxxx	0.85	xxxx	xxxx	xxxxx			
LT Adj:	xxxx	xxxx	xxxxx	0.98	0.98	xxxxx	0.94	0.94	xxxxx	xxxx	xxxx	xxxxx			
PedBike Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
HCM Sat Adj:	1.00	0.93	0.79	0.92	0.92	1.00	0.92	0.92	0.83	1.00	1.00	1.00			
Usr Sat Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
MLF Sat Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Fnl Sat Adj:	1.00	0.93	0.79	0.92	0.92	1.00	0.92	0.92	0.83	1.00	1.00	1.00			
Delay Adjustment Factor Module:															
PrtPermCase:			xxxxx				3			xxxxx			xxxxx		
Coordinated:	< < < < < < < < < < < < < < < Yes > > > > > > > > > > > > > > > > >														
Signal Type:	< < < < < < < < < < < < < Actuated > > > > > > > > > > > > > > > > >														
Green/Cycle:	0.00	0.38	0.38	0.40	0.78	0.00	0.06	0.06	0.06	0.00	0.00	0.00			
ArrivalType:			3				3			3				3	
DelAdjFctr:	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.00			

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Level Of Service Detailed Computation Report (Dual Phase Control)
2000 HCM Operations Method
Future Volume Alternative

Intersection #2 Hwy 26 EB ramps/Glencoe Rd

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L2 -	L1 -	T	L2 -	L1 -	T	L2 -	L1 -	T	L2 -	L1 -	T
Control:	Protected			Prot+Permit			Protected			Protected		
HCM Ops f(rt) and f(lt) Adj Case Module:												
f(rt) Case:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
f(lt) Case:	xxxx	xxxx	xxxx	5	4	4	xxxx	5r	5r	xxxx	xxxx	xxxx
HCM Ops Saturation Adj Module:												
Ln Wid Adj:	xxxx	xxxx	1.00	1.00	1.00	1.00	xxxx	1.00	1.00	xxxx	xxxx	xxxxx
Hev Veh Adj:	xxxx	xxxx	0.94	0.93	0.93	0.93	xxxx	0.98	0.98	xxxx	xxxx	xxxxx
Grade Adj:	xxxx	xxxx	0.99	1.01	1.01	1.01	xxxx	1.00	1.00	xxxx	xxxx	xxxxx
Parking Adj:	xxxx	xxxx	xxxxx	1.00	1.00	1.00	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Bus Stp Adj:	xxxx	xxxx	xxxxx	1.00	1.00	1.00	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Area Adj:	xxxx	xxxx	1.00	1.00	1.00	1.00	xxxx	1.00	1.00	xxxx	xxxx	xxxxx
RT Adj:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
LT Adj:	xxxx	xxxx	xxxxx	0.55	0.98	0.98	xxxx	0.94	0.94	xxxx	xxxx	xxxxx
HCM Sat Adj:	xxxx	xxxx	0.93	0.52	0.92	0.92	xxxx	0.92	0.92	xxxx	xxxx	xxxxx
Usr Sat Adj:	xxxx	xxxx	1.00	1.00	1.00	1.00	xxxx	1.00	1.00	xxxx	xxxx	xxxxx
MLF Sat Adj:	xxxx	xxxx	1.00	1.00	1.00	1.00	xxxx	1.00	1.00	xxxx	xxxx	xxxxx
Fnl Sat Adj:	xxxx	xxxx	0.93	0.52	0.92	0.92	xxxx	0.92	0.92	xxxx	xxxx	xxxxx
Volume Module:												
Volume:	xxxx	xxxx	316	202	276	670	xxxx	104	1	xxxx	xxxx	xxxxx
Saturation Flow Module:												
Sat/Lane:	xxxx	xxxx	1800	1800	1800	1800	xxxx	1800	1800	xxxx	xxxx	xxxxx
Adjustment:	xxxx	xxxx	0.93	0.52	0.92	0.92	xxxx	0.92	0.92	xxxx	xxxx	xxxxx
Lanes:	xxxx	xxxx	1.00	0.42	0.42	0.58	xxxx	0.99	0.01	xxxx	xxxx	xxxxx
Final Sat.:	xxxx	xxxx	1666	387	687	963	xxxx	1638	17	xxxx	xxxx	xxxxx
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	0.19	0.52	0.40	0.70	xxxx	0.06	0.06	xxxx	xxxx	xxxx
Crit Moves:		****			****							
Green/Cycle:	xxxx	xxxx	0.38	0.43	0.40	0.78	xxxx	0.06	0.06	xxxx	xxxx	xxxx
Volume/Cap:	xxxx	xxxx	0.51	1.21	1.00	0.90	xxxx	1.13	1.13	xxxx	xxxx	xxxx

Note: L2 = Permitted Left, L1 = Protected Left, T = Thru

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
2000 HCM Operations Method
Future Volume Alternative

Intersection #2 Hwy 26 EB ramps/Glencoe Rd

Approach:	North	South	East	West
Cycle Length, C:	xxxxxx	72	xxxxxx	xxxxxx
Actual Green Time Per Lane Group, G:	xxxxxx	59.94	xxxxxx	xxxxxx
Effective Green Time Per Lane Group, g:	xxxxxx	31.00	xxxxxx	xxxxxx
Opposing Effective Green Time, go:	xxxxxx	27.00	xxxxxx	xxxxxx
Number Of Opposing Lanes, No:	xxxxxx	1	xxxxxx	xxxxxx
Number Of Lanes In Lane Group, N:	xxxxxx	1	xxxxxx	xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:	xxxxxx	478	xxxxxx	xxxxxx
Proportion of Left Turns in Lane Group, Plt:	xxxxxx	0.42	xxxxxx	xxxxxx
Proportion of Left Turns in Opp Flow, Plto:	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Left Turns Per Cycle, LTC:	xxxxxx	9.56	xxxxxx	xxxxxx
Adjusted Opposing Flow Rate, Vo:	xxxxxx	316	xxxxxx	xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:	xxxxxx	6.32	xxxxxx	xxxxxx
Opposing Platoon Ratio, Rpo:	xxxxxx	1.00	xxxxxx	xxxxxx
Lost Time Per Phase, tl:	xxxxxx	0.00	xxxxxx	xxxxxx
Eff grn until arrival of left-turn car, gf:	xxxxxx	1.71	xxxxxx	xxxxxx
Opposing Queue Ratio, qro:	xxxxxx	0.63	xxxxxx	xxxxxx
Eff grn blocked by opposing queue, gq:	xxxxxx	9.58	xxxxxx	xxxxxx
Eff grn while left turns filter thru, gu:	xxxxxx	21.42	xxxxxx	xxxxxx
Max opposing cars arriving during gq-gf, n:	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Proportion of Opposing Thru & RT cars, ptho:	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Left-turn Saturation Factor, fs:	xxxxxx	0.68	xxxxxx	xxxxxx
Proportion of Left Turns in Shared Lane, pl:	xxxxxx	0.42	xxxxxx	xxxxxx
Through-car Equivalents, el1:	xxxxxx	1.93	xxxxxx	xxxxxx
Single Lane Through-car Equivalents, el2:	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Minimum Left Turn Adjustment Factor, fmin:	xxxxxx	0.09	xxxxxx	xxxxxx
Single Lane Left Turn Adjustment Factor, fm:	xxxxxx	0.55	xxxxxx	xxxxxx
Left Turn Adjustment Factor, flt:	xxxxxx	0.55	xxxxxx	xxxxxx

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Level Of Service Detailed Computation Report (HCM2000 Queue Method)
2000 HCM Operations Method
Future Volume Alternative

Intersection #2 Hwy 26 EB ramps/Glencoe Rd

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Green/Cycle:	0.00	0.38	0.38	0.40	0.78	0.00	0.06	0.06	0.06	0.00	0.00	0.00
ArrivalType:		3			3			3			3	
ProgFactor:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Q1:	0.0	4.9	18.4	23.0	16.8	0.0	2.1	2.1	2.9	0.0	0.0	0.0
UpstreamVC:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UpstreamAdj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EarlyArrAdj:	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.00
Q2:	0.0	1.0	50.8	18.4	6.2	0.0	4.5	4.5	9.6	0.0	0.0	0.0
HCM2KQueue:	0.0	5.9	69.2	41.3	23.1	0.0	6.6	6.6	12.5	0.0	0.0	0.0
70th%Factor:	1.20	1.19	1.12	1.14	1.16	1.20	1.18	1.18	1.17	1.20	1.20	1.20
70th%HCM2kQ:	0.0	7.0	77.3	46.9	26.7	0.0	7.8	7.8	14.7	0.0	0.0	0.0
85th%Factor:	1.60	1.55	1.33	1.38	1.44	1.60	1.54	1.54	1.50	1.60	1.60	1.60
85th%HCM2kQ:	0.0	9.1	92.0	56.9	33.2	0.0	10.1	10.1	18.8	0.0	0.0	0.0
90th%Factor:	1.80	1.70	1.41	1.45	1.53	1.80	1.69	1.69	1.61	1.80	1.80	1.80
90th%HCM2kQ:	0.0	10.0	97.7	60.0	35.2	0.0	11.1	11.1	20.2	0.0	0.0	0.0
95th%Factor:	2.10	1.93	1.51	1.56	1.67	2.10	1.92	1.92	1.80	2.10	2.10	2.10
95th%HCM2kQ:	0.0	11.3	104.6	64.5	38.4	0.0	12.6	12.6	22.6	0.0	0.0	0.0
98th%Factor:	2.70	2.34	1.70	1.74	1.87	2.70	2.30	2.30	2.08	2.70	2.70	2.70
98th%HCM2kQ:	0.0	13.7	117.9	72.0	43.1	0.0	15.1	15.1	26.1	0.0	0.0	0.0

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Hwy 26 WB ramps/Glencoe Rd

Cycle (sec): 72 Critical Vol./Cap.(X): 1.107
Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 73.0
Optimal Cycle: 180 Level Of Service: E

Street Name:	Glencoe Rd						Hwy 26 WB ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Prot+Permit			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0 0	0	0 0	1 0	1	0 0	0 0	0	1 0	0 1	0
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM												
Base Vol:	25	189	0	0	333	53	0	0	0	290	1	143
Growth Adj:	1.24	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.24	1.00	1.00
Initial Bse:	31	189	0	0	333	53	0	0	0	360	1	143
Added Vol:	0	142	0	0	369	69	0	0	0	0	0	130
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	31	331	0	0	702	122	0	0	0	360	1	273
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	33	348	0	0	739	128	0	0	0	379	1	287
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	33	348	0	0	739	128	0	0	0	379	1	287
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	33	348	0	0	739	128	0	0	0	379	1	287
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.87	0.94	1.00	1.00	0.92	0.78	1.00	1.00	1.00	0.76	0.76	0.76
Lanes:	0.09	0.91	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.01	0.99
Final Sat.:	141	1548	0	0	1650	1403	0	0	0	1366	5	1363
Capacity Analysis Module:												
Vol/Sat:	0.23	0.23	0.00	0.00	0.45	0.09	0.00	0.00	0.00	0.28	0.21	0.21
Crit Moves:	****				****					****		
Green/Cycle:	0.65	0.59	0.00	0.00	0.39	0.39	0.00	0.00	0.00	0.24	0.24	0.24
Volume/Cap:	0.41	0.38	0.00	0.00	1.14	0.23	0.00	0.00	0.00	1.14	0.87	0.87
Delay/Veh:	12.7	8.0	0.0	0.0	102	14.8	0.0	0.0	0.0	120.1	46.9	46.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	12.7	8.0	0.0	0.0	102	14.8	0.0	0.0	0.0	120.1	46.9	46.9
LOS by Move:	B	A	A	A	F	B	A	A	A	F	D	D
HCM2kAvgQ:	4	5	0	0	32	2	0	0	0	18	9	9

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Operations Method
Future Volume Alternative

Intersection #3 Hwy 26 WB ramps/Glencoe Rd

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
HCM Ops Adjusted Lane Utilization Module:												
Lanes:	0	1 0	0 0	0	0 1	0 1	0	0 0	0 0	1	0 0	1 0
Lane Group:	LT	LT	xxxx	xxxx	T	R	xxxx	xxxx	xxxx	L	RT	RT
#LnsInGrps:	1	1	0	0	1	1	0	0	0	1	1	1
HCM Ops Input Saturation Adj Module:												
Lane Width:	12	12	12	12	12	12	12	12	12	12	12	12
CrosswalkWid	8			8			8			8		
% Hev Veh:	7			8			0			12		
Grade:	-2%			+2%			0%			0%		
Parking/Hr:	No			No			No			No		
Bus Stp/Hr:	0			0			0			0		
Area Type:	< < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > > >											
Cnft Ped/Hr:	0			0			0			0		
ExclusiveRT:	Include			Include			Include			Include		
% RT Prtct:	0			0			0			0		
HCM Ops f(lt) Adj Case Module:												
f(lt) Case:	4	4	xxxx	xxxx xxxx		xxxx	xxxx xxxx		xxxx	2r xxxx		xxxx
HCM Ops Saturation Adj Module:												
Ln Wid Adj:	1.00	1.00	xxxxx	xxxx 1.00		1.00	xxxx xxxx		xxxxx	1.00 1.00		1.00
Hev Veh Adj:	0.94	0.94	xxxxx	xxxx 0.93		0.93	xxxx xxxx		xxxxx	0.89 0.89		0.89
Grade Adj:	1.01	1.01	xxxxx	xxxx 0.99		0.99	xxxx xxxx		xxxxx	1.00 1.00		1.00
Parking Adj:	1.00	1.00	xxxxx	xxxx xxxx		1.00	xxxx xxxx		xxxxx	xxxx 1.00		1.00
Bus Stp Adj:	1.00	1.00	xxxxx	xxxx xxxx		1.00	xxxx xxxx		xxxxx	xxxx 1.00		1.00
Area Adj:	1.00	1.00	xxxxx	xxxx 1.00		1.00	xxxx xxxx		xxxxx	1.00 1.00		1.00
RT Adj:	xxxx	xxxx	xxxxx	xxxx xxxx		0.85	xxxx xxxx		xxxxx	xxxx 0.85		0.85
LT Adj:	1.00	1.00	xxxxx	xxxx xxxx		xxxxx	xxxx xxxx		xxxxx	0.85 xxxx		xxxxx
PedBike Adj:	1.00	1.00	1.00	1.00 1.00		1.00	1.00 1.00		1.00	1.00 1.00		1.00
HCM Sat Adj:	0.94	0.94	1.00	1.00 0.92		0.78	1.00 1.00		1.00	0.76 0.76		0.76
Usr Sat Adj:	1.00	1.00	1.00	1.00 1.00		1.00	1.00 1.00		1.00	1.00 1.00		1.00
MLF Sat Adj:	1.00	1.00	1.00	1.00 1.00		1.00	1.00 1.00		1.00	1.00 1.00		1.00
Fnl Sat Adj:	0.94	0.94	1.00	1.00 0.92		0.78	1.00 1.00		1.00	0.76 0.76		0.76
Delay Adjustment Factor Module:												
PrtPermCase:	1			xxxxx			xxxxx			xxxxx		
Coordinated:	< < < < < < < < < < < < < < < < Yes > > > > > > > > > > > > > > > >											
Signal Type:	< < < < < < < < < < < < < < Actuated > > > > > > > > > > > > > >											
Green/Cycle:	0.20	0.59	0.00	0.00 0.39		0.39	0.00 0.00		0.00	0.24 0.24		0.24
ArrivalType:	3			3			3			3		
DelAdjFctr:	1.00	1.00	0.00	0.00 1.00		1.00	0.00 0.00		0.00	1.00 1.00		1.00

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Level Of Service Detailed Computation Report (Dual Phase Control)
2000 HCM Operations Method
Future Volume Alternative

Intersection #3 Hwy 26 WB ramps/Glencoe Rd

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L2 -	L1 -	T	L2 -	L1 -	T	L2 -	L1 -	T	L2 -	L1 -	T
Control:	Prot+Permit			Protected			Protected			Protected		
HCM Ops f(rt) and f(lt) Adj Case Module:												
f(rt) Case:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	2
f(lt) Case:	5	4	4	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	2r	xxxx
HCM Ops Saturation Adj Module:												
Ln Wid Adj:	1.00	1.00	1.00	xxxx	xxxx	1.00	xxxx	xxxx	xxxxx	xxxx	1.00	1.00
Hev Veh Adj:	0.94	0.94	0.94	xxxx	xxxx	0.93	xxxx	xxxx	xxxxx	xxxx	0.89	0.89
Grade Adj:	1.01	1.01	1.01	xxxx	xxxx	0.99	xxxx	xxxx	xxxxx	xxxx	1.00	1.00
Parking Adj:	1.00	1.00	1.00	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	1.00
Bus Stp Adj:	1.00	1.00	1.00	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	1.00
Area Adj:	1.00	1.00	1.00	xxxx	xxxx	1.00	xxxx	xxxx	xxxxx	xxxx	1.00	1.00
RT Adj:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	0.85
LT Adj:	0.79	1.00	1.00	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	0.85	xxxxx
HCM Sat Adj:	0.75	0.94	0.94	xxxx	xxxx	0.92	xxxx	xxxx	xxxxx	xxxx	0.76	0.76
Usr Sat Adj:	1.00	1.00	1.00	xxxx	xxxx	1.00	xxxx	xxxx	xxxxx	xxxx	1.00	1.00
MLF Sat Adj:	1.00	1.00	1.00	xxxx	xxxx	1.00	xxxx	xxxx	xxxxx	xxxx	1.00	1.00
Fnl Sat Adj:	0.75	0.94	0.94	xxxx	xxxx	0.92	xxxx	xxxx	xxxxx	xxxx	0.76	0.76
Volume Module:												
Volume:	4	29	348	xxxx	xxxx	739	xxxx	xxxx	xxxxx	xxxx	379	1
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	xxxx	xxxx	1800	xxxx	xxxx	xxxxx	xxxx	1800	1800
Adjustment:	0.75	0.94	0.94	xxxx	xxxx	0.92	xxxx	xxxx	xxxxx	xxxx	0.76	0.76
Lanes:	0.09	0.09	0.91	xxxx	xxxx	1.00	xxxx	xxxx	xxxxx	xxxx	1.00	0.01
Final Sat.:	116	145	1548	xxxx	xxxx	1650	xxxx	xxxx	xxxxx	xxxx	1366	5
Capacity Analysis Module:												
Vol/Sat:	0.04	0.20	0.23	xxxx	xxxx	0.45	xxxx	xxxx	xxxx	xxxx	0.28	0.21
Crit Moves:	****				****						****	
Green/Cycle:	0.45	0.20	0.59	xxxx	xxxx	0.39	xxxx	xxxx	xxxx	xxxx	0.24	0.24
Volume/Cap:	0.08	1.00	0.38	xxxx	xxxx	1.14	xxxx	xxxx	xxxx	xxxx	1.14	0.87

Note: L2 = Permitted Left, L1 = Protected Left, T = Thru

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
2000 HCM Operations Method
Future Volume Alternative

Intersection #3 Hwy 26 WB ramps/Glencoe Rd

Approach:	North	South	East	West
Cycle Length, C:	72	xxxxxx	xxxxxx	xxxxxx
Actual Green Time Per Lane Group, G:	46.50	xxxxxx	xxxxxx	xxxxxx
Effective Green Time Per Lane Group, g:	32.28	xxxxxx	xxxxxx	xxxxxx
Opposing Effective Green Time, go:	28.28	xxxxxx	xxxxxx	xxxxxx
Number Of Opposing Lanes, No:	1	xxxxxx	xxxxxx	xxxxxx
Number Of Lanes In Lane Group, N:	1	xxxxxx	xxxxxx	xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:	33	xxxxxx	xxxxxx	xxxxxx
Proportion of Left Turns in Lane Group, Plt:	0.09	xxxxxx	xxxxxx	xxxxxx
Proportion of Left Turns in Opp Flow, Plto:	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Left Turns Per Cycle, LTC:	0.65	xxxxxx	xxxxxx	xxxxxx
Adjusted Opposing Flow Rate, Vo:	739	xxxxxx	xxxxxx	xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:	14.78	xxxxxx	xxxxxx	xxxxxx
Opposing Platoon Ratio, Rpo:	1.00	xxxxxx	xxxxxx	xxxxxx
Lost Time Per Phase, tl:	0.00	xxxxxx	xxxxxx	xxxxxx
Eff grn until arrival of left-turn car, gf:	24.09	xxxxxx	xxxxxx	xxxxxx
Opposing Queue Ratio, qro:	0.61	xxxxxx	xxxxxx	xxxxxx
Eff grn blocked by opposing queue, gq:	30.45	xxxxxx	xxxxxx	xxxxxx
Eff grn while left turns filter thru, gu:	1.83	xxxxxx	xxxxxx	xxxxxx
Max opposing cars arriving during gq-gf, n:	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Proportion of Opposing Thru & RT cars, ptho:	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Left-turn Saturation Factor, fs:	0.41	xxxxxx	xxxxxx	xxxxxx
Proportion of Left Turns in Shared Lane, pl:	0.09	xxxxxx	xxxxxx	xxxxxx
Through-car Equivalents, el1:	2.92	xxxxxx	xxxxxx	xxxxxx
Single Lane Through-car Equivalents, el2:	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Minimum Left Turn Adjustment Factor, fmin:	0.07	xxxxxx	xxxxxx	xxxxxx
Single Lane Left Turn Adjustment Factor, fm:	0.79	xxxxxx	xxxxxx	xxxxxx
Left Turn Adjustment Factor, flt:	0.79	xxxxxx	xxxxxx	xxxxxx

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Level Of Service Detailed Computation Report (HCM2000 Queue Method)
2000 HCM Operations Method
Future Volume Alternative

Intersection #3 Hwy 26 WB ramps/Glencoe Rd

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Green/Cycle:	0.20	0.59	0.00	0.00	0.39	0.39	0.00	0.00	0.00	0.24	0.24	0.24
ArrivalType:	3			3			3			3		
ProgFactor:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Q1:	3.7	4.0	0.0	0.0	14.8	1.7	0.0	0.0	0.0	7.6	5.5	5.5
UpstreamVC:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UpstreamAdj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EarlyArrAdj:	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
Q2:	0.7	0.6	0.0	0.0	16.8	0.3	0.0	0.0	0.0	10.4	3.9	3.9
HCM2KQueue:	4.3	4.6	0.0	0.0	31.6	2.0	0.0	0.0	0.0	17.9	9.4	9.4
70th%Factor:	1.19	1.19	1.20	1.20	1.15	1.20	1.20	1.20	1.20	1.16	1.18	1.18
70th%HCM2kQ:	5.2	5.5	0.0	0.0	36.2	2.4	0.0	0.0	0.0	20.9	11.1	11.1
85th%Factor:	1.56	1.56	1.60	1.60	1.40	1.58	1.60	1.60	1.60	1.46	1.52	1.52
85th%HCM2kQ:	6.8	7.2	0.0	0.0	44.4	3.2	0.0	0.0	0.0	26.3	14.3	14.3
90th%Factor:	1.72	1.72	1.80	1.80	1.48	1.76	1.80	1.80	1.80	1.56	1.65	1.65
90th%HCM2kQ:	7.5	8.0	0.0	0.0	46.9	3.6	0.0	0.0	0.0	28.0	15.5	15.5
95th%Factor:	1.97	1.96	2.10	2.10	1.60	2.04	2.10	2.10	2.10	1.72	1.86	1.86
95th%HCM2kQ:	8.5	9.1	0.0	0.0	50.7	4.1	0.0	0.0	0.0	30.9	17.4	17.4
98th%Factor:	2.42	2.40	2.70	2.70	1.79	2.56	2.70	2.70	2.70	1.95	2.19	2.19
98th%HCM2kQ:	10.5	11.1	0.0	0.0	56.5	5.2	0.0	0.0	0.0	35.0	20.5	20.5

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
*******************************************************************************
Intersection #4 Texaco Dwy/Glencoe Rd
*******************************************************************************
Average Delay (sec/veh):      0.1       Worst Case Level Of Service: B[ 13.5]
*******************************************************************************
Street Name:            Glencoe Rd                    Texaco Dwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  0  0  1  0    0  0  1  0  0    0  0  0  0  0    0  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:       0  288    44     0  386     0     0    0     0     0    0    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  288    44     0  386     0     0    0     0     0    0    10
Added Vol:      0  272     0     0  437     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0  560    44     0  823     0     0    0     0     0    0    10
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     0  622    49     0  914     0     0    0     0     0    0    11
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     0  622    49     0  914     0     0    0     0     0    0    11
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   6.5
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   3.5
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   647
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   433
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   433
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  0.03
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   0.1
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  13.5
LOS by Move:   *    *     *     *    *     *     *    *     *     *    *     B
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:    *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx            xxxxxx            xxxxxx             13.5
ApproachLOS:        *                 *                 *                 B
*******************************************************************************
Note: Queue reported is the number of cars per lane.
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

```
*******************************************************************************
Intersection #4 Texaco Dwy/Glencoe Rd
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             5%               8%               0%              25%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:       #5
Dist(miles):      0.000
Speed (mph):      35.00
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol:   0 xxxxx xxxxx    0 xxxxx xxxxx    0     0     0    0     0   647
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol:   0 xxxxx xxxxx    0 xxxxx xxxxx    0     0     0    0     0   647
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:  900 xxxxx xxxxx  900 xxxxx xxxxx  900   900   900  900   900   433
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:   900 xxxxx xxxxx  900 xxxxx xxxxx  900   900   900  900   900   433
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 NW Highland Ct/Glencoe Rd

Average Delay (sec/veh): 39.2 Worst Case Level Of Service: F[492.4]

```
Street Name:            Glencoe Rd                    NW Highland Ct
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:      71  177    50    16  222    16    12    1   116    48    4    16
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   71  177    50    16  222    16    12    1   116    48    4    16
Added Vol:     15  239    18     0  349     1     4    0    49    39    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   86  416    68    16  571    17    16    1   165    87    4    16
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    96  462    76    18  634    19    18    1   183    97    4    18
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    96  462    76    18  634    19    18    1   183    97    4    18
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.2  6.6   6.3
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.6  4.1   3.4
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  653 xxxx xxxxx   538 xxxx xxxxx  1382 1408   644  1463 1380   500
Potent Cap.:  929 xxxx xxxxx  1015 xxxx xxxxx   121  139   473   104  141   561
Move Cap.:    929 xxxx xxxxx  1015 xxxx xxxxx   104  122   473    57  124   561
Volume/Cap:  0.10 xxxx  xxxx  0.02 xxxx  xxxx  0.17 0.01  0.39  1.68 0.04  0.03
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.3 xxxx xxxxx   0.1 xxxx xxxxx   0.6 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  9.3 xxxx xxxxx   8.6 xxxx xxxxx  46.7 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     A    *     *     E    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   465  xxxx   68 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   1.9 xxxxx 10.6 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  17.7 xxxxx  492 xxxxx
Shared LOS:    *    *     *     *    *     *     *    *     C     *    F     *
ApproachDel:    xxxxxx           xxxxxx             20.3            492.4
ApproachLOS:        *                *                C               F
```

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #5 NW Highland Ct/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             3%               5%               2%               7%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.000 ( 0.031)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 653 xxxxx xxxxx  538 xxxxx xxxxx 1382  1408   644 1463  1380   500
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 653 xxxxx xxxxx  538 xxxxx xxxxx 1382  1408   644 1463  1380   500
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:  929 xxxxx xxxxx 1015 xxxxx xxxxx  121   139   473  104   141   561
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:   929 xxxxx xxxxx 1015 xxxxx xxxxx  121   139   473  104   141   561
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
*******************************************************************************
Intersection #6 Chevron Dwy/Glencoe Rd
*******************************************************************************
Average Delay (sec/veh):      0.8       Worst Case Level Of Service: C[ 15.4]
*******************************************************************************
Street Name:            Glencoe Rd                    Chevron Dwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  1  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:      25  180     0     0  229    39    16    0    23     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   25  180     0     0  229    39    16    0    23     0    0     0
Added Vol:      0  242     0     0  351     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   25  422     0     0  580    39    16    0    23     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    28  469     0     0  644    43    18    0    26     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    28  469     0     0  644    43    18    0    26     0    0     0
Critical Gap Module:
Critical Gp:  4.2 xxxx xxxxx xxxxx xxxx xxxxx   6.5 xxxx   6.3 xxxxx xxxx xxxxx
FollowUpTim:  2.3 xxxx xxxxx xxxxx xxxx xxxxx   3.6 xxxx   3.4 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  688 xxxx xxxxx  xxxx xxxx xxxxx  1191 xxxx   666  xxxx xxxx xxxxx
Potent Cap.:  883 xxxx xxxxx  xxxx xxxx xxxxx   201 xxxx   447  xxxx xxxx xxxxx
Move Cap.:    883 xxxx xxxxx  xxxx xxxx xxxxx   196 xxxx   447  xxxx xxxx xxxxx
Total Cap:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   330    0 xxxxx     0    0 xxxxx
Volume/Cap:  0.03 xxxx  xxxx  xxxx xxxx  xxxx  0.05 xxxx  0.06  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  9.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  390 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.4 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 15.4 xxxxx xxxxx xxxx xxxxx
Shared LOS:    *    *     *     *    *     *     *    C     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             15.4           xxxxxx
ApproachLOS:        *                *                C                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

```
*******************************************************************************
Intersection #6 Chevron Dwy/Glencoe Rd
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             7%               6%               9%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.000 ( 0.031)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 688 xxxxx xxxxx    0 xxxxx xxxxx 1191     0   666    0     0     0
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 688 xxxxx xxxxx    0 xxxxx xxxxx 1191     0   666    0     0     0
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:  883 xxxxx xxxxx  900 xxxxx xxxxx  201   900   447  900   900   900
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:   883 xxxxx xxxxx  900 xxxxx xxxxx  201   900   447  900   900   900
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

```
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance [Median Type: TWLTL][Median Storage: 1 car]
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage One Module:
InitCfltVol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  666     0 xxxxx    0     0 xxxxx
UpstreamSat:xxxx xxxxx xxxxx xxxx xxxxx xxxxx    0     0 xxxxx    0     0 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Cnflict Vol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  666     0 xxxxx    0     0 xxxxx
InitPotCap: xxxx xxxxx xxxxx xxxx xxxxx xxxxx  498   900 xxxxx  900   900 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Potent Cap.:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  498   900 xxxxx  900   900 xxxxx
Move Cap.:  xxxx xxxxx xxxxx xxxx xxxxx xxxxx  498   900 xxxxx  872   872 xxxxx
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage Two Module:
InitCfltVol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  524     0 xxxxx    0     0 xxxxx
UpstreamSat:xxxx xxxxx xxxxx xxxx xxxxx xxxxx    0     0 xxxxx    0     0 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Cnflict Vol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  524     0 xxxxx    0     0 xxxxx
InitPotCap: xxxx xxxxx xxxxx xxxx xxxxx xxxxx  580   900 xxxxx  900   900 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Potent Cap.:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  580   900 xxxxx  900   900 xxxxx
Move Cap.:  xxxx xxxxx xxxxx xxxx xxxxx xxxxx  562   872 xxxxx  849   900 xxxxx
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
*******************************************************************************
Intersection #7 NW Pacific St/Glencoe Rd
*******************************************************************************
Average Delay (sec/veh):      7.6       Worst Case Level Of Service: F[ 51.1]
*******************************************************************************
Street Name:            Glencoe Rd                    NW Pacific St
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  0  1  0    1  0  0  1  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:       8  178     0    13  245     0     7    5     2     4    2    34
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    8  178     0    13  245     0     7    5     2     4    2    34
Added Vol:     27  163    52    36  249     5     6    2    39    63    1    29
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   35  341    52    49  494     5    13    7    41    67    3    63
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    39  379    58    54  549     6    14    8    46    74    3    70
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    39  379    58    54  549     6    14    8    46    74    3    70
Critical Gap Module:
Critical Gp:  4.2 xxxx xxxxx   4.1 xxxx xxxxx   7.2  6.6   6.3   7.2  6.6   6.3
FollowUpTim:  2.3 xxxx xxxxx   2.2 xxxx xxxxx   3.6  4.1   3.4   3.6  4.1   3.4
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  554 xxxx xxxxx   437 xxxx xxxxx  1183 1175   552  1173 1149   408
Potent Cap.:  991 xxxx xxxxx  1113 xxxx xxxxx   157  182   511   164  193   631
Move Cap.:    991 xxxx xxxxx  1113 xxxx xxxxx   129  166   511   135  177   631
Volume/Cap:  0.04 xxxx  xxxx  0.05 xxxx  xxxx  0.11 0.05  0.09  0.55 0.02  0.11
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.1 xxxx xxxxx   0.2 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.8 xxxx xxxxx   8.4 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  273 xxxxx  xxxx  217 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.0 xxxxx xxxxx  4.3 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 22.5 xxxxx xxxxx 51.1 xxxxx
Shared LOS:    *    *     *     *    *     *     *    C     *     *    F     *
ApproachDel:    xxxxxx           xxxxxx              22.5             51.1
ApproachLOS:        *                *                 C                F
*******************************************************************************
Note: Queue reported is the number of cars per lane.
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

```
*******************************************************************************
Intersection #7 NW Pacific St/Glencoe Rd
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
HevVeh:             7%               4%              14%               8%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
-----------|----------------|----------------|----------------|----------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.000 ( 0.031)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 554 xxxxx xxxxx  437 xxxxx xxxxx 1183  1175   552 1173  1149   408
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 554 xxxxx xxxxx  437 xxxxx xxxxx 1183  1175   552 1173  1149   408
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:  991 xxxxx xxxxx 1113 xxxxx xxxxx  157   182   511  164   193   631
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:   991 xxxxx xxxxx 1113 xxxxx xxxxx  157   182   511  164   193   631
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
*******************************************************************************
Intersection #8 NW Cottage St/Glencoe Rd
*******************************************************************************
Average Delay (sec/veh):      2.1       Worst Case Level Of Service: C[ 16.7]
*******************************************************************************
Street Name:            Glencoe Rd                    NW Cottage St
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|----------------||----------------||----------------||----------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  0  1  0    1  0  0  1  0    0  0  1! 0  0    0  0  1! 0  0
-----------|----------------||----------------||----------------||----------------|
Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM
Base Vol:       2  196     0     0  230     1     1    0    16     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    2  196     0     0  230     1     1    0    16     0    0     0
Added Vol:      9  180     8    46  274     2     0    5    13     4    1    41
PasserByVol:    0  -10    10    10  -10     0     0    0     0    10    0    10
Initial Fut:   11  366    18    56  494     3     1    5    29    14    1    51
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    12  407    20    62  549     3     1    6    32    16    1    57
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    12  407    20    62  549     3     1    6    32    16    1    57
Critical Gap Module:
Critical Gp:  4.2 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.3 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
-----------|----------------||----------------||----------------||----------------|
Capacity Module:
Cnflict Vol:  552 xxxx xxxxx   427 xxxx xxxxx  1145 1126   551  1135 1118   417
Potent Cap.:  998 xxxx xxxxx  1117 xxxx xxxxx   178  207   538   181  209   640
Move Cap.:    998 xxxx xxxxx  1117 xxxx xxxxx   153  193   538   158  195   640
Volume/Cap:  0.01 xxxx  xxxx  0.06 xxxx  xxxx  0.01 0.03  0.06  0.10 0.01  0.09
-----------|----------------||----------------||----------------||----------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx   0.2 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.7 xxxx xxxxx   8.4 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  405 xxxxx  xxxx  381 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.3 xxxxx xxxxx  0.7 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 14.8 xxxxx xxxxx 16.7 xxxxx
Shared LOS:    *    *     *     *    *     *     *    B     *     *    C     *
ApproachDel:    xxxxxx            xxxxxx              14.8              16.7
ApproachLOS:        *                 *                 B                 C
*******************************************************************************
Note: Queue reported is the number of cars per lane.
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #8 NW Cottage St/Glencoe Rd

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:		6%			5%			0%			0%	
Grade:		0%			0%			0%			0%	
Peds/Hour:		0			0			0			0	

Pedestrian Walk Speed: 4.00 feet/sec

LaneWidth:	12 feet	12 feet	12 feet	12 feet

Time Period: 0.25 hour

Upstream Signals:

Link Index:	#5	
Dist(miles):	0.000 (0.031)	
Speed (mph):	35.00 (35.00)	
SignalIndex:	#3	
Cycle Time:	0 secs	
InitVolume:	0	0
Saturation:	0	0
ArrivalType:	0	0
G/C:	0.00	0.00

*** Computation 1: Time for Queue to Clear at Each Upstream Intersection

P:	0.000	0.000
gq1:	0.00	0.00
gq2:	0.00	0.00
gq:	0.00	0.00

*** Computation 2: Time Intersection Blocked Because of Upstream Platoons

alpha:	0.000	
beta:	0.000	
ta (secs):	0.000	
F:	0.000	
f:	0.000	0.000
vcmax:	0	0
vcg:	0	0
vcmin:	0	0
tp:	0.0	0.0
p:	0.000	

*** Computation 3: Platoon Event Periods

pdom/psubo: 0.000/0.000/Unconstrained

*** Computation 4: Conflicting Flows During Each Unblocked Period

InitCnflVol:	552	xxxxx	xxxxx	427	xxxxx	xxxxx	1145	1126	551	1135	1118	417
UpstreamAdj:	1.00	x.xxx	x.xxx	1.00	x.xxx	x.xxx	1.00	1.000	1.000	1.00	1.000	1.000
ConflictVol:	552	xxxxx	xxxxx	427	xxxxx	xxxxx	1145	1126	551	1135	1118	417

*** Computation 5: Capactiy for Subject Movement During Unblocked Period

InitPotCap:	998	xxxxx	xxxxx	1117	xxxxx	xxxxx	178	207	538	181	209	640
UpstreamAdj:	1.00	x.xxx	x.xxx	1.00	x.xxx	x.xxx	1.00	1.000	1.000	1.00	1.000	1.000
PotentCap:	998	xxxxx	xxxxx	1117	xxxxx	xxxxx	178	207	538	181	209	640

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #9 NW Commercial/Glencoe Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.773
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	22.5
Optimal Cycle:	0	Level Of Service:	C

Street Name:	Glencoe Rd						NW Commercial/West Union					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 0	1 0		1 0 0	1 0		0 0	1! 0	0	0 0	1! 0	0

Volume Module: >> Count Date: 16 Nov 2005 << 6:45 AM to 7:45 AM

Base Vol:	51	77	55	27	151	2	4	12	44	31	16	15
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	51	77	55	27	151	2	4	12	44	31	16	15
Added Vol:	63	46	110	25	106	2	1	160	123	103	61	25
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	114	123	165	52	257	4	5	172	167	134	77	40
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	127	137	183	58	286	4	6	191	186	149	86	44
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	127	137	183	58	286	4	6	191	186	149	86	44
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	127	137	183	58	286	4	6	191	186	149	86	44

Saturation Flow Module:

Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.43	0.57	1.00	0.98	0.02	0.01	0.50	0.49	0.53	0.31	0.16
Final Sat.:	424	203	272	416	436	7	7	247	240	237	136	71

Capacity Analysis Module:

Vol/Sat:	0.30	0.67	0.67	0.14	0.66	0.66	0.77	0.77	0.77	0.63	0.63	0.63
Crit Moves:		****			****		****				****	
Delay/Veh:	14.2	22.4	22.4	12.2	22.5	22.5	27.8	27.8	27.8	21.0	21.0	21.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	14.2	22.4	22.4	12.2	22.5	22.5	27.8	27.8	27.8	21.0	21.0	21.0
LOS by Move:	B	C	C	B	C	C	D	D	D	C	C	C
ApproachDel:		20.1			20.8			27.8			21.0	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		20.1			20.8			27.8			21.0	
LOS by Appr:		C			C			D			C	
AllWayAvgQ:	0.4	1.6	1.6	0.1	1.5	1.5	2.4	2.4	2.4	1.3	1.3	1.3

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday AM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM 4-Way Stop Method
Future Volume Alternative

Intersection #9 NW Commercial/Glencoe Rd

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Time Period: 0.25 hour												
HevVeh:	7%			4%			10%			13%		
Alpha Value: 0.01												
GroupType:	5			5			2			2		
P[C1]:	0.03			0.03			0.03			0.02		
P[C2]:	0.07			0.08			0.05			0.06		
P[C3]:	0.15			0.11			0.17			0.11		
P[C4]:	0.45			0.45			0.45			0.44		
P[C5]:	0.30			0.33			0.30			0.38		
Padj[C1]:	0.029			0.030			0.029			0.031		
Padj[C2]:	0.019			0.019			0.019			0.020		
Padj[C3]:	0.006			0.008			0.005			0.009		
Padj[C4]:	-0.024			-0.024			-0.024			-0.022		
Padj[C5]:	-0.030			-0.033			-0.030			-0.038		
Lanes:	L1	L2		L1	L2		L1	L2		L1	L2	
LaneType:	LEFT	RTTHRU		LEFT	RTTHRU		LTR	NOLANE		LTR	NOLANE	
HeadwayAdj:	0.619	-0.282		0.568	0.057		-0.118	xx.xxx		0.232	xx.xxx	
Volume:	127	320		58	290		382	xxxxxx		279	xxxxxx	
Capacity:	424	475		416	443		495	xxxxx		443	xxxxx	
DegOfUtil:	0.29	0.65		0.13	0.62		0.75	x.xx		0.59	x.xx	
DepHeadway:	8.19	7.29		8.26	7.75		7.02	xx.xx		7.63	xx.xx	
ServiceTime:	5.9	5.0		6.0	5.5		5.0	xx.x		5.6	xx.x	
Delay:	14.2	22.4		12.2	22.5		27.8	xxx.x		21.0	xxx.x	
Queue:	0.4	1.6		0.1	1.5		2.4	xxx.x		1.3	xxx.x	
Approach:	North Bound			South Bound			East Bound			West Bound		
ApproachDel:	20.1			20.8			27.8			21.0		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	20.1			20.8			27.8			21.0		
LOS by Appr:	C			C			D			C		
OverallDel:	22.5											
OverallLOS:	C											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)		0%			0%			2%			-2%	
Total Lost time (s)		3.0	3.0					3.0	3.0		3.0	
Lane Util. Factor		1.00	1.00					1.00	1.00		1.00	
Frt		1.00	0.85					1.00	0.85		1.00	
Flt Protected		0.95	1.00					1.00	1.00		0.98	
Satd. Flow (prot)		1681	1500					1625	1381		1609	
Flt Permitted		0.95	1.00					1.00	1.00		0.98	
Satd. Flow (perm)		1681	1500					1625	1381		1609	
Volume (vph)	99	1	138	0	0	0	0	299	873	454	636	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	104	1	145	0	0	0	0	315	919	478	669	0
Lane Group Flow (vph)	0	105	145	0	0	0	0	315	919	0	1147	0
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	6%	6%	6%	7%	7%	7%
Turn Type	Split		Prot						Prot	pm+pt		
Protected Phases	4	4	4					2	2	1	6	
Permitted Phases								2		6	6	
Actuated Green, G (s)		9.5	9.5					54.0	54.0		54.0	
Effective Green, g (s)		10.5	10.5					55.5	55.5		55.5	
Actuated g/C Ratio		0.15	0.15					0.77	0.77		0.77	
Clearance Time (s)		4.0	4.0					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		245	219					1253	1065		1240	
v/s Ratio Prot		0.06	c0.10					0.19	0.67		c0.71	
v/s Ratio Perm												
v/c Ratio		0.43	0.66					0.25	0.86		0.93	
Uniform Delay, d1		28.0	29.1					2.3	5.6		6.6	
Progression Factor		1.00	1.00					1.00	1.00		1.31	
Incremental Delay, d2		5.4	14.7					0.5	9.3		9.3	
Delay (s)		33.4	43.8					2.8	14.9		17.9	
Level of Service		C	D					A	B		B	
Approach Delay (s)		39.4			0.0			11.8			17.9	
Approach LOS		D			A			B			B	

Intersection Summary			
HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	72.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	141.3%	ICU Level of Service	H

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)		0%			2%			-2%			2%	
Total Lost time (s)				3.0	3.0			3.0			3.0	3.0
Lane Util. Factor				1.00	1.00			1.00			1.00	1.00
Frt				1.00	0.85			1.00			1.00	0.85
Flt Protected				0.95	1.00			1.00			1.00	1.00
Satd. Flow (prot)				1525	1365			1651			1610	1368
Flt Permitted				0.95	1.00			0.92			1.00	1.00
Satd. Flow (perm)				1525	1365			1524			1610	1368
Volume (vph)	0	0	0	359	1	273	31	331	0	0	702	122
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	378	1	287	33	348	0	0	739	128
Lane Group Flow (vph)	0	0	0	378	288	0	0	381	0	0	739	128
Heavy Vehicles (%)	0%	0%	0%	11%	11%	11%	6%	6%	6%	7%	7%	7%
Turn Type				Split			pm+pt					Prot
Protected Phases				8	8		5	2			6	6
Permitted Phases							2					
Actuated Green, G (s)				20.5	20.5			43.0			43.0	43.0
Effective Green, g (s)				21.5	21.5			44.5			44.5	44.5
Actuated g/C Ratio				0.30	0.30			0.62			0.62	0.62
Clearance Time (s)				4.0	4.0			4.5			4.5	4.5
Vehicle Extension (s)				3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)				455	408			942			995	846
v/s Ratio Prot				c0.25	0.21						c0.46	0.09
v/s Ratio Perm								0.25				
v/c Ratio				0.83	0.71			0.40			0.74	0.15
Uniform Delay, d1				23.6	22.4			7.0			9.7	5.8
Progression Factor				1.00	1.00			0.69			1.00	1.00
Incremental Delay, d2				16.0	9.9			0.3			5.0	0.4
Delay (s)				39.6	32.3			5.1			14.7	6.2
Level of Service				D	C			A			B	A
Approach Delay (s)		0.0			36.4			5.1			13.5	
Approach LOS		A			D			A			B	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	72.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	71.2%	ICU Level of Service	C

c Critical Lane Group

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday PM Peak Hour

Scenario Report

Scenario:	pm
Command:	pm
Volume:	pm
Geometry:	pm
Impact Fee:	Default Impact Fee
Trip Generation:	pm
Trip Distribution:	pm
Paths:	Default Paths
Routes:	Default Routes
Configuration:	Default Configuration

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday PM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 NW Beach Rd/Glencoe Rd	F	70.6	0.000	F	113.1	0.000	+42.442 D/V
# 2 Hwy 26 EB ramps/Glencoe Rd	E	72.8	1.135	F	181.9	3.422	+109.118 D/V
# 3 Hwy 26 WB ramps/Glencoe Rd	E	70.7	1.104	F	162.6	1.378	+91.908 D/V
# 4 Texaco Dwy/Glencoe Rd	B	11.0	0.000	C	17.3	0.000	+ 6.271 D/V
# 5 NW Highland Ct/Glencoe Rd	D	26.1	0.000	F	OVRFL	0.000	+1140.212 D/
# 6 Chevron Dwy/Glencoe Rd	B	11.3	0.000	C	16.6	0.000	+ 5.345 D/V
# 7 NW Pacific St/Glencoe Rd	C	15.9	0.000	F	301.5	0.000	+285.523 D/V
# 8 NW Cottage St/Glencoe Rd	B	10.6	0.000	F	213.3	0.000	+202.647 D/V
# 9 NW Commercial/Glencoe Rd	A	9.5	0.299	F	69.8	1.180	+ 0.881 V/C

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 NW Beach Rd/Glencoe Rd

Average Delay (sec/veh): 0.9 Worst Case Level Of Service: F[113.1]

```
Street Name:            Glencoe Rd                    NW Beach Rd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  1  0  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:      17  625     0     0  715    24    11    0     5     0    0     0
Growth Adj:  1.00 1.24  1.00  1.00 1.48  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   17  775     0     0 1058    24    11    0     5     0    0     0
Added Vol:      0  126     0     0  111     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   17  901     0     0 1169    24    11    0     5     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    19 1001     0     0 1299    27    12    0     6     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    19 1001     0     0 1299    27    12    0     6     0    0     0
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.5 xxxx   6.3 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.6 xxxx   3.4 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1326 xxxx xxxxx  xxxx xxxx xxxxx  2351 xxxx  1312  xxxx xxxx xxxxx
Potent Cap.:  521 xxxx xxxxx  xxxx xxxx xxxxx    38 xxxx   190  xxxx xxxx xxxxx
Move Cap.:    521 xxxx xxxxx  xxxx xxxx xxxxx    37 xxxx   190  xxxx xxxx xxxxx
Volume/Cap:  0.04 xxxx  xxxx  xxxx xxxx  xxxx  0.33 xxxx  0.03  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del: 12.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   B    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx   50 xxxxx  xxxx    0 xxxxx
SharedQueue:  0.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.3 xxxxx xxxxx xxxx xxxxx
Shrd ConDel: 12.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  113 xxxxx xxxxx xxxx xxxxx
Shared LOS:    B    *     *     *    *     *     *    F     *     *    *     *
ApproachDel:    xxxxxx            xxxxxx            113.1           xxxxxx
ApproachLOS:        *                 *                F                *
```

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #1 NW Beach Rd/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             2%               5%               6%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:                        #2
Dist(miles):                       0.000
Speed (mph):                       45.00
SignalIndex:                       #2
Cycle Time:                            0 secs
InitVolume:                      0     0
Saturation:                      0     0
ArrivalType:                     0     0
G/C:                          0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:                           0.000 0.000
gq1:                          0.00  0.00
gq2:                          0.00  0.00
gq:                           0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:                             0.000
beta:                              0.000
ta (secs):                         0.000
F:                                 0.000
f:                           0.000 0.000
vcmax:                           0     0
vcg:                             0     0
vcmin:                           0     0
tp:                           0.0   0.0
p:                                 0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol:1326 xxxxx xxxxx    0 xxxxx xxxxx 2351     0  1312    0     0     0
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol:1326 xxxxx xxxxx    0 xxxxx xxxxx 2351     0  1312    0     0     0
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:  521 xxxxx xxxxx  900 xxxxx xxxxx   38   900   190  900   900   900
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:   521 xxxxx xxxxx  900 xxxxx xxxxx   38   900   190  900   900   900
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #2 Hwy 26 EB ramps/Glencoe Rd

Cycle (sec):	72	Critical Vol./Cap.(X):	3.422
Loss Time (sec):	12 (Y+R=4.0 sec)	Average Delay (sec/veh):	181.9
Optimal Cycle:	180	Level Of Service:	F

Street Name:	Glencoe Rd							Hwy 26 EB ramps							
Approach:	North Bound				South Bound				East Bound				West Bound		
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected					Prot+Permit					Protected				
Rights:	Include					Include					Include				
Min. Green:	0	0	0			0	0	0			0	0	0		
Lanes:	0	0	1	0	1	0	1	0	0	0	0	1	0	0	1
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM															
Base Vol:	0	258	408		157	691		0		35	1		59		0
Growth Adj:	1.00	1.24	1.24		1.00	1.48		1.00		1.00	1.24		1.00		1.00
Initial Bse:	0	320	506		157	1023		0		35	1		73		0
Added Vol:	0	126	0		198	111		0		84	0		0		0
PasserByVol:	0	0	0		0	0		0		0	0		0		0
Initial Fut:	0	446	506		355	1134		0		119	1		73		0
User Adj:	1.00	1.00	1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	0.95	0.95	0.95		0.95	0.95		0.95		0.95	0.95		0.95		0.95
PHF Volume:	0	469	533		374	1193		0		125	1		77		0
Reduct Vol:	0	0	0		0	0		0		0	0		0		0
Reduced Vol:	0	469	533		374	1193		0		125	1		77		0
PCE Adj:	1.00	1.00	1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
MLF Adj:	1.00	1.00	1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
Final Vol.:	0	469	533		374	1193		0		125	1		77		0
Saturation Flow Module:															
Sat/Lane:	1800	1800	1800		1800	1800		1800		1800	1800		1800		1800
Adjustment:	1.00	0.95	0.81		0.31	0.95		1.00		0.88	0.88		0.83		1.00
Lanes:	0.00	1.00	1.00		0.24	0.76		0.00		0.99	0.01		1.00		0.00
Final Sat.:	0	1714	1457		135	1302		0		1574	13		1486		0
Capacity Analysis Module:															
Vol/Sat:	0.00	0.27	0.37		2.77	0.92		0.00		0.08	0.08		0.05		0.00
Crit Moves:					****					****					
Green/Cycle:	0.00	0.22	0.22		0.87	0.78		0.00		0.05	0.05		0.05		0.00
Volume/Cap:	0.00	1.22	1.63		1.50	1.17		0.00		1.63	1.63		1.06		0.00
Delay/Veh:	0.0	150	326.7		244.4	91.7		0.0		370.4	370		158.7		0.0
User DelAdj:	1.00	1.00	1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
AdjDel/Veh:	0.0	150	326.7		244.4	91.7		0.0		370.4	370		158.7		0.0
LOS by Move:	A	F	F		F	F		A		F	F		F		A
HCM2kAvgQ:	0	24	39		100	65		0		11	11		5		0

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Operations Method
Future Volume Alternative

Intersection #2 Hwy 26 EB ramps/Glencoe Rd

Approach:	North Bound				South Bound				East Bound				West Bound		
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
HCM Ops Adjusted Lane Utilization Module:															
Lanes:	0	0	1	0	1	0	1	0	0	0	0	1	0	0	1
Lane Group:	xxxx		T		R	LT		LT	xxxx		LT		LT		R
#LnsInGrps:	0		1		1	1		1	0		1		1		1
HCM Ops Input Saturation Adj Module:															
Lane Width:	12		12		12	12		12	12		12		12		12
CrosswalkWid			8					8					8		
% Hev Veh:			4					5					3		
Grade:			+2%					-2%					0%		
Parking/Hr:			No					No					No		
Bus Stp/Hr:			0					0					0		
Area Type:	< < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > > >														
Cnft Ped/Hr:			0					0					0		
ExclusiveRT:			Include					Include					Include		
% RT Prtct:			0					0					0		
HCM Ops f(lt) Adj Case Module:															
f(lt) Case:	xxxx	xxxx	xxxx			4		4	xxxx		5r		5r	xxxx	
HCM Ops Saturation Adj Module:															
Ln Wid Adj:	xxxx	1.00	1.00		1.00	1.00		xxxxx		1.00	1.00		1.00		xxxx
Hev Veh Adj:	xxxx	0.96	0.96		0.95	0.95		xxxxx		0.97	0.97		0.97		xxxx
Grade Adj:	xxxx	0.99	0.99		1.01	1.01		xxxxx		1.00	1.00		1.00		xxxx
Parking Adj:	xxxx	xxxx	1.00		1.00	1.00		xxxxx		xxxx	xxxx		1.00		xxxx
Bus Stp Adj:	xxxx	xxxx	1.00		1.00	1.00		xxxxx		xxxx	xxxx		1.00		xxxx
Area Adj:	xxxx	1.00	1.00		1.00	1.00		xxxxx		1.00	1.00		1.00		xxxx
RT Adj:	xxxx	xxxx	0.85		xxxx	xxxx		xxxxx		xxxx	xxxx		0.85		xxxx
LT Adj:	xxxx	xxxx	xxxxx		0.99	0.99		xxxxx		0.91	0.91		xxxxx		xxxx
PedBike Adj:	1.00	1.00	1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
HCM Sat Adj:	1.00	0.95	0.81		0.95	0.95		1.00		0.88	0.88		0.83		1.00
Usr Sat Adj:	1.00	1.00	1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
MLF Sat Adj:	1.00	1.00	1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
Fnl Sat Adj:	1.00	0.95	0.81		0.95	0.95		1.00		0.88	0.88		0.83		1.00
Delay Adjustment Factor Module:															
PrtPermCase:			xxxxx					3			xxxxx			xxxxx	
Coordinated:	< < < < < < < < < < < < < < < No > > > > > > > > > > > > > > > > >														
Signal Type:	< < < < < < < < < < < < < Actuated > > > > > > > > > > > > > > >														
DelAdjFctr:	0.00	1.00	1.00		1.00	1.00		0.00		1.00	1.00		1.00	0.00	0.00

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Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday PM Peak Hour

Level Of Service Detailed Computation Report (Dual Phase Control)
2000 HCM Operations Method
Future Volume Alternative

Intersection #2 Hwy 26 EB ramps/Glencoe Rd

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L2 -	L1 -	T	L2 -	L1 -	T	L2 -	L1 -	T	L2 -	L1 -	T
Control:	Protected			Prot+Permit			Protected			Protected		
HCM Ops f(rt) and f(lt) Adj Case Module:												
f(rt) Case:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
f(lt) Case:	xxxx	xxxx	xxxx	5	4	4	xxxx	5r	5r	xxxx	xxxx	xxxx
HCM Ops Saturation Adj Module:												
Ln Wid Adj:	xxxx	xxxx	1.00	1.00	1.00	1.00	xxxx	1.00	1.00	xxxx	xxxx	xxxxx
Hev Veh Adj:	xxxx	xxxx	0.96	0.95	0.95	0.95	xxxx	0.97	0.97	xxxx	xxxx	xxxxx
Grade Adj:	xxxx	xxxx	0.99	1.01	1.01	1.01	xxxx	1.00	1.00	xxxx	xxxx	xxxxx
Parking Adj:	xxxx	xxxx	xxxxx	1.00	1.00	1.00	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Bus Stp Adj:	xxxx	xxxx	xxxxx	1.00	1.00	1.00	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Area Adj:	xxxx	xxxx	1.00	1.00	1.00	1.00	xxxx	1.00	1.00	xxxx	xxxx	xxxxx
RT Adj:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
LT Adj:	xxxx	xxxx	xxxxx	0.16	0.99	0.99	xxxx	0.91	0.91	xxxx	xxxx	xxxxx
HCM Sat Adj:	xxxx	xxxx	0.95	0.15	0.95	0.95	xxxx	0.88	0.88	xxxx	xxxx	xxxxx
Usr Sat Adj:	xxxx	xxxx	1.00	1.00	1.00	1.00	xxxx	1.00	1.00	xxxx	xxxx	xxxxx
MLF Sat Adj:	xxxx	xxxx	1.00	1.00	1.00	1.00	xxxx	1.00	1.00	xxxx	xxxx	xxxxx
Fnl Sat Adj:	xxxx	xxxx	0.95	0.15	0.95	0.95	xxxx	0.88	0.88	xxxx	xxxx	xxxxx
Volume Module:												
Volume:	xxxx	xxxx	469	145	229	1193	xxxx	125	1	xxxx	xxxx	xxxxx
Saturation Flow Module:												
Sat/Lane:	xxxx	xxxx	1800	1800	1800	1800	xxxx	1800	1800	xxxx	xxxx	xxxxx
Adjustment:	xxxx	xxxx	0.95	0.15	0.95	0.95	xxxx	0.88	0.88	xxxx	xxxx	xxxxx
Lanes:	xxxx	xxxx	1.00	0.24	0.24	0.76	xxxx	0.99	0.01	xxxx	xxxx	xxxxx
Final Sat.:	xxxx	xxxx	1714	66	408	1302	xxxx	1574	13	xxxx	xxxx	xxxxx
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	0.27	2.21	0.56	0.92	xxxx	0.08	0.08	xxxx	xxxx	xxxx
Crit Moves:			****		****			****				
Green/Cycle:	xxxx	xxxx	0.22	0.31	0.56	0.78	xxxx	0.05	0.05	xxxx	xxxx	xxxx
Volume/Cap:	xxxx	xxxx	1.22	7.20	1.00	1.17	xxxx	1.63	1.63	xxxx	xxxx	xxxx

Note: L2 = Permitted Left, L1 = Protected Left, T = Thru

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
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Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
2000 HCM Operations Method
Future Volume Alternative

Intersection #2 Hwy 26 EB ramps/Glencoe Rd

Approach:	North	South	East	West
Cycle Length, C:	xxxxxx	72	xxxxxx	xxxxxx
Actual Green Time Per Lane Group, G:	xxxxxx	60.49	xxxxxx	xxxxxx
Effective Green Time Per Lane Group, g:	xxxxxx	20.11	xxxxxx	xxxxxx
Opposing Effective Green Time, go:	xxxxxx	16.11	xxxxxx	xxxxxx
Number Of Opposing Lanes, No:	xxxxxx	1	xxxxxx	xxxxxx
Number Of Lanes In Lane Group, N:	xxxxxx	1	xxxxxx	xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:	xxxxxx	374	xxxxxx	xxxxxx
Proportion of Left Turns in Lane Group, Plt:	xxxxxx	0.24	xxxxxx	xxxxxx
Proportion of Left Turns in Opp Flow, Plto:	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Left Turns Per Cycle, LTC:	xxxxxx	7.47	xxxxxx	xxxxxx
Adjusted Opposing Flow Rate, Vo:	xxxxxx	469	xxxxxx	xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:	xxxxxx	9.38	xxxxxx	xxxxxx
Opposing Platoon Ratio, Rpo:	xxxxxx	1.00	xxxxxx	xxxxxx
Lost Time Per Phase, tl:	xxxxxx	0.00	xxxxxx	xxxxxx
Eff grn until arrival of left-turn car, gf:	xxxxxx	2.87	xxxxxx	xxxxxx
Opposing Queue Ratio, qro:	xxxxxx	0.78	xxxxxx	xxxxxx
Eff grn blocked by opposing queue, gq:	xxxxxx	19.69	xxxxxx	xxxxxx
Eff grn while left turns filter thru, gu:	xxxxxx	0.42	xxxxxx	xxxxxx
Max opposing cars arriving during gq-gf, n:	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Proportion of Opposing Thru & RT cars, ptho:	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Left-turn Saturation Factor, fs:	xxxxxx	0.58	xxxxxx	xxxxxx
Proportion of Left Turns in Shared Lane, pl:	xxxxxx	0.24	xxxxxx	xxxxxx
Through-car Equivalents, el1:	xxxxxx	2.24	xxxxxx	xxxxxx
Single Lane Through-car Equivalents, el2:	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Minimum Left Turn Adjustment Factor, fmin:	xxxxxx	0.12	xxxxxx	xxxxxx
Single Lane Left Turn Adjustment Factor, fm:	xxxxxx	0.16	xxxxxx	xxxxxx
Left Turn Adjustment Factor, flt:	xxxxxx	0.16	xxxxxx	xxxxxx

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
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Level Of Service Detailed Computation Report (HCM2000 Queue Method)
2000 HCM Operations Method
Future Volume Alternative

Intersection #2 Hwy 26 EB ramps/Glencoe Rd

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Green/Cycle:	0.00	0.22	0.22	0.56	0.78	0.00	0.05	0.05	0.05	0.00	0.00	0.00
ArrivalType:	3			3			3			3		
ProgFactor:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Q1:	0.0	9.4	10.7	31.3	31.3	0.0	2.5	2.5	1.5	0.0	0.0	0.0
UpstreamVC:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UpstreamAdj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EarlyArrAdj:	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.00
Q2:	0.0	14.7	28.2	68.3	33.9	0.0	8.1	8.1	3.4	0.0	0.0	0.0
HCM2KQueue:	0.0	24.1	38.8	99.6	65.3	0.0	10.6	10.6	4.9	0.0	0.0	0.0
70th%Factor:	1.20	1.15	1.14	1.11	1.12	1.20	1.18	1.18	1.19	1.20	1.20	1.20
70th%HCM2kQ:	0.0	27.8	44.2	110.4	73.1	0.0	12.5	12.5	5.9	0.0	0.0	0.0
85th%Factor:	1.60	1.43	1.38	1.31	1.33	1.60	1.51	1.51	1.55	1.60	1.60	1.60
85th%HCM2kQ:	0.0	34.6	53.7	130.6	87.1	0.0	16.0	16.0	7.7	0.0	0.0	0.0
90th%Factor:	1.80	1.52	1.46	1.40	1.42	1.80	1.64	1.64	1.71	1.80	1.80	1.80
90th%HCM2kQ:	0.0	36.6	56.6	139.8	92.4	0.0	17.3	17.3	8.5	0.0	0.0	0.0
95th%Factor:	2.10	1.66	1.57	1.50	1.52	2.10	1.83	1.83	1.96	2.10	2.10	2.10
95th%HCM2kQ:	0.0	40.0	60.9	149.7	99.0	0.0	19.4	19.4	9.7	0.0	0.0	0.0
98th%Factor:	2.70	1.86	1.75	1.70	1.71	2.70	2.14	2.14	2.38	2.70	2.70	2.70
98th%HCM2kQ:	0.0	44.8	68.0	169.4	111	0.0	22.7	22.7	11.8	0.0	0.0	0.0

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Glencoe Road Interchange Area Management Plan - North Plains, Oregon
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Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Hwy 26 WB ramps/Glencoe Rd

Cycle (sec):	72	Critical Vol./Cap.(X):	1.378
Loss Time (sec):	12 (Y+R=4.0 sec)	Average Delay (sec/veh):	162.6
Optimal Cycle:	180	Level Of Service:	F

Street Name:	Glencoe Rd								Hwy 26 WB ramps							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Prot+Permit				Protected				Protected				Protected			
Rights:	Include				Include				Include				Include			
Min. Green:	0	0	0		0	0	0		0	0	0		0	0	0	
Lanes:	0	1	0	0 0	0	0	1	0 1	0	0	0	0 0	1	0	0	1 0
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM																
Base Vol:	107	186	0		0	328	71		0	0	0		520	2	262	
Growth Adj:	1.24	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.48	1.00	1.00	
Initial Bse:	133	186	0		0	328	71		0	0	0		770	2	262	
Added Vol:	0	210	0		0	309	84		0	0	0		0	0	276	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	133	396	0		0	637	155		0	0	0		770	2	538	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	140	417	0		0	671	163		0	0	0		810	2	566	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	140	417	0		0	671	163		0	0	0		810	2	566	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Final Vol.:	140	417	0		0	671	163		0	0	0		810	2	566	
Saturation Flow Module:																
Sat/Lane:	1800	1800	1800		1800	1800	1800		1800	1800	1800		1800	1800	1800	
Adjustment:	0.58	0.98	1.00		1.00	0.96	0.82		1.00	1.00	1.00		0.82	0.82	0.82	
Lanes:	0.25	0.75	0.00		0.00	1.00	1.00		0.00	0.00	0.00		1.00	0.01	0.99	
Final Sat.:	262	1318	0		0	1730	1471		0	0	0		1472	5	1468	
Capacity Analysis Module:																
Vol/Sat:	0.53	0.32	0.00		0.00	0.39	0.11		0.00	0.00	0.00		0.55	0.39	0.39	
Crit Moves:	****					****							****			
Green/Cycle:	0.52	0.47	0.00		0.00	0.26	0.26		0.00	0.00	0.00		0.37	0.37	0.37	
Volume/Cap:	1.01	0.68	0.00		0.00	1.50	0.43		0.00	0.00	0.00		1.50	1.05	1.05	
Delay/Veh:	53.0	17.2	0.0		0.0	265	23.1		0.0	0.0	0.0		259.6	76.8	76.8	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	53.0	17.2	0.0		0.0	265	23.1		0.0	0.0	0.0		259.6	76.8	76.8	
LOS by Move:	D	B	A		A	F	C		A	A	A		F	E	E	
HCM2kAvgQ:	20	11	0		0	44	3		0	0	0		53	22	22	

Note: Queue reported is the number of cars per lane.

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Future Volume Alternative

Intersection #3 Hwy 26 WB ramps/Glencoe Rd

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HCM Ops Adjusted Lane Utilization Module:												
Lanes:	0	1 0	0 0	0	0 1	0 1	0	0 0	0 0	1	0 0	1 0
Lane Group:	LT	LT	xxxx	xxxx	T	R	xxxx	xxxx	xxxx	L	RT	RT
#LnsInGrps:	1	1	0	0	1	1	0	0	0	1	1	1
HCM Ops Input Saturation Adj Module:												
Lane Width:	12	12	12	12	12	12	12	12	12	12	12	12
CrosswalkWid		8			8			8			8	
% Hev Veh:		2			3			0			4	
Grade:		-2%			+2%			0%			0%	
Parking/Hr:		No			No			No			No	
Bus Stp/Hr:		0			0			0			0	
Area Type:	< < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > > >											
Cnft Ped/Hr:		0			0			0			0	
ExclusiveRT:		Include			Include			Include			Include	
% RT Prtct:		0			0			0			0	
HCM Ops f(lt) Adj Case Module:												
f(lt) Case:	4	4	xxxx	xxxx xxxx	xxxx	xxxx xxxx	xxxx	2r	xxxx	xxxx		
HCM Ops Saturation Adj Module:												
Ln Wid Adj:	1.00	1.00	xxxxx	xxxx 1.00	1.00	xxxx xxxx	xxxxx	1.00	1.00	1.00		
Hev Veh Adj:	0.98	0.98	xxxxx	xxxx 0.97	0.97	xxxx xxxx	xxxxx	0.96	0.96	0.96		
Grade Adj:	1.01	1.01	xxxxx	xxxx 0.99	0.99	xxxx xxxx	xxxxx	1.00	1.00	1.00		
Parking Adj:	1.00	1.00	xxxxx	xxxx xxxx	1.00	xxxx xxxx	xxxxx	xxxx	1.00	1.00		
Bus Stp Adj:	1.00	1.00	xxxxx	xxxx xxxx	1.00	xxxx xxxx	xxxxx	xxxx	1.00	1.00		
Area Adj:	1.00	1.00	xxxxx	xxxx 1.00	1.00	xxxx xxxx	xxxxx	1.00	1.00	1.00		
RT Adj:	xxxx	xxxx	xxxxx	xxxx xxxx	0.85	xxxx xxxx	xxxxx	xxxx	0.85	0.85		
LT Adj:	0.99	0.99	xxxxx	xxxx xxxx	xxxxx	xxxx xxxx	xxxxx	0.85	xxxx	xxxxx		
PedBike Adj:	1.00	1.00	1.00	1.00 1.00	1.00	1.00 1.00	1.00	1.00	1.00	1.00		
HCM Sat Adj:	0.98	0.98	1.00	1.00 0.96	0.82	1.00 1.00	1.00	0.82	0.82	0.82		
Usr Sat Adj:	1.00	1.00	1.00	1.00 1.00	1.00	1.00 1.00	1.00	1.00	1.00	1.00		
MLF Sat Adj:	1.00	1.00	1.00	1.00 1.00	1.00	1.00 1.00	1.00	1.00	1.00	1.00		
Fnl Sat Adj:	0.98	0.98	1.00	1.00 0.96	0.82	1.00 1.00	1.00	0.82	0.82	0.82		
Delay Adjustment Factor Module:												
PrtPermCase:		2			xxxxx			xxxxx			xxxxx	
Coordinated:	< < < < < < < < < < < < < < < < No > > > > > > > > > > > > > > > >											
Signal Type:	< < < < < < < < < < < < < < Actuated > > > > > > > > > > > > > >											
DelAdjFctr:	1.00	1.00	0.00	0.00 1.00	1.00	0.00 0.00	0.00	1.00	1.00	1.00		

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Future Volume Alternative

Intersection #3 Hwy 26 WB ramps/Glencoe Rd

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L2	L1	T	L2	L1	T	L2	L1	T	L2	L1	T
Control:	Prot+Permit			Protected			Protected			Protected		
HCM Ops f(rt) and f(lt) Adj Case Module:												
f(rt) Case:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	2
f(lt) Case:	5	4	4	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	2r	xxxx
HCM Ops Saturation Adj Module:												
Ln Wid Adj:	1.00	1.00	1.00	xxxx	xxxx	1.00	xxxx	xxxx	xxxxx	xxxx	1.00	1.00
Hev Veh Adj:	0.98	0.98	0.98	xxxx	xxxx	0.97	xxxx	xxxx	xxxxx	xxxx	0.96	0.96
Grade Adj:	1.01	1.01	1.01	xxxx	xxxx	0.99	xxxx	xxxx	xxxxx	xxxx	1.00	1.00
Parking Adj:	1.00	1.00	1.00	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	1.00
Bus Stp Adj:	1.00	1.00	1.00	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	1.00
Area Adj:	1.00	1.00	1.00	xxxx	xxxx	1.00	xxxx	xxxx	xxxxx	xxxx	1.00	1.00
RT Adj:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	0.85
LT Adj:	0.32	0.99	0.99	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	0.85	xxxxx
HCM Sat Adj:	0.32	0.98	0.98	xxxx	xxxx	0.96	xxxx	xxxx	xxxxx	xxxx	0.82	0.82
Usr Sat Adj:	1.00	1.00	1.00	xxxx	xxxx	1.00	xxxx	xxxx	xxxxx	xxxx	1.00	1.00
MLF Sat Adj:	1.00	1.00	1.00	xxxx	xxxx	1.00	xxxx	xxxx	xxxxx	xxxx	1.00	1.00
Fnl Sat Adj:	0.32	0.98	0.98	xxxx	xxxx	0.96	xxxx	xxxx	xxxxx	xxxx	0.82	0.82
Volume Module:												
Volume:	47	93	417	xxxx	xxxx	671	xxxx	xxxx	xxxxx	xxxx	810	2
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	xxxx	xxxx	1800	xxxx	xxxx	xxxxx	xxxx	1800	1800
Adjustment:	0.32	0.98	0.98	xxxx	xxxx	0.96	xxxx	xxxx	xxxxx	xxxx	0.82	0.82
Lanes:	0.25	0.25	0.75	xxxx	xxxx	1.00	xxxx	xxxx	xxxxx	xxxx	1.00	0.01
Final Sat.:	145	442	1318	xxxx	xxxx	1730	xxxx	xxxx	xxxxx	xxxx	1472	5
Capacity Analysis Module:												
Vol/Sat:	0.32	0.21	0.32	xxxx	xxxx	0.39	xxxx	xxxx	xxxx	xxxx	0.55	0.39
Crit Moves:	****				****						****	
Green/Cycle:	0.31	0.21	0.47	xxxx	xxxx	0.26	xxxx	xxxx	xxxx	xxxx	0.37	0.37
Volume/Cap:	1.03	1.00	0.68	xxxx	xxxx	1.50	xxxx	xxxx	xxxx	xxxx	1.50	1.05

Note: L2 = Permitted Left, L1 = Protected Left, T = Thru

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday PM Peak Hour

Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
2000 HCM Operations Method
Future Volume Alternative

Intersection #3 Hwy 26 WB ramps/Glencoe Rd

Approach:	North	South	East	West
Cycle Length, C:	72	xxxxxx	xxxxxx	xxxxxx
Actual Green Time Per Lane Group, G:	37.67	xxxxxx	xxxxxx	xxxxxx
Effective Green Time Per Lane Group, g:	22.54	xxxxxx	xxxxxx	xxxxxx
Opposing Effective Green Time, go:	18.54	xxxxxx	xxxxxx	xxxxxx
Number Of Opposing Lanes, No:	1	xxxxxx	xxxxxx	xxxxxx
Number Of Lanes In Lane Group, N:	1	xxxxxx	xxxxxx	xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:	140	xxxxxx	xxxxxx	xxxxxx
Proportion of Left Turns in Lane Group, Plt:	0.25	xxxxxx	xxxxxx	xxxxxx
Proportion of Left Turns in Opp Flow, Plto:	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Left Turns Per Cycle, LTC:	2.79	xxxxxx	xxxxxx	xxxxxx
Adjusted Opposing Flow Rate, Vo:	671	xxxxxx	xxxxxx	xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:	13.42	xxxxxx	xxxxxx	xxxxxx
Opposing Platoon Ratio, Rpo:	1.00	xxxxxx	xxxxxx	xxxxxx
Lost Time Per Phase, tl:	0.00	xxxxxx	xxxxxx	xxxxxx
Eff grn until arrival of left-turn car, gf:	7.30	xxxxxx	xxxxxx	xxxxxx
Opposing Queue Ratio, qro:	0.74	xxxxxx	xxxxxx	xxxxxx
Eff grn blocked by opposing queue, gq:	22.54	xxxxxx	xxxxxx	xxxxxx
Eff grn while left turns filter thru, gu:	0.00	xxxxxx	xxxxxx	xxxxxx
Max opposing cars arriving during gq-gf, n:	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Proportion of Opposing Thru & RT cars, ptho:	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Left-turn Saturation Factor, fs:	0.46	xxxxxx	xxxxxx	xxxxxx
Proportion of Left Turns in Shared Lane, pl:	0.25	xxxxxx	xxxxxx	xxxxxx
Through-car Equivalents, el1:	2.71	xxxxxx	xxxxxx	xxxxxx
Single Lane Through-car Equivalents, el2:	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Minimum Left Turn Adjustment Factor, fmin:	0.11	xxxxxx	xxxxxx	xxxxxx
Single Lane Left Turn Adjustment Factor, fm:	0.32	xxxxxx	xxxxxx	xxxxxx
Left Turn Adjustment Factor, flt:	0.32	xxxxxx	xxxxxx	xxxxxx

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Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday PM Peak Hour

Level Of Service Detailed Computation Report (HCM2000 Queue Method)
2000 HCM Operations Method
Future Volume Alternative

Intersection #3 Hwy 26 WB ramps/Glencoe Rd

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Green/Cycle:	0.21	0.47	0.00	0.00	0.26	0.26	0.00	0.00	0.00	0.37	0.37	0.37
ArrivalType:	3			3			3			3		
ProgFactor:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Q1:	11.1	8.7	0.0	0.0	13.4	2.7	0.0	0.0	0.0	16.2	11.4	11.4
UpstreamVC:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UpstreamAdj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EarlyArrAdj:	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
Q2:	8.7	2.0	0.0	0.0	30.8	0.7	0.0	0.0	0.0	36.7	10.5	10.5
HCM2KQueue:	19.9	10.6	0.0	0.0	44.2	3.5	0.0	0.0	0.0	52.9	21.8	21.8
70th%Factor:	1.16	1.18	1.20	1.20	1.13	1.19	1.20	1.20	1.20	1.13	1.16	1.16
70th%HCM2kQ:	23.1	12.5	0.0	0.0	50.1	4.1	0.0	0.0	0.0	59.6	25.3	25.3
85th%Factor:	1.45	1.51	1.60	1.60	1.37	1.57	1.60	1.60	1.60	1.35	1.44	1.44
85th%HCM2kQ:	28.9	16.1	0.0	0.0	60.6	5.4	0.0	0.0	0.0	71.5	31.6	31.6
90th%Factor:	1.55	1.64	1.80	1.80	1.44	1.74	1.80	1.80	1.80	1.43	1.53	1.53
90th%HCM2kQ:	30.7	17.4	0.0	0.0	63.9	6.0	0.0	0.0	0.0	75.6	33.5	33.5
95th%Factor:	1.70	1.83	2.10	2.10	1.55	2.00	2.10	2.10	2.10	1.53	1.68	1.68
95th%HCM2kQ:	33.7	19.5	0.0	0.0	68.6	6.9	0.0	0.0	0.0	81.1	36.7	36.7
98th%Factor:	1.92	2.14	2.70	2.70	1.73	2.47	2.70	2.70	2.70	1.72	1.89	1.89
98th%HCM2kQ:	38.1	22.8	0.0	0.0	76.7	8.5	0.0	0.0	0.0	90.9	41.2	41.2

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
*******************************************************************************
Intersection #4 Texaco Dwy/Glencoe Rd
*******************************************************************************
Average Delay (sec/veh):      0.0       Worst Case Level Of Service: C[ 17.3]
*******************************************************************************
Street Name:            Glencoe Rd                    Texaco Dwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  0  0  1  0    0  0  1  0  0    0  0  0  0  0    0  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:       0  399    49     0  399     0     0    0     0     0    0     1
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  399    49     0  399     0     0    0     0     0    0     1
Added Vol:      0  486     0     0  393     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0  885    49     0  792     0     0    0     0     0    0     1
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     0  983    54     0  880     0     0    0     0     0    0     1
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     0  983    54     0  880     0     0    0     0     0    0     1
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   6.2
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx  1011
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   294
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   294
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   0.0
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  17.3
LOS by Move:   *    *     *     *    *     *     *    *     *     *    *     C
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:    *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:    xxxxxx            xxxxxx            xxxxxx              17.3
ApproachLOS:        *                 *                 *                  C
*******************************************************************************
Note: Queue reported is the number of cars per lane.
```


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Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

```
*******************************************************************************
Intersection #4 Texaco Dwy/Glencoe Rd
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             2%               1%               2%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:       #5
Dist(miles):      0.000
Speed (mph):      35.00
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol:   0 xxxxx xxxxx    0 xxxxx xxxxx    0     0     0    0     0  1011
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol:   0 xxxxx xxxxx    0 xxxxx xxxxx    0     0     0    0     0  1011
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:  900 xxxxx xxxxx  900 xxxxx xxxxx  900   900   900  900   900   294
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:   900 xxxxx xxxxx  900 xxxxx xxxxx  900   900   900  900   900   294
```

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Glencoe Road Interchange Area Management Plan - North Plains, Oregon
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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 NW Highland Ct/Glencoe Rd

Average Delay (sec/veh): 76.5 Worst Case Level Of Service: F[1166.3]

```
Street Name:            Glencoe Rd                    NW Highland Ct
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:      97  293    10    12  261    15    10    4    87    51    4    20
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   97  293    10    12  261    15    10    4    87    51    4    20
Added Vol:     47  398    41     0  325     4     4    0    33    35    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  144  691    51    12  586    19    14    4   120    86    4    20
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:   160  768    57    13  651    21    16    4   133    96    4    22
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:   160  768    57    13  651    21    16    4   133    96    4    22
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  672 xxxx xxxxx   824 xxxx xxxxx  1818 1833   662  1873 1815   796
Potent Cap.:  918 xxxx xxxxx   810 xxxx xxxxx    60   76   462    56   79   390
Move Cap.:    918 xxxx xxxxx   810 xxxx xxxxx    46   62   462    32   64   390
Volume/Cap:  0.17 xxxx  xxxx  0.02 xxxx  xxxx  0.34 0.07  0.29  2.98 0.07  0.06
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.6 xxxx xxxxx   0.1 xxxx xxxxx   1.2 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  9.7 xxxx xxxxx   9.5 xxxx xxxxx 119.0 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     A    *     *     F    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   382  xxxx   39 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   1.6 xxxxx 13.7 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  19.6 xxxxx 1166 xxxxx
Shared LOS:    *    *     *     *    *     *     *    *     C     *    F     *
ApproachDel:    xxxxxx            xxxxxx              29.7           1166.3
ApproachLOS:        *                 *                 D                F
```

Note: Queue reported is the number of cars per lane.

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Glencoe Road Interchange Area Management Plan - North Plains, Oregon
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Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #5 NW Highland Ct/Glencoe Rd

```
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             2%               1%               2%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.000 ( 0.031)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 672 xxxxx xxxxx  824 xxxxx xxxxx 1818  1833   662 1873  1815   796
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 672 xxxxx xxxxx  824 xxxxx xxxxx 1818  1833   662 1873  1815   796
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:  918 xxxxx xxxxx  810 xxxxx xxxxx   60    76   462   56    79   390
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:   918 xxxxx xxxxx  810 xxxxx xxxxx   60    76   462   56    79   390
```

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Glencoe Road Interchange Area Management Plan - North Plains, Oregon
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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
*******************************************************************************
Intersection #6 Chevron Dwy/Glencoe Rd
*******************************************************************************
Average Delay (sec/veh):      0.6       Worst Case Level Of Service: C[ 16.6]
*******************************************************************************
Street Name:            Glencoe Rd                    Chevron Dwy
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  1  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:      23  300     0     0  266    28    16    0    22     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   23  300     0     0  266    28    16    0    22     0    0     0
Added Vol:      0  401     0     0  330     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   23  701     0     0  596    28    16    0    22     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    26  779     0     0  662    31    18    0    24     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    26  779     0     0  662    31    18    0    24     0    0     0
Critical Gap Module:
Critical Gp:  4.2 xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx   6.2 xxxxx xxxx xxxxx
FollowUpTim:  2.3 xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  693 xxxx xxxxx  xxxx xxxx xxxxx  1508 xxxx   678  xxxx xxxx xxxxx
Potent Cap.:  884 xxxx xxxxx  xxxx xxxx xxxxx   134 xxxx   456  xxxx xxxx xxxxx
Move Cap.:    884 xxxx xxxxx  xxxx xxxx xxxxx   131 xxxx   456  xxxx xxxx xxxxx
Total Cap:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   269    0 xxxxx     0    0 xxxxx
Volume/Cap:  0.03 xxxx  xxxx  xxxx xxxx  xxxx  0.07 xxxx  0.05  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  9.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  353 xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.4 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 16.6 xxxxx xxxxx xxxx xxxxx
Shared LOS:    *    *     *     *    *     *     *    C     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             16.6           xxxxxx
ApproachLOS:        *                *                C                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
```


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Glencoe Road Interchange Area Management Plan - North Plains, Oregon
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Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

```
*******************************************************************************
Intersection #6 Chevron Dwy/Glencoe Rd
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:             6%               1%               0%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------||---------------||---------------||---------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.000 ( 0.031)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000
beta:             0.000
ta (secs):        0.000
F:                0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 693 xxxxx xxxxx    0 xxxxx xxxxx 1508     0   678    0     0     0
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 693 xxxxx xxxxx    0 xxxxx xxxxx 1508     0   678    0     0     0
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:  884 xxxxx xxxxx  900 xxxxx xxxxx  134   900   456  900   900   900
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:   884 xxxxx xxxxx  900 xxxxx xxxxx  134   900   456  900   900   900
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday PM Peak Hour

```
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance [Median Type: TWLTL][Median Storage: 1 car]
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage One Module:
InitCfltVol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  678     0 xxxxx    0     0 xxxxx
UpstreamSat:xxxx xxxxx xxxxx xxxx xxxxx xxxxx    0     0 xxxxx    0     0 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Cnflict Vol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  678     0 xxxxx    0     0 xxxxx
InitPotCap: xxxx xxxxx xxxxx xxxx xxxxx xxxxx  508   900 xxxxx  900   900 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Potent Cap.:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  508   900 xxxxx  900   900 xxxxx
Move Cap.:  xxxx xxxxx xxxxx xxxx xxxxx xxxxx  508   900 xxxxx  874   874 xxxxx
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage Two Module:
InitCfltVol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  830     0 xxxxx    0     0 xxxxx
UpstreamSat:xxxx xxxxx xxxxx xxxx xxxxx xxxxx    0     0 xxxxx    0     0 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Cnflict Vol:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  830     0 xxxxx    0     0 xxxxx
InitPotCap: xxxx xxxxx xxxxx xxxx xxxxx xxxxx  432   900 xxxxx  900   900 xxxxx
UpstreamAdj:xxxx xxxxx xxxxx xxxx xxxxx xxxxx 1.00  1.00 xxxxx 1.00  1.00 xxxxx
Potent Cap.:xxxx xxxxx xxxxx xxxx xxxxx xxxxx  432   900 xxxxx  900   900 xxxxx
Move Cap.:  xxxx xxxxx xxxxx xxxx xxxxx xxxxx  419   874 xxxxx  852   900 xxxxx
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
*******************************************************************************
Intersection #7 NW Pacific St/Glencoe Rd
*******************************************************************************
Average Delay (sec/veh):     37.5       Worst Case Level Of Service: F[301.5]
*******************************************************************************
Street Name:            Glencoe Rd                    NW Pacific St
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  0  1  0    1  0  0  1  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:      40  255     9     5  277     6    29    0     4     6    1     4
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   40  255     9     5  277     6    29    0     4     6    1     4
Added Vol:     50  273    78    55  234    10     9    3    29    67    4    59
PasserByVol:    0  -10    10     5   -5     0     0    0     0     5    0    10
Initial Fut:   90  518    97    65  506    16    38    3    33    78    5    73
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:   100  576   108    72  562    18    42    3    37    87    6    81
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:   100  576   108    72  562    18    42    3    37    87    6    81
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  580 xxxx xxxxx   683 xxxx xxxxx  1588 1599   571  1565 1554   629
Potent Cap.:  999 xxxx xxxxx   914 xxxx xxxxx    88  107   524    91  114   486
Move Cap.:    999 xxxx xxxxx   914 xxxx xxxxx    61   89   524    72   95   486
Volume/Cap:  0.10 xxxx  xxxx  0.08 xxxx  xxxx  0.69 0.04  0.07  1.21 0.06  0.17
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.3 xxxx xxxxx   0.3 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  9.0 xxxx xxxxx   9.3 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  103 xxxxx  xxxx  121 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  4.4 xxxxx xxxxx 12.0 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  116 xxxxx xxxxx  301 xxxxx
Shared LOS:    *    *     *     *    *     *     *    F     *     *    F     *
ApproachDel:    xxxxxx            xxxxxx             116.1            301.5
ApproachLOS:        *                 *                 F                F
*******************************************************************************
Note: Queue reported is the number of cars per lane.
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

```
*******************************************************************************
Intersection #7 NW Pacific St/Glencoe Rd
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------|---------------|---------------|---------------|
HevVeh:             1%               1%               0%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------|---------------|---------------|---------------|
Upstream Signals:
Link Index:       #5
Dist(miles):  0.000 ( 0.031)
Speed (mph):  35.00 ( 35.00)
SignalIndex:      #3
Cycle Time:           0 secs
InitVolume:     0     0
Saturation:     0     0
ArrivalType:    0     0
G/C:         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000 0.000
gq1:         0.00  0.00
gq2:         0.00  0.00
gq:          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:           0.000
beta:            0.000
ta (secs):       0.000
F:               0.000
f:          0.000 0.000
vcmax:          0     0
vcg:            0     0
vcmin:          0     0
tp:           0.0   0.0
p:               0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 580 xxxxx xxxxx  683 xxxxx xxxxx 1588  1599   571 1565  1554   629
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 580 xxxxx xxxxx  683 xxxxx xxxxx 1588  1599   571 1565  1554   629
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:  999 xxxxx xxxxx  914 xxxxx xxxxx   88   107   524   91   114   486
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:   999 xxxxx xxxxx  914 xxxxx xxxxx   88   107   524   91   114   486
```


Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

```
*******************************************************************************
Intersection #8 NW Cottage St/Glencoe Rd
*******************************************************************************
Average Delay (sec/veh):     33.8       Worst Case Level Of Service: F[213.3]
*******************************************************************************
Street Name:            Glencoe Rd                    NW Cottage St
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------||---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  0  1  0    1  0  0  1  0    0  0  1! 0  0    0  0  1! 0  0
------------||---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM
Base Vol:      14  252     0     0  261     3     3    0    10     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   14  252     0     0  261     3     3    0    10     0    0     0
Added Vol:     16  309    16   101  264     1     3    6    20    19   10   105
PasserByVol:    0  -55    55    35  -35     0     0    0     0    35    0    55
Initial Fut:   30  506    71   136  490     4     6    6    30    54   10   160
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    33  562    79   151  544     4     7    7    33    60   11   178
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    33  562    79   151  544     4     7    7    33    60   11   178
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------||---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  549 xxxx xxxxx   641 xxxx xxxxx  1612 1557   547  1537 1519   602
Potent Cap.: 1021 xxxx xxxxx   939 xxxx xxxxx    85  114   541    96  120   504
Move Cap.:   1021 xxxx xxxxx   939 xxxx xxxxx    43   92   541    73   97   504
Volume/Cap:  0.03 xxxx  xxxx  0.16 xxxx  xxxx  0.16 0.07  0.06  0.83 0.11  0.35
------------||---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.1 xxxx xxxxx   0.6 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.6 xxxx xxxxx   9.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   A    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  161 xxxxx  xxxx  192 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  1.1 xxxxx xxxxx 13.8 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 36.1 xxxxx xxxxx  213 xxxxx
Shared LOS:    *    *     *     *    *     *     *    E     *     *    F     *
ApproachDel:    xxxxxx            xxxxxx              36.1            213.3
ApproachLOS:        *                 *                 E                F
*******************************************************************************
Note: Queue reported is the number of cars per lane.
```

Kittelson & Associates, Inc. - Project #7191
Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM Unsignalized Method
Future Volume Alternative

Intersection #8 NW Cottage St/Glencoe Rd

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
HevVeh:	2%			3%			0%			0%		
Grade:	0%			0%			0%			0%		
Peds/Hour:	0			0			0			0		

Pedestrian Walk Speed: 4.00 feet/sec

LaneWidth:	12 feet	12 feet	12 feet	12 feet

Time Period: 0.25 hour

Upstream Signals:

Link Index:	#5	
Dist(miles):	0.000 (0.031)	
Speed (mph):	35.00 (35.00)	
SignalIndex:	#3	
Cycle Time:	0 secs	
InitVolume:	0	0
Saturation:	0	0
ArrivalType:	0	0
G/C:	0.00	0.00

*** Computation 1: Time for Queue to Clear at Each Upstream Intersection

P:	0.000	0.000
gq1:	0.00	0.00
gq2:	0.00	0.00
gq:	0.00	0.00

*** Computation 2: Time Intersection Blocked Because of Upstream Platoons

alpha:	0.000	
beta:	0.000	
ta (secs):	0.000	
F:	0.000	
f:	0.000	0.000
vcmax:	0	0
vcg:	0	0
vcmin:	0	0
tp:	0.0	0.0
p:	0.000	

*** Computation 3: Platoon Event Periods

pdom/psubo: 0.000/0.000/Unconstrained

*** Computation 4: Conflicting Flows During Each Unblocked Period

InitCnflVol:	549	xxxxx	xxxxx	641	xxxxx	xxxxx	1612	1557	547	1537	1519	602
UpstreamAdj:	1.00	x.xxx	x.xxx	1.00	x.xxx	x.xxx	1.00	1.000	1.000	1.00	1.000	1.000
ConflictVol:	549	xxxxx	xxxxx	641	xxxxx	xxxxx	1612	1557	547	1537	1519	602

*** Computation 5: Capactiy for Subject Movement During Unblocked Period

InitPotCap:	1021	xxxxx	xxxxx	939	xxxxx	xxxxx	85	114	541	96	120	504
UpstreamAdj:	1.00	x.xxx	x.xxx	1.00	x.xxx	x.xxx	1.00	1.000	1.000	1.00	1.000	1.000
PotentCap:	1021	xxxxx	xxxxx	939	xxxxx	xxxxx	85	114	541	96	120	504

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Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #9 NW Commercial/Glencoe Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	1.180
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	69.8
Optimal Cycle:	0	Level Of Service:	F

Street Name:	Glencoe Rd				NW Commercial/West Union							
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0

Volume Module: >> Count Date: 16 Nov 2005 << 4:45 PM to 5:45 PM

Base Vol:	79	139	42	29	123	7	11	19	62	68	33	31
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	79	139	42	29	123	7	11	19	62	68	33	31
Added Vol:	181	111	136	27	70	1	2	79	145	158	165	26
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	260	250	178	56	193	8	13	98	207	226	198	57
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	289	278	198	62	214	9	14	109	230	251	220	63
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	289	278	198	62	214	9	14	109	230	251	220	63
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	289	278	198	62	214	9	14	109	230	251	220	63

Saturation Flow Module:

Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.58	0.42	1.00	0.96	0.04	0.04	0.31	0.65	0.47	0.41	0.12
Final Sat.:	411	263	188	377	383	16	18	139	294	213	186	54

Capacity Analysis Module:

Vol/Sat:	0.70	1.05	1.05	0.17	0.56	0.56	0.78	0.78	0.78	1.18	1.18	1.18
Crit Moves:			****		****			****			****	
Delay/Veh:	29.7	85.3	85.3	13.9	22.0	22.0	33.5	33.5	33.5	128.2	128	128.2
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	29.7	85.3	85.3	13.9	22.0	22.0	33.5	33.5	33.5	128.2	128	128.2
LOS by Move:	D	F	F	B	C	C	D	D	D	F	F	F

ApproachDel:	64.3	20.2	33.5	128.2
Delay Adj:	1.00	1.00	1.00	1.00
ApprAdjDel:	64.3	20.2	33.5	128.2
LOS by Appr:	F	C	D	F

AllWayAvgQ:	2.1	9.3	9.3	0.2	1.2	1.2	2.8	2.8	2.8	14.7	14.7	14.7

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Glencoe Road Interchange Area Management Plan - North Plains, Oregon
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Note: Queue reported is the number of cars per lane.

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Glencoe Road Interchange Area Management Plan - North Plains, Oregon
Year 2030 No-Build Weekday PM Peak Hour

Level Of Service Detailed Computation Report
2000 HCM 4-Way Stop Method
Future Volume Alternative

Intersection #9 NW Commercial/Glencoe Rd

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R

Time Period: 0.25 hour
HevVeh: 1% 1% 2% 4%
Alpha Value: 0.01

GroupType:	5	5	2	2
P[C1]:	0.0000	0.0000	0.0000	0.0000
P[C2]:	0.0000	0.0000	0.0000	0.0000
P[C3]:	0.0838	0.0000	0.0000	0.0838
P[C4]:	0.4312	0.2230	0.3757	0.4312
P[C5]:	0.4851	0.7770	0.6243	0.4851
Padj[C1]:	0.03401	0.03777	0.03624	0.03401
Padj[C2]:	0.02401	0.02777	0.02624	0.02401
Padj[C3]:	0.01150	0.01777	0.01624	0.01150
Padj[C4]:	-0.02102	-0.00561	-0.01630	-0.02102
Padj[C5]:	-0.04851	-0.07770	-0.06243	-0.04851

Lanes:	L1	L2	L1	L2	L1	L2	L1	L2
LaneType:	LEFT	RTTHRU	LEFT	RTTHRU	LTR	NOLANE	LTR	NOLANE
HeadwayAdj:	0.517	-0.274	0.517	-0.011	-0.348	xx.xxx	0.091	xx.xxx
Volume:	289	476	62	223	353	xxxxxx	534	xxxxxx
Capacity:	411	451	377	399	451	xxxxx	453	xxxxx
DegOfUtil:	0.70	1.05	0.16	0.55	0.78	x.xx	1.18	x.xx
DepHeadway:	8.76	7.97	9.42	8.89	7.92	xx.xx	7.95	xx.xx
ServiceTime:	6.5	5.7	7.1	6.6	5.9	xx.x	6.0	xx.x
Delay:	29.7	85.3	13.9	22.0	33.5	xxx.x	128.2	xxx.x
Queue:	2.1	9.3	0.2	1.2	2.8	xxx.x	14.7	xxx.x

Approach:	North Bound	South Bound	East Bound	West Bound
ApproachDel:	64.3	20.2	33.5	128.2
Delay Adj:	1.00	1.00	1.00	1.00
ApprAdjDel:	64.3	20.2	33.5	128.2
LOS by Appr:	F	C	D	F

OverallDel: 69.8
OverallLOS: F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)		0%			0%			2%			-2%	
Total Lost time (s)		3.0	3.0					3.0	3.0		3.0	
Lane Util. Factor		1.00	1.00					1.00	1.00		1.00	
Frt		1.00	0.85					1.00	0.85		1.00	
Flt Protected		0.95	1.00					1.00	1.00		0.99	
Satd. Flow (prot)		1665	1485					1656	1408		1670	
Flt Permitted		0.95	1.00					1.00	1.00		0.99	
Satd. Flow (perm)		1665	1485					1656	1408		1670	
Volume (vph)	119	1	73	0	0	0	0	445	505	355	1133	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	125	1	77	0	0	0	0	468	532	374	1193	0
Lane Group Flow (vph)	0	126	77	0	0	0	0	468	532	0	1567	0
Heavy Vehicles (%)	3%	3%	3%	0%	0%	0%	4%	4%	4%	4%	4%	4%
Turn Type	Split		Prot						Prot	pm+pt		
Protected Phases	4	4	4					2	2	1	6	
Permitted Phases								2		6	6	
Actuated Green, G (s)		7.5	7.5					56.0	56.0		56.0	
Effective Green, g (s)		8.5	8.5					57.5	57.5		57.5	
Actuated g/C Ratio		0.12	0.12					0.80	0.80		0.80	
Clearance Time (s)		4.0	4.0					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		197	175					1323	1124		1334	
v/s Ratio Prot		c0.08	0.05					0.28	0.38		c0.94	
v/s Ratio Perm												
v/c Ratio		0.64	0.44					0.35	0.47		1.17	
Uniform Delay, d1		30.3	29.5					2.0	2.3		7.2	
Progression Factor		1.00	1.00					1.00	1.00		2.08	
Incremental Delay, d2		14.9	7.8					0.7	1.4		79.4	
Delay (s)		45.1	37.4					2.8	3.8		94.5	
Level of Service		D	D					A	A		F	
Approach Delay (s)		42.2			0.0			3.3			94.5	
Approach LOS		D			A			A			F	

Intersection Summary			
HCM Average Control Delay	57.8	HCM Level of Service	E
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	72.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	140.2%	ICU Level of Service	H

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)		0%			2%			-2%			2%	
Total Lost time (s)				3.0	3.0			3.0			3.0	3.0
Lane Util. Factor				1.00	1.00			1.00			1.00	1.00
Frt				1.00	0.85			1.00			1.00	0.85
Flt Protected				0.95	1.00			0.99			1.00	1.00
Satd. Flow (prot)				1628	1457			1702			1672	1422
Flt Permitted				0.95	1.00			0.46			1.00	1.00
Satd. Flow (perm)				1628	1457			788			1672	1422
Volume (vph)	0	0	0	769	2	538	132	396	0	0	637	155
Peak-hour factor, PHF	0.95	0.95	1.00	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	809	2	566	139	417	0	0	671	163
Lane Group Flow (vph)	0	0	0	809	568	0	0	556	0	0	671	163
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	2%	2%	2%	3%	3%	3%
Turn Type				Split			pm+pt					Prot
Protected Phases				8	8		5	2			6	6
Permitted Phases							2					
Actuated Green, G (s)				28.5	28.5			35.0			35.0	35.0
Effective Green, g (s)				29.5	29.5			36.5			36.5	36.5
Actuated g/C Ratio				0.41	0.41			0.51			0.51	0.51
Clearance Time (s)				4.0	4.0			4.5			4.5	4.5
Vehicle Extension (s)				3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)				667	597			399			848	721
v/s Ratio Prot				c0.50	0.39						0.40	0.11
v/s Ratio Perm								c0.71				
v/c Ratio				1.21	0.95			1.39			0.79	0.23
Uniform Delay, d1				21.2	20.6			17.8			14.6	9.9
Progression Factor				1.00	1.00			0.67			1.00	1.00
Incremental Delay, d2				109.3	26.6			190.7			7.5	0.7
Delay (s)				130.5	47.2			202.6			22.1	10.6
Level of Service				F	D			F			C	B
Approach Delay (s)		0.0			96.1			202.6			19.8	
Approach LOS		A			F			F			B	

Intersection Summary			
HCM Average Control Delay	94.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	72.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	125.9%	ICU Level of Service	H

c Critical Lane Group

Appendix G3

Technical Memorandum #3a – Opportunities and Constraints Qualitative Analysis

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TECHNICAL MEMORANDUM

Glencoe Interchange Area Management Plan
Technical Memorandum #3a
IAMP Opportunities and Constraints Analysis – Qualitative Analysis

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Date: July 7, 2006 **Project** #: 7191

To: PMT / SWG Committees

From: Matt Hughart, AICP, Andrew Ooms, Marc Butorac, P.E., P.T.O.E.

cc: Glencoe Project Team

This technical memorandum is the third in a series of memorandums that are being prepared for the Glencoe Interchange Area Management Plan (IAMP). This memorandum documents the development and preliminary evaluation of the interchange design concepts that have been developed as part of the IAMP process. Included in this memorandum is a description of the process used to develop the initial concepts, a qualitative assessment of each interchange form concept, and a preliminary consultant team ranking of each concept.

The purpose of this memorandum is to provide the PDT and SWG committee members with an assessment and feasibility analysis of the initial interchange concepts, and to assist in the screening process that will pare the number of concepts down for a more detailed quantitative assessment.

CONCEPT DEVELOPMENT PROCESS

The development of the initial interchange concepts for the Glencoe IAMP began with two separate design workshops. The first workshop was held for members of the PDT and SWG committees, while the second workshop was held for interested citizens, business owners, and landowners in a public open house setting. Both of these workshops were held on the week of June 5th, 2006.

Within each workshop, participants were presented with an overview of applicable interchange design forms and basic design parameters. Following these presentation overviews, participants

were asked to sketch their ideas for a new interchange form that would serve the City of North Plains and the surrounding regional study area.

Following the completion of the PDT/SWG and public workshops, the project team took all of the individual design ideas and grouped them into various interchange forms. After the initial grouping, each group was further sorted into common and unique interchange concepts. Based on this process, a representative interchange diagram was developed from the common and unique interchange form concepts. As part of this process, the project team made some technical refinements to the interchange form concepts to ensure basic design parameters were being met. This process resulted in 33 different interchange form diagrams/concepts which are presented in *Appendix "A"*.

CONCEPT SCREENING

Preliminary Purpose and Need Screening

Once the initial set of interchange concepts were developed, the project team first performed a preliminary assessment to determine if any of the concepts were not meeting the basic intent of the official project Purpose and Need Statement. The official Purpose and Need Statement, as approved by the SWG and adopted by the PDT, is outlined below:

Purpose of the Project

The purpose of the project is to improve the safety and efficiency of the existing interchange connection between the Sunset Highway (US26) and Glencoe Road within North Plains, to serve the growing demand of regional and local travel.

Need of the Project

Glencoe Road currently experiences heavy backup and delay at the ramp terminal intersections with the Sunset Highway. The average daily traffic (ADT) on Glencoe Road at the Sunset Highway interchange today (2005) is 9,500 north of the interchange and 13,400 south of the interchange, with an anticipated increase to 17,000 north of the interchange and 21,500 south of the interchange by the year 2030 (or 20 years from assumed year of construction).

The existing Glencoe Road structure is not of sufficient height or width to effectively accommodate all freight and passenger traffic traveling on the Sunset Highway and Glencoe Road. There is inadequate intersection sight distance from the ramps to the structure.

The interchange structure and Glencoe Road width is not sufficient to accommodate bicycles and there are no pedestrian sidewalks. Driveway and road approaches on Glencoe Road are in close proximity to the interchange ramp intersections. These closely spaced intersections affect the operations of the interchange.

Future growth in North Plains and Western Washington County will increase congestion, difficulty to access adjacent businesses north of the structure from Glencoe Road, and the likelihood of safety problems for drivers and bicyclists.

From this initial screening, it was determined that Concepts #6, 11A, 11B, 19, 23, 24, 25, 26, and 27 were not meeting the basic intent of the project Purpose and Need Statement as outlined below.

- Concept #6 – The concept does not improve the safety and efficiency of the interchange as it does not accommodate westbound to northbound or southbound to eastbound movements between the City of North Plains and US 26.
- Concept #11A – This concept only proposes to extend the existing interchange ramp acceleration and deceleration lanes. As a result, it does not address the existing/future capacity deficiencies, sight distance deficiencies, access spacing, and multi-modal deficiencies of the Glencoe Road interchange.
- Concept #11B – This concept only proposes to widen the existing Glencoe Road overpass to a three-lane cross-section. As a result, it does not fully address potential future capacity deficiencies, sight distance deficiencies, and ramp acceleration/deceleration deficiencies.
- Concept #19 – This concept proposes a split diamond between Glencoe Road and Gordon Road with a frontage road along US 26. Due to the configuration of the split diamond interchange, the interchange form does not efficiently accommodate access from Glencoe Road to US 26 westbound.
- Concept #23 – This concept proposes to remove the westbound US 26 on- and off-ramps and develop a new interchange at Gordon Road. As a result, the Glencoe Road interchange modification would no longer efficiently accommodate full movements at Glencoe Road, potentially forcing certain Glencoe Road traffic movements through City streets to the proposed Gordon Road interchange.
- Concept #24 – This concept proposes a new interchange at Gordon Road with no improvements or modifications to the existing Glencoe Road overpass. As a result, it does not address the existing sight distance deficiencies, access spacing, and multi-modal deficiencies of the existing Glencoe Road interchange.
- Concept #25 – This concept proposes to remove the existing Glencoe Road interchange ramps and develop a new split diamond interchange form at Gordon Road and Dersham Road. As a result, the interchange form does not accommodate access from Glencoe Road to US 26.
- Concept #26 – This concept proposes to leave the existing Glencoe Road interchange as is and develop a new interchange at Dersham Road. As such, it does not address the existing/future capacity deficiencies, sight distance deficiencies, access spacing, and multi-modal deficiencies of the existing Glencoe Road interchange.
- Concept #27 – This concept proposes to leave the existing Glencoe Road interchange as is and develop a new interchange just west of Gordon Road. As such, it does not address

the existing/future capacity deficiencies, sight distance deficiencies, access spacing, and multi-modal deficiencies of the existing Glencoe Road interchange.

Basic Concept Screening at a Qualitative Level

After the initial Purpose and Need Statement screening, the next step was to begin a basic qualitative screening of the remaining twenty-four concepts. To assist in the evaluation process, the project team reviewed the adopted evaluation criteria and developed a screening level evaluation process by which each of the interchange form concepts could be evaluated at a high level qualitative perspective. As part of this process, it was recognized that at this particular level of evaluation, certain evaluation criteria could not be applied to each concept because the criterion was determined to be too specific, required a higher level of detailed information, or was a non-differentiating factor. In these instances, a screening level evaluation was not applied to the concepts[1]. The following outline lists the five screening level project goals, the objectives of each goal, and the selected evaluation criteria within each objective that were investigated as part of this process.

Goal 1 – Transportation and Access

Objective #1A: Reduce congestion and improve traffic flow in interchange area

- Ramp terminal locations relative to existing interchange.
- Sunset Highway: Interchange spacing standards are met.

Objective #1B: Provide improvements that are safe for all modes

- Minimizes exposure to vehicle conflicts for pedestrians.
- Minimizes exposure to vehicle conflicts for bicycles.
- Interchange concept provides proper transition between Sunset Highway and Glencoe Road.

Objective #1C: Meet sound engineering practices and safety requirements

- A minimum number of design exceptions are required.

Objective #1D: Provide reasonable access to the interchange area businesses

- Business access or through residential traffic is not routed through residential areas or other sensitive areas.
- Provides safe and efficient access for freight movement.

Goal 2 – Land Use

Objective #2A: Minimize impacts to EFU lands

- Minimize the acres of EFU land required for right-of-way

[1] Goal 6 – *Project Development*, was not included in the screening level evaluation as it was determined that the supporting evaluation criteria were non-differentiating at the screening analysis level.

Objective #2B: Develop land use measures to protect the operational integrity of the project solution from land use impacts

- Interchange and local circulation system support development of the local area according to the North Plains Comprehensive Plan

Goal 3 – Community and Economic Development

Objective #3A: Minimize impacts to existing businesses and residences in the interchange area

- Minimizes the number of businesses displaced or negatively impacted
- Minimizes the number of residences displaced or negatively impacted

Objective #3B: Minimize impacts to the livability, quality and integrity of established residences

- Freight traffic or through residential traffic is not routed through residential areas
- Minimizes the number of sensitive receptors impacted by noise

Objective #3C: Supports continued economic development in North Plains

- Supports the City of North Plains Comprehensive Plan
- Supports the Washington County Comprehensive Plan

Goal 4 – Aesthetics

Objective #4A: Consider aesthetics in the design of the interchange and Glencoe Road

- The interchange does not conflict with the community character of North Plains
- A gateway along Glencoe Road is not precluded

Goal 5 – Natural and Cultural Resources

Objective #5A: Avoid or minimize impacts to habitat systems

- Minimizes the number of acres and quality of habitat impacted

Objective #5C: Minimize and mitigate adverse impacts to surface and groundwater resources

- Surface waterways are protected or enhanced
- Impacts to floodway can be mitigated

Based on this outline, screening level evaluation matrices were created for each of the goals listed above. The Goal 1 matrices are included in *Appendix "B"*, the Goal 2 matrices are includes in *Appendix "C"*, the Goal 3 matrices are included in *Appendix "D"*, the Goal 4 matrices are included in *Appendix "E"*, and the Goal 5 matrices are included in *Appendix "F"*.

It should be noted that these matrices are solely related to the interchange form itself and do not address any issues that relate to the existing or future supporting local circulation system. A summary of the qualitative screening process is provided in Table 3a-1 below.

Table 3a-1
Screening Level Evaluation Summary

Specific Criteria	Concept																							
	#1	#2	#3	#4	#5	#7A	#7B	#7C	#8	#9	#10	#11C	#12	#13	#14A	#14B	#15	#16	#17	#18	#20	#21A	#21B	#22
Goal #1: Transportation and Access																								
1A2: Ramp Interchange Locations	-	-	-	+	0	-	-	-	-	0	0	0	0	+	+	+	+	-	-	-	-	0	0	0
1A3: Interchange Spacing	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
1B1: Pedestrians	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	-	0	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -
1B2: Bicycles	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	-	0	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -
1B3: Highway Transition	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-
1C1: Design Exceptions	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+
1D1: Sensitive Areas	+	-	+	-	+	+	+	+	+	+	-	+	+	+	+	+	-	+	-	-	-	+	+	+
1D2: Freight Movement	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+	+	+	+
Goal #2: Land Use																								
2A1: Minimize EFU Impacts	+	-	+	-	-	+	+	+	+	+	-	+	+	+	+	+	-	+	-	-	-	+	+	-
2B2: Supports Development	+	-	+	-	+	+	+	+	+	+	-	+	+	+	+	+	-	+	-	-	+	+	+	+
Goal #3: Community and Economic Development																								
3A1: Business Displacement	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	-	-	+	+	-	-	-	+
3A2: Residence Displacement	+	-	+	-	+	+	+	+	+	+	-	+	+	+	+	+	-	+	-	-	-	+	+	+
3B1: Freight Traffic	+	-	+	-	+	+	+	+	+	+	-	+	+	+	+	+	-	+	-	-	-	-	-	-
3C1: North Plains Comprehensive Plan	+	-	+	-	+	+	+	+	+	+	-	+	+	+	+	+	-	+	-	-	-	-	-	-
3C2: Washington County Comprehensive Plan	+	-	+	-	+	+	+	+	+	+	-	+	+	+	+	+	-	+	-	-	-	-	-	-
Goal #4: Aesthetics																								
4A1: Community Character	+	+	+	-	+	+	+	+	+	-	-	+	+	+	+	+	+	-	-	-	-	-	-	+
4A2: Gateway	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+
Goal #5: Natural and Cultural Resources																								
5A1: Habitat Impacts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5C1: Waterways	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5C2: Floodway	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: In general, a + indicates the interchange concept is positively meeting the basic parameters of the evaluation criterion, a - indicates the interchange concept is not meeting the basic parameters of the evaluation criteria, and a 0 indicates the interchange concept is neither positively nor negatively meeting the basic intent of the evaluation criterion. See Appendices “B” through “F” for detailed explanation of the screening level scoring definitions.

Preliminary Project Team Assessment

Once the Scoring Summary of the screening evaluation was developed, the next task was to determine the concepts that will emerge from this effort and continue on to the operational analysis screening.

As part of the screening process, it was determined that total aggregate scores for all criteria would not be used to evaluate one concept against the other. It is critical, however, to determine how well the various concepts address the intent of each of the project goals. It is felt that looking at each goal individually and determining how well each concept addresses this goal by determining the number of (+) scores, without accounting for all of the neutral or negative scores, is the fair and honest method of determining the effectiveness of each concept for that goal at this qualitative screening level. The methodology used to interpret screening results is outlined below.

First, the number of positive (+) scores was determined for each concept within the set of criteria for each individual goal. For Goal 1, Transportation and Access, there were eight criteria evaluated. None of the concepts came close to scoring (+'s) on all of the criteria, in fact, it was determined that the highest rated concepts for this goal scored four or five (+'s). For Goal 2, Land Use, several concepts scored the maximum two (+'s) for the two criteria. For Goal 3, Community and Economic Development, there were five criteria and the top concepts scored four or five (+'s). For Goal 4, Aesthetics, a number of concepts scored (+'s) on both of the two criteria. For Goal 5, Natural and Cultural Resources, there were no concepts that scored a (+). The results from this summary grouping are shown in the Table 3a-2 below.

Table 3a-2
Summary of Positive Groupings

	Goal 1 – Transportation & Access *(4-5 +'s)*	**Goal 2 – Land Use** *(2 +'s)*	**Goal 3 – Community & Economic Development** *(4-5 +'s)*	**Goal 4 – Aesthetics** *(2 +'s)*	**Goal 5 – Natural and Cultural Resources** *(1-2 +'s)*
Best Concepts for Each Goal	1, 3, 4, 7A, 7B, 7C, 8, 9, 11C, 12, 13, 14A, 14B, 15	1, 3, 7A, 7B, 7C, 8, 9,11C, 12, 13, 14A, 14B, 16, 21A, 21B	1, 3, 5, 7A, 7B, 7C, 8, 9, 11C, 12, 13, 14A, 14B, 16	1, 2, 3, 5, 7A, 7B, 7C, 8, 11C, 12, 13, 14A, 14B, 15, 22	

The table above illustrates the group of concepts that best address the intent of each of the five project goals. For example, Concepts 1, 3, 4, 7A, 7B, 7C, 8, 9, 11C, 12, 13, 14A, 14B, and 15 do the best job in fulfilling the intent of Goal 1. Similar groupings are shown for the other four goals.

Next, it was necessary to determine which concepts performed in this highest category for the most goals. This is illustrated in Table 3a-3 below.

Table 3a-3

	Concepts
Among the Best for 5 Goals	
Among the Best for 4 Goals	1, 3, 7A, 7B, 7C, 8, 11C, 12, 13, 14A, 14B
Among the Best for 3 Goals	9
Among the Best for 2 Goals	5, 15, 16
Among the Best for 1 Goal	2, 4, 21A, 21B, 22
Not Among the Best at All	10, 17, 18, 20

This table shows that Concepts 1, 3, 7A, 7B, 7C, 8, 9, 11C, 12, 13, 14A, and 14B do the best job of addressing at least three of the five goals. It also illustrates that the effectiveness of the remaining concepts falls off after these first twelve concepts.

It is recommended that this level of screening identify these twelve concepts for further development. A brief description of these concepts (in numerical order, not priority ranking) is given in Table 3a-4 below. In addition, a re-ordered screening level evaluation summary table is provided in Table 3a-5.

Table 3a-4
Preliminary Project Team Concepts For Further Evaluation

Concept	Description of 11 Top-Ranked Concepts
Concept #1	PARCLO AB
Concept # 3	Single Loop, PARCLO A, NE quadrant
Concept #7A	Single Loop, PARCLO B, NW quadrant
Concept #7B	Single Loop, PARCLO B, NW quadrant
Concept #7C	Standard Diamond
Concept #8	PARCLO B, NW & SE quadrants
Concept #9	Diamond, East-to-South Flyover Ramp
Concept #11C	Rebuild Ramps & Glencoe Road
Concept #12	Single Point Urban Interchange
Concept #13	Roundabout Interchange
Concept #14A	Tight Diamond (Sunset Highway Under Glencoe Rd)
Concept #14B	Tight Diamond (Sunset Highway Over Glencoe Rd)

Next Steps

As previously stated, the purpose of this memorandum is to provide the PDT and SWG committee members with a qualitative assessment of the initial concepts developed through the committee and public workshop exercises. Based on input from the PDT and SWG committees, the screened concepts will be further refined from a more detailed quantitative perspective.

Table 3a-5
Re-ordered Screening Level Evaluation Summary Table

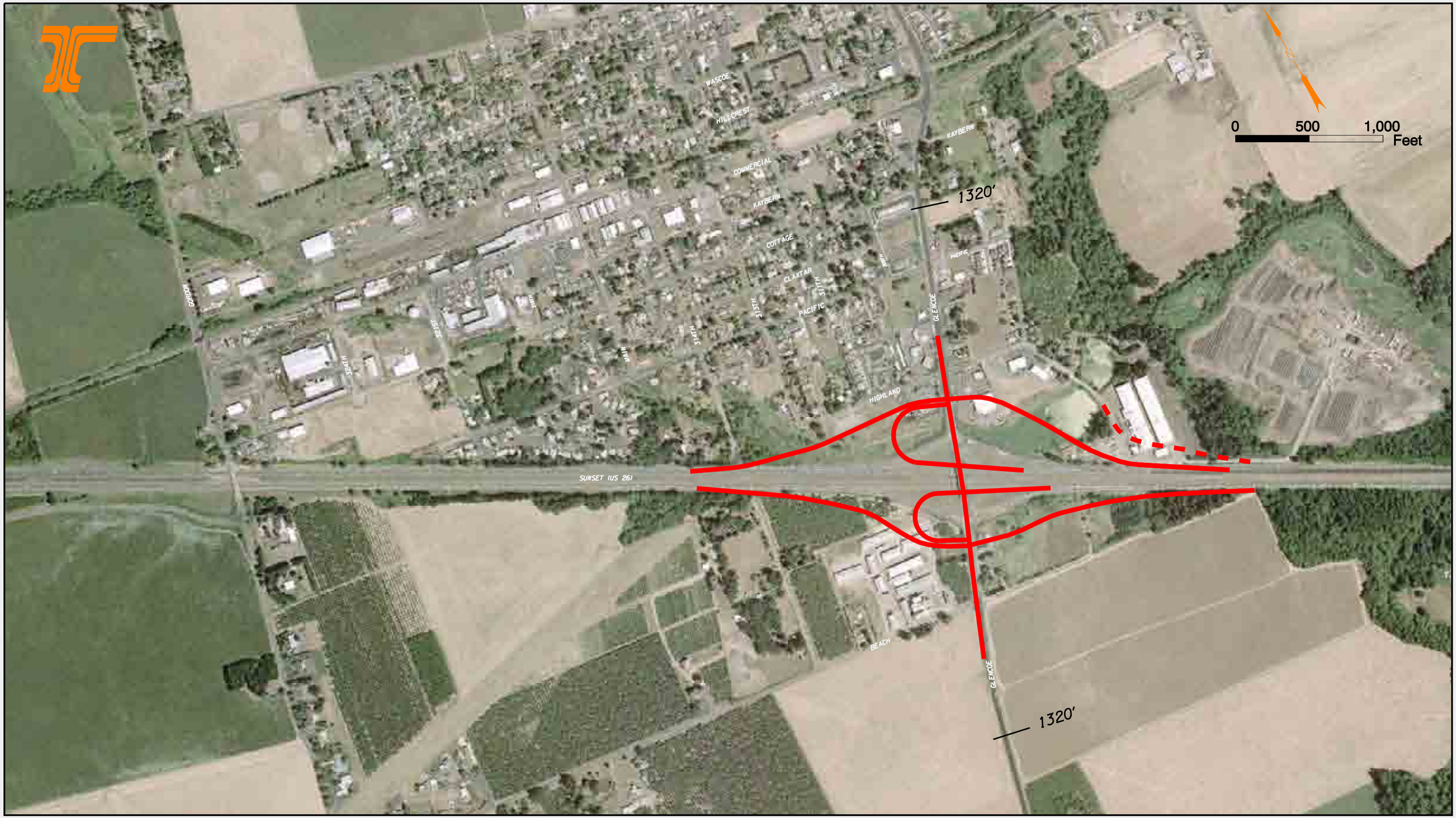
Specific Criteria	Concept																							
	#1	#3	#7A	#7B	#7C	#8	#9	#11C	#12	#13	#14A	#14B	#2	#4	#5	#10	#15	#16	#17	#18	#20	#21A	#21B	#22
Goal #1: Transportation and Access																								
1A2: Ramp Interchange Locations	-	-	-	-	-	-	0	0	0	+	+	+	-	+	0	0	+	-	-	-	-	0	0	0
1A3: Interchange Spacing	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
1B1: Pedestrians	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	-	0	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -
1B2: Bicycles	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	-	0	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -	0 / -
1B3: Highway Transition	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-
1C1: Design Exceptions	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	-	+	+	+	+	+	+
1D1: Sensitive Areas	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+	-	-	+	-	-	-	+	+	+
1D2: Freight Movement	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+	+	+	+
Goal #2: Land Use																								
2A1: Minimize EFU Impacts	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	+	-	-	-	+	+	-
2B2: Supports Development	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+	-	-	+	-	-	+	+	+	+
Goal #3: Community and Economic Development																								
3A1: Business Displacement	-	-	-	-	-	-	-	+	+	+	+	+	-	-	-	-	-	-	+	+	-	-	-	+
3A2: Residence Displacement	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+	-	-	+	-	-	-	+	+	+
3B1: Freight Traffic	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+	-	-	+	-	-	-	-	-	-
3C1: North Plains Comprehensive Plan	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+	-	-	+	-	-	-	-	-	-
3C2: Washington County Comprehensive Plan	+	+	+	-	+	+	+	+	+	+	+	+	-	-	+	-	-	+	-	-	-	-	-	-
Goal #4: Aesthetics																								
4A1: Community Character	+	+	+	+	+	+	-	+	+	+	+	+	+	-	+	-	+	-	-	-	-	-	-	+
4A2: Gateway	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	-	+	+	+	+	+
Goal #5: Natural and Cultural Resources																								
5A1: Habitat Impacts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5C1: Waterways	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5C2: Floodway	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: In general, a + indicates the interchange concept is positively meeting the basic parameters of the evaluation criterion, a - indicates the interchange concept is not meeting the basic parameters of the evaluation criteria, and a 0 indicates the interchange concept is neither positively nor negatively meeting the basic intent of the evaluation criterion. See Appendices "B" through "F" for detailed explanation of the screening level scoring definitions.

Shaded cells represent those concepts that the project team has determined are worthy of moving forward in the evaluation process.

Appendix A

Interchange Design Concepts



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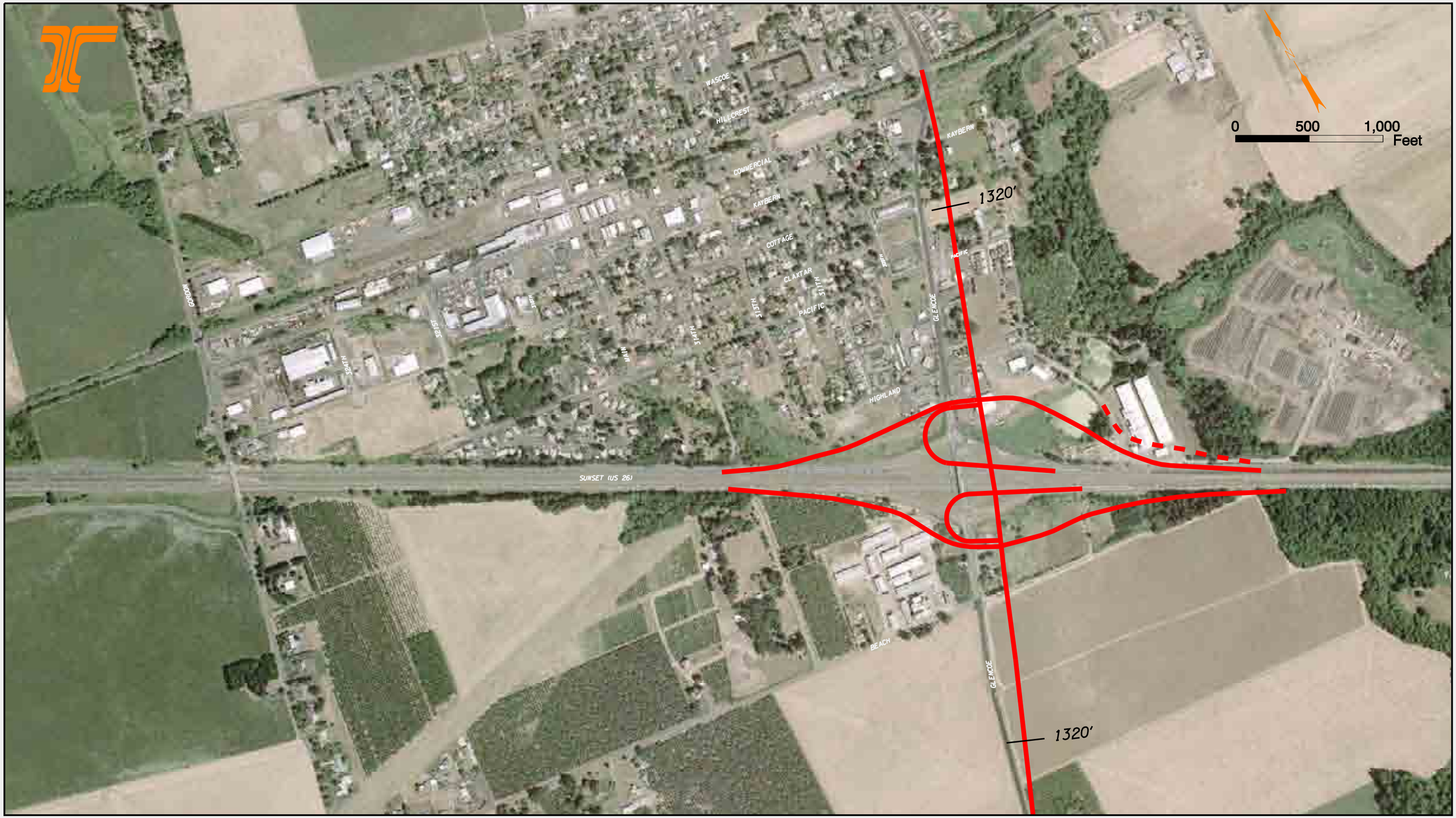
Glencoe IAMP Interchange Workshop Concepts

CONCEPT #1

Parclo AB



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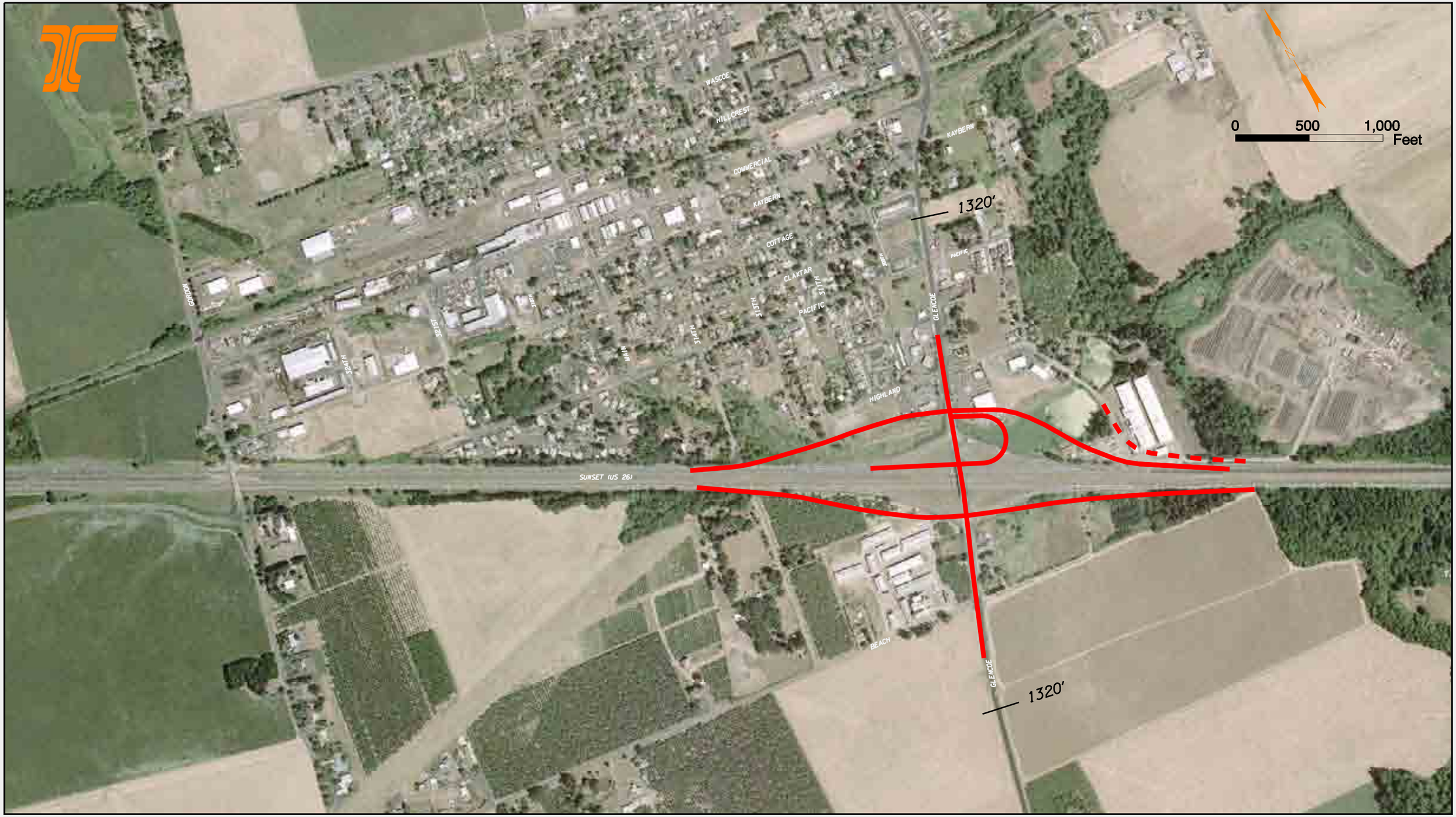
CONCEPT #2

Parclo AB - Glencoe Road Shifted East



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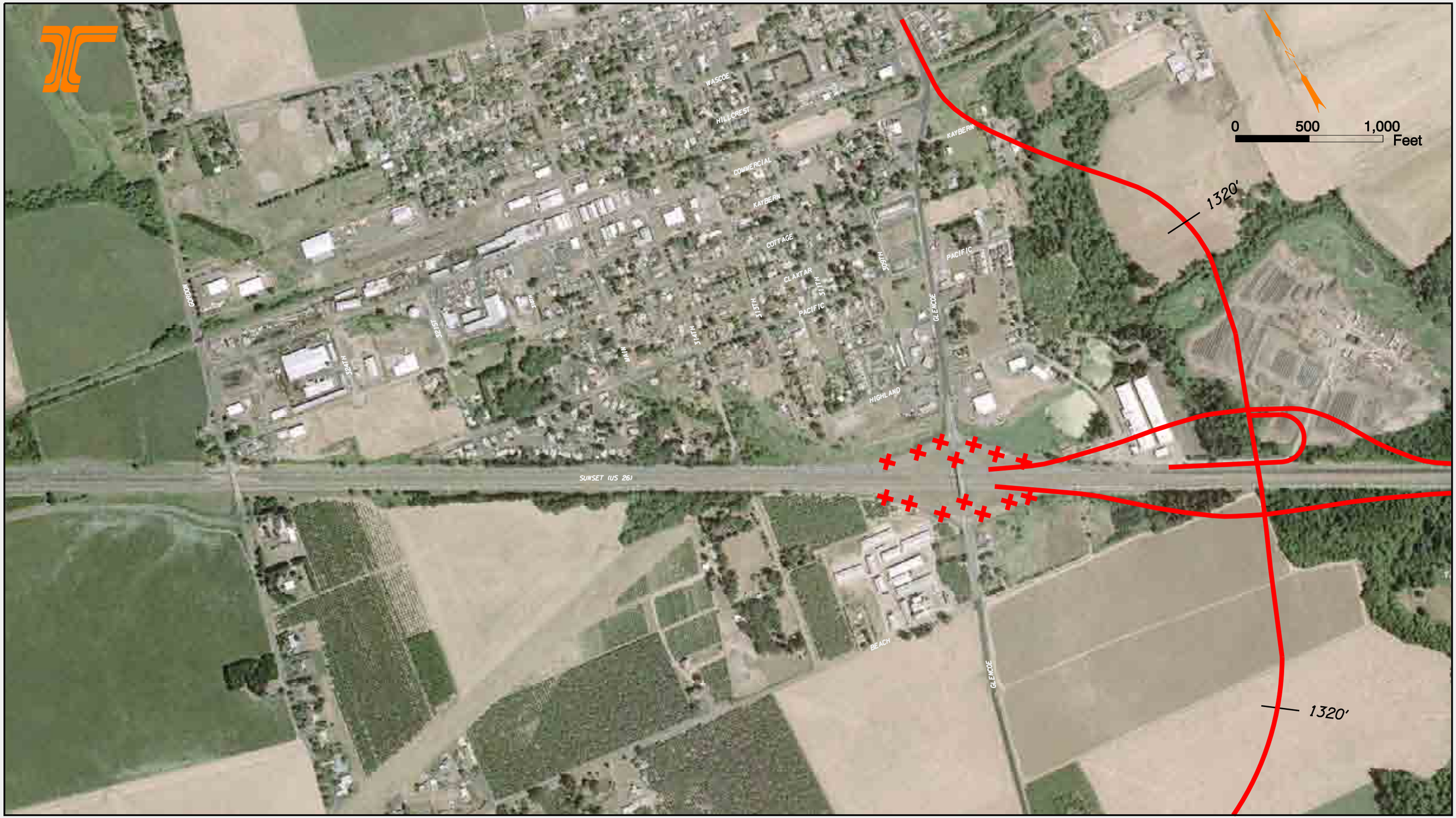
CONCEPT #3

Single Loop, Parcio A (NE Quad)



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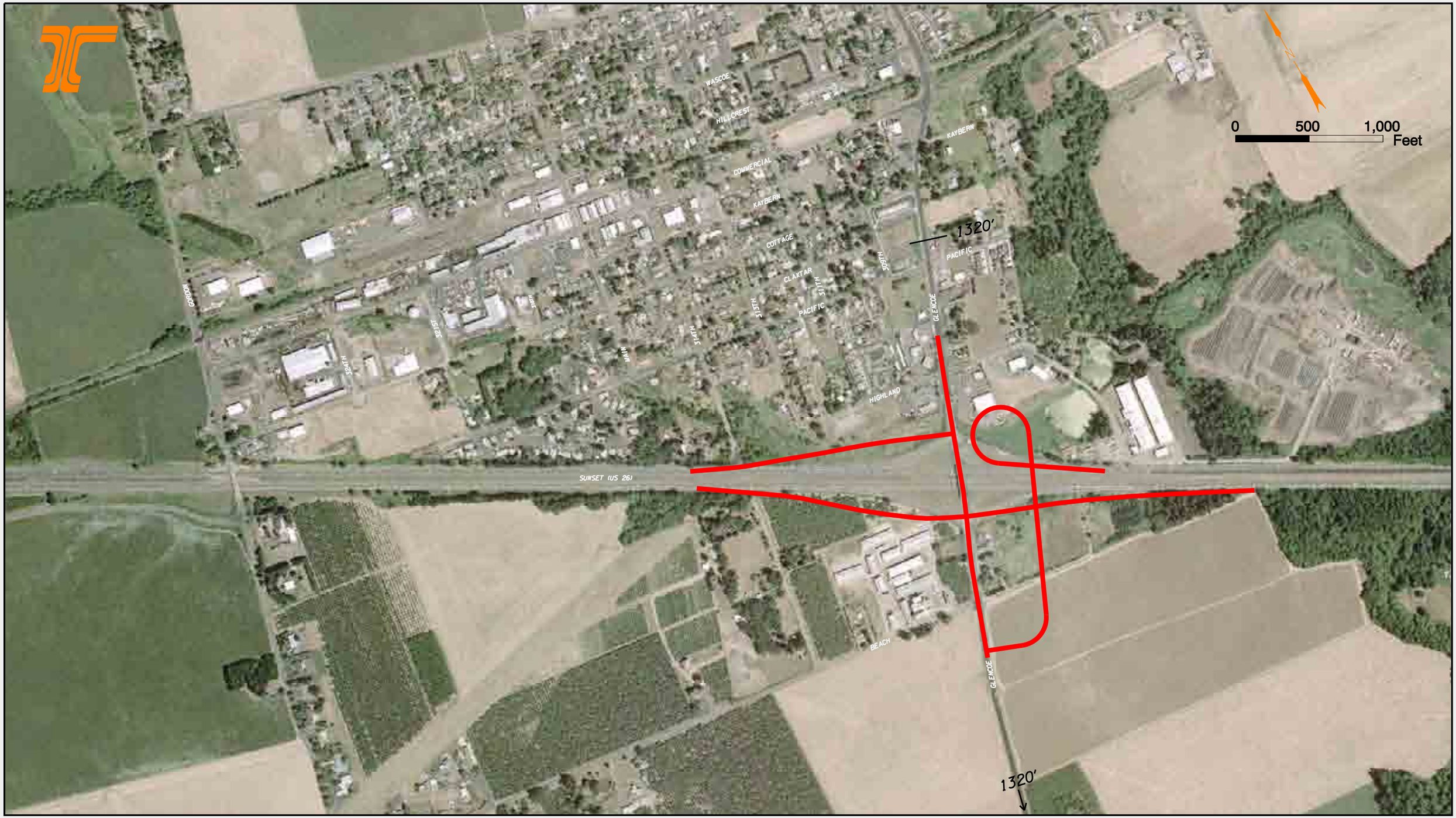
CONCEPT #4

Single Loop, Parcio A, Gencoe Road Shifted East



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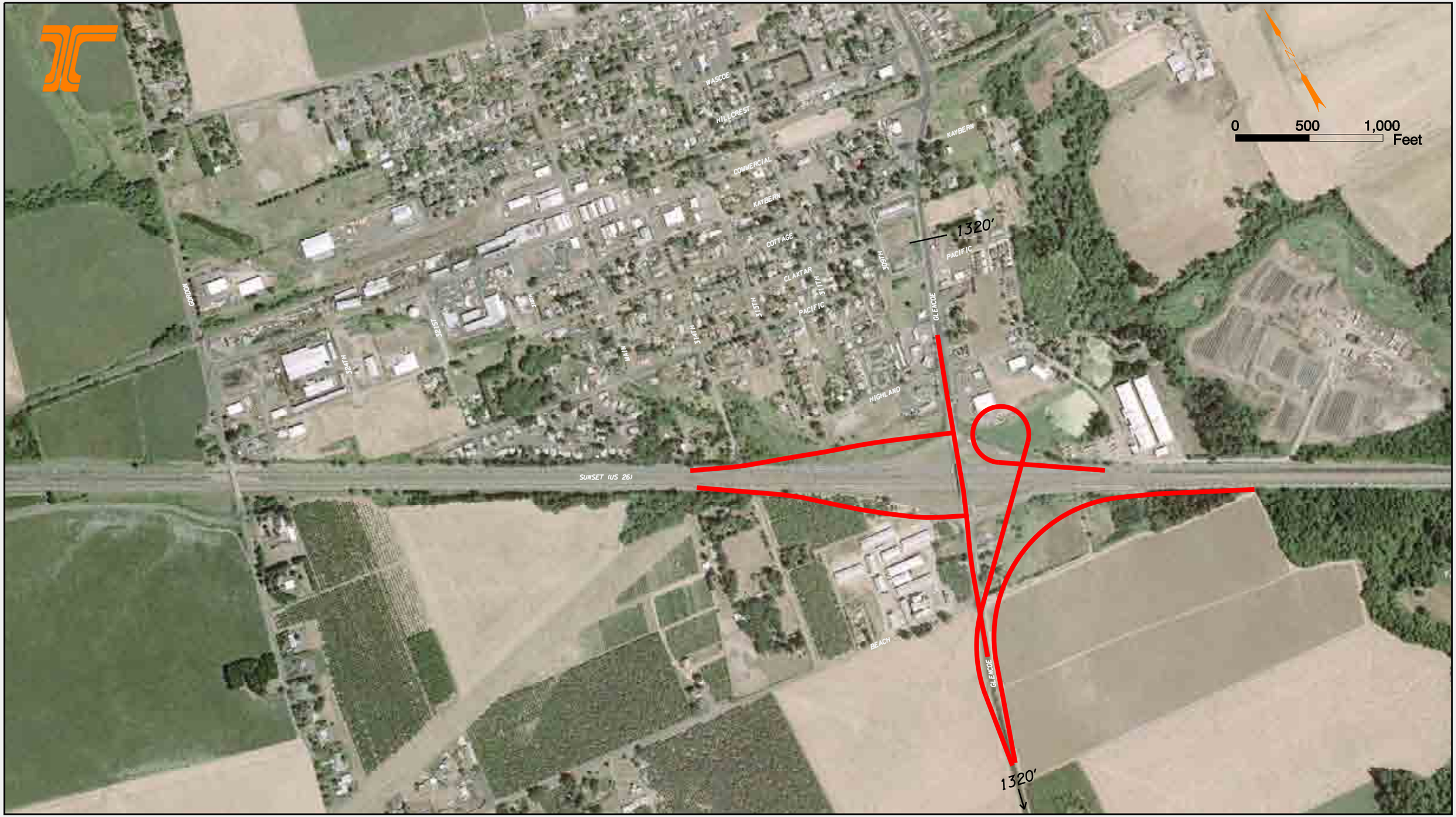
CONCEPT #5

Parcio A - Single Loop Flyover



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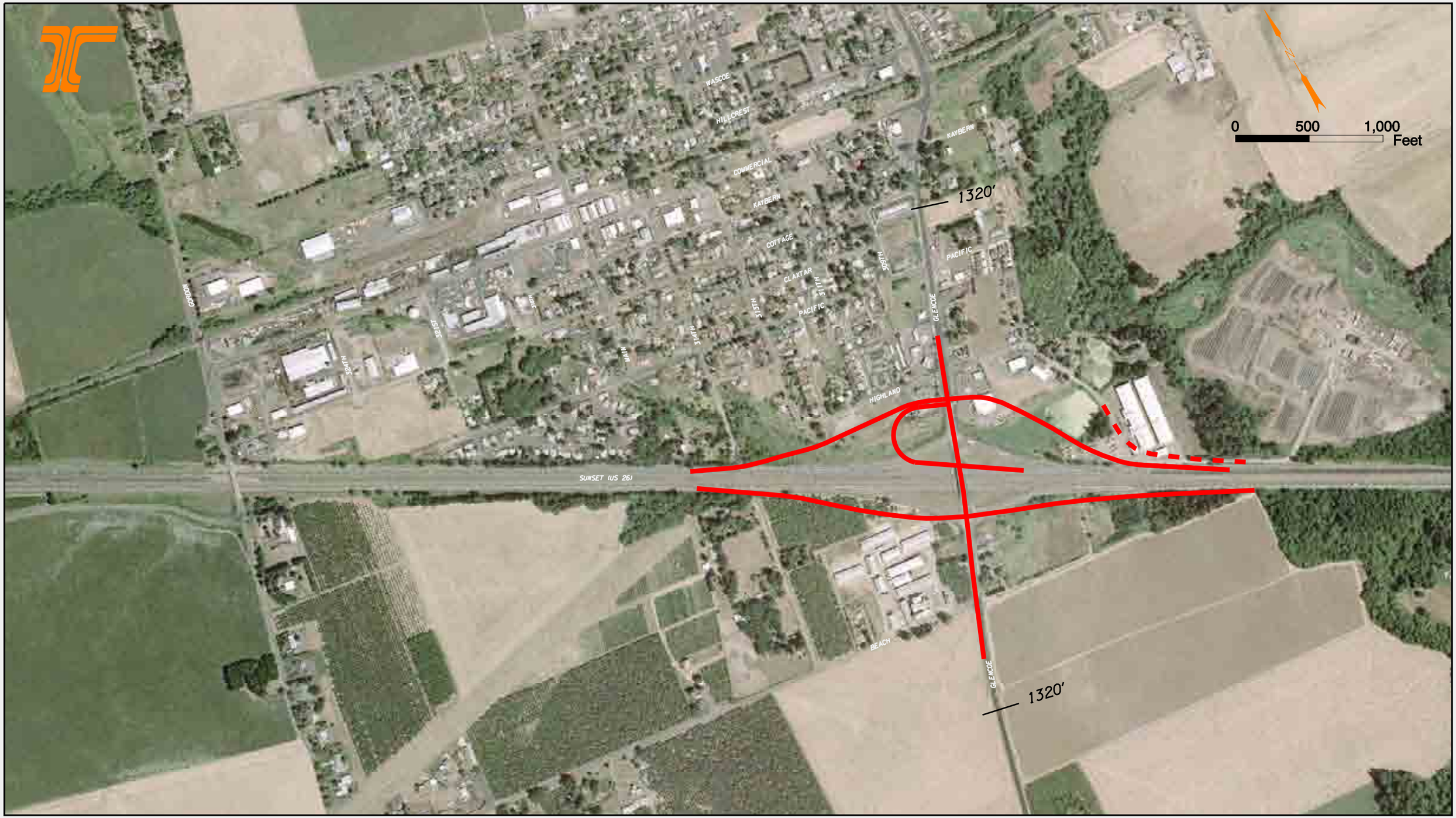
CONCEPT #6

Parcio A - Single Loop Flyover, Merge onto Glencoe



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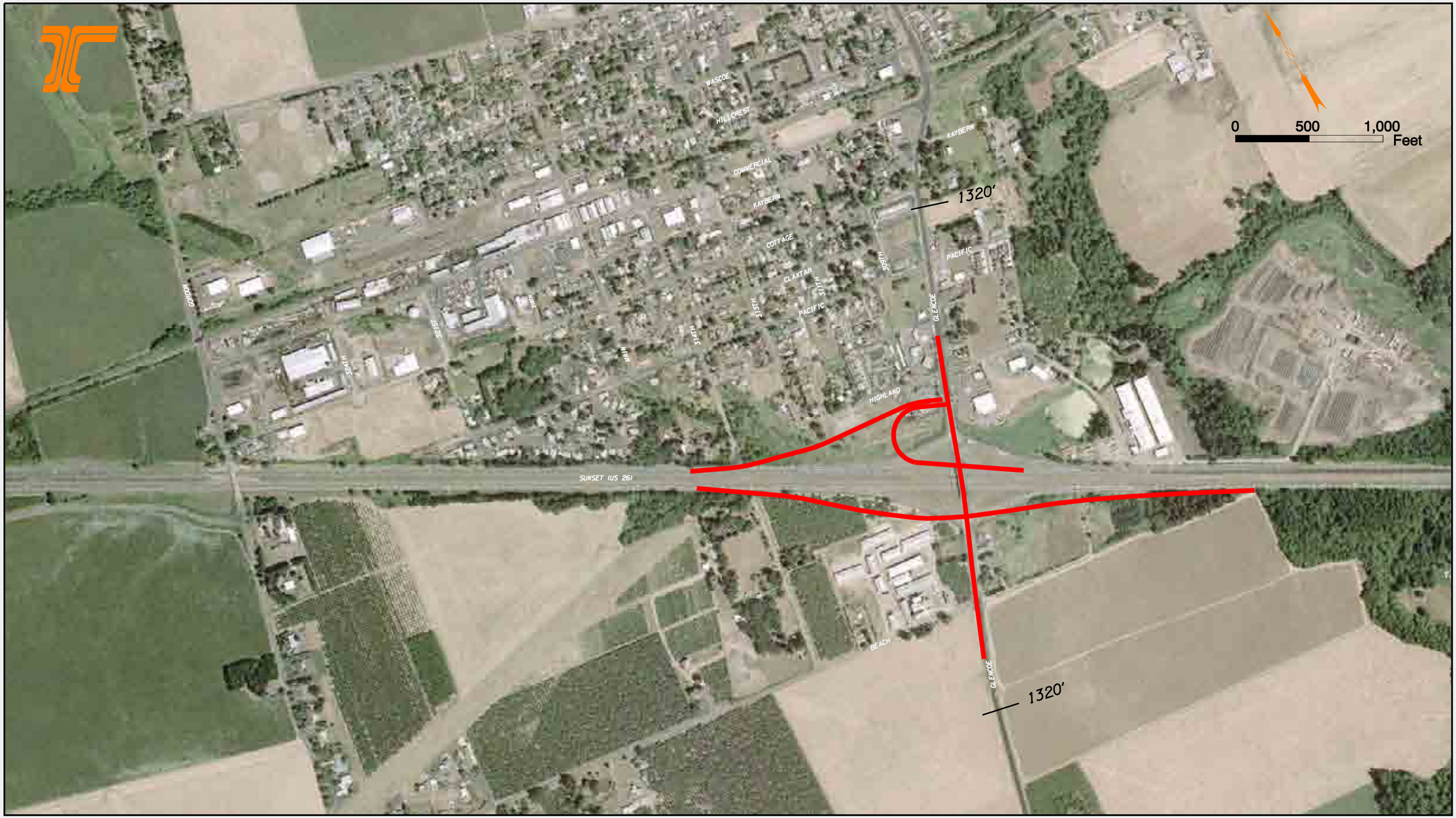
Glencoe IAMP Interchange Workshop Concepts

CONCEPT #7A

Single Loop, Parcio B (NW Quad)



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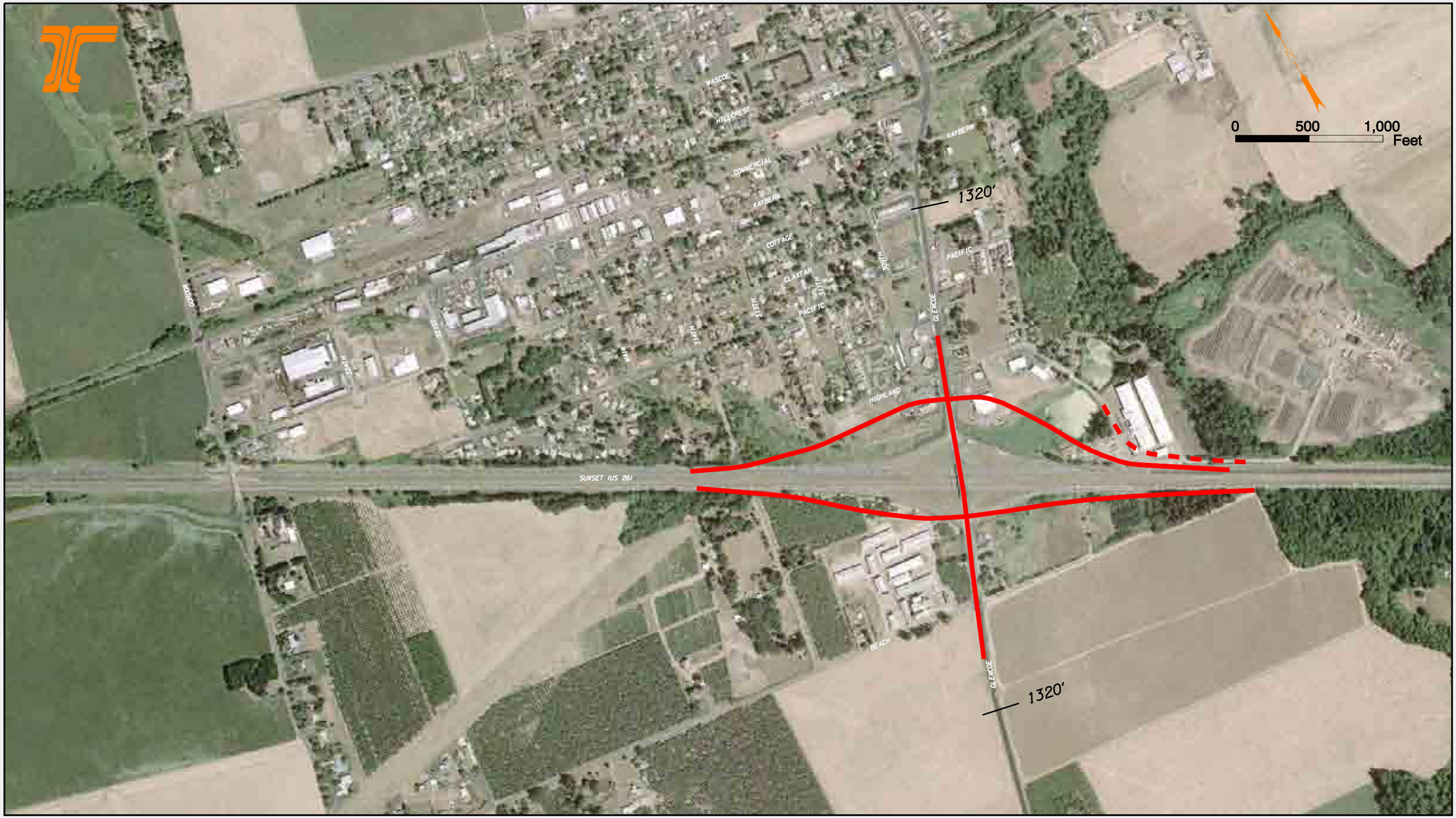
CONCEPT #7B

Single Loop, Parclo B (NW Quad)



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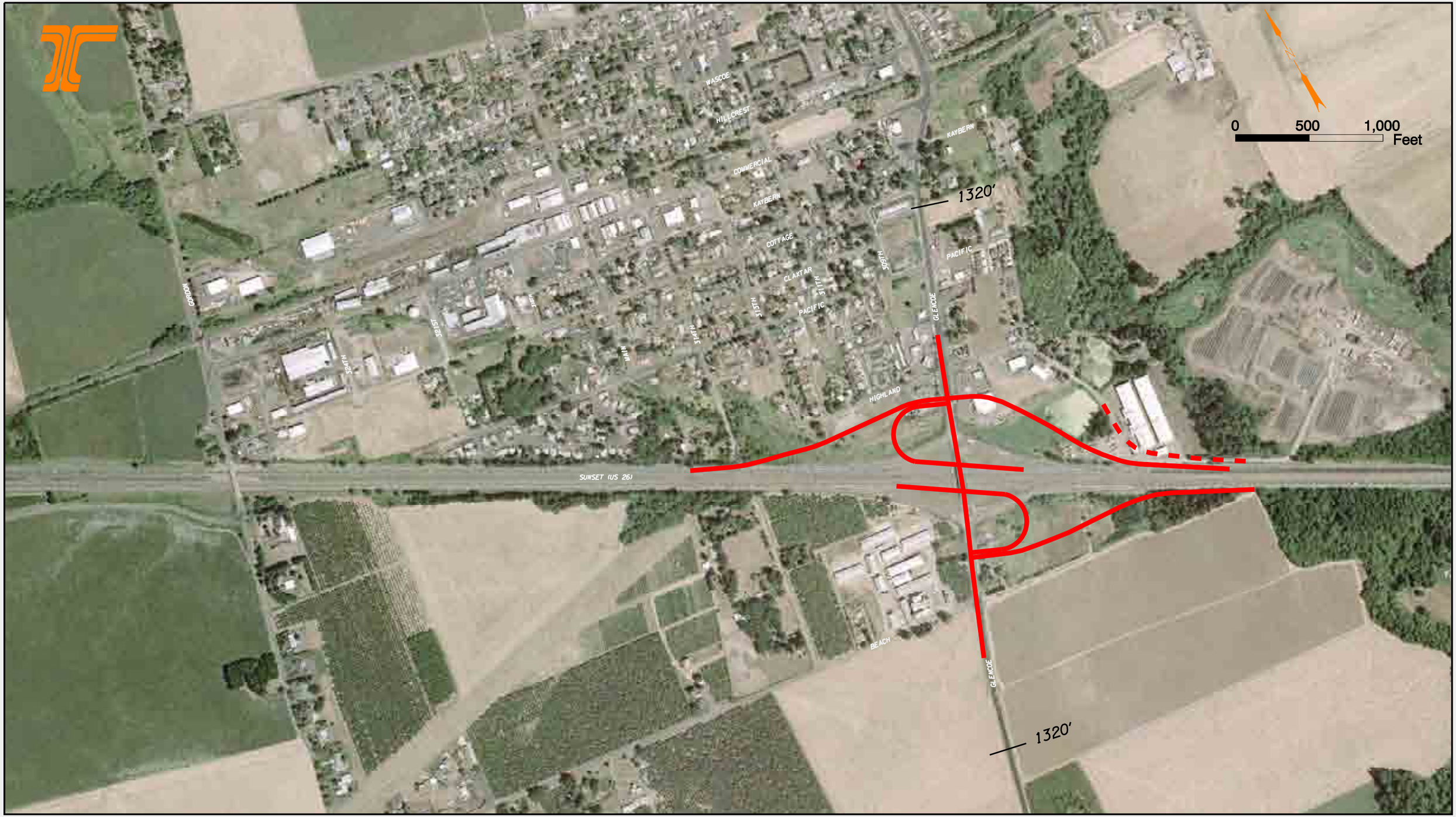
CONCEPT #7C

Standard Diamond



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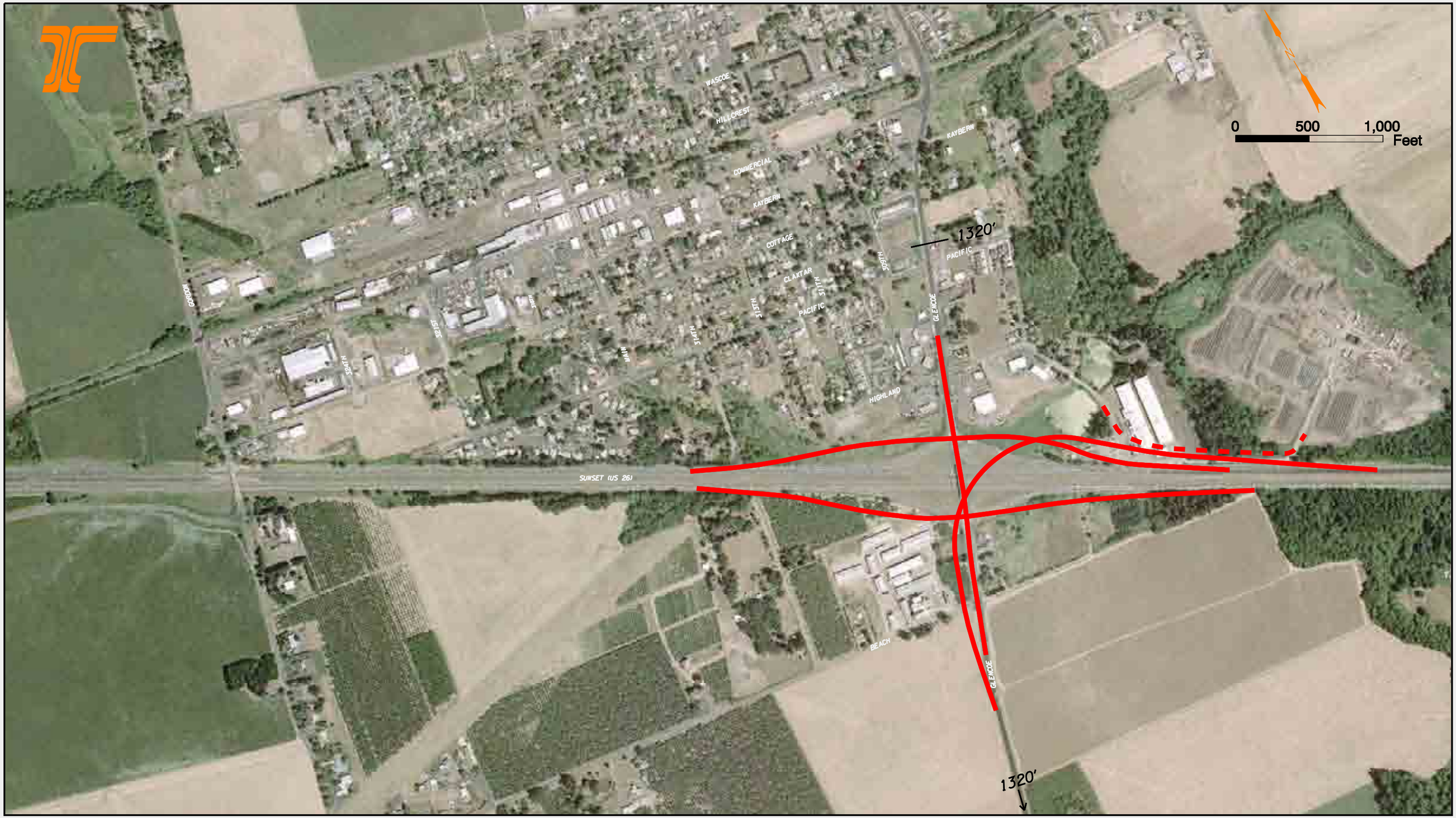
CONCEPT #8

Two Loops, Parcio B



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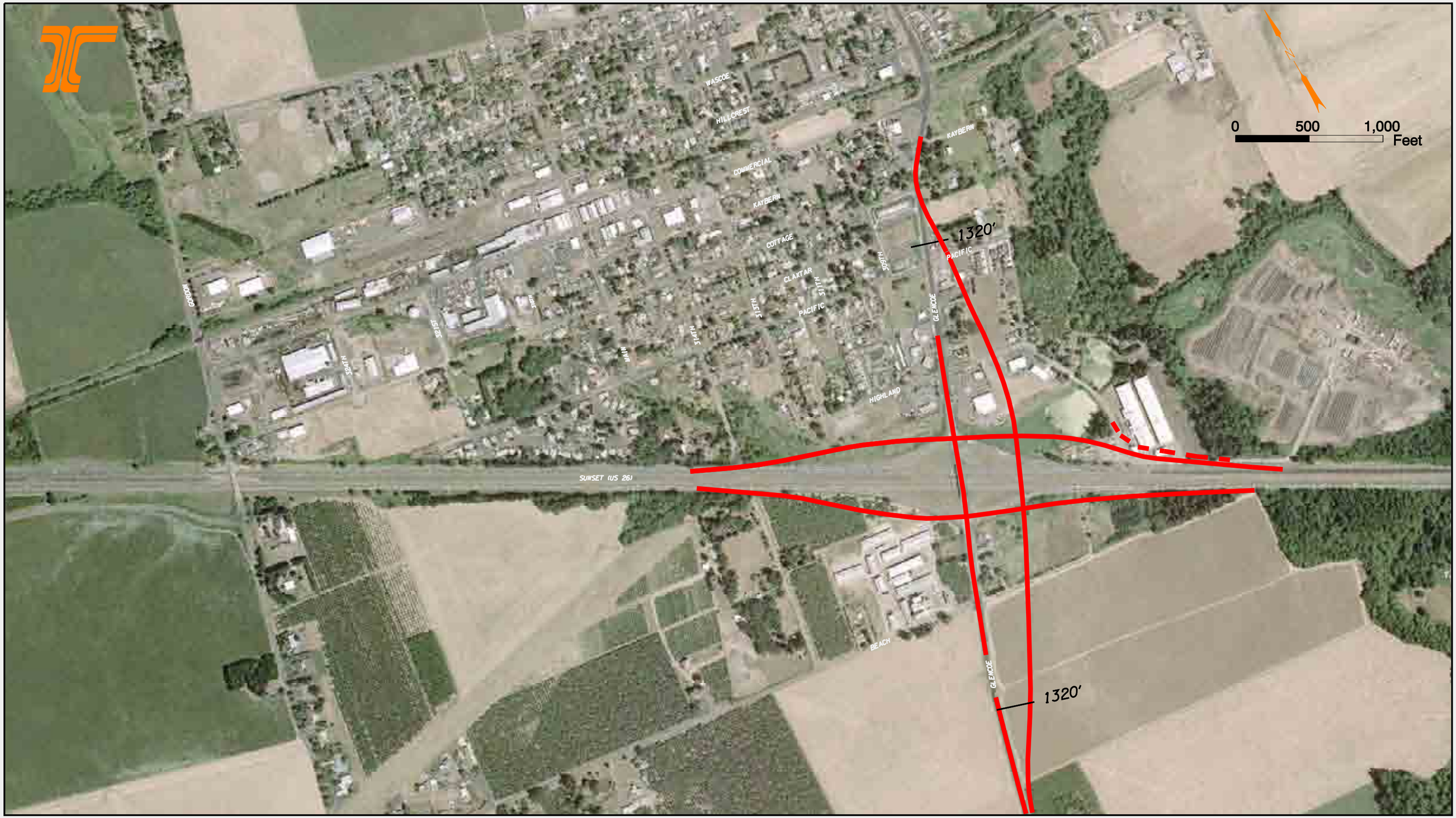
CONCEPT #9

Diamond w/ Flyover



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Glencoe IAMP Interchange Workshop Concepts

CONCEPT #10

Split Diamond with One Way Streets

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CONCEPT #11A

Extend Ramp Acceleration and Deceleration Lanes

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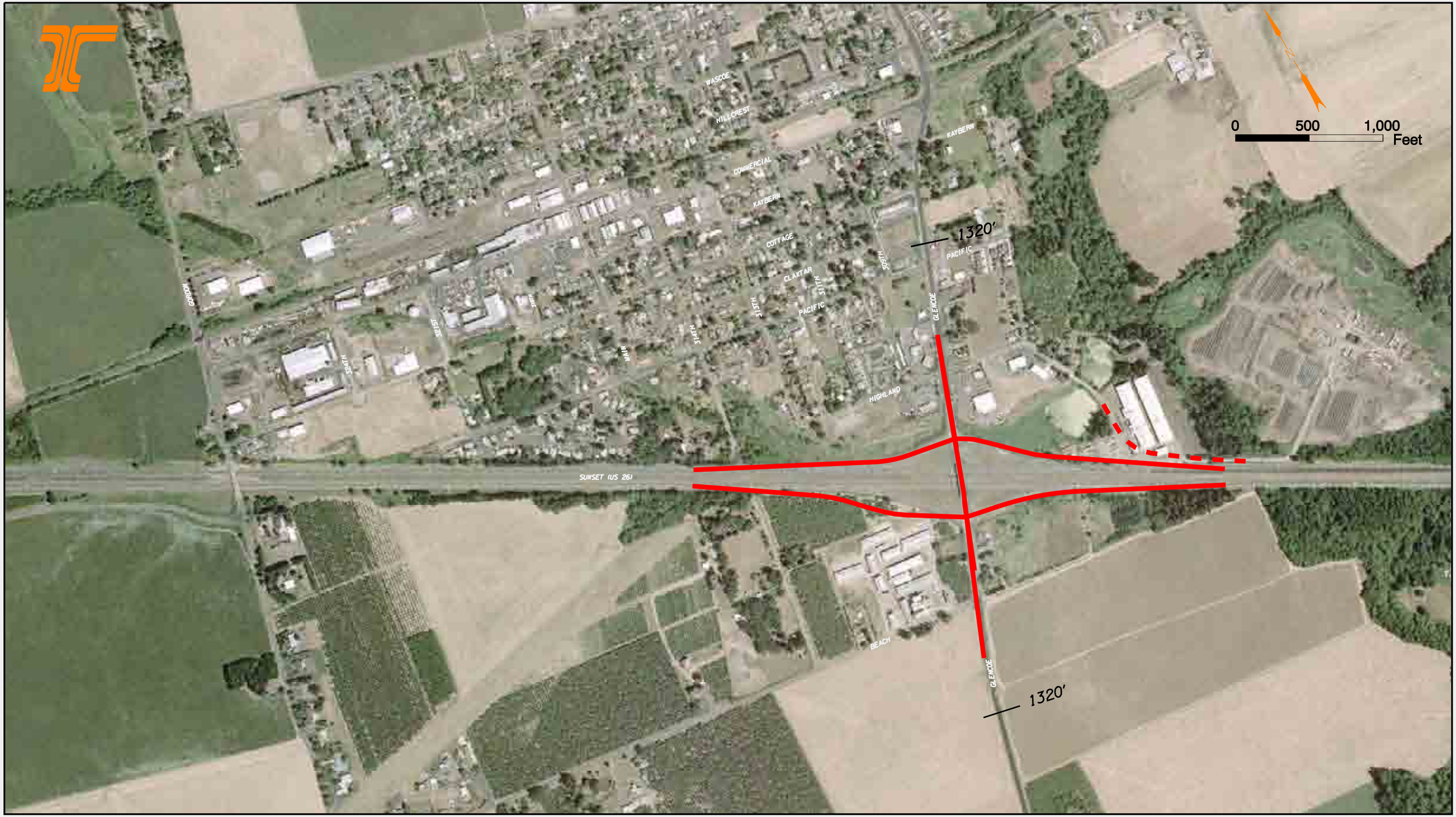
Glencoe IAMP Interchange Workshop Concepts

CONCEPT #11B

Widen Glencoe to 3 Lanes



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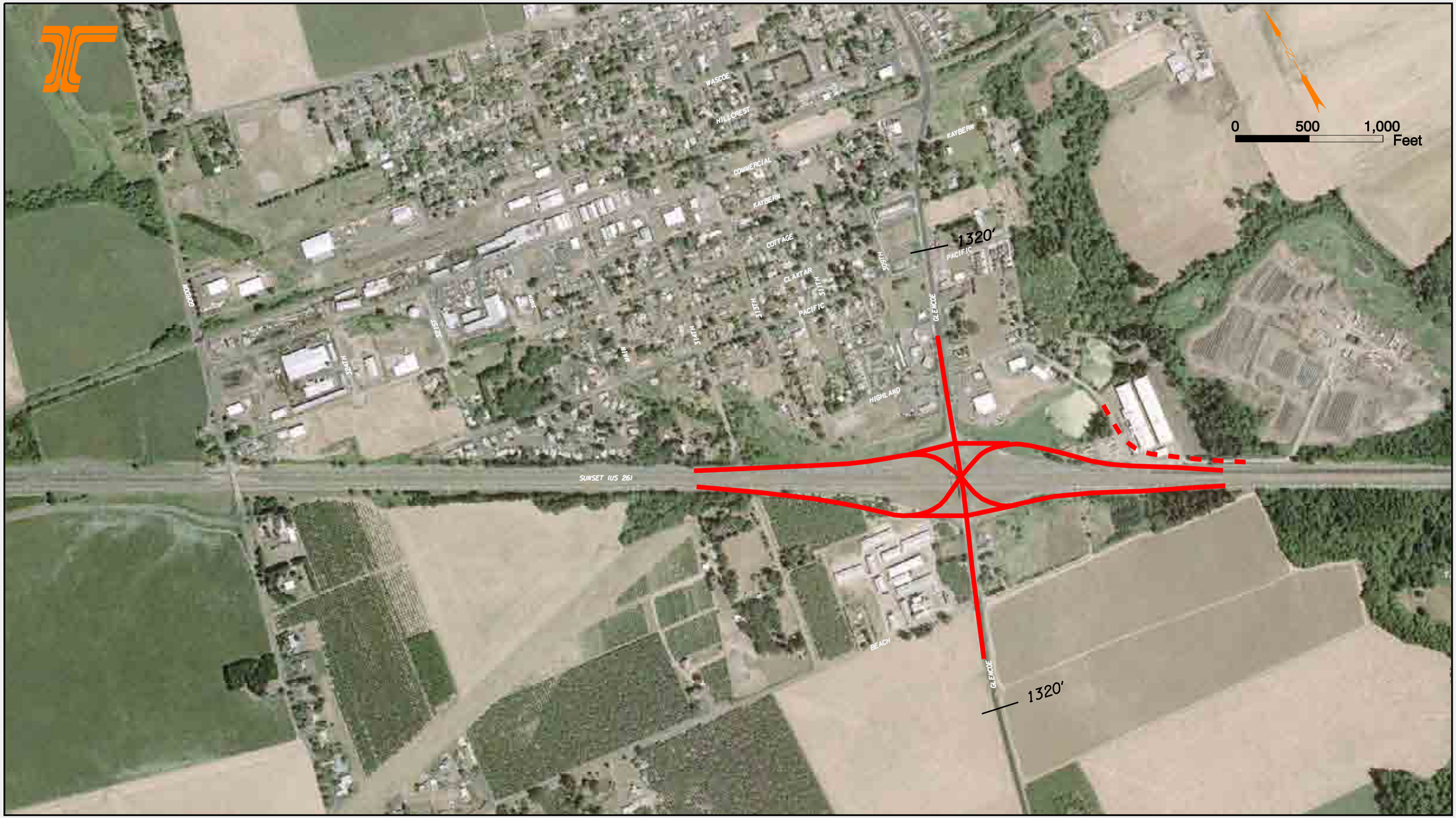
Glencoe IAMP Interchange Workshop Concepts

CONCEPT #11C

Rebuild Ramps and Glencoe



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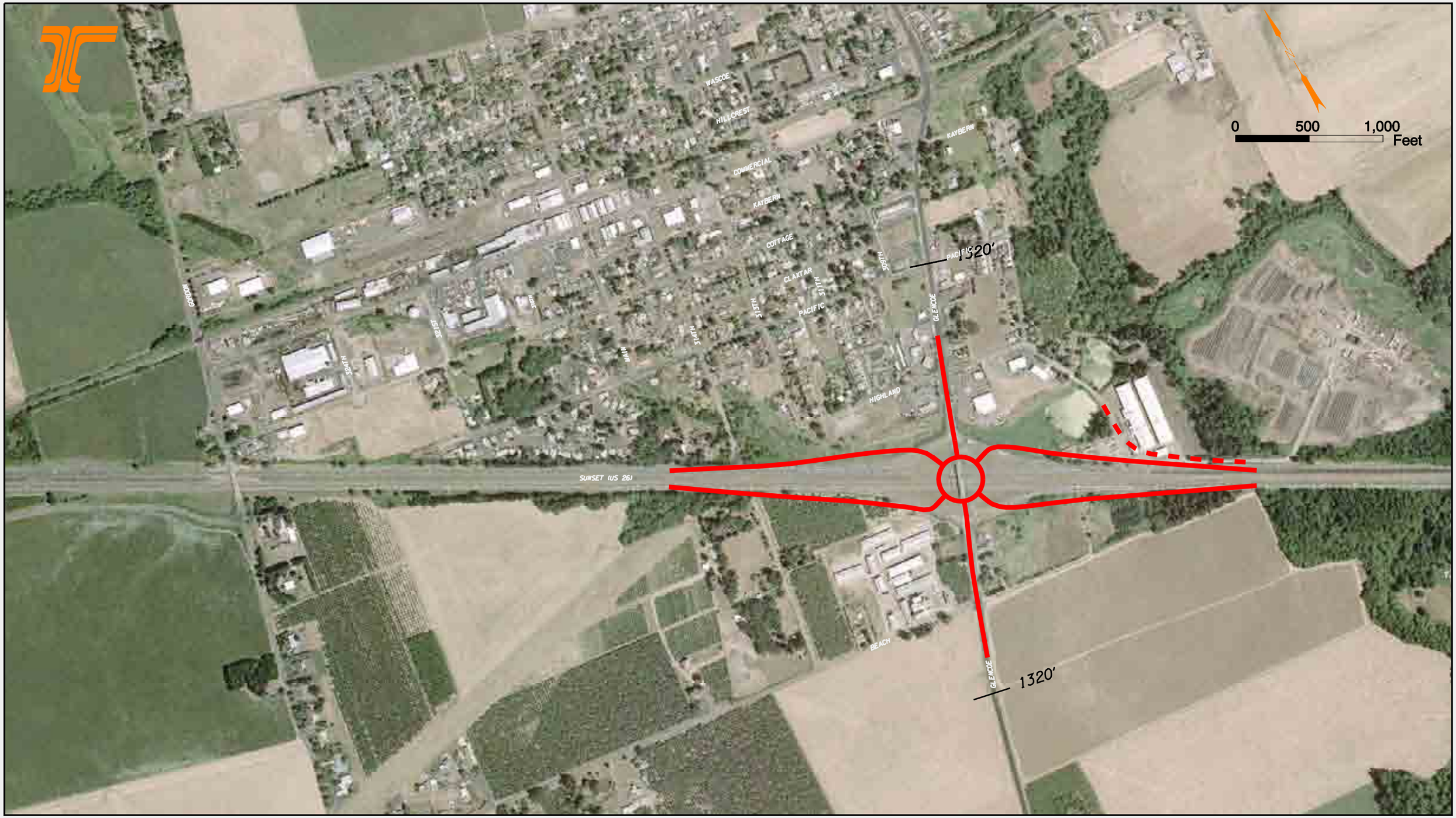
CONCEPT #12

Single Point Urban Interchange (SPUI)



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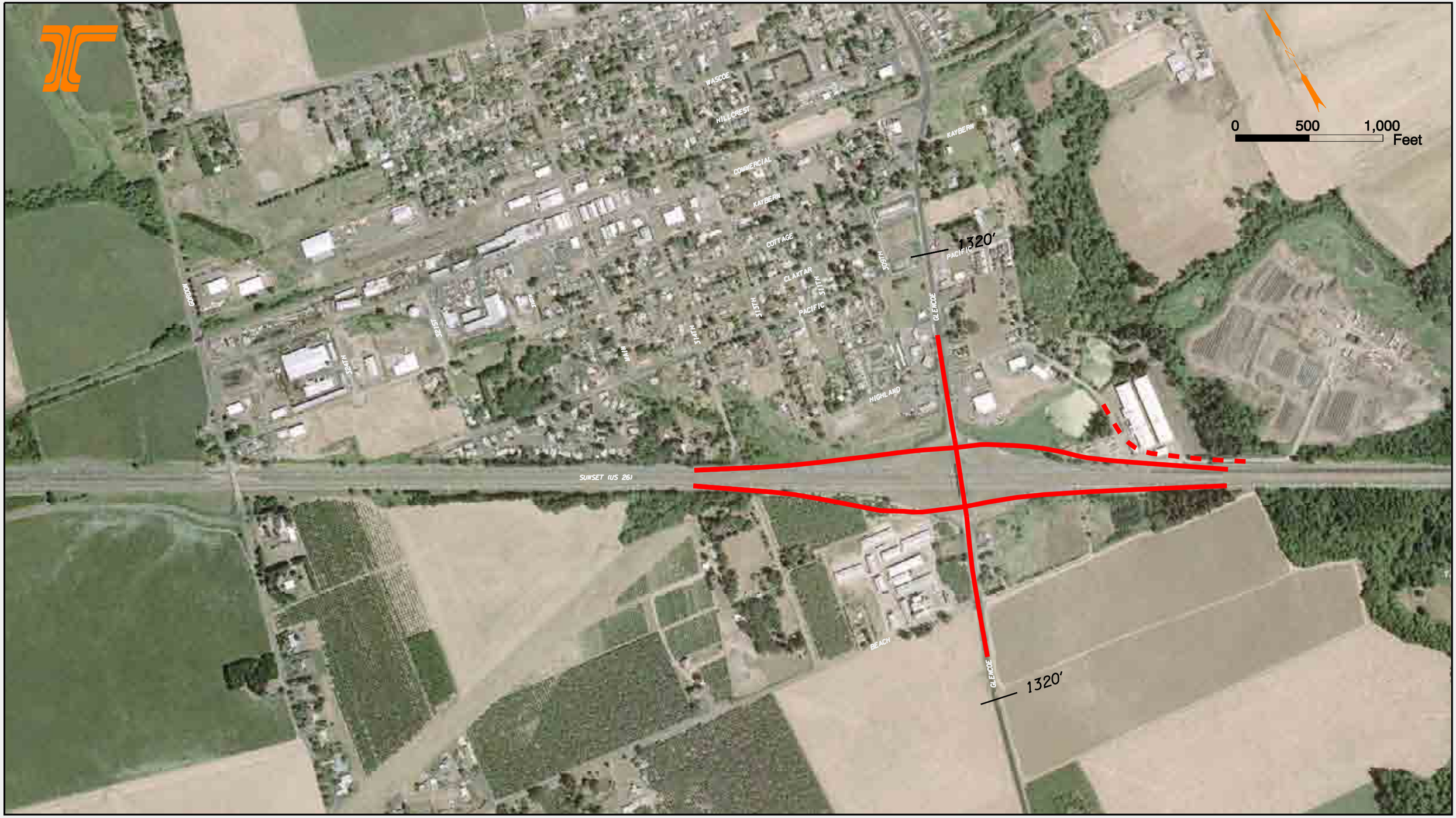
CONCEPT #13

Roundabout Interchange



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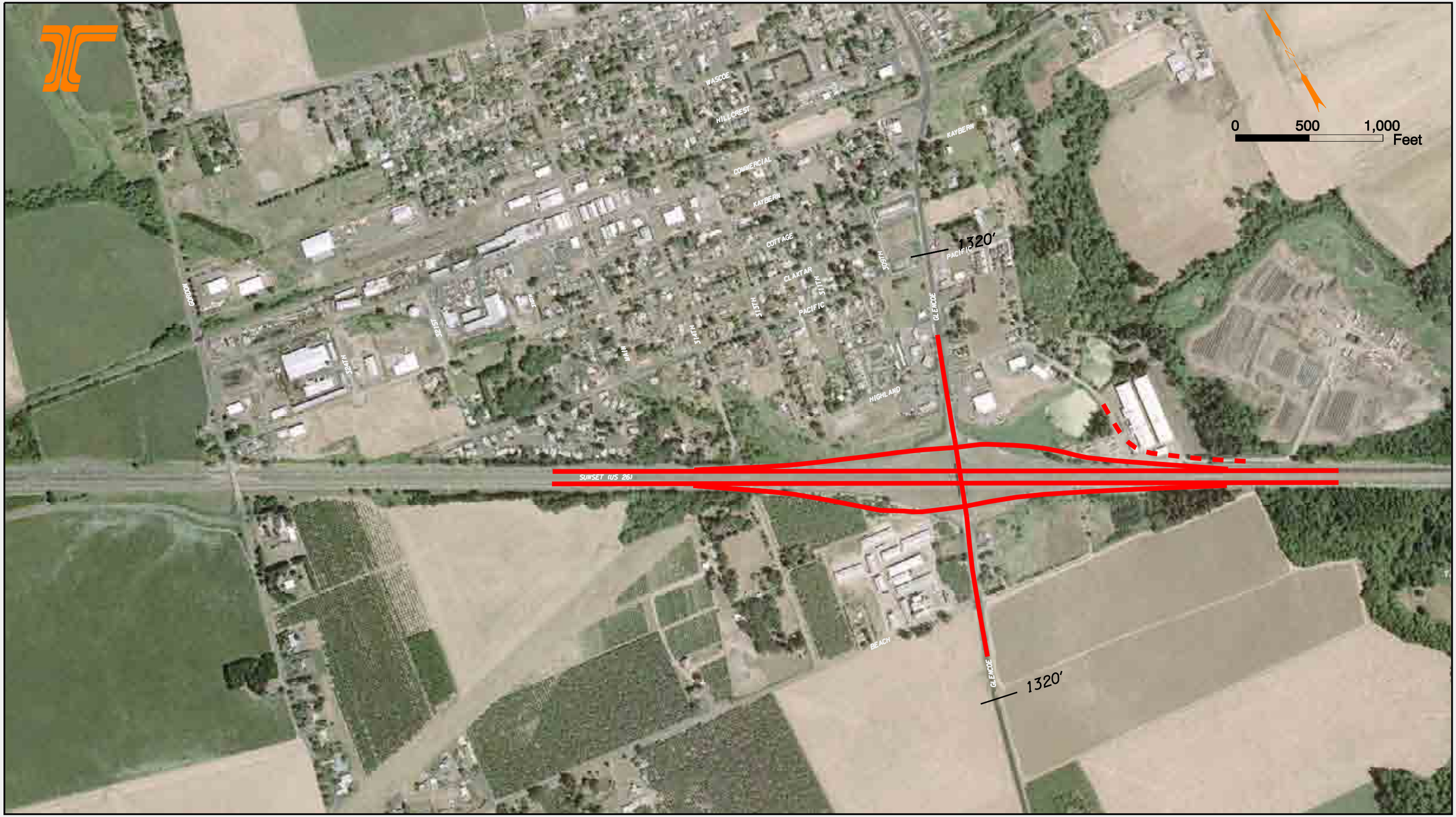
Glencoe IAMP Interchange Workshop Concepts

CONCEPT #14A

Tight Diamond (Sunset Highway Under Glencoe Road)



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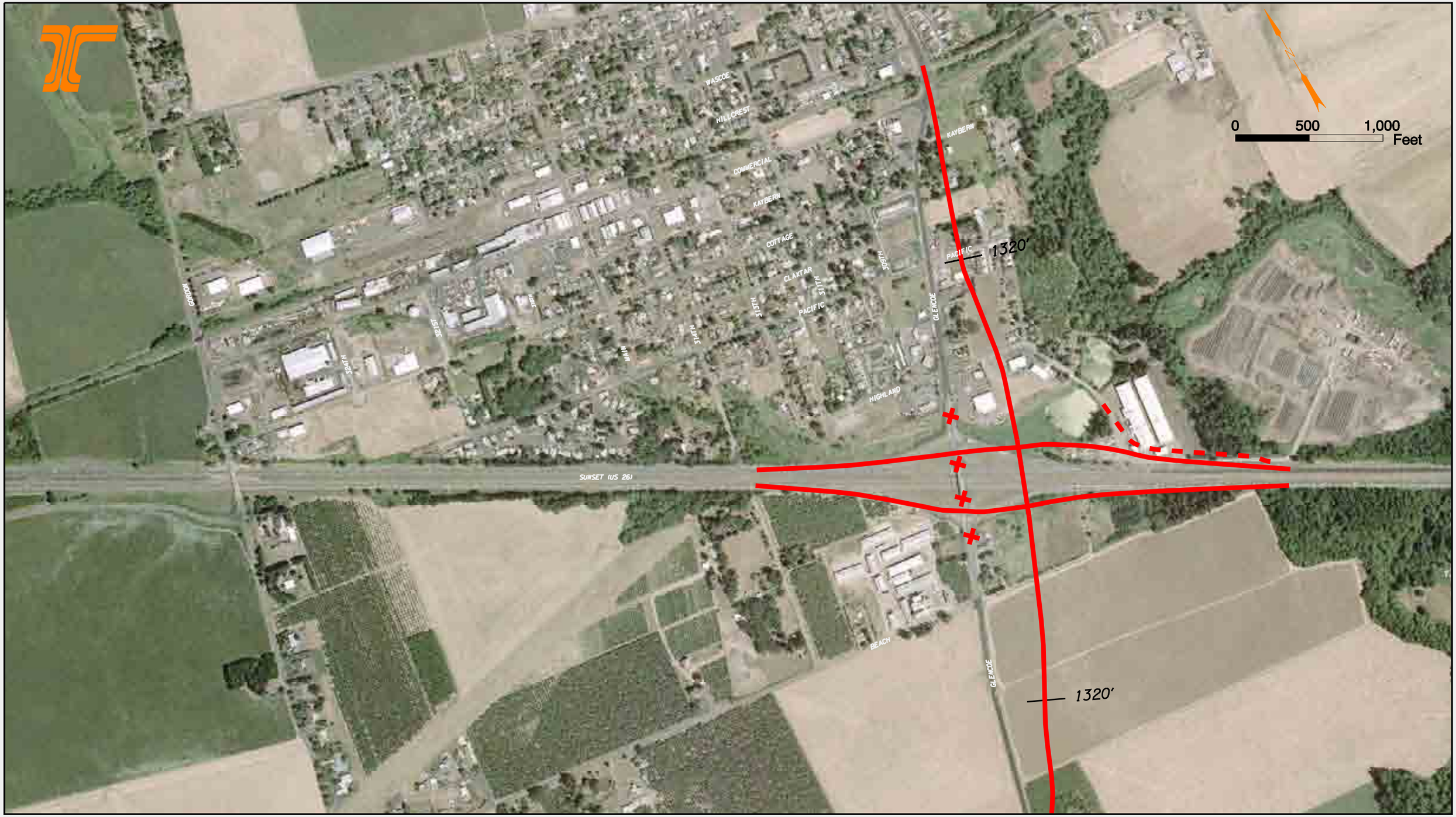
CONCEPT #14B

Tight Diamond (Sunset Highway Over Glencoe Road)



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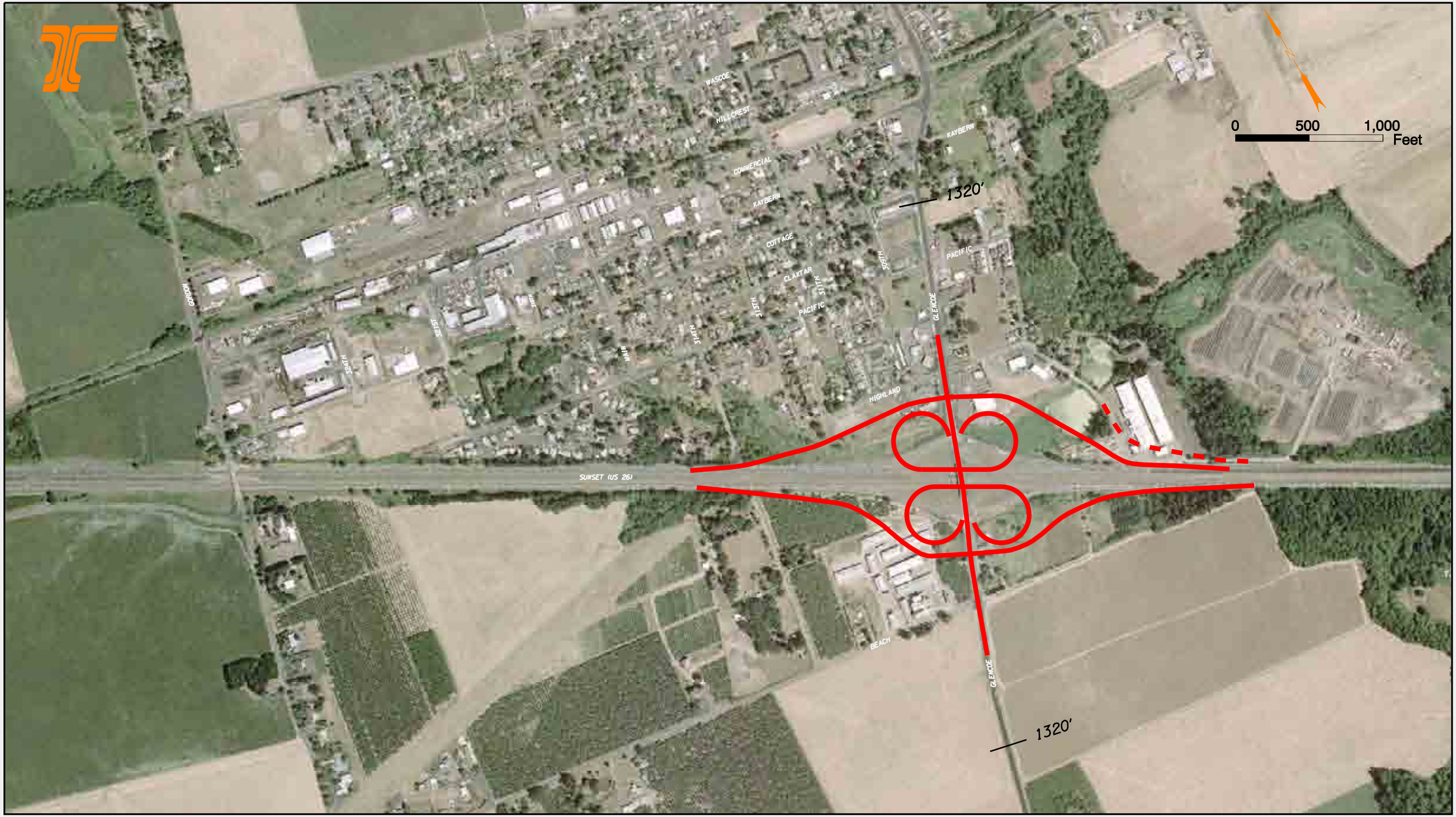
CONCEPT #15

Tight Diamond, Glencoe Road Shifted East



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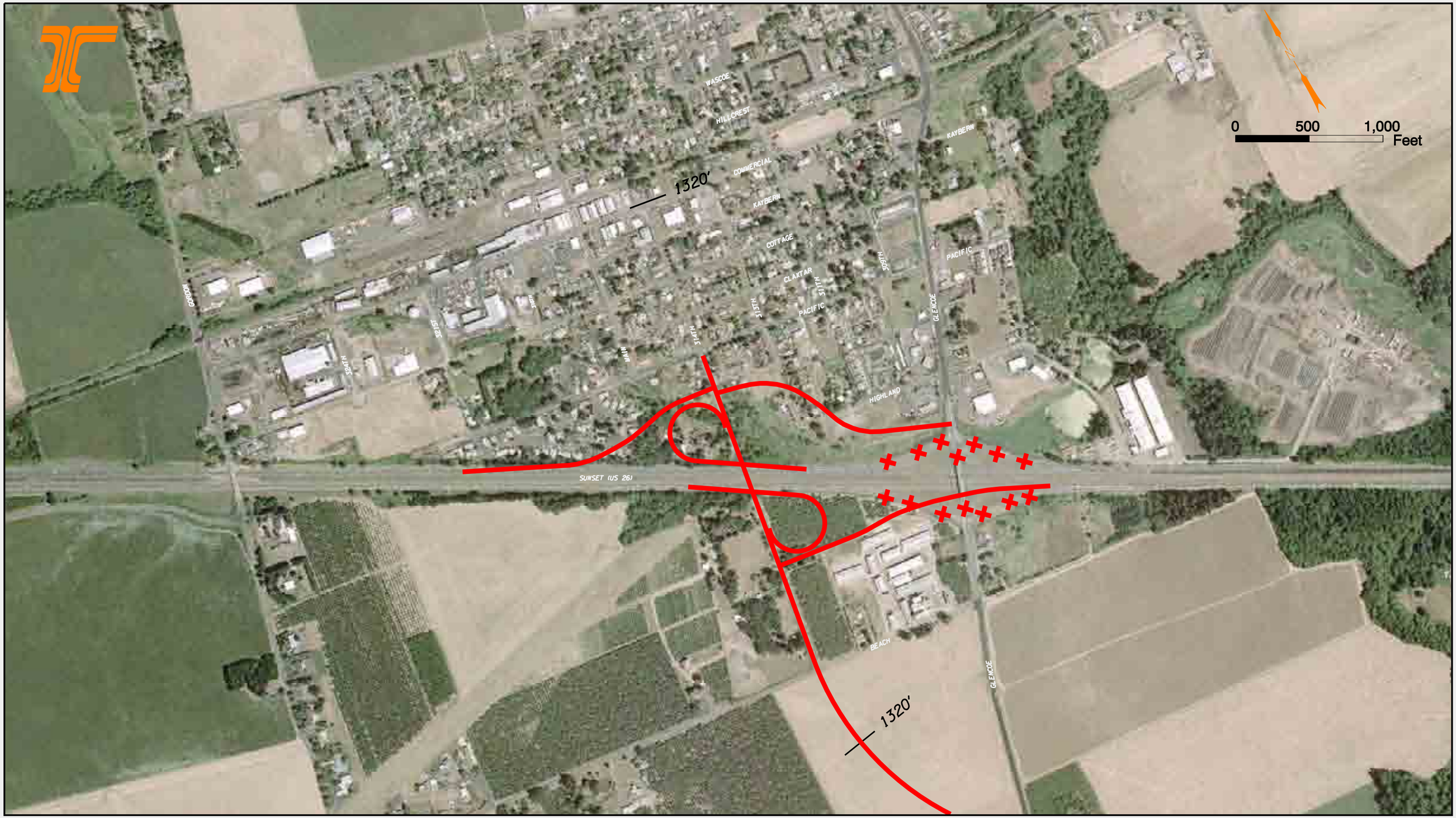
CONCEPT #16

Full Cloverleaf



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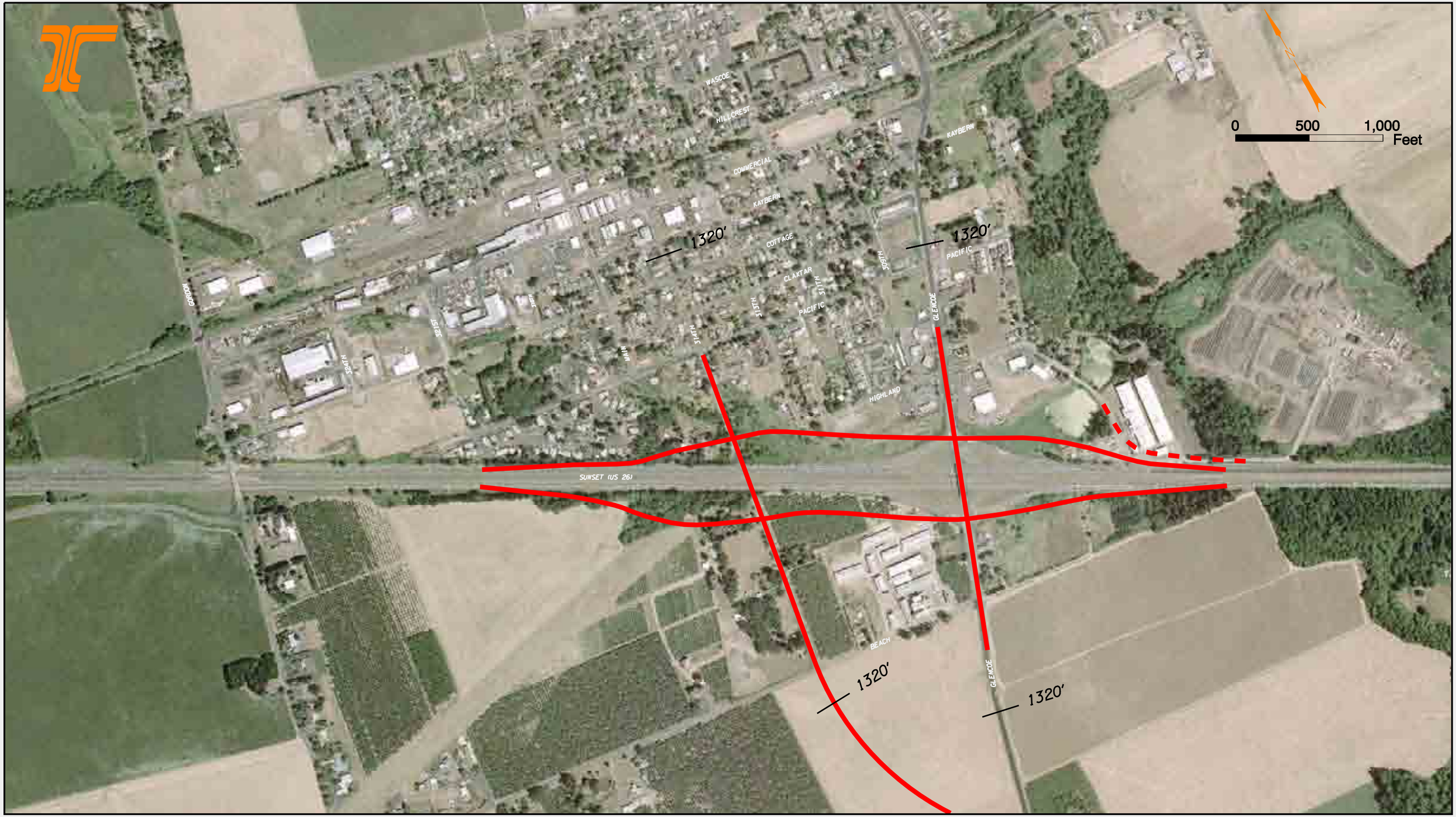
CONCEPT #17

Parcio B. Move Glencoe Road West



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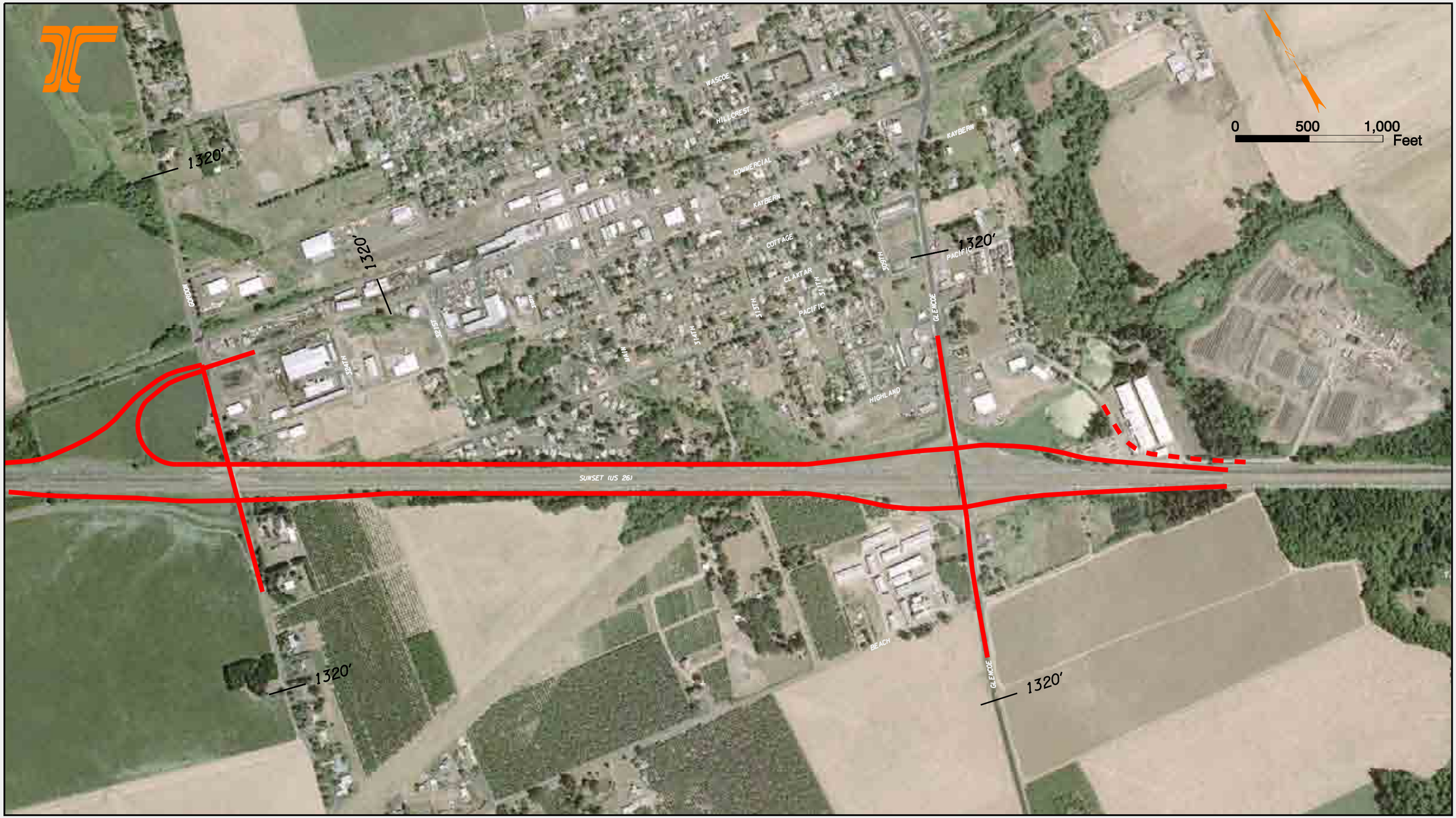
CONCEPT #18

Split Diamond (Glencoe/314th)



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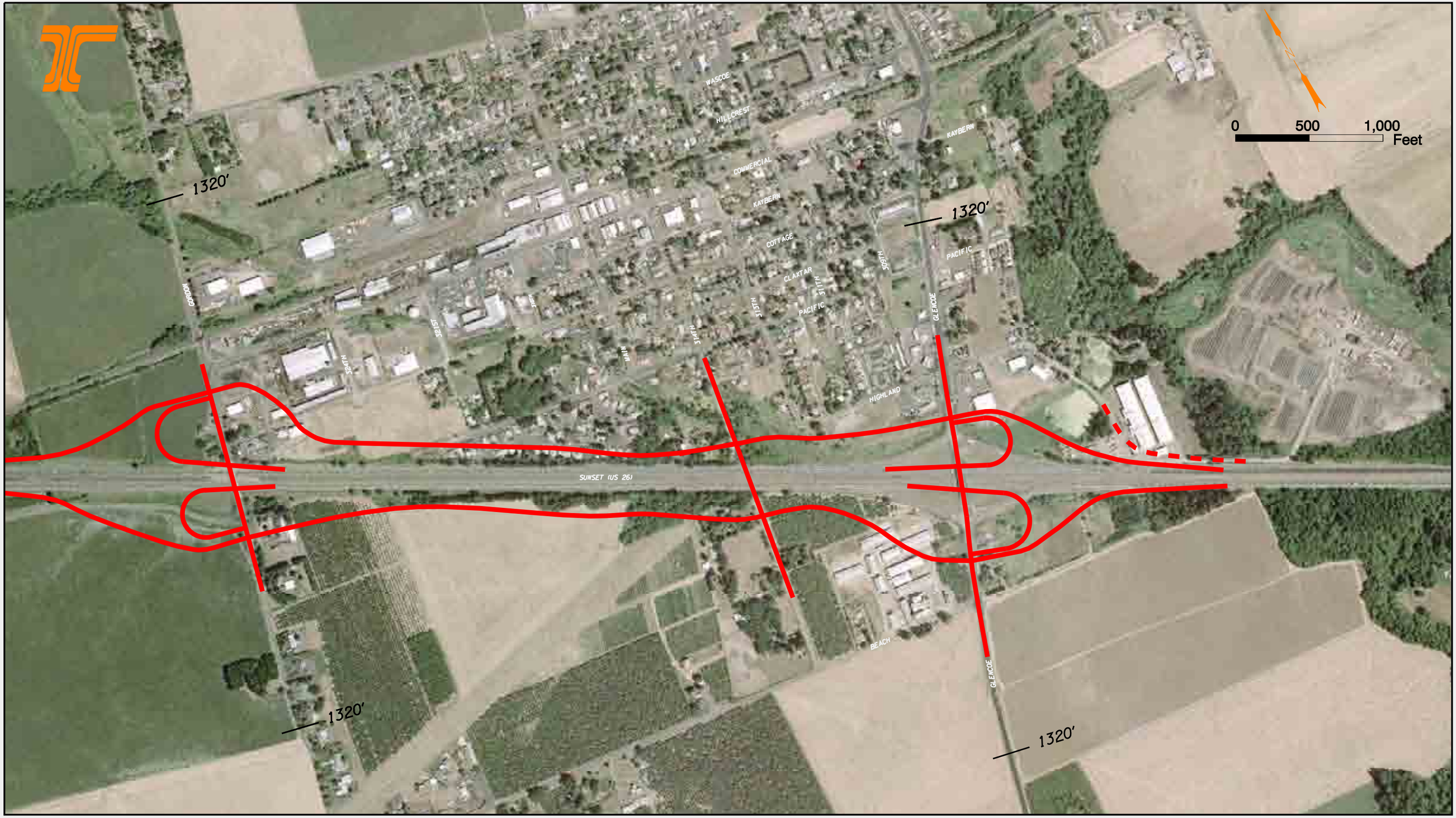
CONCEPT #19

Split Diamond (Glencoe/Gordon), Frontage Roads
Barrier Separated



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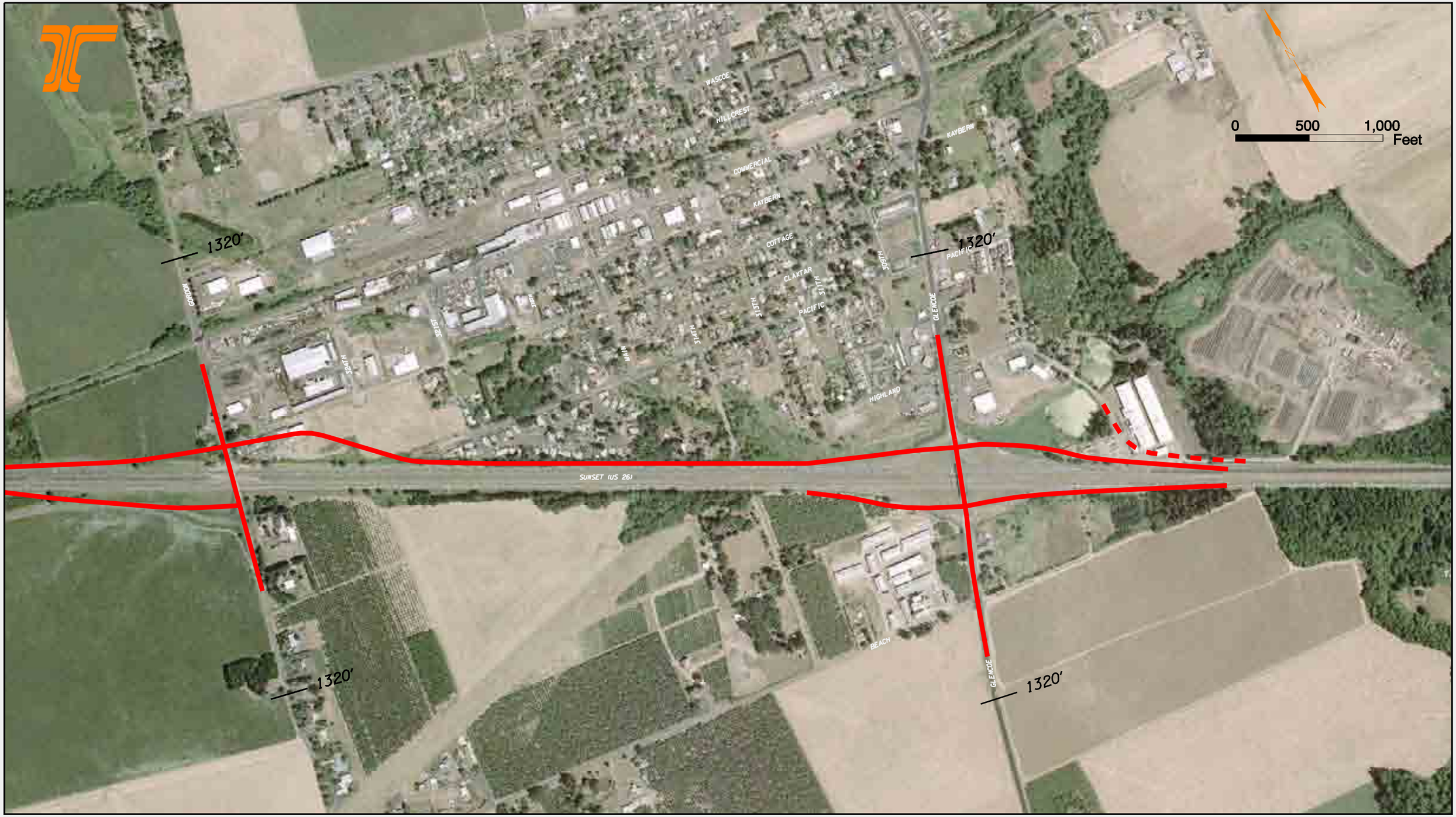
CONCEPT #20

Split Diamond (Glencoe/Gordon), Parclo AB
314th/316th Overcrossing



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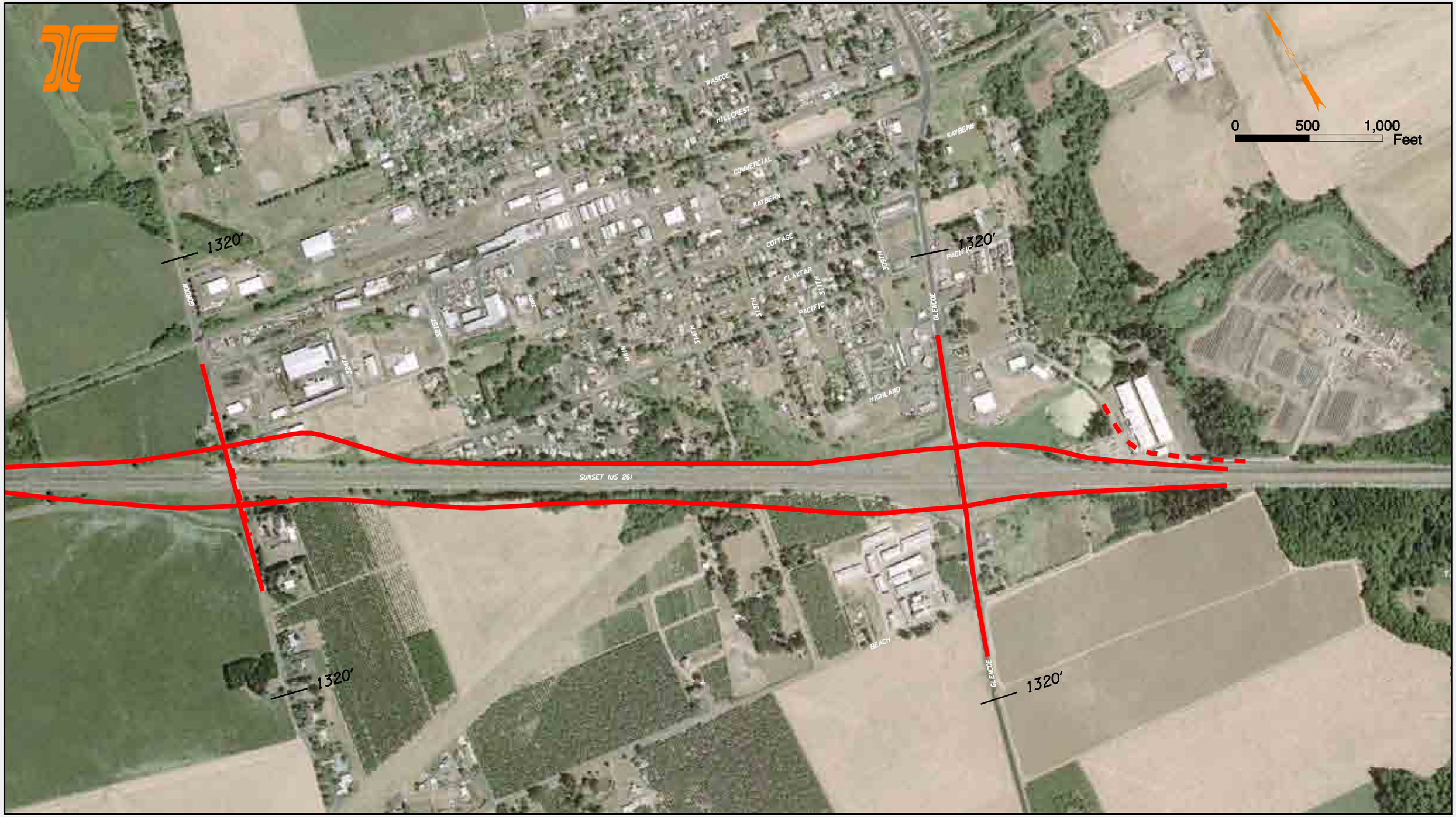
CONCEPT #21A

3/4 Split Diamond (Glencoe/Gordon)



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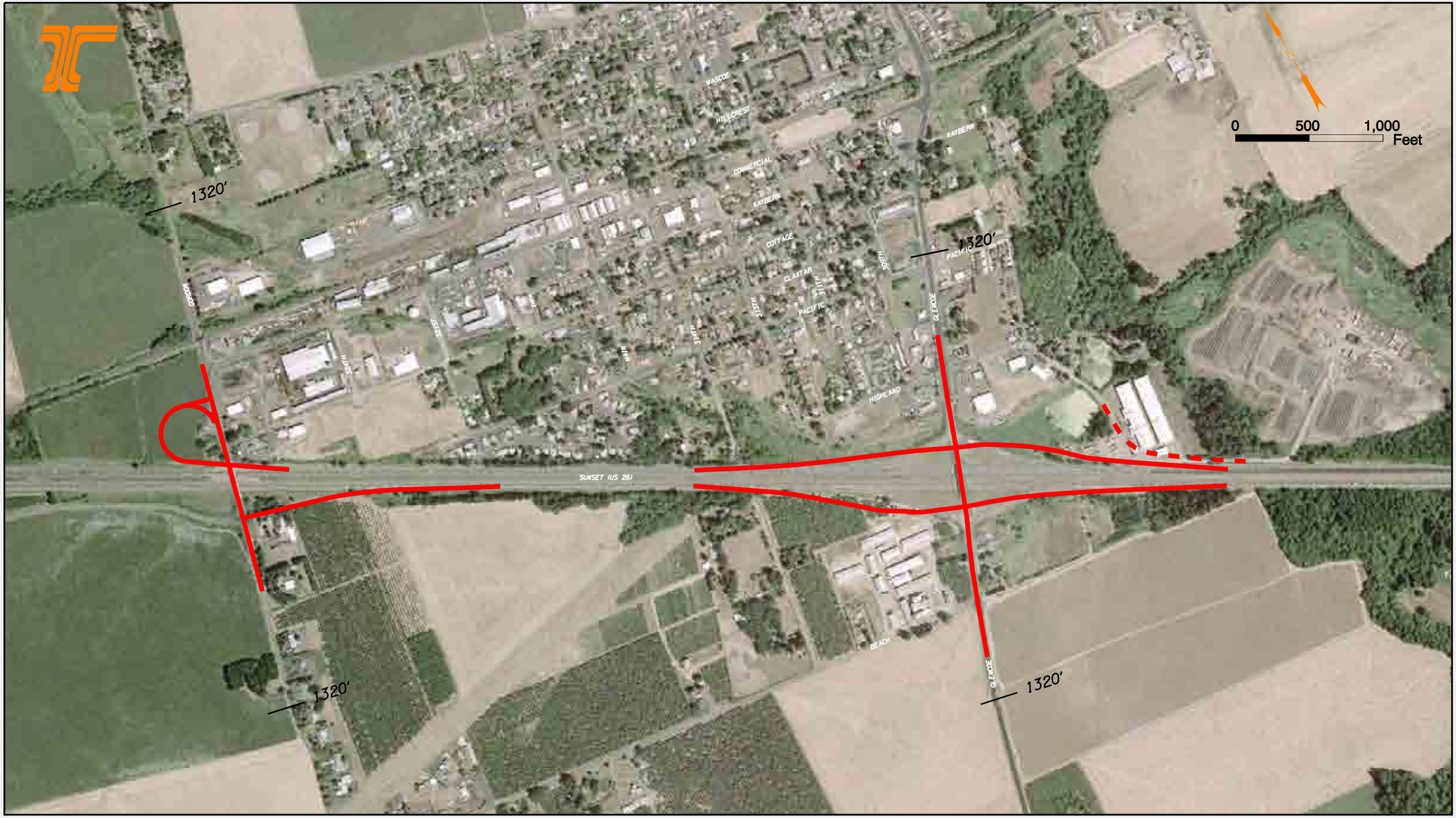
CONCEPT #21B

Split Diamond (Glencoe/Gordon)



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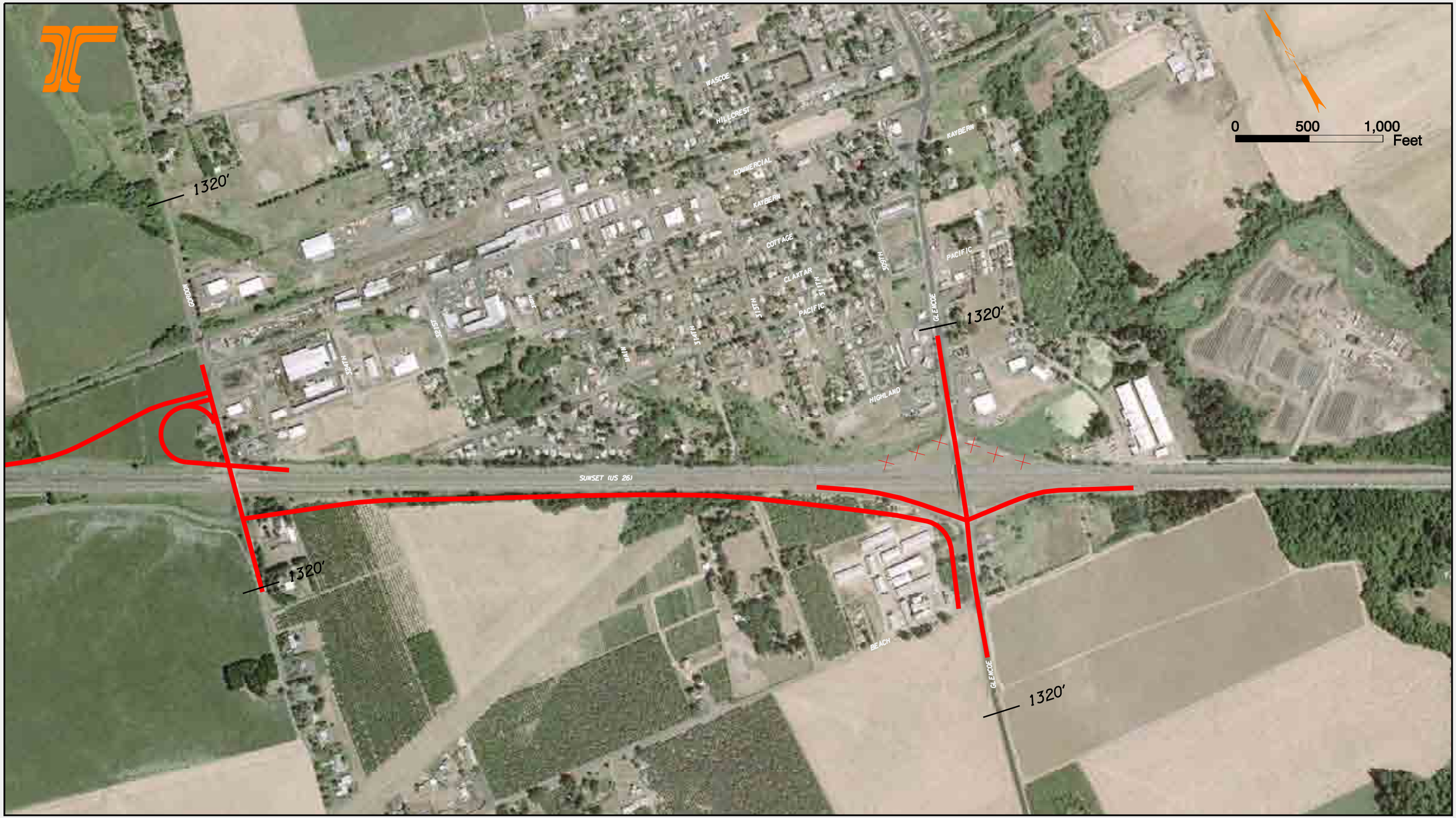
CONCEPT #22

Glencoe Tight Diamond, Gordon 1/2 Interchange



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CONCEPT #23

Glencoe ½ Interchange, Gordon ½ Interchange, Frontage Road

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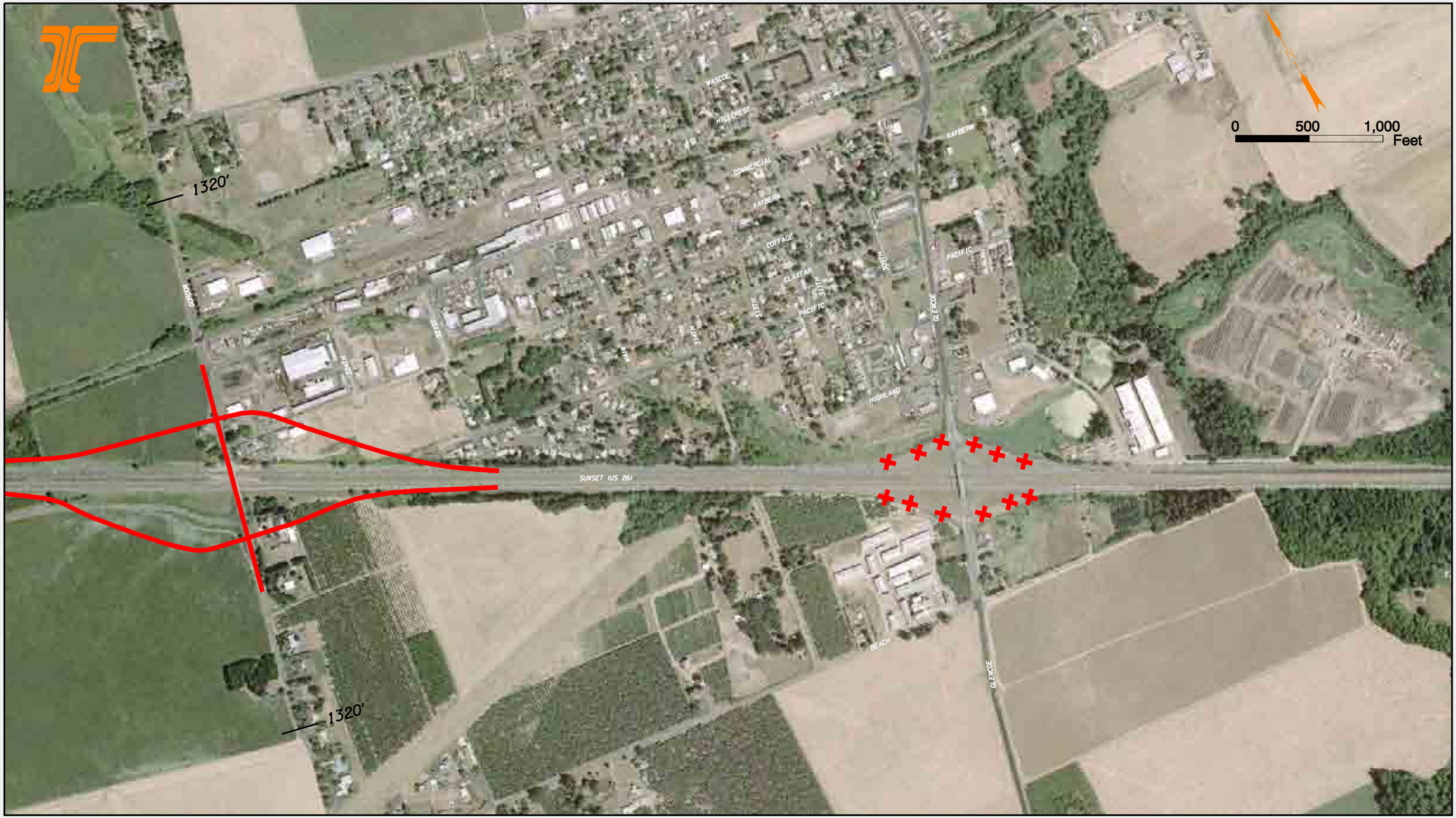
CONCEPT #24

Gordon Road Parclo AB



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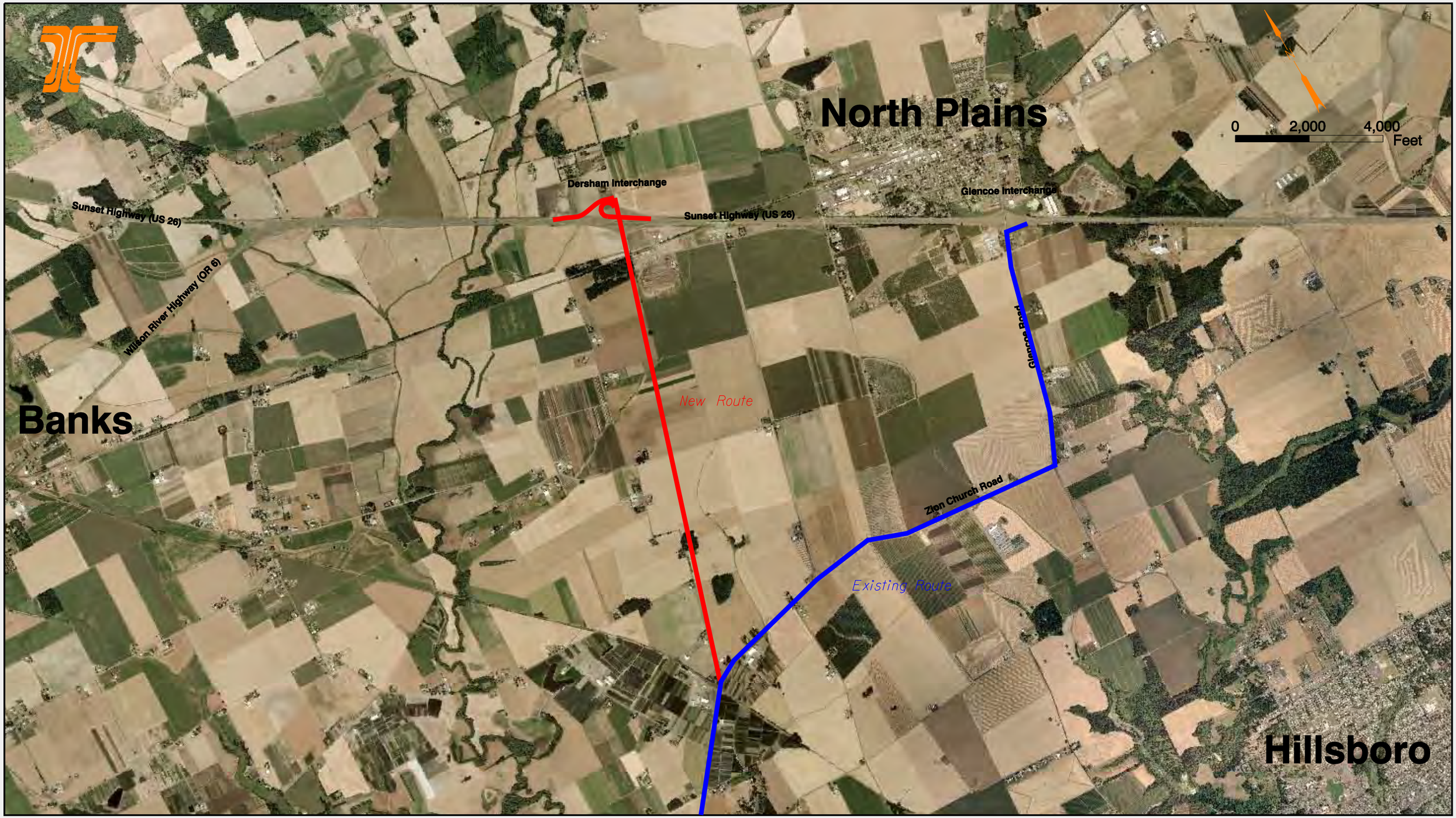
CONCEPT #25

Gordon Road Interchange.
Close Glencoe/Dersham Ramps



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CONCEPT #26

Construct New Arterial to Dersham Road
Add exit loop to Dersham Interchange

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Glencoe IAMP Interchange Workshop Concepts

CONCEPT #27

Extend North Road to Cross US26. Add Interchange

Appendix B

Interchange Concept Evaluation Matrices (At the Screening Level)

Goal #1: Transportation and Access

DRAFT Evaluation Matrix Table Layout – Goal #1: Transportation and Access

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #1	**Objective #1A: Reduce congestion and improve traffic flow in interchange area**				
	1A2: Ramp terminal locations relative to existing interchange.	+ 0 -	Ramp terminal is further from existing driveways and public streets than existing ramp interchange. Ramp terminal is the same distance from existing driveways and public streets as the existing ramp interchange. Ramp terminal is closer to existing driveways and public streets than existing ramp interchange.	-	⇒ Westbound and eastbound ramps terminals would be located beyond the existing interchange ramp terminals.
	1A3: Sunset Highway: Interchange spacing standards are met	+ -	Interchange spacing standards are met. Interchange spacing standards are not met.	-	⇒ The eastbound on-ramp and westbound off-ramps are within 1 mile of the Jackson School Road interchange ramps.
	Objective #1B: Provide improvements that are safe for all modes				
	1B1: Minimizes exposure to vehicle conflicts for pedestrians	+ 0 -	Grade separated. Stop-controlled. Free flow.	0 / -	⇒ Loop ramps could be a mix of stop-controlled and free-flow movements.
	1B2: Minimizes exposure to vehicle conflicts for bicycles	+ 0 -	Grade separated. Stop-controlled. Free flow.	0 / -	⇒ Loop ramps could be a mix of stop-controlled and free-flow movements.
	1B3: Interchange concept provides proper transition between Sunset Highway and Glencoe Road	+ -	Interchange form is compatible with roadway functional classes. Interchange form is not compatible with roadway functional classes.	+	⇒ All ramps connect to Glencoe Road, transitioning at the ramp terminal intersections.
	Objective #1C: Meet sound engineering practices and safety requirements				
	1C1: A minimum number of design exceptions are required	+ -	Interchange concept does not appear to require design exceptions. Interchange concept will require one or more design exceptions.	+	⇒ This concept could potentially be designed and constructed without any apparent design exceptions.
	Objective #1D: Provide reasonable access to the interchange area businesses				
	1D1: Business access or through residential traffic is not routed through residential areas or other sensitive areas	+ -	Interchange concept has less potential impact to residential or other sensitive areas. Interchange concept has more potential impact to residential or other sensitive areas.	+	⇒ Traffic is routed to/from US 26 via the Glencoe Road corridor.
	1D2: Provides safe and efficient access for freight movement	+ -	Accommodates freight movements. Does not accommodate freight movements.	+	⇒ Interchange form would accommodate freight traffic.
Concept #2	**Objective #1A: Reduce congestion and improve traffic flow in interchange area**				
	1A2: Ramp terminal locations relative to existing interchange.	+ 0 -	Ramp terminal is further from existing driveways and public streets than existing ramp interchange. Ramp terminal is the same distance from existing driveways and public streets as the existing ramp interchange. Ramp terminal is closer to existing driveways and public streets than existing ramp interchange.	-	⇒ Westbound and eastbound ramps terminals would be located beyond the existing interchange ramp terminals.
	1A3: Sunset Highway: Interchange spacing standards are met	+ -	Interchange spacing standards are met. Interchange spacing standards are not met.	-	⇒ The eastbound on-ramp and westbound off-ramps are within 1 mile of the Jackson School Road interchange ramps.
	Objective #1B: Provide improvements that are safe for all modes				
	1B1: Minimizes exposure to vehicle conflicts for pedestrians	+ 0 -	Grade separated. Stop-controlled. Free flow.	0 / -	⇒ Loop ramps could be a mix of stop-controlled and free-flow movements.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
	1B2: Minimizes exposure to vehicle conflicts for bicycles	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ Loop ramps could be a mix of stop-controlled and free-flow movements.
	1B3: Interchange concept provides proper transition between Sunset Highway and Glencoe Road	+ -	Interchange form is compatible with roadway functional classes. Interchange form is not compatible with roadway functional classes.	+	⇒ All ramps connect to a new alignment of Glencoe Road, transitioning at the ramp terminal intersections.
	Objective #1C: Meet sound engineering practices and safety requirements				
	1C1: A minimum number of design exceptions are required	+ -	Interchange concept does not appear to require design exceptions. Interchange concept will require one or more design exceptions.	+	⇒ This concept could potentially be designed and constructed without any apparent design exceptions.
	Objective #1D: Provide reasonable access to the interchange area businesses				
	1D1: Business access or through residential traffic is not routed through residential areas or other sensitive areas	+ -	Interchange concept has less potential impact to residential or other sensitive areas. Interchange concept has more potential impact to residential or other sensitive areas.	-	⇒ The new Glencoe Road alignment would need to be located adjacent to existing residences and land zoned residential.
	1D2: Provides safe and efficient access for freight movement	+ -	Accommodates freight movements. Does not accommodate freight movements.	+	⇒ Interchange form would accommodate freight traffic.
Concept #3	**Objective #1A: Reduce congestion and improve traffic flow in interchange area**				
	1A2: Ramp terminal locations relative to existing interchange.	+ 0 -	Ramp terminal is further from existing driveways and public streets than existing ramp interchange. Ramp terminal is the same distance from existing driveways and public streets as the existing ramp interchange. Ramp terminal is closer to existing driveways and public streets than existing ramp interchange.	-	⇒ Westbound ramp terminal would be located beyond the existing interchange ramp terminals.
	1A3: Sunset Highway: Interchange spacing standards are met	+ -	Interchange spacing standards are met. Interchange spacing standards are not met.	-	⇒ The eastbound on-ramp and westbound off-ramps are within 1 mile of the Jackson School Road interchange ramps.
	Objective #1B: Provide improvements that are safe for all modes				
	1B1: Minimizes exposure to vehicle conflicts for pedestrians	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ Loop ramps could be a mix of stop-controlled and free-flow movements.
	1B2: Minimizes exposure to vehicle conflicts for bicycles	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ Loop ramps could be a mix of stop-controlled and free-flow movements.
	1B3: Interchange concept provides proper transition between Sunset Highway and Glencoe Road	+ -	Interchange form is compatible with roadway functional classes. Interchange form is not compatible with roadway functional classes.	+	⇒ All ramps connect to Glencoe Road, transitioning at the ramp terminal intersections.
	Objective #1C: Meet sound engineering practices and safety requirements				
	1C1: A minimum number of design exceptions are required	+ -	Interchange concept does not appear to require design exceptions. Interchange concept will require one or more design exceptions.	+	⇒ This concept could potentially be designed and constructed without any apparent design exceptions.
	Objective #1D: Provide reasonable access to the interchange area businesses				
	1D1: Business access or through residential traffic is not routed through residential areas or other sensitive areas	+ -	Interchange concept has less potential impact to residential or other sensitive areas. Interchange concept has more potential impact to residential or other sensitive areas.	+	⇒ Traffic is routed to/from US 26 via the existing Glencoe Road corridor.
	1D2: Provides safe and efficient access for freight movement	+ -	Accommodates freight movements. Does not accommodate freight movements.	+	⇒ Interchange form would accommodate freight traffic.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #4	**Objective #1A: Reduce congestion and improve traffic flow in interchange area**				
	1A2: Ramp terminal locations relative to existing interchange.	+ 0 -	Ramp terminal is further from existing driveways and public streets than existing ramp interchange. Ramp terminal is the same distance from existing driveways and public streets as the existing ramp interchange. Ramp terminal is closer to existing driveways and public streets than existing ramp interchange.	+	⇒ The ramp terminals are further from existing driveways and public streets than existing ramp interchange.
	1A3: Sunset Highway: Interchange spacing standards are met	+ -	Interchange spacing standards are met. Interchange spacing standards are not met.	-	⇒ The eastbound on-ramp and westbound off-ramps are well within 1 mile of the Jackson School Road interchange ramps.
	Objective #1B: Provide improvements that are safe for all modes				
	1B1: Minimizes exposure to vehicle conflicts for pedestrians	+ 0 -	Grade separated. Stop-controlled. Free flow.	0 / -	⇒ Loop ramps could be a mix of stop-controlled and free-flow movements.
	1B2: Minimizes exposure to vehicle conflicts for bicycles	+ 0 -	Grade separated. Stop-controlled. Free flow.	0 / -	⇒ Loop ramps could be a mix of stop-controlled and free-flow movements.
	1B3: Interchange concept provides proper transition between Sunset Highway and Glencoe Road	+ -	Interchange form is compatible with roadway functional classes. Interchange form is not compatible with roadway functional classes.	+	⇒ All ramps connect to a new alignment of Glencoe Road, transitioning at the ramp terminal intersections.
	Objective #1C: Meet sound engineering practices and safety requirements				
	1C1: A minimum number of design exceptions are required	+ -	Interchange concept does not appear to require design exceptions. Interchange concept will require one or more design exceptions.	+	⇒ This concept could potentially be designed and constructed without any apparent design exceptions.
	Objective #1D: Provide reasonable access to the interchange area businesses				
	1D1: Business access or through residential traffic is not routed through residential areas or other sensitive areas	+ -	Interchange concept has less potential impact to residential or other sensitive areas. Interchange concept has more potential impact to residential or other sensitive areas.	-	⇒ The new Glencoe Road alignment would route traffic through residentially zoned land and across McKay Creek.
	1D2: Provides safe and efficient access for freight movement	+ -	Accommodates freight movements. Does not accommodate freight movements.	+	⇒ Interchange form would accommodate freight traffic.
Concept #5	**Objective #1A: Reduce congestion and improve traffic flow in interchange area**				
	1A2: Ramp terminal locations relative to existing interchange.	+ 0 -	Ramp terminal is further from existing driveways and public streets than existing ramp interchange. Ramp terminal is the same distance from existing driveways and public streets as the existing ramp interchange. Ramp terminal is closer to existing driveways and public streets than existing ramp interchange.	0	⇒ The ramp terminals are approximately in the same location as the existing terminals with the exception of the loop flyover ramp, which is located further south than the existing eastbound ramp terminal.
	1A3: Sunset Highway: Interchange spacing standards are met	+ -	Interchange spacing standards are met. Interchange spacing standards are not met.	-	⇒ The eastbound on-ramp and westbound off-ramps are within 1 mile of the Jackson School Road interchange ramps.
	Objective #1B: Provide improvements that are safe for all modes				
	1B1: Minimizes exposure to vehicle conflicts for pedestrians	+ 0 -	Grade separated. Stop-controlled. Free flow.	0 / -	⇒ The ramp terminal intersections would likely be signalized and may contain free flow movements.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
	1B2: Minimizes exposure to vehicle conflicts for bicycles	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ The ramp terminal intersections would likely be signalized and may contain free flow movements.
	1B3: Interchange concept provides proper transition between Sunset Highway and Glencoe Road	+ -	Interchange form is compatible with roadway functional classes. Interchange form is not compatible with roadway functional classes.	+	⇒ All ramps connect to Glencoe Road, transitioning at the ramp terminal intersections.
	Objective #1C: Meet sound engineering practices and safety requirements				
	1C1: A minimum number of design exceptions are required	+ -	Interchange concept does not appear to require design exceptions. Interchange concept will require one or more design exceptions.	-	⇒ This concept may require on or more design exceptions.
	Objective #1D: Provide reasonable access to the interchange area businesses				
	1D1: Business access or through residential traffic is not routed through residential areas or other sensitive areas	+ -	Interchange concept has less potential impact to residential or other sensitive areas. Interchange concept has more potential impact to residential or other sensitive areas.	+	⇒ Traffic is routed to/from US 26 via the Glencoe Road corridor.
	1D2: Provides safe and efficient access for freight movement	+ -	Accommodates freight movements. Does not accommodate freight movements.	+	⇒ Interchange form would accommodate freight traffic.
Concept #7A	**Objective #1A: Reduce congestion and improve traffic flow in interchange area**				
	1A2: Ramp terminal locations relative to existing interchange.	+ 0 -	Ramp terminal is further from existing driveways and public streets than existing ramp interchange. Ramp terminal is the same distance from existing driveways and public streets as the existing ramp interchange. Ramp terminal is closer to existing driveways and public streets than existing ramp interchange.	-	⇒ Westbound ramps terminal would be located beyond the existing interchange ramp terminals.
	1A3: Sunset Highway: Interchange spacing standards are met	+ -	Interchange spacing standards are met. Interchange spacing standards are not met.	-	⇒ The eastbound on-ramp and westbound off-ramps are within 1 mile of the Jackson School Road interchange ramps.
	Objective #1B: Provide improvements that are safe for all modes				
	1B1: Minimizes exposure to vehicle conflicts for pedestrians	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ Loop ramps could be a mix of stop-controlled and free-flow movements.
	1B2: Minimizes exposure to vehicle conflicts for bicycles	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ Loop ramps could be a mix of stop-controlled and free-flow movements.
	1B3: Interchange concept provides proper transition between Sunset Highway and Glencoe Road	+ -	Interchange form is compatible with roadway functional classes. Interchange form is not compatible with roadway functional classes.	+	⇒ All ramps connect to Glencoe Road, transitioning at the ramp terminal intersections.
	Objective #1C: Meet sound engineering practices and safety requirements				
	1C1: A minimum number of design exceptions are required	+ -	Interchange concept does not appear to require design exceptions. Interchange concept will require one or more design exceptions.	+	⇒ This concept could potentially be designed and constructed without any apparent design exceptions.
	Objective #1D: Provide reasonable access to the interchange area businesses				
	1D1: Business access or through residential traffic is not routed through residential areas or other sensitive areas	+ -	Interchange concept has less potential impact to residential or other sensitive areas. Interchange concept has more potential impact to residential or other sensitive areas.	+	⇒ Traffic is routed to/from US 26 via the Glencoe Road corridor.
	1D2: Provides safe and efficient access for freight movement	+ -	Accommodates freight movements. Does not accommodate freight movements.	+	⇒ Interchange form would accommodate freight traffic.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #7B	**Objective #1A: Reduce congestion and improve traffic flow in interchange area**				
	1A2: Ramp terminal locations relative to existing interchange.	+ 0 -	Ramp terminal is further from existing driveways and public streets than existing ramp interchange. Ramp terminal is the same distance from existing driveways and public streets as the existing ramp interchange. Ramp terminal is closer to existing driveways and public streets than existing ramp interchange.	-	⇒ Westbound ramp terminals would be located beyond the existing interchange ramp terminals.
	1A3: Sunset Highway: Interchange spacing standards are met	+ -	Interchange spacing standards are met. Interchange spacing standards are not met.	-	⇒ The eastbound on-ramp and westbound off-ramps are within 1 mile of the Jackson School Road interchange ramps.
	Objective #1B: Provide improvements that are safe for all modes				
	1B1: Minimizes exposure to vehicle conflicts for pedestrians	+ 0 -	Grade separated. Stop-controlled. Free flow.	0 / -	⇒ Loop ramps could be a mix of stop-controlled and free-flow movements.
	1B2: Minimizes exposure to vehicle conflicts for bicycles	+ 0 -	Grade separated. Stop-controlled. Free flow.	0 / -	⇒ Loop ramps could be a mix of stop-controlled and free-flow movements.
	1B3: Interchange concept provides proper transition between Sunset Highway and Glencoe Road	+ -	Interchange form is compatible with roadway functional classes. Interchange form is not compatible with roadway functional classes.	+	⇒ All ramps connect to Glencoe Road, transitioning at the ramp terminal intersections.
	Objective #1C: Meet sound engineering practices and safety requirements				
	1C1: A minimum number of design exceptions are required	+ -	Interchange concept does not appear to require design exceptions. Interchange concept will require one or more design exceptions.	+	⇒ This concept could potentially be designed and constructed without any apparent design exceptions.
	Objective #1D: Provide reasonable access to the interchange area businesses				
	1D1: Business access or through residential traffic is not routed through residential areas or other sensitive areas	+ -	Interchange concept has less potential impact to residential or other sensitive areas. Interchange concept has more potential impact to residential or other sensitive areas.	+	⇒ Traffic is routed to/from US 26 via the Glencoe Road corridor.
	1D2: Provides safe and efficient access for freight movement	+ -	Accommodates freight movements. Does not accommodate freight movements.	+	⇒ Interchange form would accommodate freight traffic.
Concept #7C	**Objective #1A: Reduce congestion and improve traffic flow in interchange area**				
	1A2: Ramp terminal locations relative to existing interchange.	+ 0 -	Ramp terminal is further from existing driveways and public streets than existing ramp interchange. Ramp terminal is the same distance from existing driveways and public streets as the existing ramp interchange. Ramp terminal is closer to existing driveways and public streets than existing ramp interchange.	-	⇒ Westbound ramps terminal would be located beyond the existing interchange ramp terminals.
	1A3: Sunset Highway: Interchange spacing standards are met	+ -	Interchange spacing standards are met. Interchange spacing standards are not met.	-	⇒ The eastbound on-ramp and westbound off-ramps are within 1 mile of the Jackson School Road interchange ramps.
	Objective #1B: Provide improvements that are safe for all modes				
	1B1: Minimizes exposure to vehicle conflicts for pedestrians	+ 0 -	Grade separated. Stop-controlled. Free flow.	0 / -	⇒ The ramp terminal intersections would be signalized and may contain free flow movements.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
	1B2: Minimizes exposure to vehicle conflicts for bicycles	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ The ramp terminal intersections would be signalized and may contain free flow movements.
	1B3: Interchange concept provides proper transition between Sunset Highway and Glencoe Road	+ -	Interchange form is compatible with roadway functional classes. Interchange form is not compatible with roadway functional classes.	+	⇒ All ramps connect to Glencoe Road, transitioning at the ramp terminal intersections.
	Objective #1C: Meet sound engineering practices and safety requirements				
	1C1: A minimum number of design exceptions are required	+ -	Interchange concept does not appear to require design exceptions. Interchange concept will require one or more design exceptions.	+	⇒ This concept could potentially be designed and constructed without any apparent design exceptions.
	Objective #1D: Provide reasonable access to the interchange area businesses				
	1D1: Business access or through residential traffic is not routed through residential areas or other sensitive areas	+ -	Interchange concept has less potential impact to residential or other sensitive areas. Interchange concept has more potential impact to residential or other sensitive areas.	+	⇒ Traffic is routed to/from US 26 via the Glencoe Road corridor.
	1D2: Provides safe and efficient access for freight movement	+ -	Accommodates freight movements. Does not accommodate freight movements.	+	⇒ Interchange form would accommodate freight traffic.
	Objective #1A: Reduce congestion and improve traffic flow in interchange area				
	1A2: Ramp terminal locations relative to existing interchange.	+ 0 -	Ramp terminal is further from existing driveways and public streets than existing ramp interchange. Ramp terminal is the same distance from existing driveways and public streets as the existing ramp interchange. Ramp terminal is closer to existing driveways and public streets than existing ramp interchange.	-	⇒ Westbound ramps terminal would be located beyond the existing interchange ramp terminals.
	1A3: Sunset Highway: Interchange spacing standards are met	+ -	Interchange spacing standards are met. Interchange spacing standards are not met.	-	⇒ The eastbound on-ramp and westbound off-ramps are within 1 mile of the Jackson School Road interchange ramps.
	Objective #1B: Provide improvements that are safe for all modes				
Concept #8	1B1: Minimizes exposure to vehicle conflicts for pedestrians	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ Loop ramps could be a mix of stop-controlled and free-flow movements.
	1B2: Minimizes exposure to vehicle conflicts for bicycles	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ Loop ramps could be a mix of stop-controlled and free-flow movements.
	1B3: Interchange concept provides proper transition between Sunset Highway and Glencoe Road	+ -	Interchange form is compatible with roadway functional classes. Interchange form is not compatible with roadway functional classes.	+	⇒ All ramps connect to Glencoe Road, transitioning at the ramp terminal intersections.
	Objective #1C: Meet sound engineering practices and safety requirements				
	1C1: A minimum number of design exceptions are required	+ -	Interchange concept does not appear to require design exceptions. Interchange concept will require one or more design exceptions.	+	⇒ This concept could potentially be designed and constructed without any apparent design exceptions.
	Objective #1D: Provide reasonable access to the interchange area businesses				
	1D1: Business access or through residential traffic is not routed through residential areas or other sensitive areas	+ -	Interchange concept has less potential impact to residential or other sensitive areas. Interchange concept has more potential impact to residential or other sensitive areas.	+	⇒ Traffic is routed to/from US 26 via the Glencoe Road corridor.
	1D2: Provides safe and efficient access for freight movement	+ -	Accommodates freight movements. Does not accommodate freight movements.	+	⇒ Accommodates freight traffic in the existing manner.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #9	**Objective #1A: Reduce congestion and improve traffic flow in interchange area**				
	1A2: Ramp terminal locations relative to existing interchange.	+ 0 -	Ramp terminal is further from existing driveways and public streets than existing ramp interchange. Ramp terminal is the same distance from existing driveways and public streets as the existing ramp interchange. Ramp terminal is closer to existing driveways and public streets than existing ramp interchange.	**0**	⇒ The ramp terminals are approximately in the same location as the existing terminals with the exception of the loop flyover ramp, which is located further south than the existing eastbound ramp terminal.
	1A3: Sunset Highway: Interchange spacing standards are met	+ -	Interchange spacing standards are met. Interchange spacing standards are not met.	**-**	⇒ The eastbound on-ramp and westbound off-ramps are within 1 mile of the Jackson School Road interchange ramps.
	Objective #1B: Provide improvements that are safe for all modes				
	1B1: Minimizes exposure to vehicle conflicts for pedestrians	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ The flyover ramp would have a free flow movement onto southbound Glencoe Road. However, pedestrians could be routed around this feature. ⇒ The remaining pedestrian crossings could be a mix of stop-controlled and free-flow movements.
	1B2: Minimizes exposure to vehicle conflicts for bicycles	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ The flyover ramp would have a free flow movement onto southbound Glencoe Road. However, bicycles could be routed around this feature. ⇒ The remaining bicycles crossings could be a mix of stop-controlled and free-flow movements.
	1B3: Interchange concept provides proper transition between Sunset Highway and Glencoe Road	+ -	Interchange form is compatible with roadway functional classes. Interchange form is not compatible with roadway functional classes.	**+**	⇒ All ramps connect to Glencoe Road, transitioning at the ramp terminal intersections with the exception of the flyover ramp, which merges with a 55-mph portion of Glencoe Road.
	Objective #1C: Meet sound engineering practices and safety requirements				
	1C1: A minimum number of design exceptions are required	+ -	Interchange concept does not appear to require design exceptions. Interchange concept will require one or more design exceptions.	**+**	⇒ This concept could potentially be designed and constructed without any apparent design exceptions.
	Objective #1D: Provide reasonable access to the interchange area businesses				
	1D1: Business access or through residential traffic is not routed through residential areas or other sensitive areas	+ -	Interchange concept has less potential impact to residential or other sensitive areas. Interchange concept has more potential impact to residential or other sensitive areas.	**+**	⇒ Traffic is routed to/from US 26 via the Glencoe Road corridor.
	1D2: Provides safe and efficient access for freight movement	+ -	Accommodates freight movements. Does not accommodate freight movements.	**+**	⇒ Interchange form would accommodate freight traffic.
Concept #10	**Objective #1A: Reduce congestion and improve traffic flow in interchange area**				
	1A2: Ramp terminal locations relative to existing interchange.	+ 0 -	Ramp terminal is further from existing driveways and public streets than existing ramp interchange. Ramp terminal is the same distance from existing driveways and public streets as the existing ramp interchange. Ramp terminal is closer to existing driveways and public streets than existing ramp interchange.	**0**	⇒ The ramp terminals are approximately in the same location as the existing terminals.
	1A3: Sunset Highway: Interchange spacing standards are met	+ -	Interchange spacing standards are met. Interchange spacing standards are not met.	**-**	⇒ The eastbound on-ramp and westbound off-ramps are within 1 mile of the Jackson School Road interchange ramps.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
	Objective #1B: Provide improvements that are safe for all modes				
	1B1: Minimizes exposure to vehicle conflicts for pedestrians	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ The ramp terminal intersections would likely be signalized and may contain free flow movements.
	1B2: Minimizes exposure to vehicle conflicts for bicycles	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ The ramp terminal intersections would likely be signalized and may contain free flow movements.
	1B3: Interchange concept provides proper transition between Sunset Highway and Glencoe Road	+ -	Interchange form is compatible with roadway functional classes. Interchange form is not compatible with roadway functional classes.	+	⇒ All ramps connect to a couplet of Glencoe Road, transitioning at the ramp terminal intersections.
	Objective #1C: Meet sound engineering practices and safety requirements				
	1C1: A minimum number of design exceptions are required	+ -	Interchange concept does not appear to require design exceptions. Interchange concept will require one or more design exceptions.	+	⇒ This concept could potentially be designed and constructed without any apparent design exceptions.
	Objective #1D: Provide reasonable access to the interchange area businesses				
	1D1: Business access or through residential traffic is not routed through residential areas or other sensitive areas	+ -	Interchange concept has less potential impact to residential or other sensitive areas. Interchange concept has more potential impact to residential or other sensitive areas.	-	⇒ The new Glencoe Road alignment would impact existing residences and residentially zoned land.
	1D2: Provides safe and efficient access for freight movement	+ -	Accommodates freight movements. Does not accommodate freight movements.	+	⇒ Interchange form would accommodate freight traffic.
Concept #11C	**Objective #1A: Reduce congestion and improve traffic flow in interchange area**				
	1A2: Ramp terminal locations relative to existing interchange.	+ 0 -	Ramp terminal is further from existing driveways and public streets than existing ramp interchange. Ramp terminal is the same distance from existing driveways and public streets as the existing ramp interchange. Ramp terminal is closer to existing driveways and public streets than existing ramp interchange.	**0**	⇒ The ramp terminals are approximately in the same location as the existing terminals.
	1A3: Sunset Highway: Interchange spacing standards are met	+ -	Interchange spacing standards are met. Interchange spacing standards are not met.	-	⇒ The eastbound on-ramp and westbound off-ramps are within 1 mile of the Jackson School Road interchange ramps.
	Objective #1B: Provide improvements that are safe for all modes				
	1B1: Minimizes exposure to vehicle conflicts for pedestrians	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ The ramp terminal intersections would likely be signalized and may contain free flow movements.
	1B2: Minimizes exposure to vehicle conflicts for bicycles	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ The ramp terminal intersections would likely be signalized and may contain free flow movements.
	1B3: Interchange concept provides proper transition between Sunset Highway and Glencoe Road	+ -	Interchange form is compatible with roadway functional classes. Interchange form is not compatible with roadway functional classes.	+	⇒ All ramps connect to Glencoe Road, transitioning at the ramp terminal intersections.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
	Objective #1C: Meet sound engineering practices and safety requirements				
	1C1: A minimum number of design exceptions are required	+ -	Interchange concept does not appear to require design exceptions. Interchange concept will require one or more design exceptions.	+	⇒ This concept could potentially be designed and constructed without any apparent design exceptions.
	Objective #1D: Provide reasonable access to the interchange area businesses				
	1D1: Business access or through residential traffic is not routed through residential areas or other sensitive areas	+ -	Interchange concept has less potential impact to residential or other sensitive areas. Interchange concept has more potential impact to residential or other sensitive areas.	+	⇒ Traffic is routed to/from US 26 via the Glencoe Road corridor.
	1D2: Provides safe and efficient access for freight movement	+ -	Accommodates freight movements. Does not accommodate freight movements.	+	⇒ Interchange form would accommodate freight traffic.
Concept #12	**Objective #1A: Reduce congestion and improve traffic flow in interchange area**				
	1A2: Ramp terminal locations relative to existing interchange.	+ 0 -	Ramp terminal is further from existing driveways and public streets than existing ramp interchange. Ramp terminal is the same distance from existing driveways and public streets as the existing ramp interchange. Ramp terminal is closer to existing driveways and public streets than existing ramp interchange.	0	⇒ The westbound and eastbound right-turn lanes are approximately in the same location as the existing terminals. ⇒ The single point intersection is located between the ramp terminals over US 26.
	1A3: Sunset Highway: Interchange spacing standards are met	+ -	Interchange spacing standards are met. Interchange spacing standards are not met.	-	⇒ The eastbound on-ramp and westbound off-ramps are within 1 mile of the Jackson School Road interchange ramps.
	Objective #1B: Provide improvements that are safe for all modes				
	1B1: Minimizes exposure to vehicle conflicts for pedestrians	+ 0 -	Grade separated. Stop-controlled. Free flow.	-	⇒ The westbound and eastbound ramp terminal intersections would likely contain yield-controlled or free flow movements.
	1B2: Minimizes exposure to vehicle conflicts for bicycles	+ 0 -	Grade separated. Stop-controlled. Free flow.	-	⇒ The westbound and eastbound ramp terminal intersections would likely contain yield-controlled or free flow movements.
	1B3: Interchange concept provides proper transition between Sunset Highway and Glencoe Road	+ -	Interchange form is compatible with roadway functional classes. Interchange form is not compatible with roadway functional classes.	+	⇒ All ramps connect to Glencoe Road, transitioning at the ramp terminal intersections.
	Objective #1C: Meet sound engineering practices and safety requirements				
	1C1: A minimum number of design exceptions are required	+ -	Interchange concept does not appear to require design exceptions. Interchange concept will require one or more design exceptions.	+	⇒ This concept could potentially be designed and constructed without any apparent design exceptions.
	Objective #1D: Provide reasonable access to the interchange area businesses				
	1D1: Business access or through residential traffic is not routed through residential areas or other sensitive areas	+ -	Interchange concept has less potential impact to residential or other sensitive areas. Interchange concept has more potential impact to residential or other sensitive areas.	+	⇒ Traffic is routed to/from US 26 via the Glencoe Road corridor.
	1D2: Provides safe and efficient access for freight movement	+ -	Accommodates freight movements. Does not accommodate freight movements.	+	⇒ Interchange form would accommodate freight traffic.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #13	**Objective #1A: Reduce congestion and improve traffic flow in interchange area**				
	1A2: Ramp terminal locations relative to existing interchange.	+ 0 -	Ramp terminal is further from existing driveways and public streets than existing ramp interchange. Ramp terminal is the same distance from existing driveways and public streets as the existing ramp interchange. Ramp terminal is closer to existing driveways and public streets than existing ramp interchange.	+	⇒ The Glencoe Road roundabout approaches would be inside the existing interchange ramp terminals. ⇒ If the addition of right-turn bypass lanes were deemed necessary, the approaches would remain inside the existing interchange footprint.
	1A3: Sunset Highway: Interchange spacing standards are met	+ -	Interchange spacing standards are met. Interchange spacing standards are not met.	-	⇒ The eastbound on-ramp and westbound off-ramps are within 1 mile of the Jackson School Road interchange ramps.
	Objective #1B: Provide improvements that are safe for all modes				
	1B1: Minimizes exposure to vehicle conflicts for pedestrians	+ 0 -	Grade separated. Stop-controlled. Free flow.	0	⇒ The roundabout approaches would be yield-controlled, but the roundabout would operate as a traffic calming feature, creating a safe environment for pedestrians.
	1B2: Minimizes exposure to vehicle conflicts for bicycles	+ 0 -	Grade separated. Stop-controlled. Free flow.	0	⇒ The roundabout approaches would be yield-controlled, but the roundabout would operate as a traffic calming feature, creating a safe environment for bicycles.
	1B3: Interchange concept provides proper transition between Sunset Highway and Glencoe Road	+ -	Interchange form is compatible with roadway functional classes. Interchange form is not compatible with roadway functional classes.	+	⇒ All ramps connect to Glencoe Road, transitioning at the ramp terminal intersections.
	Objective #1C: Meet sound engineering practices and safety requirements				
	1C1: A minimum number of design exceptions are required	+ -	Interchange concept does not appear to require design exceptions. Interchange concept will require one or more design exceptions.	+	⇒ This concept could potentially be designed and constructed without any apparent design exceptions.
	Objective #1D: Provide reasonable access to the interchange area businesses				
	1D1: Business access or through residential traffic is not routed through residential areas or other sensitive areas	+ -	Interchange concept has less potential impact to residential or other sensitive areas. Interchange concept has more potential impact to residential or other sensitive areas.	+	⇒ Traffic is routed to/from US 26 via the Glencoe Road corridor.
	1D2: Provides safe and efficient access for freight movement	+ -	Accommodates freight movements. Does not accommodate freight movements.	+	⇒ Although it could be designed to accommodate freight traffic, large trucks may have more difficulty navigating the roundabout interchange compared to more traditional interchange forms.
Concept #14A	**Objective #1A: Reduce congestion and improve traffic flow in interchange area**				
	1A2: Ramp terminal locations relative to existing interchange.	+ 0 -	Ramp terminal is further from existing driveways and public streets than existing ramp interchange. Ramp terminal is the same distance from existing driveways and public streets as the existing ramp interchange. Ramp terminal is closer to existing driveways and public streets than existing ramp interchange.	+	⇒ The ramp terminals are located inside the existing interchange footprint.
	1A3: Sunset Highway: Interchange spacing standards are met	+ -	Interchange spacing standards are met. Interchange spacing standards are not met.	-	⇒ The eastbound on-ramp and westbound off-ramps are within 1 mile of the Jackson School Road interchange ramps.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
	Objective #1B: Provide improvements that are safe for all modes				
	1B1: Minimizes exposure to vehicle conflicts for pedestrians	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ The ramp terminal intersections would likely be signalized and may contain free flow movements.
	1B2: Minimizes exposure to vehicle conflicts for bicycles	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ The ramp terminal intersections would likely be signalized and may contain free flow movements.
	1B3: Interchange concept provides proper transition between Sunset Highway and Glencoe Road	+ -	Interchange form is compatible with roadway functional classes. Interchange form is not compatible with roadway functional classes.	+	⇒ All ramps connect to Glencoe Road, transitioning at the ramp terminal intersections.
	Objective #1C: Meet sound engineering practices and safety requirements				
	1C1: A minimum number of design exceptions are required	+ -	Interchange concept does not appear to require design exceptions. Interchange concept will require one or more design exceptions.	+	⇒ This concept could potentially be designed and constructed without any apparent design exceptions.
	Objective #1D: Provide reasonable access to the interchange area businesses				
	1D1: Business access or through residential traffic is not routed through residential areas or other sensitive areas	+ -	Interchange concept has less potential impact to residential or other sensitive areas. Interchange concept has more potential impact to residential or other sensitive areas.	+	⇒ Traffic is routed to/from US 26 via the Glencoe Road corridor.
	1D2: Provides safe and efficient access for freight movement	+ -	Accommodates freight movements. Does not accommodate freight movements.	+	⇒ Interchange form would accommodate freight traffic.
Concept #14B	**Objective #1A: Reduce congestion and improve traffic flow in interchange area**				
	1A2: Ramp terminal locations relative to existing interchange.	+ 0 -	Ramp terminal is further from existing driveways and public streets than existing ramp interchange. Ramp terminal is the same distance from existing driveways and public streets as the existing ramp interchange. Ramp terminal is closer to existing driveways and public streets than existing ramp interchange.	+	⇒ The ramp terminals are located inside the existing interchange footprint.
	1A3: Sunset Highway: Interchange spacing standards are met	+ -	Interchange spacing standards are met. Interchange spacing standards are not met.	-	⇒ The eastbound on-ramp and westbound off-ramps are within 1 mile of the Jackson School Road interchange ramps.
	Objective #1B: Provide improvements that are safe for all modes				
	1B1: Minimizes exposure to vehicle conflicts for pedestrians	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ The ramp terminal intersections would likely be signalized and may contain free flow movements.
	1B2: Minimizes exposure to vehicle conflicts for bicycles	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ The ramp terminal intersections would likely be signalized and may contain free flow movements.
	1B3: Interchange concept provides proper transition between Sunset Highway and Glencoe Road	+ -	Interchange form is compatible with roadway functional classes. Interchange form is not compatible with roadway functional classes.	+	⇒ All ramps connect to Glencoe Road, transitioning at the ramp terminal intersections.
	Objective #1C: Meet sound engineering practices and safety requirements				
	1C1: A minimum number of design exceptions are required	+ -	Interchange concept does not appear to require design exceptions. Interchange concept will require one or more design exceptions.	+	⇒ This concept could potentially be designed and constructed without any apparent design exceptions.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
	Objective #1D: Provide reasonable access to the interchange area businesses				
	1D1: Business access or through residential traffic is not routed through residential areas or other sensitive areas	+ -	Interchange concept has less potential impact to residential or other sensitive areas. Interchange concept has more potential impact to residential or other sensitive areas.	+	⇒ Traffic is routed to/from US 26 via the Glencoe Road corridor.
	1D2: Provides safe and efficient access for freight movement	+ -	Accommodates freight movements. Does not accommodate freight movements.	+	⇒ Interchange form would accommodate freight traffic.
Concept #15	**Objective #1A: Reduce congestion and improve traffic flow in interchange area**				
	1A2: Ramp terminal locations relative to existing interchange.	+ 0 -	Ramp terminal is further from existing driveways and public streets than existing ramp interchange. Ramp terminal is the same distance from existing driveways and public streets as the existing ramp interchange. Ramp terminal is closer to existing driveways and public streets than existing ramp interchange.	+	⇒ The ramp terminals are further from existing access points on the new north/south roadway.
	1A3: Sunset Highway: Interchange spacing standards are met	+ -	Interchange spacing standards are met. Interchange spacing standards are not met.	-	⇒ The eastbound on-ramp and westbound off-ramps are within 1 mile of the Jackson School Road interchange ramps.
	Objective #1B: Provide improvements that are safe for all modes				
	1B1: Minimizes exposure to vehicle conflicts for pedestrians	+ 0 -	Grade separated. Stop-controlled. Free flow.	0 / -	⇒ The ramp terminal intersections would likely be signalized and may contain free flow movements.
	1B2: Minimizes exposure to vehicle conflicts for bicycles	+ 0 -	Grade separated. Stop-controlled. Free flow.	0 / -	⇒ The ramp terminal intersections would likely be signalized and may contain free flow movements.
	1B3: Interchange concept provides proper transition between Sunset Highway and Glencoe Road	+ -	Interchange form is compatible with roadway functional classes. Interchange form is not compatible with roadway functional classes.	+	⇒ All ramps connect to Glencoe Road, transitioning at the ramp terminal intersections.
	Objective #1C: Meet sound engineering practices and safety requirements				
	1C1: A minimum number of design exceptions are required	+ -	Interchange concept does not appear to require design exceptions. Interchange concept will require one or more design exceptions.	+	⇒ This concept could potentially be designed and constructed without any apparent design exceptions.
	Objective #1D: Provide reasonable access to the interchange area businesses				
	1D1: Business access or through residential traffic is not routed through residential areas or other sensitive areas	+ -	Interchange concept has less potential impact to residential or other sensitive areas. Interchange concept has more potential impact to residential or other sensitive areas.	-	⇒ The new Glencoe Road alignment would need to be located adjacent to existing residences and land zoned residential.
	1D2: Provides safe and efficient access for freight movement	+ -	Accommodates freight movements. Does not accommodate freight movements.	+	⇒ Interchange form would accommodate freight traffic.
Concept #16	**Objective #1A: Reduce congestion and improve traffic flow in interchange area**				
	1A2: Ramp terminal locations relative to existing interchange.	+ 0 -	Ramp terminal is further from existing driveways and public streets than existing ramp interchange. Ramp terminal is the same distance from existing driveways and public streets as the existing ramp interchange. Ramp terminal is closer to existing driveways and public streets than existing ramp interchange.	-	⇒ Westbound and eastbound ramps terminals would be located beyond the existing interchange ramp terminals.
	1A3: Sunset Highway: Interchange spacing standards are met	+ -	Interchange spacing standards are met. Interchange spacing standards are not met.	-	⇒ The eastbound on-ramp and westbound off-ramps are within 1 mile of the Jackson School Road interchange ramps.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
	Objective #1B: Provide improvements that are safe for all modes				
	1B1: Minimizes exposure to vehicle conflicts for pedestrians	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ Loop ramps could be a mix of stop-controlled and free-flow movements.
	1B2: Minimizes exposure to vehicle conflicts for bicycles	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ Loop ramps could be a mix of stop-controlled and free-flow movements.
	1B3: Interchange concept provides proper transition between Sunset Highway and Glencoe Road	+ -	Interchange form is compatible with roadway functional classes. Interchange form is not compatible with roadway functional classes.	+	⇒ All ramps connect to Glencoe Road, transitioning at the ramp terminal intersections.
	Objective #1C: Meet sound engineering practices and safety requirements				
	1C1: A minimum number of design exceptions are required	+ -	Interchange concept does not appear to require design exceptions. Interchange concept will require one or more design exceptions.	-	⇒ This concept would potentially require a short weaving section on the associated collector-distributor road and may require one or more design exceptions.
	Objective #1D: Provide reasonable access to the interchange area businesses				
	1D1: Business access or through residential traffic is not routed through residential areas or other sensitive areas	+ -	Interchange concept has less potential impact to residential or other sensitive areas. Interchange concept has more potential impact to residential or other sensitive areas.	+	⇒ Traffic is routed to/from US 26 via the Glencoe Road corridor.
	1D2: Provides safe and efficient access for freight movement	+ -	Accommodates freight movements. Does not accommodate freight movements.	+	⇒ Interchange form would accommodate freight traffic.
Concept #17	**Objective #1A: Reduce congestion and improve traffic flow in interchange area**				
	1A2: Ramp terminal locations relative to existing interchange.	+ 0 -	Ramp terminal is further from existing driveways and public streets than existing ramp interchange. Ramp terminal is the same distance from existing driveways and public streets as the existing ramp interchange. Ramp terminal is closer to existing driveways and public streets than existing ramp interchange.	-	⇒ Westbound and eastbound ramps terminals would be located beyond the existing interchange ramp terminals. ⇒ Westbound and eastbound ramps terminals at314th Avenue would be located near existing driveways and public streets.
	1A3: Sunset Highway: Interchange spacing standards are met	+ -	Interchange spacing standards are met. Interchange spacing standards are not met.	+	⇒ Preliminary measurements show the eastbound on-ramp and westbound off-ramps are approximately 1 mile from the Jackson School Road interchange ramps. ⇒ Preliminary measurements show the westbound on-ramp is approximately 1 mile from the Dersham Road interchange ramps.
	Objective #1B: Provide improvements that are safe for all modes				
	1B1: Minimizes exposure to vehicle conflicts for pedestrians	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ Loop ramps could be a mix of stop-controlled and free-flow movements.
	1B2: Minimizes exposure to vehicle conflicts for bicycles	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ Loop ramps could be a mix of stop-controlled and free-flow movements.
	1B3: Interchange concept provides proper transition between Sunset Highway and Glencoe Road	+ -	Interchange form is compatible with roadway functional classes. Interchange form is not compatible with roadway functional classes.	-	⇒ 314th Avenue is a local street and is not compatible with interchange traffic volumes or composition.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
	Objective #1C: Meet sound engineering practices and safety requirements				
	1C1: A minimum number of design exceptions are required	+ -	Interchange concept does not appear to require design exceptions. Interchange concept will require one or more design exceptions.	+	⇒ This concept could potentially be designed and constructed without any apparent design exceptions.
	Objective #1D: Provide reasonable access to the interchange area businesses				
	1D1: Business access or through residential traffic is not routed through residential areas or other sensitive areas	+ -	Interchange concept has less potential impact to residential or other sensitive areas. Interchange concept has more potential impact to residential or other sensitive areas.	-	⇒ The new Glencoe Road alignment routes interchange traffic through a residential area and the westbound off-ramp would impact existing residences.
	1D2: Provides safe and efficient access for freight movement	+ -	Accommodates freight movements. Does not accommodate freight movements.	-	⇒ The new Glencoe Road alignment routes freight traffic through a residential area
Concept #18	**Objective #1A: Reduce congestion and improve traffic flow in interchange area**				
	1A2: Ramp terminal locations relative to existing interchange.	+ 0 -	Ramp terminal is further from existing driveways and public streets than existing ramp interchange. Ramp terminal is the same distance from existing driveways and public streets as the existing ramp interchange. Ramp terminal is closer to existing driveways and public streets than existing ramp interchange.	-	⇒ Westbound and eastbound ramps terminals would be located beyond the existing interchange ramp terminals. ⇒ Westbound and eastbound ramps terminals at314th Avenue would be located near existing driveways and public streets.
	1A3: Sunset Highway: Interchange spacing standards are met	+ -	Interchange spacing standards are met. Interchange spacing standards are not met.	-	⇒ The eastbound on-ramp and westbound off-ramps are within 1 mile of the Jackson School Road interchange ramps. ⇒ The westbound on-ramp is approximately 1 mile from the Dersham Road interchange ramps.
	Objective #1B: Provide improvements that are safe for all modes				
	1B1: Minimizes exposure to vehicle conflicts for pedestrians	+ 0 -	Grade separated. Stop-controlled. Free flow.	0 / -	⇒ The ramp terminal intersections would likely be signalized and may contain free flow movements.
	1B2: Minimizes exposure to vehicle conflicts for bicycles	+ 0 -	Grade separated. Stop-controlled. Free flow.	0 / -	⇒ The ramp terminal intersections would likely be signalized and may contain free flow movements.
	1B3: Interchange concept provides proper transition between Sunset Highway and Glencoe Road	+ -	Interchange form is compatible with roadway functional classes. Interchange form is not compatible with roadway functional classes.	-	⇒ 314th Avenue is not compatible with interchange traffic volumes or composition.
	Objective #1C: Meet sound engineering practices and safety requirements				
	1C1: A minimum number of design exceptions are required	+ -	Interchange concept does not appear to require design exceptions. Interchange concept will require one or more design exceptions.	+	⇒ This concept could potentially be designed and constructed without any apparent design exceptions.
	Objective #1D: Provide reasonable access to the interchange area businesses				
	1D1: Business access or through residential traffic is not routed through residential areas or other sensitive areas	+ -	Interchange concept has less potential impact to residential or other sensitive areas. Interchange concept has more potential impact to residential or other sensitive areas.	-	⇒ The new 314th Avenue connection routes interchange traffic through a residential area.
	1D2: Provides safe and efficient access for freight movement	+ -	Accommodates freight movements. Does not accommodate freight movements.	-	⇒ The new 314th Avenue connection routes freight traffic through a residential district.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #20	**Objective #1A: Reduce congestion and improve traffic flow in interchange area**				
	1A2: Ramp terminal locations relative to existing interchange.	+ 0 -	Ramp terminal is further from existing driveways and public streets than existing ramp interchange. Ramp terminal is the same distance from existing driveways and public streets as the existing ramp interchange. Ramp terminal is closer to existing driveways and public streets than existing ramp interchange.	-	⇒ Westbound and eastbound ramps terminals at Glencoe Road would be located beyond the existing interchange ramp terminals. ⇒ Westbound and eastbound ramps terminals at Gordon Road would be located near existing driveways and public streets.
	1A3: Sunset Highway: Interchange spacing standards are met	+ -	Interchange spacing standards are met. Interchange spacing standards are not met.	-	⇒ The eastbound on-ramp and westbound off-ramp at Glencoe Road are within 1 mile of the Jackson School Road interchange ramps. ⇒ The eastbound off-ramp and westbound on-ramp at Gordon Road are within 1 mile of the Dersham Road interchange ramps. ⇒ The eastbound on-ramp and westbound off-ramps at the Gordon Road interchange ramps are well within 1 mile of the eastbound off-ramp and westbound on-ramp at the Glencoe Road interchange ramps.
	Objective #1B: Provide improvements that are safe for all modes				
	1B1: Minimizes exposure to vehicle conflicts for pedestrians	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ Loop ramps could be a mix of stop-controlled and free-flow movements.
	1B2: Minimizes exposure to vehicle conflicts for bicycles	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ Loop ramps could be a mix of stop-controlled and free-flow movements.
	1B3: Interchange concept provides proper transition between Sunset Highway and Glencoe Road	+ -	Interchange form is compatible with roadway functional classes. Interchange form is not compatible with roadway functional classes.	-	⇒ Gordon Road is not compatible with interchange traffic volumes or composition.
	Objective #1C: Meet sound engineering practices and safety requirements				
	1C1: A minimum number of design exceptions are required	+ -	Interchange concept does not appear to require design exceptions. Interchange concept will require one or more design exceptions.	+	⇒ This concept could potentially be designed and constructed without any apparent design exceptions.
	Objective #1D: Provide reasonable access to the interchange area businesses				
	1D1: Business access or through residential traffic is not routed through residential areas or other sensitive areas	+ -	Interchange concept has less potential impact to residential or other sensitive areas. Interchange concept has more potential impact to residential or other sensitive areas.	-	⇒ The split diamond frontage roads may impact existing residential areas both north and south of Highway 26. ⇒ The Gordon Road connection routes interchange traffic through an industrial area.
	1D2: Provides safe and efficient access for freight movement	+ -	Accommodates freight movements. Does not accommodate freight movements.	+	⇒ Interchange form would accommodate freight traffic. ⇒ A Gordon Road interchange could divert freight traffic around the commercial and residential areas of the City and offer a more direct connection to the western industrial areas.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #21A	**Objective #1A: Reduce congestion and improve traffic flow in interchange area**				
	1A2: Ramp terminal locations relative to existing interchange.	+ 0 -	Ramp terminal is further from existing driveways and public streets than existing ramp interchange. Ramp terminal is the same distance from existing driveways and public streets as the existing ramp interchange. Ramp terminal is closer to existing driveways and public streets than existing ramp interchange.	**0**	⇒ Westbound and eastbound ramps terminals at Glencoe Road would be located inside the existing interchange footprint. ⇒ Westbound and eastbound ramps terminals at Gordon Road would be located near existing driveways and public streets.
	1A3: Sunset Highway: Interchange spacing standards are met	+ -	Interchange spacing standards are met. Interchange spacing standards are not met.	**-**	⇒ The eastbound on-ramp and westbound off-ramp at Glencoe Road are within 1 mile of the Jackson School Road interchange ramps. ⇒ The eastbound off-ramp and westbound on-ramp at Gordon Road are within 1 mile of the Dersham Road interchange ramps.
	Objective #1B: Provide improvements that are safe for all modes				
	1B1: Minimizes exposure to vehicle conflicts for pedestrians	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ The ramp terminal intersections would likely be signalized and may contain free flow movements.
	1B2: Minimizes exposure to vehicle conflicts for bicycles	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ The ramp terminal intersections would likely be signalized and may contain free flow movements.
	1B3: Interchange concept provides proper transition between Sunset Highway and Glencoe Road	+ -	Interchange form is compatible with roadway functional classes. Interchange form is not compatible with roadway functional classes.	**-**	⇒ Gordon Road is not currently compatible with interchange traffic volumes or composition.
	Objective #1C: Meet sound engineering practices and safety requirements				
	1C1: A minimum number of design exceptions are required	+ -	Interchange concept does not appear to require design exceptions. Interchange concept will require one or more design exceptions.`	+	⇒ This concept could potentially be designed and constructed without any apparent design exceptions.
	Objective #1D: Provide reasonable access to the interchange area businesses				
	1D1: Business access or through residential traffic is not routed through residential areas or other sensitive areas	+ -	Interchange concept has less potential impact to residential or other sensitive areas. Interchange concept has more potential impact to residential or other sensitive areas.	+	⇒ The split diamond frontage road may impact existing residential areas north of Highway 26. ⇒ The Glencoe Road interchange traffic is routed to/from US 26 via the Glencoe Road corridor.
	1D2: Provides safe and efficient access for freight movement	+ -	Accommodates freight movements. Does not accommodate freight movements.	+	⇒ Interchange form would accommodate freight traffic. ⇒ A Gordon Road interchange could divert freight traffic around the commercial and residential areas of the City and offer a more direct connection to the western industrial areas.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #21B	**Objective #1A: Reduce congestion and improve traffic flow in interchange area**				
	1A2: Ramp terminal locations relative to existing interchange.	+ 0 -	Ramp terminal is further from existing driveways and public streets than existing ramp interchange. Ramp terminal is the same distance from existing driveways and public streets as the existing ramp interchange. Ramp terminal is closer to existing driveways and public streets than existing ramp interchange.	**0**	⇒ Westbound and eastbound ramps terminals at Glencoe Road would be located inside the existing interchange footprint. ⇒ Westbound and eastbound ramps terminals at Gordon Road would be located near existing driveways and public streets.
	1A3: Sunset Highway: Interchange spacing standards are met	+ -	Interchange spacing standards are met. Interchange spacing standards are not met.	**-**	⇒ The eastbound on-ramp and westbound off-ramp at Glencoe Road are within 1 mile of the Jackson School Road interchange ramps. ⇒ The eastbound off-ramp and westbound on-ramp at Gordon Road are within 1 mile of the Dersham Road interchange ramps.
	Objective #1B: Provide improvements that are safe for all modes				
	1B1: Minimizes exposure to vehicle conflicts for pedestrians	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ The ramp terminal intersections would likely be signalized and may contain free flow movements.
	1B2: Minimizes exposure to vehicle conflicts for bicycles	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ The ramp terminal intersections would likely be signalized and may contain free flow movements.
	1B3: Interchange concept provides proper transition between Sunset Highway and Glencoe Road	+ -	Interchange form is compatible with roadway functional classes. Interchange form is not compatible with roadway functional classes.	**-**	⇒ Gordon Road is not currently compatible with interchange traffic volumes or composition.
	Objective #1C: Meet sound engineering practices and safety requirements				
	1C1: A minimum number of design exceptions are required	+ -	Interchange concept does not appear to require design exceptions. Interchange concept will require one or more design exceptions.	**+**	⇒ This concept could potentially be designed and constructed without any apparent design exceptions.
	Objective #1D: Provide reasonable access to the interchange area businesses				
	1D1: Business access or through residential traffic is not routed through residential areas or other sensitive areas	+ -	Interchange concept has less potential impact to residential or other sensitive areas. Interchange concept has more potential impact to residential or other sensitive areas.	**+**	⇒ The Gordon Road connection routes interchange traffic through an industrial district. ⇒ The Glencoe Road interchange traffic is routed to/from US 26 via the Glencoe Road corridor.
	1D2: Provides safe and efficient access for freight movement	+ -	Accommodates freight movements. Does not accommodate freight movements.	**+**	⇒ Interchange form would accommodate freight traffic. ⇒ A Gordon Road interchange could divert freight traffic around the commercial and residential areas of the City and offer a more direct connection to the western industrial areas.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #22	**Objective #1A: Reduce congestion and improve traffic flow in interchange area**				
	1A2: Ramp terminal locations relative to existing interchange.	+ 0 -	Ramp terminal is further from existing driveways and public streets than existing ramp interchange. Ramp terminal is the same distance from existing driveways and public streets as the existing ramp interchange. Ramp terminal is closer to existing driveways and public streets than existing ramp interchange.	**0**	⇒ Westbound and eastbound ramps terminals at Glencoe Road would be located inside the existing interchange footprint. ⇒ Westbound and eastbound ramps terminals at Gordon Road would be located near existing driveways and public streets.
	1A3: Sunset Highway: Interchange spacing standards are met	+ -	Interchange spacing standards are met. Interchange spacing standards are not met.	**-**	⇒ The eastbound on-ramp and westbound off-ramp at Glencoe Road are within 1 mile of the Jackson School Road interchange ramps. ⇒ The westbound off-ramp Gordon Road is within 1 mile of the Dersham Road interchange ramps. ⇒ The eastbound on-ramp and westbound off-ramps at the Gordon Road interchange ramps are well within 1 mile of the eastbound off-ramp and westbound on-ramp at the Glencoe Road interchange ramps.
	Objective #1B: Provide improvements that are safe for all modes				
	1B1: Minimizes exposure to vehicle conflicts for pedestrians	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ The ramp terminal intersections would likely be signalized and may contain free flow movements.
	1B2: Minimizes exposure to vehicle conflicts for bicycles	+ 0 -	Grade separated. Stop-controlled. Free flow.	**0 / -**	⇒ The ramp terminal intersections would likely be signalized and may contain free flow movements.
	1B3: Interchange concept provides proper transition between Sunset Highway and Glencoe Road	+ -	Interchange form is compatible with roadway functional classes. Interchange form is not compatible with roadway functional classes.	**-**	⇒ Gordon Road is not compatible with interchange traffic volumes or composition.
	Objective #1C: Meet sound engineering practices and safety requirements				
	1C1: A minimum number of design exceptions are required	+ -	Interchange concept does not appear to require design exceptions. Interchange concept will require one or more design exceptions.	**+**	⇒ This concept could potentially be designed and constructed without any apparent design exceptions.
	Objective #1D: Provide reasonable access to the interchange area businesses				
	1D1: Business access or through residential traffic is not routed through residential areas or other sensitive areas	+ -	Interchange concept has less potential impact to residential or other sensitive areas. Interchange concept has more potential impact to residential or other sensitive areas.	**+**	⇒ The Gordon Road connection routes interchange traffic through an industrial district. ⇒ The Glencoe Road interchange traffic is routed to/from US 26 via the Glencoe Road corridor.
	1D2: Provides safe and efficient access for freight movement	+ -	Accommodates freight movements. Does not accommodate freight movements.	**+**	⇒ Interchange form would accommodate freight traffic. ⇒ A Gordon Road interchange could divert freight traffic around the commercial and residential areas of the City and offer a more direct connection to the western industrial areas.

Appendix C

Interchange Concept Evaluation Matrices (At the Screening Level)

Goal #2: Land Use

DRAFT Evaluation Matrix Table Layout – Goal #2: Land Use

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #1	**Objective #2A: Minimize impacts to EFU lands**				
	2A1: Minimize the acres of EFU land required for right-of-way	+ -	Concept does not divide EFU lands. Divides EFU lands.	+	⇒ This concept will likely not divide any EFU lands.
	Objective #2B: Develop land use measures to protect the operational integrity of the project solution from land use impacts				
	2B2: Interchange and local circulation system support development of the local area according to the North Plains Comprehensive Plan	+ -	Does support development. Does not support development.	+	⇒ The concept supports development according to the existing North Plains Comprehensive Plan and zoning map.
Concept #2	**Objective #2A: Minimize impacts to EFU lands**				
	2A1: Minimize the acres of EFU land required for right-of-way	+ -	Concept does not divide EFU lands. Divides EFU lands.	-	⇒ The realignment of Glencoe Road south of US 26 divides some EFU land.
	Objective #2B: Develop land use measures to protect the operational integrity of the project solution from land use impacts				
	2B2: Interchange and local circulation system support development of the local area according to the North Plains Comprehensive Plan	+ -	Does support development. Does not support development.	-	⇒ This concept displaces commercially-zoned land with new roadway and may impact residentially-zoned land.
Concept #3	**Objective #2A: Minimize impacts to EFU lands**				
	2A1: Minimize the acres of EFU land required for right-of-way	+ -	Concept does not divide EFU lands. Divides EFU lands.	+	⇒ This concept will likely not divide any EFU lands.
	Objective #2B: Develop land use measures to protect the operational integrity of the project solution from land use impacts				
	2B2: Interchange and local circulation system support development of the local area according to the North Plains Comprehensive Plan	+ -	Does support development. Does not support development.	+	⇒ The concept supports development according to the existing North Plains Comprehensive Plan and zoning map.
Concept #4	**Objective #2A: Minimize impacts to EFU lands**				
	2A1: Minimize the acres of EFU land required for right-of-way	+ -	Concept does not divide EFU lands. Divides EFU lands.	-	⇒ The realignment of Glencoe Road north and south of US 26 dividies EFU land.
	Objective #2B: Develop land use measures to protect the operational integrity of the project solution from land use impacts				
	2B2: Interchange and local circulation system support development of the local area according to the North Plains Comprehensive Plan	+ -	Does support development. Does not support development.	-	⇒ All existing commercial land along the existing Glencoe Road alignment would not have access to the regional transportation network with the realignment of the interchange and Glencoe Road.
Concept #5	**Objective #2A: Minimize impacts to EFU lands**				
	2A1: Minimize the acres of EFU land required for right-of-way	+ -	Concept does not divide EFU lands. Divides EFU lands.	-	⇒ This concept will divide some EFU lands south of Highway 26.
	Objective #2B: Develop land use measures to protect the operational integrity of the project solution from land use impacts				
	2B2: Interchange and local circulation system support development of the local area according to the North Plains Comprehensive Plan	+ -	Does support development. Does not support development.	+	⇒ The concept supports development according to the existing North Plains Comprehensive Plan and zoning map.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #7A	**Objective #2A: Minimize impacts to EFU lands**				
	2A1: Minimize the acres of EFU land required for right-of-way	+ -	Concept does not divide EFU lands. Divides EFU lands.	+	⇒ This concept will likely not divide any EFU lands.
	Objective #2B: Develop land use measures to protect the operational integrity of the project solution from land use impacts				
	2B2: Interchange and local circulation system support development of the local area according to the North Plains Comprehensive Plan	+ -	Does support development. Does not support development.	+	⇒ The concept supports development according to the existing North Plains Comprehensive Plan and zoning map.
Concept #7B	**Objective #2A: Minimize impacts to EFU lands**				
	2A1: Minimize the acres of EFU land required for right-of-way	+ -	Concept does not divide EFU lands. Divides EFU lands.	+	⇒ This concept will likely not divide any EFU lands.
	Objective #2B: Develop land use measures to protect the operational integrity of the project solution from land use impacts				
	2B2: Interchange and local circulation system support development of the local area according to the North Plains Comprehensive Plan	+ -	Does support development. Does not support development.	+	⇒ The concept supports development according to the existing North Plains Comprehensive Plan and zoning map.
Concept #7C	**Objective #2A: Minimize impacts to EFU lands**				
	2A1: Minimize the acres of EFU land required for right-of-way	+ -	Concept does not divide EFU lands. Divides EFU lands.	+	⇒ This concept will likely not divide any EFU lands.
	Objective #2B: Develop land use measures to protect the operational integrity of the project solution from land use impacts				
	2B2: Interchange and local circulation system support development of the local area according to the North Plains Comprehensive Plan	+ -	Does support development. Does not support development.	+	⇒ The concept supports development according to the existing North Plains Comprehensive Plan and zoning map.
Concept #8	**Objective #2A: Minimize impacts to EFU lands**				
	2A1: Minimize the acres of EFU land required for right-of-way	+ -	Concept does not divide EFU lands. Divides EFU lands.	+	⇒ This concept will likely not divide any EFU lands.
	Objective #2B: Develop land use measures to protect the operational integrity of the project solution from land use impacts				
	2B2: Interchange and local circulation system support development of the local area according to the North Plains Comprehensive Plan	+ -	Does support development. Does not support development.	+	⇒ The concept supports development according to the existing North Plains Comprehensive Plan and zoning map.
Concept #9	**Objective #2A: Minimize impacts to EFU lands**				
	2A1: Minimize the acres of EFU land required for right-of-way	+ -	Concept does not divide EFU lands. Divides EFU lands.	+	⇒ The flyover ramp will not divide any EFU lands south of Highway 26.
	Objective #2B: Develop land use measures to protect the operational integrity of the project solution from land use impacts				
	2B2: Interchange and local circulation system support development of the local area according to the North Plains Comprehensive Plan	+ -	Does support development. Does not support development.	+	⇒ The concept supports development according to the existing North Plains Comprehensive Plan and zoning map.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #10	**Objective #2A: Minimize impacts to EFU lands**				
	2A1: Minimize the acres of EFU land required for right-of-way	+ -	Concept does not divide EFU lands. Divides EFU lands.	-	⇒ A new alignment of Glencoe Road will divide EFU land south of US 26.
	Objective #2B: Develop land use measures to protect the operational integrity of the project solution from land use impacts				
	2B2: Interchange and local circulation system support development of the local area according to the North Plains Comprehensive Plan	+ -	Does support development. Does not support development.	-	⇒ This concept displaces commercially-zoned land and would impact residentially-zoned land. ⇒ The Glencoe Road couplet may limit access to some existing business properties.
Concept #11C	**Objective #2A: Minimize impacts to EFU lands**				
	2A1: Minimize the acres of EFU land required for right-of-way	+ -	Concept does not divide EFU lands. Divides EFU lands.	+	⇒ This concept will likely not divide any EFU lands.
	Objective #2B: Develop land use measures to protect the operational integrity of the project solution from land use impacts				
	2B2: Interchange and local circulation system support development of the local area according to the North Plains Comprehensive Plan	+ -	Does support development. Does not support development.	+	⇒ The concept supports development according to the existing North Plains Comprehensive Plan and zoning map.
Concept #12	**Objective #2A: Minimize impacts to EFU lands**				
	2A1: Minimize the acres of EFU land required for right-of-way	+ -	Concept does not divide EFU lands. Divides EFU lands.	+	⇒ This concept will likely not divide any EFU lands.
	Objective #2B: Develop land use measures to protect the operational integrity of the project solution from land use impacts				
	2B2: Interchange and local circulation system support development of the local area according to the North Plains Comprehensive Plan	+ -	Does support development. Does not support development.	+	⇒ The concept supports development according to the existing North Plains Comprehensive Plan and zoning map.
Concept #13	**Objective #2A: Minimize impacts to EFU lands**				
	2A1: Minimize the acres of EFU land required for right-of-way	+ -	Concept does not divide EFU lands. Divides EFU lands.	+	⇒ This concept will likely not divide any EFU lands.
	Objective #2B: Develop land use measures to protect the operational integrity of the project solution from land use impacts				
	2B2: Interchange and local circulation system support development of the local area according to the North Plains Comprehensive Plan	+ -	Does support development. Does not support development.	+	⇒ The concept supports development according to the existing North Plains Comprehensive Plan and zoning map.
Concept #14A	**Objective #2A: Minimize impacts to EFU lands**				
	2A1: Minimize the acres of EFU land required for right-of-way	+ -	Concept does not divide EFU lands. Divides EFU lands.	+	⇒ This concept will likely not divide any EFU lands.
	Objective #2B: Develop land use measures to protect the operational integrity of the project solution from land use impacts				
	2B2: Interchange and local circulation system support development of the local area according to the North Plains Comprehensive Plan	+ -	Does support development. Does not support development.	+	⇒ The concept supports development according to the existing North Plains Comprehensive Plan and zoning map.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #14B	**Objective #2A: Minimize impacts to EFU lands**				
	2A1: Minimize the acres of EFU land required for right-of-way	+ -	Concept does not divide EFU lands. Divides EFU lands.	+	⇒ This concept will likely not divide any EFU lands.
	Objective #2B: Develop land use measures to protect the operational integrity of the project solution from land use impacts				
	2B2: Interchange and local circulation system support development of the local area according to the North Plains Comprehensive Plan	+ -	Does support development. Does not support development.	+	⇒ The concept supports development according to the existing North Plains Comprehensive Plan and zoning map.
Concept #15	**Objective #2A: Minimize impacts to EFU lands**				
	2A1: Minimize the acres of EFU land required for right-of-way	+ -	Concept does not divide EFU lands. Divides EFU lands.	-	⇒ The realignment of Glencoe Road south of US 26 will divide some EFU land.
	Objective #2B: Develop land use measures to protect the operational integrity of the project solution from land use impacts				
	2B2: Interchange and local circulation system support development of the local area according to the North Plains Comprehensive Plan	+ -	Does support development. Does not support development.	-	⇒ This concept displaces commercial and residentially-zoned land with new roadway alignment.
Concept #16	**Objective #2A: Minimize impacts to EFU lands**				
	2A1: Minimize the acres of EFU land required for right-of-way	+ -	Concept does not divide EFU lands. Divides EFU lands.	+	⇒ This concept will likely not divide any EFU lands.
	Objective #2B: Develop land use measures to protect the operational integrity of the project solution from land use impacts				
	2B2: Interchange and local circulation system support development of the local area according to the North Plains Comprehensive Plan	+ -	Does support development. Does not support development.	+	⇒ The concept supports development according to the existing North Plains Comprehensive Plan and zoning map.
Concept #17	**Objective #2A: Minimize impacts to EFU lands**				
	2A1: Minimize the acres of EFU land required for right-of-way	+ -	Concept does not divide EFU lands. Divides EFU lands.	-	⇒ This concept will divides some EFU land with the construction of the new roadway south of US 26.
	Objective #2B: Develop land use measures to protect the operational integrity of the project solution from land use impacts				
	2B2: Interchange and local circulation system support development of the local area according to the North Plains Comprehensive Plan	+ -	Does support development. Does not support development.	-	⇒ This concept moves interchange traffic away from the Glencoe Road commercial district and onto residential streets.
Concept #18	**Objective #2A: Minimize impacts to EFU lands**				
	2A1: Minimize the acres of EFU land required for right-of-way	+ -	Concept does not divide EFU lands. Divides EFU lands.	-	⇒ This concept will divide some EFU land with the construction of the new roadway south of US 26.
	Objective #2B: Develop land use measures to protect the operational integrity of the project solution from land use impacts				
	2B2: Interchange and local circulation system support development of the local area according to the North Plains Comprehensive Plan	+ -	Does support development. Does not support development.	-	⇒ This concept would likely shift interchange traffic onto local residential streets.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #20	**Objective #2A: Minimize impacts to EFU lands**				
	2A1: Minimize the acres of EFU land required for right-of-way	+ -	Concept does not divide EFU lands. Divides EFU lands.	-	⇒ This concept will divide some EFU land with the construction of the Gordon Road interchange.
	Objective #2B: Develop land use measures to protect the operational integrity of the project solution from land use impacts				
	2B2: Interchange and local circulation system support development of the local area according to the North Plains Comprehensive Plan	+ -	Does support development. Does not support development.	+	⇒ The concept does not preclude development according to the existing North Plains Comprehensive Plan and zoning map.
Concept #21A	**Objective #2A: Minimize impacts to EFU lands**				
	2A1: Minimize the acres of EFU land required for right-of-way	+ -	Concept does not divide EFU lands. Divides EFU lands.	-	⇒ This concept will not divide any EFU lands.
	Objective #2B: Develop land use measures to protect the operational integrity of the project solution from land use impacts				
	2B2: Interchange and local circulation system support development of the local area according to the North Plains Comprehensive Plan	+ -	Does support development. Does not support development.	+	⇒ The concept does not preclude development according to the existing North Plains Comprehensive Plan and zoning map.
Concept #21B	**Objective #2A: Minimize impacts to EFU lands**				
	2A1: Minimize the acres of EFU land required for right-of-way	+ -	Concept does not divide EFU lands. Divides EFU lands.	+	⇒ This concept will not divide any EFU lands.
	Objective #2B: Develop land use measures to protect the operational integrity of the project solution from land use impacts				
	2B2: Interchange and local circulation system support development of the local area according to the North Plains Comprehensive Plan	+ -	Does support development. Does not support development.	+	⇒ The concept does not preclude development according to the existing North Plains Comprehensive Plan and zoning map.
Concept #22	**Objective #2A: Minimize impacts to EFU lands**				
	2A1: Minimize the acres of EFU land required for right-of-way	+ -	Concept does not divide EFU lands. Divides EFU lands.	-	⇒ This concept will divide some EFU land with the construction of the loop ramp.
	Objective #2B: Develop land use measures to protect the operational integrity of the project solution from land use impacts				
	2B2: Interchange and local circulation system support development of the local area according to the North Plains Comprehensive Plan	+ -	Does support development. Does not support development.	+	⇒ The concept does not preclude development according to the existing North Plains Comprehensive Plan and zoning map.

Appendix D

Interchange Concept Evaluation Matrices (At the Screening Level)

Goal #3: Community and Economic Development

DRAFT Evaluation Matrix Table Layout – Goal #3: Community and Economic Development

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #1	**Objective #3A: Minimize impacts to existing businesses and residences in the interchange area**				
	3A1:Minimizes the number of businesses displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing businesses. Interchange concept has higher potential to displace existing businesses.	-	⇒ This concept displaces existing businesses to the north and south of the interchange.
	3A2:Minimizes the number of residences displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing residences. Interchange concept has higher potential to displace existing residences.	+	⇒ This concept is likely to not displace existing residences.
	Objective #3B: Minimize impacts to the livability, quality and integrity of established residences				
	3B1:Freight traffic or through residential traffic is not routed through residential areas	+ -	Interchange concept has less potential to route traffic through residential areas. Interchange concept has more potential to route traffic through residential areas.	+	⇒ Traffic is routed to/from US 26 via the existing Glencoe Road corridor.
	Objective #3C: Supports continued economic development in North Plains				
	3C1:Supports the City of North Plains Comprehensive Plan	+ -	Supports the City of North Plains Comprehensive Plan. Does not support the City of North Plains Comprehensive Plan.	+	⇒ This concept is compatible with the land use and transportation components of the North Plains Comprehensive Plan.
	3C2:Supports the Washington County Comprehensive Plan	+ -	Supports the Washington County Comprehensive Plan Does not support the Washington County Comprehensive Plan	+	⇒ This concept is compatible with the land use and transportation components of the Washington County Comprehensive Plan.
Concept #2	**Objective #3A: Minimize impacts to existing businesses and residences in the interchange area**				
	3A1:Minimizes the number of businesses displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing businesses. Interchange concept has higher potential to displace existing businesses.	-	⇒ This concept displaces existing businesses to the north and south of the interchange.
	3A2:Minimizes the number of residences displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing residences. Interchange concept has higher potential to displace existing residences.	-	⇒ This concept displaces residences to the north and south of the interchange.
	Objective #3B: Minimize impacts to the livability, quality and integrity of established residences				
	3B1:Freight traffic or through residential traffic is not routed through residential areas	+ -	Interchange concept has less potential to route traffic through residential areas. Interchange concept has more potential to route traffic through residential areas.	-	⇒ The new Glencoe Road alignment is adjacent to existing residences and land zoned residential.
	Objective #3C: Supports continued economic development in North Plains				
	3C1:Supports the City of North Plains Comprehensive Plan	+ -	Supports the City of North Plains Comprehensive Plan. Does not support the City of North Plains Comprehensive Plan.	-	⇒ The new Glencoe Road alignment is not consistent with the planned circulation pattern and prevents the area immediately east of the existing alignment from being developed.
	3C2:Supports the Washington County Comprehensive Plan	+ -	Supports the Washington County Comprehensive Plan Does not support the Washington County Comprehensive Plan	-	⇒ The new Glencoe Road alignment is not consistent with the planned roadway improvements to Glencoe Road.
Concept #3	**Objective #3A: Minimize impacts to existing businesses and residences in the interchange area**				
	3A1:Minimizes the number of businesses displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing businesses. Interchange concept has higher potential to displace existing businesses.	-	⇒ This concept displaces existing businesses to the north of the interchange.
	3A2:Minimizes the number of residences displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing residences. Interchange concept has higher potential to displace existing residences.	+	⇒ This concept is likely to not displace existing residences.
	Objective #3B: Minimize impacts to the livability, quality and integrity of established residences				
	3B1:Freight traffic or through residential traffic is not routed through residential areas	+ -	Interchange concept has less potential to route traffic through residential areas. Interchange concept has more potential to route traffic through residential areas.	+	⇒ Traffic is routed to/from US 26 via the existing Glencoe Road corridor.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
	Objective #3C: Supports continued economic development in North Plains				
	3C1:Supports the City of North Plains Comprehensive Plan	+ -	Supports the City of North Plains Comprehensive Plan. Does not support the City of North Plains Comprehensive Plan.	+	⇒ This concept is compatible with the land use and transportation components of the North Plains Comprehensive Plan.
	3C2:Supports the Washington County Comprehensive Plan	+ -	Supports the Washington County Comprehensive Plan Does not support the Washington County Comprehensive Plan	+	⇒ This concept is compatible with the land use and transportation components of the Washington County Comprehensive Plan.
Concept #4	**Objective #3A: Minimize impacts to existing businesses and residences in the interchange area**				
	3A1:Minimizes the number of businesses displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing businesses. Interchange concept has higher potential to displace existing businesses.	-	⇒ This concept displaces existing businesses to the north of the interchange.
	3A2:Minimizes the number of residences displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing residences. Interchange concept has higher potential to displace existing residences.	-	⇒ This concept displaces residences and residentially zoned land to the north of the interchange.
	Objective #3B: Minimize impacts to the livability, quality and integrity of established residences				
	3B1:Freight traffic or through residential traffic is not routed through residential areas	+ -	Interchange concept has less potential to route traffic through residential areas. Interchange concept has more potential to route traffic through residential areas.	-	⇒ The new Glencoe Road alignment is adjacent to existing residences and land zoned residential.
	Objective #3C: Supports continued economic development in North Plains				
	3C1:Supports the City of North Plains Comprehensive Plan	+ -	Supports the City of North Plains Comprehensive Plan. Does not support the City of North Plains Comprehensive Plan.	-	⇒ The new Glencoe Road alignment and interchange form are located outside of the North Plains UGB and are not consistent with the planned land use and circulation patterns.
	3C2:Supports the Washington County Comprehensive Plan	+ -	Supports the Washington County Comprehensive Plan Does not support the Washington County Comprehensive Plan	-	⇒ The new Glencoe Road alignment is not consistent with the planned roadway improvements to Glencoe Road.
Concept #5	**Objective #3A: Minimize impacts to existing businesses and residences in the interchange area**				
	3A1:Minimizes the number of businesses displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing businesses. Interchange concept has higher potential to displace existing businesses.	-	⇒ This concept displaces existing businesses to the north of the interchange.
	3A2:Minimizes the number of residences displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing residences. Interchange concept has higher potential to displace existing residences.	+	⇒ This concept is likely to not displace existing residences.
	Objective #3B: Minimize impacts to the livability, quality and integrity of established residences				
	3B1:Freight traffic or through residential traffic is not routed through residential areas	+ -	Interchange concept has less potential to route traffic through residential areas. Interchange concept has more potential to route traffic through residential areas.	+	⇒ Traffic is routed to/from US 26 via the existing Glencoe Road corridor.
	Objective #3C: Supports continued economic development in North Plains				
	3C1:Supports the City of North Plains Comprehensive Plan	+ -	Supports the City of North Plains Comprehensive Plan. Does not support the City of North Plains Comprehensive Plan.	+	⇒ This concept is somewhat compatible with the land use and transportation components of the North Plains Comprehensive Plan.
	3C2:Supports the Washington County Comprehensive Plan	+ -	Supports the Washington County Comprehensive Plan Does not support the Washington County Comprehensive Plan	+	⇒ This concept is somewhat compatible with the land use and transportation components of the Washington County Comprehensive Plan.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #7A	**Objective #3A: Minimize impacts to existing businesses and residences in the interchange area**				
	3A1:Minimizes the number of businesses displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing businesses. Interchange concept has higher potential to displace existing businesses.	-	⇒ This concept displaces existing businesses to the north of the interchange.
	3A2:Minimizes the number of residences displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing residences. Interchange concept has higher potential to displace existing residences.	+	⇒ This concept is likely to not displace existing residences.
	Objective #3B: Minimize impacts to the livability, quality and integrity of established residences				
	3B1:Freight traffic or through residential traffic is not routed through residential areas	+ -	Interchange concept has less potential to route traffic through residential areas. Interchange concept has more potential to route traffic through residential areas.	+	⇒ Traffic is routed to/from US 26 via the existing Glencoe Road corridor.
	Objective #3C: Supports continued economic development in North Plains				
	3C1:Supports the City of North Plains Comprehensive Plan	+ -	Supports the City of North Plains Comprehensive Plan. Does not support the City of North Plains Comprehensive Plan.	+	⇒ This concept is compatible with the land use and transportation components of the North Plains Comprehensive Plan.
	3C2:Supports the Washington County Comprehensive Plan	+ -	Supports the Washington County Comprehensive Plan Does not support the Washington County Comprehensive Plan	+	⇒ This concept is compatible with the land use and transportation components of the Washington County Comprehensive Plan.
Concept #7B	**Objective #3A: Minimize impacts to existing businesses and residences in the interchange area**				
	3A1:Minimizes the number of businesses displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing businesses. Interchange concept has higher potential to displace existing businesses.	-	⇒ This concept displaces existing businesses to the north of the interchange.
	3A2:Minimizes the number of residences displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing residences. Interchange concept has higher potential to displace existing residences.	+	⇒ This concept is likely to not displace existing residences.
	Objective #3B: Minimize impacts to the livability, quality and integrity of established residences				
	3B1:Freight traffic or through residential traffic is not routed through residential areas	+ -	Interchange concept has less potential to route traffic through residential areas. Interchange concept has more potential to route traffic through residential areas.	+	⇒ Traffic is routed to/from US 26 via the existing Glencoe Road corridor.
	Objective #3C: Supports continued economic development in North Plains				
	3C1:Supports the City of North Plains Comprehensive Plan	+ -	Supports the City of North Plains Comprehensive Plan. Does not support the City of North Plains Comprehensive Plan.	+	⇒ This concept is compatible with the land use and transportation components of the North Plains Comprehensive Plan.
	3C2:Supports the Washington County Comprehensive Plan	+ -	Supports the Washington County Comprehensive Plan Does not support the Washington County Comprehensive Plan	+	⇒ This concept is compatible with the land use and transportation components of the Washington County Comprehensive Plan.
Concept #7C	**Objective #3A: Minimize impacts to existing businesses and residences in the interchange area**				
	3A1:Minimizes the number of businesses displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing businesses. Interchange concept has higher potential to displace existing businesses.	-	⇒ This concept displaces existing businesses to the north of the interchange.
	3A2:Minimizes the number of residences displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing residences. Interchange concept has higher potential to displace existing residences.	+	⇒ This concept is likely to not displace existing residences.
	Objective #3B: Minimize impacts to the livability, quality and integrity of established residences				
	3B1:Freight traffic or through residential traffic is not routed through residential areas	+ -	Interchange concept has less potential to route traffic through residential areas. Interchange concept has more potential to route traffic through residential areas.	+	⇒ Traffic is routed to/from US 26 via the existing Glencoe Road corridor.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
	Objective #3C: Supports continued economic development in North Plains				
	3C1:Supports the City of North Plains Comprehensive Plan	+ -	Supports the City of North Plains Comprehensive Plan. Does not support the City of North Plains Comprehensive Plan.	+	⇒ This concept is compatible with the land use and transportation components of the North Plains Comprehensive Plan.
	3C2:Supports the Washington County Comprehensive Plan	+ -	Supports the Washington County Comprehensive Plan Does not support the Washington County Comprehensive Plan	+	⇒ This concept is compatible with the land use and transportation components of the Washington County Comprehensive Plan.
Concept #8	**Objective #3A: Minimize impacts to existing businesses and residences in the interchange area**				
	3A1:Minimizes the number of businesses displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing businesses. Interchange concept has higher potential to displace existing businesses.	-	⇒ This concept displaces existing businesses to the north and south of the interchange.
	3A2:Minimizes the number of residences displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing residences. Interchange concept has higher potential to displace existing residences.	+	⇒ This concept is likely to not displace existing residences.
	Objective #3B: Minimize impacts to the livability, quality and integrity of established residences				
	3B1:Freight traffic or through residential traffic is not routed through residential areas	+ -	Interchange concept has less potential to route traffic through residential areas. Interchange concept has more potential to route traffic through residential areas.	+	⇒ Traffic is routed to/from US 26 via the existing Glencoe Road corridor.
	Objective #3C: Supports continued economic development in North Plains				
	3C1:Supports the City of North Plains Comprehensive Plan	+ -	Supports the City of North Plains Comprehensive Plan. Does not support the City of North Plains Comprehensive Plan.	+	⇒ This concept is compatible with the land use and transportation components of the North Plains Comprehensive Plan.
	3C2:Supports the Washington County Comprehensive Plan	+ -	Supports the Washington County Comprehensive Plan Does not support the Washington County Comprehensive Plan	+	⇒ This concept is compatible with the land use and transportation components of the Washington County Comprehensive Plan.
Concept #9	**Objective #3A: Minimize impacts to existing businesses and residences in the interchange area**				
	3A1:Minimizes the number of businesses displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing businesses. Interchange concept has higher potential to displace existing businesses.	-	⇒ This concept displaces existing businesses to the north and south of the interchange.
	3A2:Minimizes the number of residences displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing residences. Interchange concept has higher potential to displace existing residences.	+	⇒ This concept is likely to not displace existing residences.
	Objective #3B: Minimize impacts to the livability, quality and integrity of established residences				
	3B1:Freight traffic or through residential traffic is not routed through residential areas	+ -	Interchange concept has less potential to route traffic through residential areas. Interchange concept has more potential to route traffic through residential areas.	+	⇒ Traffic is routed to/from US 26 via the existing Glencoe Road corridor.
	Objective #3C: Supports continued economic development in North Plains				
	3C1:Supports the City of North Plains Comprehensive Plan	+ -	Supports the City of North Plains Comprehensive Plan. Does not support the City of North Plains Comprehensive Plan.	+	⇒ This concept is compatible with the land use and transportation components of the North Plains Comprehensive Plan.
	3C2:Supports the Washington County Comprehensive Plan	+ -	Supports the Washington County Comprehensive Plan Does not support the Washington County Comprehensive Plan	+	⇒ This concept is compatible with the land use and transportation components of the Washington County Comprehensive Plan.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #10	**Objective #3A: Minimize impacts to existing businesses and residences in the interchange area**				
	3A1:Minimizes the number of businesses displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing businesses. Interchange concept has higher potential to displace existing businesses.	-	⇒ This concept displaces existing businesses to the north of the interchange.
	3A2:Minimizes the number of residences displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing residences. Interchange concept has higher potential to displace existing residences.	-	⇒ This concept displaces residences to the north of the interchange.
	Objective #3B: Minimize impacts to the livability, quality and integrity of established residences				
	3B1:Freight traffic or through residential traffic is not routed through residential areas	+ -	Interchange concept has less potential to route traffic through residential areas. Interchange concept has more potential to route traffic through residential areas.	-	⇒ The new Glencoe Road alignment is adjacent to existing residences and land zoned residential.
	Objective #3C: Supports continued economic development in North Plains				
	3C1:Supports the City of North Plains Comprehensive Plan	+ -	Supports the City of North Plains Comprehensive Plan. Does not support the City of North Plains Comprehensive Plan.	-	⇒ The new Glencoe Road alignment is not consistent with the planned circulation pattern of North Plains.
	3C2:Supports the Washington County Comprehensive Plan	+ -	Supports the Washington County Comprehensive Plan Does not support the Washington County Comprehensive Plan	-	⇒ The new Glencoe Road alignment is not consistent with the planned roadway improvements to Glencoe Road.
Concept #11C	**Objective #3A: Minimize impacts to existing businesses and residences in the interchange area**				
	3A1:Minimizes the number of businesses displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing businesses. Interchange concept has higher potential to displace existing businesses.	+	⇒ This concept is likely to not displace existing businesses.
	3A2:Minimizes the number of residences displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing residences. Interchange concept has higher potential to displace existing residences.	+	⇒ This concept is likely to not displace existing residences.
	Objective #3B: Minimize impacts to the livability, quality and integrity of established residences				
	3B1:Freight traffic or through residential traffic is not routed through residential areas	+ -	Interchange concept has less potential to route traffic through residential areas. Interchange concept has more potential to route traffic through residential areas.	+	⇒ Traffic is routed to/from US 26 via the existing Glencoe Road corridor.
	Objective #3C: Supports continued economic development in North Plains				
	3C1:Supports the City of North Plains Comprehensive Plan	+ -	Supports the City of North Plains Comprehensive Plan. Does not support the City of North Plains Comprehensive Plan.	+	⇒ This concept is compatible with the land use and transportation components of the North Plains Comprehensive Plan.
	3C2:Supports the Washington County Comprehensive Plan	+ -	Supports the Washington County Comprehensive Plan Does not support the Washington County Comprehensive Plan	+	⇒ This concept is compatible with the land use and transportation components of the Washington County Comprehensive Plan.
Concept #12	**Objective #3A: Minimize impacts to existing businesses and residences in the interchange area**				
	3A1:Minimizes the number of businesses displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing businesses. Interchange concept has higher potential to displace existing businesses.	+	⇒ This concept is likely to not displace existing businesses.
	3A2:Minimizes the number of residences displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing residences. Interchange concept has higher potential to displace existing residences.	+	⇒ This concept is likely to not displace existing residences.
	Objective #3B: Minimize impacts to the livability, quality and integrity of established residences				
	3B1:Freight traffic or through residential traffic is not routed through residential areas	+ -	Interchange concept has less potential to route traffic through residential areas. Interchange concept has more potential to route traffic through residential areas.	+	⇒ Traffic is routed to/from US 26 via the existing Glencoe Road corridor.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
	Objective #3C: Supports continued economic development in North Plains				
	3C1:Supports the City of North Plains Comprehensive Plan	+ -	Supports the City of North Plains Comprehensive Plan. Does not support the City of North Plains Comprehensive Plan.	+	⇒ This concept is compatible with the land use and transportation components of the North Plains Comprehensive Plan.
	3C2:Supports the Washington County Comprehensive Plan	+ -	Supports the Washington County Comprehensive Plan Does not support the Washington County Comprehensive Plan	+	⇒ This concept is compatible with the land use and transportation components of the Washington County Comprehensive Plan.
Concept #13	**Objective #3A: Minimize impacts to existing businesses and residences in the interchange area**				
	3A1:Minimizes the number of businesses displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing businesses. Interchange concept has higher potential to displace existing businesses.	+	⇒ This concept is likely to not displace existing businesses.
	3A2:Minimizes the number of residences displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing residences. Interchange concept has higher potential to displace existing residences.	+	⇒ This concept is likely to not displace existing residences.
	Objective #3B: Minimize impacts to the livability, quality and integrity of established residences				
	3B1:Freight traffic or through residential traffic is not routed through residential areas	+ -	Interchange concept has less potential to route traffic through residential areas. Interchange concept has more potential to route traffic through residential areas.	+	⇒ Traffic is routed to/from US 26 via the existing Glencoe Road corridor.
	Objective #3C: Supports continued economic development in North Plains				
	3C1:Supports the City of North Plains Comprehensive Plan	+ -	Supports the City of North Plains Comprehensive Plan. Does not support the City of North Plains Comprehensive Plan.	+	⇒ This concept is compatible with the land use and transportation components of the North Plains Comprehensive Plan.
	3C2:Supports the Washington County Comprehensive Plan	+ -	Supports the Washington County Comprehensive Plan Does not support the Washington County Comprehensive Plan	+	⇒ This concept is compatible with the land use and transportation components of the Washington County Comprehensive Plan.
Concept #14A	**Objective #3A: Minimize impacts to existing businesses and residences in the interchange area**				
	3A1:Minimizes the number of businesses displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing businesses. Interchange concept has higher potential to displace existing businesses.	+	⇒ This concept is likely to not displace existing businesses.
	3A2:Minimizes the number of residences displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing residences. Interchange concept has higher potential to displace existing residences.	+	⇒ This concept is likely to not displace existing residences.
	Objective #3B: Minimize impacts to the livability, quality and integrity of established residences				
	3B1:Freight traffic or through residential traffic is not routed through residential areas	+ -	Interchange concept has less potential to route traffic through residential areas. Interchange concept has more potential to route traffic through residential areas.	+	⇒ Traffic is routed to/from US 26 via the existing Glencoe Road corridor.
	Objective #3C: Supports continued economic development in North Plains				
	3C1:Supports the City of North Plains Comprehensive Plan	+ -	Supports the City of North Plains Comprehensive Plan. Does not support the City of North Plains Comprehensive Plan.	+	⇒ This concept is compatible with the land use and transportation components of the North Plains Comprehensive Plan.
	3C2:Supports the Washington County Comprehensive Plan	+ -	Supports the Washington County Comprehensive Plan Does not support the Washington County Comprehensive Plan	+	⇒ This concept is compatible with the land use and transportation components of the Washington County Comprehensive Plan.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #14B	**Objective #3A: Minimize impacts to existing businesses and residences in the interchange area**				
	3A1:Minimizes the number of businesses displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing businesses. Interchange concept has higher potential to displace existing businesses.	+	⇒ This concept is likely to not displace existing businesses.
	3A2:Minimizes the number of residences displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing residences. Interchange concept has higher potential to displace existing residences.	+	⇒ This concept is likely to not displace existing residences.
	Objective #3B: Minimize impacts to the livability, quality and integrity of established residences				
	3B1:Freight traffic or through residential traffic is not routed through residential areas	+ -	Interchange concept has less potential to route traffic through residential areas. Interchange concept has more potential to route traffic through residential areas.	+	⇒ Traffic is routed to/from US 26 via the existing Glencoe Road corridor.
	Objective #3C: Supports continued economic development in North Plains				
	3C1:Supports the City of North Plains Comprehensive Plan	+ -	Supports the City of North Plains Comprehensive Plan. Does not support the City of North Plains Comprehensive Plan.	+	⇒ This concept is compatible with the land use and transportation components of the North Plains Comprehensive Plan.
	3C2:Supports the Washington County Comprehensive Plan	+ -	Supports the Washington County Comprehensive Plan Does not support the Washington County Comprehensive Plan	+	⇒ This concept is compatible with the land use and transportation components of the Washington County Comprehensive Plan.
Concept #15	**Objective #3A: Minimize impacts to existing businesses and residences in the interchange area**				
	3A1:Minimizes the number of businesses displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing businesses. Interchange concept has higher potential to displace existing businesses.	-	⇒ This concept displaces existing businesses to the north of the interchange.
	3A2:Minimizes the number of residences displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing residences. Interchange concept has higher potential to displace existing residences.	-	⇒ This concept displaces residences to the north of the interchange.
	Objective #3B: Minimize impacts to the livability, quality and integrity of established residences				
	3B1:Freight traffic or through residential traffic is not routed through residential areas	+ -	Interchange concept has less potential to route traffic through residential areas. Interchange concept has more potential to route traffic through residential areas.	-	⇒ The new Glencoe Road alignment is adjacent to existing residences and land zoned residential.
	Objective #3C: Supports continued economic development in North Plains				
	3C1:Supports the City of North Plains Comprehensive Plan	+ -	Supports the City of North Plains Comprehensive Plan. Does not support the City of North Plains Comprehensive Plan.	-	⇒ The new Glencoe Road alignment is not consistent with the planned circulation pattern.
	3C2:Supports the Washington County Comprehensive Plan	+ -	Supports the Washington County Comprehensive Plan Does not support the Washington County Comprehensive Plan	-	⇒ The new Glencoe Road alignment is not consistent with the planned roadway improvements to Glencoe Road.
Concept #16	**Objective #3A: Minimize impacts to existing businesses and residences in the interchange area**				
	3A1:Minimizes the number of businesses displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing businesses. Interchange concept has higher potential to displace existing businesses.	-	⇒ This concept displaces existing businesses to the north and south of the interchange.
	3A2:Minimizes the number of residences displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing residences. Interchange concept has higher potential to displace existing residences.	+	⇒ This concept is likely to not displace existing residences.
	Objective #3B: Minimize impacts to the livability, quality and integrity of established residences				
	3B1:Freight traffic or through residential traffic is not routed through residential areas	+ -	Interchange concept has less potential to route traffic through residential areas. Interchange concept has more potential to route traffic through residential areas.	+	⇒ Traffic is routed to/from US 26 via the existing Glencoe Road corridor.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
	Objective #3C: Supports continued economic development in North Plains				
	3C1:Supports the City of North Plains Comprehensive Plan	+ -	Supports the City of North Plains Comprehensive Plan. Does not support the City of North Plains Comprehensive Plan.	+	⇒ This concept is compatible with the land use and transportation components of the North Plains Comprehensive Plan.
	3C2:Supports the Washington County Comprehensive Plan	+ -	Supports the Washington County Comprehensive Plan Does not support the Washington County Comprehensive Plan	+	⇒ This concept is compatible with the land use and transportation components of the Washington County Comprehensive Plan.
Concept #17	**Objective #3A: Minimize impacts to existing businesses and residences in the interchange area**				
	3A1:Minimizes the number of businesses displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing businesses. Interchange concept has higher potential to displace existing businesses.	+	⇒ This concept may avoid significant displacing existing businesses.
	3A2:Minimizes the number of residences displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing residences. Interchange concept has higher potential to displace existing residences.	-	⇒ This concept displaces residences to the north of the interchange.
	Objective #3B: Minimize impacts to the livability, quality and integrity of established residences				
	3B1:Freight traffic or through residential traffic is not routed through residential areas	+ -	Interchange concept has less potential to route traffic through residential areas. Interchange concept has more potential to route traffic through residential areas.	-	⇒ The new Glencoe Road alignment routes interchange traffic through a residential district.
	Objective #3C: Supports continued economic development in North Plains				
	3C1:Supports the City of North Plains Comprehensive Plan	+ -	Supports the City of North Plains Comprehensive Plan. Does not support the City of North Plains Comprehensive Plan.	-	⇒ The new Glencoe Road alignment is not consistent with the planned circulation pattern and makes circulation to existing business and industrial areas difficult.
	3C2:Supports the Washington County Comprehensive Plan	+ -	Supports the Washington County Comprehensive Plan Does not support the Washington County Comprehensive Plan	-	⇒ The new Glencoe Road alignment is not consistent with the planned roadway improvements to Glencoe Road.
Concept #18	**Objective #3A: Minimize impacts to existing businesses and residences in the interchange area**				
	3A1:Minimizes the number of businesses displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing businesses. Interchange concept has higher potential to displace existing businesses.	+	⇒ This concept is likely to not displace existing businesses. ⇒ The split diamond interchange form is not consistent with the commercial service character of Glencoe Road.
	3A2:Minimizes the number of residences displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing residences. Interchange concept has higher potential to displace existing residences.	-	⇒ This concept displaces residences to the north of the interchange.
	Objective #3B: Minimize impacts to the livability, quality and integrity of established residences				
	3B1:Freight traffic or through residential traffic is not routed through residential areas	+ -	Interchange concept has less potential to route traffic through residential areas. Interchange concept has more potential to route traffic through residential areas.	-	⇒ The 314th Avenue connection routes interchange traffic through a residential district.
	Objective #3C: Supports continued economic development in North Plains				
	3C1:Supports the City of North Plains Comprehensive Plan	+ -	Supports the City of North Plains Comprehensive Plan. Does not support the City of North Plains Comprehensive Plan.	-	⇒ The use of 314th Avenue is not consistent with the planned circulation pattern and makes circulation to existing business and industrial areas difficult.
	3C2:Supports the Washington County Comprehensive Plan	+ -	Supports the Washington County Comprehensive Plan Does not support the Washington County Comprehensive Plan	-	⇒ The use of 314th Avenue is not consistent with the planned roadway improvements to Glencoe Road.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #20	**Objective #3A: Minimize impacts to existing businesses and residences in the interchange area**				
	3A1:Minimizes the number of businesses displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing businesses. Interchange concept has higher potential to displace existing businesses.	-	⇒ This concept displaces businesses to the north and south of the Glencoe Road interchange. ⇒ Businesses are displaced at the Gordon Road interchange.
	3A2:Minimizes the number of residences displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing residences. Interchange concept has higher potential to displace existing residences.	-	⇒ This concept displaces residences to the south of the Gordon Road interchange. ⇒ The split diamond frontage road may displace existing residences along the north side of US 26.
	Objective #3B: Minimize impacts to the livability, quality and integrity of established residences				
	3B1:Freight traffic or through residential traffic is not routed through residential areas	+ -	Interchange concept has less potential to route traffic through residential areas. Interchange concept has more potential to route traffic through residential areas.	-	⇒ The Gordon Road connection routes interchange traffic through a rural residential area.
	Objective #3C: Supports continued economic development in North Plains				
	3C1:Supports the City of North Plains Comprehensive Plan	+ -	Supports the City of North Plains Comprehensive Plan. Does not support the City of North Plains Comprehensive Plan.	-	⇒ The development of a Gordon Road interchange is not consistent with the planned circulation pattern of North Plains.
	3C2:Supports the Washington County Comprehensive Plan	+ -	Supports the Washington County Comprehensive Plan Does not support the Washington County Comprehensive Plan	-	⇒ The development of Gordon Road interchange is not consistent with the Washington County transportation plan and planned infrastructure network south of US 26.
Concept #21A	**Objective #3A: Minimize impacts to existing businesses and residences in the interchange area**				
	3A1:Minimizes the number of businesses displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing businesses. Interchange concept has higher potential to displace existing businesses.	-	⇒ This concept displaces businesses to the north of the Gordon Road interchange. ⇒ The split diamond interchange form is not consistent with the commercial service character of Glencoe Road.
	3A2:Minimizes the number of residences displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing residences. Interchange concept has higher potential to displace existing residences.	+	⇒ This concept is likely to not displace existing residences.
	Objective #3B: Minimize impacts to the livability, quality and integrity of established residences				
	3B1:Freight traffic or through residential traffic is not routed through residential areas	+ -	Interchange concept has less potential to route traffic through residential areas. Interchange concept has more potential to route traffic through residential areas.	-	⇒ The Gordon Road connection routes interchange traffic through a rural residential area.
	Objective #3C: Supports continued economic development in North Plains				
	3C1:Supports the City of North Plains Comprehensive Plan	+ -	Supports the City of North Plains Comprehensive Plan. Does not support the City of North Plains Comprehensive Plan.	-	⇒ The development of a Gordon Road interchange is not consistent with the planned circulation pattern of North Plains.
	3C2:Supports the Washington County Comprehensive Plan	+ -	Supports the Washington County Comprehensive Plan Does not support the Washington County Comprehensive Plan	-	⇒ The development of Gordon Road interchange is not consistent with the Washington County transportation plan and planned infrastructure network south of US 26.

Concept	Evaluation Criteria		Interchange Scoring at the Screening Level (Evaluation Scoring Key)	Concept Score	Comments
Concept #21B	**Objective #3A: Minimize impacts to existing businesses and residences in the interchange area**				
	3A1:Minimizes the number of businesses displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing businesses. Interchange concept has higher potential to displace existing businesses.	-	⇒ This concept displaces businesses to the north of the Gordon Road interchange.
	3A2:Minimizes the number of residences displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing residences. Interchange concept has higher potential to displace existing residences.	+	⇒ This concept is likely to not displace existing residences.
	Objective #3B: Minimize impacts to the livability, quality and integrity of established residences				
	3B1:Freight traffic or through residential traffic is not routed through residential areas	+ -	Interchange concept has less potential to route traffic through residential areas. Interchange concept has more potential to route traffic through residential areas.	-	⇒ The Gordon Road connection routes interchange traffic through a rural residential area.
	Objective #3C: Supports continued economic development in North Plains				
	3C1:Supports the City of North Plains Comprehensive Plan	+ -	Supports the City of North Plains Comprehensive Plan. Does not support the City of North Plains Comprehensive Plan.	-	⇒ The development of a Gordon Road interchange is not consistent with the planned circulation pattern of North Plains.
	3C2:Supports the Washington County Comprehensive Plan	+ -	Supports the Washington County Comprehensive Plan Does not support the Washington County Comprehensive Plan	-	⇒ The development of Gordon Road interchange is not consistent with the Washington County transportation plan and planned infrastructure network south of US 26.
Concept #22	**Objective #3A: Minimize impacts to existing businesses and residences in the interchange area**				
	3A1:Minimizes the number of businesses displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing businesses. Interchange concept has higher potential to displace existing businesses.	+	⇒ This concept is likely to not displace existing businesses.
	3A2:Minimizes the number of residences displaced or negatively impacted	+ -	Interchange concept has lower potential to displace existing residences. Interchange concept has higher potential to displace existing residences.	+	⇒ This concept is likely to not displace existing residences.
	Objective #3B: Minimize impacts to the livability, quality and integrity of established residences				
	3B1:Freight traffic or through residential traffic is not routed through residential areas	+ -	Interchange concept has less potential to route traffic through residential areas. Interchange concept has more potential to route traffic through residential areas.	-	⇒ The Gordon Road connection routes interchange traffic through a rural residential area.
	Objective #3C: Supports continued economic development in North Plains				
	3C1:Supports the City of North Plains Comprehensive Plan	+ -	Supports the City of North Plains Comprehensive Plan. Does not support the City of North Plains Comprehensive Plan.	-	⇒ The development of a Gordon Road interchange is not consistent with the planned circulation pattern of North Plains.
	3C2:Supports the Washington County Comprehensive Plan	+ -	Supports the Washington County Comprehensive Plan Does not support the Washington County Comprehensive Plan	-	⇒ The development of Gordon Road interchange is not consistent with the Washington County transportation plan and planned infrastructure network south of US 26.

Appendix E

Interchange Concept Evaluation Matrices (At the Screening Level)

Goal #4: Aesthetics

DRAFT Evaluation Matrix Table Layout – Goal #4: Aesthetics

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #1	**Objective #4A: Consider aesthetics in the design of the interchange and Glencoe Road**				
	4A1: The interchange does not conflict with the community character of North Plains	+ -	Does not conflict with community character. Does conflict with community character.	+	⇒ The scale and form of the interchange concept is consistent with the commercial character of Glencoe Road and the adjacent land uses.
	4A2: A gateway along Glencoe Road is not precluded	+ -	A gateway is not precluded. A gateway is precluded.	+	⇒ The concept does not preclude the development of a gateway feature along Glencoe Road.
Concept #2	**Objective #4A: Consider aesthetics in the design of the interchange and Glencoe Road**				
	4A1: The interchange does not conflict with the community character of North Plains	+ -	Does not conflict with community character. Does conflict with community character.	+	⇒ The scale and form of the interchange concept is consistent with the commercial character of Glencoe Road and the adjacent land uses.
	4A2: A gateway along Glencoe Road is not precluded	+ -	A gateway is not precluded. A gateway is precluded.	+	⇒ The concept does not preclude the development of a gateway feature along Glencoe Road.
Concept #3	**Objective #4A: Consider aesthetics in the design of the interchange and Glencoe Road**				
	4A1: The interchange does not conflict with the community character of North Plains	+ -	Does not conflict with community character. Does conflict with community character.	+	⇒ The scale and form of the interchange concept is consistent with the commercial character of Glencoe Road and the adjacent land uses.
	4A2: A gateway along Glencoe Road is not precluded	+ -	A gateway is not precluded. A gateway is precluded.	+	⇒ The concept does not preclude the development of a gateway feature along Glencoe Road.
Concept #4	**Objective #4A: Consider aesthetics in the design of the interchange and Glencoe Road**				
	4A1: The interchange does not conflict with the community character of North Plains	+ -	Does not conflict with community character. Does conflict with community character.	-	⇒ This concept removes Glencoe Road as the main north/south thoroughfare and commercial district serving US 26 traffic.
	4A2: A gateway along Glencoe Road is not precluded	+ -	A gateway is not precluded. A gateway is precluded.	-	⇒ A gateway feature along Glencoe Road would not serve the intended purpose with the new Glencoe Road alignment to the east.
Concept #5	**Objective #4A: Consider aesthetics in the design of the interchange and Glencoe Road**				
	4A1: The interchange does not conflict with the community character of North Plains	+ -	Does not conflict with community character. Does conflict with community character.	+	⇒ The scale and form of the interchange concept is consistent with the commercial character of Glencoe Road and the adjacent land uses.
	4A2: A gateway along Glencoe Road is not precluded	+ -	A gateway is not precluded. A gateway is precluded.	+	⇒ The concept does not preclude the development of a gateway feature along Glencoe Road.
Concept #7A	**Objective #4A: Consider aesthetics in the design of the interchange and Glencoe Road**				
	4A1: The interchange does not conflict with the community character of North Plains	+ -	Does not conflict with community character. Does conflict with community character.	+	⇒ The scale and form of the interchange concept is consistent with the commercial character of Glencoe Road and the adjacent land uses.
	4A2: A gateway along Glencoe Road is not precluded	+ -	A gateway is not precluded. A gateway is precluded.	+	⇒ The concept does not preclude the development of a gateway feature along Glencoe Road.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #7B	**Objective #4A: Consider aesthetics in the design of the interchange and Glencoe Road**				
	4A1: The interchange does not conflict with the community character of North Plains	+ -	Does not conflict with community character. Does conflict with community character.	+	⇒ The scale and form of the interchange concept is consistent with the commercial character of Glencoe Road and the adjacent land uses.
	4A2: A gateway along Glencoe Road is not precluded	+ -	A gateway is not precluded. A gateway is precluded.	+	⇒ The concept does not preclude the development of a gateway feature along Glencoe Road.
Concept #7C	**Objective #4A: Consider aesthetics in the design of the interchange and Glencoe Road**				
	4A1: The interchange does not conflict with the community character of North Plains	+ -	Does not conflict with community character. Does conflict with community character.	+	⇒ The scale and form of the interchange concept is consistent with the commercial character of Glencoe Road and the adjacent land uses.
	4A2: A gateway along Glencoe Road is not precluded	+ -	A gateway is not precluded. A gateway is precluded.	+	⇒ The concept does not preclude the development of a gateway feature along Glencoe Road.
Concept #8	**Objective #4A: Consider aesthetics in the design of the interchange and Glencoe Road**				
	4A1: The interchange does not conflict with the community character of North Plains	+ -	Does not conflict with community character. Does conflict with community character.	+	⇒ The scale and form of the interchange concept is consistent with the commercial character of Glencoe Road and the adjacent land uses.
	4A2: A gateway along Glencoe Road is not precluded	+ -	A gateway is not precluded. A gateway is precluded.	+	⇒ The concept does not preclude the development of a gateway feature along Glencoe Road.
Concept #9	**Objective #4A: Consider aesthetics in the design of the interchange and Glencoe Road**				
	4A1: The interchange does not conflict with the community character of North Plains	+ -	Does not conflict with community character. Does conflict with community character.	-	⇒ The high-capacity directional flyover ramp is not consistent with North Plains and the adjacent rural land uses to the south.
	4A2: A gateway along Glencoe Road is not precluded	+ -	A gateway is not precluded. A gateway is precluded.	+	⇒ The concept does not preclude the development of a gateway feature along Glencoe Road.
Concept #10	**Objective #4A: Consider aesthetics in the design of the interchange and Glencoe Road**				
	4A1: The interchange does not conflict with the community character of North Plains	+ -	Does not conflict with community character. Does conflict with community character.	-	⇒ The split diamond interchange form and Glencoe Road couplet is not consistent with the commercial and residential character north of US 26.
	4A2: A gateway along Glencoe Road is not precluded	+ -	A gateway is not precluded. A gateway is precluded.	+	⇒ The concept does not preclude the development of a gateway feature along Glencoe Road.
Concept #11C	**Objective #4A: Consider aesthetics in the design of the interchange and Glencoe Road**				
	4A1: The interchange does not conflict with the community character of North Plains	+ -	Does not conflict with community character. Does conflict with community character.	+	⇒ The scale and form of the interchange concept is consistent with the commercial character of Glencoe Road and the adjacent land uses.
	4A2: A gateway along Glencoe Road is not precluded	+ -	A gateway is not precluded. A gateway is precluded.	+	⇒ The concept does not preclude the development of a gateway feature along Glencoe Road.
Concept #12	**Objective #4A: Consider aesthetics in the design of the interchange and Glencoe Road**				
	4A1: The interchange does not conflict with the community character of North Plains	+ -	Does not conflict with community character. Does conflict with community character.	+	⇒ The scale and form of the interchange concept is consistent with the commercial character of Glencoe Road and the adjacent land uses.
	4A2: A gateway along Glencoe Road is not precluded	+ -	A gateway is not precluded. A gateway is precluded.	+	⇒ The concept does not preclude the development of a gateway feature along Glencoe Road.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #13	**Objective #4A: Consider aesthetics in the design of the interchange and Glencoe Road**				
	4A1: The interchange does not conflict with the community character of North Plains	+ -	Does not conflict with community character. Does conflict with community character.	+	⇒ The scale and form of the interchange concept is consistent with the commercial character of Glencoe Road and the adjacent land uses.
	4A2: A gateway along Glencoe Road is not precluded	+ -	A gateway is not precluded. A gateway is precluded.	+	⇒ The concept does not preclude the development of a gateway feature along Glencoe Road.
Concept #14A	**Objective #4A: Consider aesthetics in the design of the interchange and Glencoe Road**				
	4A1: The interchange does not conflict with the community character of North Plains	+ -	Does not conflict with community character. Does conflict with community character.	+	⇒ The scale and form of the interchange concept is consistent with the commercial character of Glencoe Road and the adjacent land uses.
	4A2: A gateway along Glencoe Road is not precluded	+ -	A gateway is not precluded. A gateway is precluded.	+	⇒ The concept does not preclude the development of a gateway feature along Glencoe Road.
Concept #14B	**Objective #4A: Consider aesthetics in the design of the interchange and Glencoe Road**				
	4A1: The interchange does not conflict with the community character of North Plains	+ -	Does not conflict with community character. Does conflict with community character.	+	⇒ The scale and form of the interchange concept is consistent with the commercial character of Glencoe Road and the adjacent land uses.
	4A2: A gateway along Glencoe Road is not precluded	+ -	A gateway is not precluded. A gateway is precluded.	+	⇒ The concept does not preclude the development of a gateway feature along Glencoe Road.
Concept #15	**Objective #4A: Consider aesthetics in the design of the interchange and Glencoe Road**				
	4A1: The interchange does not conflict with the community character of North Plains	+ -	Does not conflict with community character. Does conflict with community character.	+	⇒ The scale and form of the interchange concept is consistent with the commercial character of Glencoe Road and the adjacent land uses.
	4A2: A gateway along Glencoe Road is not precluded	+ -	A gateway is not precluded. A gateway is precluded.	+	⇒ The concept does not preclude the development of a gateway feature along Glencoe Road.
Concept #16	**Objective #4A: Consider aesthetics in the design of the interchange and Glencoe Road**				
	4A1: The interchange does not conflict with the community character of North Plains	+ -	Does not conflict with community character. Does conflict with community character.	-	⇒ The high-capacity cloverleaf interchange is not consistent with North Plains and the adjacent land uses.
	4A2: A gateway along Glencoe Road is not precluded	+ -	A gateway is not precluded. A gateway is precluded.	+	⇒ The concept does not preclude the development of a gateway feature along Glencoe Road.
Concept #17	**Objective #4A: Consider aesthetics in the design of the interchange and Glencoe Road**				
	4A1: The interchange does not conflict with the community character of North Plains	+ -	Does not conflict with community character. Does conflict with community character.	-	⇒ The location of the interchange concept is not consistent with the adjacent residential land uses.
	4A2: A gateway along Glencoe Road is not precluded	+ -	A gateway is not precluded. A gateway is precluded.	-	⇒ A gateway feature along Glencoe Road would not serve the intended purpose with the new interchange to the west.
Concept #18	**Objective #4A: Consider aesthetics in the design of the interchange and Glencoe Road**				
	4A1: The interchange does not conflict with the community character of North Plains	+ -	Does not conflict with community character. Does conflict with community character.	-	⇒ The location of the interchange concept is not consistent with the adjacent residential land uses.
	4A2: A gateway along Glencoe Road is not precluded	+ -	A gateway is not precluded. A gateway is precluded.	+	⇒ The concept does not preclude the development of a gateway feature along Glencoe Road.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #20	**Objective #4A: Consider aesthetics in the design of the interchange and Glencoe Road**				
	4A1: The interchange does not conflict with the community character of North Plains	+ -	Does not conflict with community character. Does conflict with community character.	-	⇒ A split diamond interchange with Gordon Road is not consistent with the commercial service character along Glencoe Road.
	4A2: A gateway along Glencoe Road is not precluded	+ -	A gateway is not precluded. A gateway is precluded.	+	⇒ The concept does not preclude the development of a gateway feature along Glencoe Road.
Concept #21A	**Objective #4A: Consider aesthetics in the design of the interchange and Glencoe Road**				
	4A1: The interchange does not conflict with the community character of North Plains	+ -	Does not conflict with community character. Does conflict with community character.	-	⇒ A split diamond interchange with Gordon Road is not consistent with the commercial service character along Glencoe Road.
	4A2: A gateway along Glencoe Road is not precluded	+ -	A gateway is not precluded. A gateway is precluded.	+	⇒ The concept does not preclude the development of a gateway feature along Glencoe Road.
Concept #21B	**Objective #4A: Consider aesthetics in the design of the interchange and Glencoe Road**				
	4A1: The interchange does not conflict with the community character of North Plains	+ -	Does not conflict with community character. Does conflict with community character.	-	⇒ A split diamond interchange with Gordon Road is not consistent with the commercial service character along Glencoe Road.
	4A2: A gateway along Glencoe Road is not precluded	+ -	A gateway is not precluded. A gateway is precluded.	+	⇒ The concept does not preclude the development of a gateway feature along Glencoe Road.
Concept #22	**Objective #4A: Consider aesthetics in the design of the interchange and Glencoe Road**				
	4A1: The interchange does not conflict with the community character of North Plains	+ -	Does not conflict with community character. Does conflict with community character.	+	⇒ The scale and form of the interchange concept is consistent with the commercial character of Glencoe Road and the adjacent land uses.
	4A2: A gateway along Glencoe Road is not precluded	+ -	A gateway is not precluded. A gateway is precluded.	+	⇒ The concept does not preclude the development of a gateway feature along Glencoe Road.

Appendix F

Interchange Concept Evaluation Matrices (At the Screening Level)

Goal #5: Natural and Cultural Resources

DRAFT Evaluation Matrix Table Layout – Goal #5: Natural and Cultural Resources

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #1	**Objective #5A: Avoid or minimize impacts to habitat systems**				
	5A1: Minimizes the number of acres and quality of habitat impacted	+ -	No habitat impacted. Some habitat impacted.	-	⇒ This concept is likely to impact some habitat.
	Objective #5C: Minimize and mitigate adverse impacts to surface and groundwater resources				
	5C1: Surface waterways are protected or enhanced	+ -	Surface waterways are avoided. Surface waterways are not avoided.	-	⇒ The westbound on/off ramps cross some of the surface waterways on the north side of the interchange.
	5C2: Impacts to floodway can be mitigated	+ -	Impacts to floodway avoided. Impacts to floodway not avoided.	-	⇒ The westbound on/off ramps cross some of the floodway on the north side of the interchange.
Concept #2	**Objective #5A: Avoid or minimize impacts to habitat systems**				
	5A1: Minimizes the number of acres and quality of habitat impacted	+ -	No habitat impacted. Some habitat impacted.	-	⇒ This concept is likely to impact some habitat.
	Objective #5C: Minimize and mitigate adverse impacts to surface and groundwater resources				
	5C1: Surface waterways are protected or enhanced	+ -	Surface waterways are avoided. Surface waterways are not avoided.	-	⇒ The westbound on/off ramps cross some of the surface waterways on the north side of the interchange.
	5C2: Impacts to floodway can be mitigated	+ -	Impacts to floodway avoided. Impacts to floodway not avoided.	-	⇒ The westbound on/off ramps cross some of the floodway on the north side of the interchange.
Concept #3	**Objective #5A: Avoid or minimize impacts to habitat systems**				
	5A1: Minimizes the number of acres and quality of habitat impacted	+ -	No habitat impacted. Some habitat impacted.	-	⇒ This concept is likely to impact some habitat.
	Objective #5C: Minimize and mitigate adverse impacts to surface and groundwater resources				
	5C1: Surface waterways are protected or enhanced	+ -	Surface waterways are avoided. Surface waterways are not avoided.	-	⇒ The westbound on/off ramps cross some of the surface waterways on the north side of the interchange.
	5C2: Impacts to floodway can be mitigated	+ -	Impacts to floodway avoided. Impacts to floodway not avoided.	-	⇒ The westbound on/off ramps cross some of the floodway on the north side of the interchange.
Concept #4	**Objective #5A: Avoid or minimize impacts to habitat systems**				
	5A1: Minimizes the number of acres and quality of habitat impacted	+ -	No habitat impacted. Some habitat impacted.	-	⇒ This concept is likely to impact a significant amount of habitat.
	Objective #5C: Minimize and mitigate adverse impacts to surface and groundwater resources				
	5C1: Surface waterways are protected or enhanced	+ -	Surface waterways are avoided. Surface waterways are not avoided.	-	⇒ This concept crosses some surface waterways on the north side of the interchange.
	5C2: Impacts to floodway can be mitigated	+ -	Impacts to floodway avoided. Impacts to floodway not avoided.	-	⇒ This concept crosses some of the floodway on the north side of the interchange.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #5	**Objective #5A: Avoid or minimize impacts to habitat systems**				
	5A1: Minimizes the number of acres and quality of habitat impacted	+ -	No habitat impacted. Some habitat impacted.	-	⇒ This concept is likely to impact some habitat.
	Objective #5C: Minimize and mitigate adverse impacts to surface and groundwater resources				
	5C1: Surface waterways are protected or enhanced	+ -	Surface waterways are avoided. Surface waterways are not avoided.	-	⇒ The westbound on/off ramps cross some of the surface waterways on the north side of the interchange.
	5C2: Impacts to floodway can be mitigated	+ -	Impacts to floodway avoided. Impacts to floodway not avoided.	-	⇒ The westbound on/off ramps cross some of the floodway on the north side of the interchange.
Concept #7A	**Objective #5A: Avoid or minimize impacts to habitat systems**				
	5A1: Minimizes the number of acres and quality of habitat impacted	+ -	No habitat impacted. Some habitat impacted.	-	⇒ This concept is likely to impact some habitat.
	Objective #5C: Minimize and mitigate adverse impacts to surface and groundwater resources				
	5C1: Surface waterways are protected or enhanced	+ -	Surface waterways are avoided. Surface waterways are not avoided.	-	⇒ The westbound on/off ramps cross some of the surface waterways on the north side of the interchange.
	5C2: Impacts to floodway can be mitigated	+ -	Impacts to floodway avoided. Impacts to floodway not avoided.	-	⇒ The westbound on/off ramps cross some of the floodway on the north side of the interchange.
Concept #7B	**Objective #5A: Avoid or minimize impacts to habitat systems**				
	5A1: Minimizes the number of acres and quality of habitat impacted	+ -	No habitat impacted. Some habitat impacted.	-	⇒ This concept is likely to impact some habitat.
	Objective #5C: Minimize and mitigate adverse impacts to surface and groundwater resources				
	5C1: Surface waterways are protected or enhanced	+ -	Surface waterways are avoided. Surface waterways are not avoided.	-	⇒ The westbound on/off ramps cross some of the surface waterways on the north side of the interchange.
	5C2: Impacts to floodway can be mitigated	+ -	Impacts to floodway avoided. Impacts to floodway not avoided.	-	⇒ The westbound on/off ramps cross some of the floodway on the north side of the interchange.
Concept #7C	**Objective #5A: Avoid or minimize impacts to habitat systems**				
	5A1: Minimizes the number of acres and quality of habitat impacted	+ -	No habitat impacted. Some habitat impacted.	-	⇒ This concept is likely to impact some habitat.
	Objective #5C: Minimize and mitigate adverse impacts to surface and groundwater resources				
	5C1: Surface waterways are protected or enhanced	+ -	Surface waterways are avoided. Surface waterways are not avoided.	-	⇒ The westbound on/off ramps cross some of the surface waterways on the north side of the interchange.
	5C2: Impacts to floodway can be mitigated	+ -	Impacts to floodway avoided. Impacts to floodway not avoided.	-	⇒ The westbound on/off ramps cross some of the floodway on the north side of the interchange.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #8	**Objective #5A: Avoid or minimize impacts to habitat systems**				
	5A1: Minimizes the number of acres and quality of habitat impacted	+ -	No habitat impacted. Some habitat impacted.	-	⇒ This concept is likely to impact some habitat.
	Objective #5C: Minimize and mitigate adverse impacts to surface and groundwater resources				
	5C1: Surface waterways are protected or enhanced	+ -	Surface waterways are avoided. Surface waterways are not avoided.	-	⇒ The westbound on/off ramps cross some of the surface waterways on the north side of the interchange.
	5C2: Impacts to floodway can be mitigated	+ -	Impacts to floodway avoided. Impacts to floodway not avoided.	-	⇒ The westbound on/off ramps cross some of the floodway on the north side of the interchange.
Concept #9	**Objective #5A: Avoid or minimize impacts to habitat systems**				
	5A1: Minimizes the number of acres and quality of habitat impacted	+ -	No habitat impacted. Some habitat impacted.	-	⇒ This concept is likely to impact some habitat.
	Objective #5C: Minimize and mitigate adverse impacts to surface and groundwater resources				
	5C1: Surface waterways are protected or enhanced	+ -	Surface waterways are avoided. Surface waterways are not avoided.	-	⇒ The westbound on/off ramps cross some of the surface waterways on the north side of the interchange.
	5C2: Impacts to floodway can be mitigated	+ -	Impacts to floodway avoided. Impacts to floodway not avoided.	-	⇒ The westbound on/off ramps cross some of the floodway on the north side of the interchange.
Concept #10	**Objective #5A: Avoid or minimize impacts to habitat systems**				
	5A1: Minimizes the number of acres and quality of habitat impacted	+ -	No habitat impacted. Some habitat impacted.	-	⇒ This concept is likely to impact some habitat.
	Objective #5C: Minimize and mitigate adverse impacts to surface and groundwater resources				
	5C1: Surface waterways are protected or enhanced	+ -	Surface waterways are avoided. Surface waterways are not avoided.	-	⇒ The westbound on/off ramps cross some of the surface waterways on the north side of the interchange.
	5C2: Impacts to floodway can be mitigated	+ -	Impacts to floodway avoided. Impacts to floodway not avoided.	-	⇒ The westbound on/off ramps cross some of the floodway on the north side of the interchange.
Concept #11C	**Objective #5A: Avoid or minimize impacts to habitat systems**				
	5A1: Minimizes the number of acres and quality of habitat impacted	+ -	No habitat impacted. Some habitat impacted.	-	⇒ This concept is likely to have only a minor impact to habitat.
	Objective #5C: Minimize and mitigate adverse impacts to surface and groundwater resources				
	5C1: Surface waterways are protected or enhanced	+ -	Surface waterways are avoided. Surface waterways are not avoided.	-	⇒ The concept is likely to have only a minor impact to surface waterways.
	5C2: Impacts to floodway can be mitigated	+ -	Impacts to floodway avoided. Impacts to floodway not avoided.	-	⇒ The concept is likely to have only a minor impact to floodway.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #12	**Objective #5A: Avoid or minimize impacts to habitat systems**				
	5A1: Minimizes the number of acres and quality of habitat impacted	+ -	No habitat impacted. Some habitat impacted.	-	⇒ This concept is likely to have only a minor impact to habitat.
	Objective #5C: Minimize and mitigate adverse impacts to surface and groundwater resources				
	5C1: Surface waterways are protected or enhanced	+ -	Surface waterways are avoided. Surface waterways are not avoided.	-	⇒ The concept is likely to have only a minor impact to surface waterways.
	5C2: Impacts to floodway can be mitigated	+ -	Impacts to floodway avoided. Impacts to floodway not avoided.	-	⇒ The concept is likely to have only a minor impact to floodway.
Concept #13	**Objective #5A: Avoid or minimize impacts to habitat systems**				
	5A1: Minimizes the number of acres and quality of habitat impacted	+ -	No habitat impacted. Some habitat impacted.	-	⇒ This concept is likely to have only a minor impact to habitat.
	Objective #5C: Minimize and mitigate adverse impacts to surface and groundwater resources				
	5C1: Surface waterways are protected or enhanced	+ -	Surface waterways are avoided. Surface waterways are not avoided.	-	⇒ The concept is likely to have only a minor impact to surface waterways.
	5C2: Impacts to floodway can be mitigated	+ -	Impacts to floodway avoided. Impacts to floodway not avoided.	-	⇒ The concept is likely to have only a minor impact to floodway.
Concept #14A	**Objective #5A: Avoid or minimize impacts to habitat systems**				
	5A1: Minimizes the number of acres and quality of habitat impacted	+ -	No habitat impacted. Some habitat impacted.	-	⇒ This concept is likely to have only a minor impact to habitat.
	Objective #5C: Minimize and mitigate adverse impacts to surface and groundwater resources				
	5C1: Surface waterways are protected or enhanced	+ -	Surface waterways are avoided. Surface waterways are not avoided.	-	⇒ The concept is likely to have only a minor impact to surface waterways.
	5C2: Impacts to floodway can be mitigated	+ -	Impacts to floodway avoided. Impacts to floodway not avoided.	-	⇒ The concept is likely to have only a minor impact to floodway.
Concept #14B	**Objective #5A: Avoid or minimize impacts to habitat systems**				
	5A1: Minimizes the number of acres and quality of habitat impacted	+ -	No habitat impacted. Some habitat impacted.	-	⇒ This concept is likely to have only a minor impact to habitat.
	Objective #5C: Minimize and mitigate adverse impacts to surface and groundwater resources				
	5C1: Surface waterways are protected or enhanced	+ -	Surface waterways are avoided. Surface waterways are not avoided.	-	⇒ The concept will likely necessitate a widening at the McKay Creek crossing.
	5C2: Impacts to floodway can be mitigated	+ -	Impacts to floodway avoided. Impacts to floodway not avoided.	-	⇒ A Glencoe Road underpass would impact floodway on the north side of the interchange.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #15	**Objective #5A: Avoid or minimize impacts to habitat systems**				
	5A1: Minimizes the number of acres and quality of habitat impacted	+ -	No habitat impacted. Some habitat impacted.	-	⇒ This concept is likely to impact some habitat.
	Objective #5C: Minimize and mitigate adverse impacts to surface and groundwater resources				
	5C1: Surface waterways are protected or enhanced	+ -	Surface waterways are avoided. Surface waterways are not avoided.	-	⇒ The westbound on/off ramps cross some of the surface waterways on the north side of the interchange.
	5C2: Impacts to floodway can be mitigated	+ -	Impacts to floodway avoided. Impacts to floodway not avoided.	-	⇒ The westbound on/off ramps cross some of the floodway on the north side of the interchange.
Concept #16	**Objective #5A: Avoid or minimize impacts to habitat systems**				
	5A1: Minimizes the number of acres and quality of habitat impacted	+ -	No habitat impacted. Some habitat impacted.	-	⇒ This concept is likely to impact some habitat.
	Objective #5C: Minimize and mitigate adverse impacts to surface and groundwater resources				
	5C1: Surface waterways are protected or enhanced	+ -	Surface waterways are avoided. Surface waterways are not avoided.	-	⇒ The westbound on/off ramps cross some of the surface waterways on the north side of the interchange. The concept will likely necessitate a widening at the McKay Creek crossing.
	5C2: Impacts to floodway can be mitigated	+ -	Impacts to floodway avoided. Impacts to floodway not avoided.	-	⇒ The westbound on/off ramps cross some of the floodway on the north side of the interchange.
Concept #17	**Objective #5A: Avoid or minimize impacts to habitat systems**				
	5A1: Minimizes the number of acres and quality of habitat impacted	+ -	No habitat impacted. Some habitat impacted.	-	⇒ This concept is likely to impact some habitat.
	Objective #5C: Minimize and mitigate adverse impacts to surface and groundwater resources				
	5C1: Surface waterways are protected or enhanced	+ -	Surface waterways are avoided. Surface waterways are not avoided.	-	⇒ The westbound on/off ramps cross some of the surface waterways on the north side of the interchange.
	5C2: Impacts to floodway can be mitigated	+ -	Impacts to floodway avoided. Impacts to floodway not avoided.	-	⇒ The westbound on/off ramps cross some of the floodway on the north side of the interchange.
Concept #18	**Objective #5A: Avoid or minimize impacts to habitat systems**				
	5A1: Minimizes the number of acres and quality of habitat impacted	+ -	No habitat impacted. Some habitat impacted.	-	⇒ This concept is likely to impact some habitat.
	Objective #5C: Minimize and mitigate adverse impacts to surface and groundwater resources				
	5C1: Surface waterways are protected or enhanced	+ -	Surface waterways are avoided. Surface waterways are not avoided.	-	⇒ The westbound on/off ramps cross some of the surface waterways on the north side of the interchange.
	5C2: Impacts to floodway can be mitigated	+ -	Impacts to floodway avoided. Impacts to floodway not avoided.	-	⇒ The westbound on/off ramps cross some of the floodway on the north side of the interchange.

Concept	Evaluation Criteria	Interchange Scoring at the Screening Level (Evaluation Scoring Key)		Concept Score	Comments
Concept #20	**Objective #5A: Avoid or minimize impacts to habitat systems**				
	5A1: Minimizes the number of acres and quality of habitat impacted	+ -	No habitat impacted. Some habitat impacted.	-	⇒ This concept is likely to impact some habitat.
	Objective #5C: Minimize and mitigate adverse impacts to surface and groundwater resources				
	5C1: Surface waterways are protected or enhanced	+ -	Surface waterways are avoided. Surface waterways are not avoided.	-	⇒ The westbound split diamond frontage road will cross some of the surface waterways on the north side of the interchange.
	5C2: Impacts to floodway can be mitigated	+ -	Impacts to floodway avoided. Impacts to floodway not avoided.	-	⇒ The westbound split diamond frontage road will cross some of the floodway on the north side of the interchange.
Concept #21A	**Objective #5A: Avoid or minimize impacts to habitat systems**				
	5A1: Minimizes the number of acres and quality of habitat impacted	+ -	No habitat impacted. Some habitat impacted.	-	⇒ This concept is likely to impact some habitat.
	Objective #5C: Minimize and mitigate adverse impacts to surface and groundwater resources				
	5C1: Surface waterways are protected or enhanced	+ -	Surface waterways are avoided. Surface waterways are not avoided.	-	⇒ The concept is likely to have only a minor impact to surface waterways.
	5C2: Impacts to floodway can be mitigated	+ -	Impacts to floodway avoided. Impacts to floodway not avoided.	-	⇒ The concept is likely to have only a minor impact to floodway.
Concept #21B	**Objective #5A: Avoid or minimize impacts to habitat systems**				
	5A1: Minimizes the number of acres and quality of habitat impacted	+ -	No habitat impacted. Some habitat impacted.	-	⇒ This concept is likely to impact some habitat.
	Objective #5C: Minimize and mitigate adverse impacts to surface and groundwater resources				
	5C1: Surface waterways are protected or enhanced	+ -	Surface waterways are avoided. Surface waterways are not avoided.	-	⇒ The concept is likely to have only a minor impact to surface waterways.
	5C2: Impacts to floodway can be mitigated	+ -	Impacts to floodway avoided. Impacts to floodway not avoided.	-	⇒ The concept is likely to have only a minor impact to floodway.
Concept #22	**Objective #5A: Avoid or minimize impacts to habitat systems**				
	5A1: Minimizes the number of acres and quality of habitat impacted	+ -	No habitat impacted. Some habitat impacted.	-	⇒ This concept is likely to have only a minor impact to habitat.
	Objective #5C: Minimize and mitigate adverse impacts to surface and groundwater resources				
	5C1: Surface waterways are protected or enhanced	+ -	Surface waterways are avoided. Surface waterways are not avoided.	-	⇒ The concept is likely to have only a minor impact to surface waterways.
	5C2: Impacts to floodway can be mitigated	+ -	Impacts to floodway avoided. Impacts to floodway not avoided.	-	⇒ The concept is likely to have only a minor impact to floodway.

Appendix G4

Technical Memorandum #3b – Opportunities and Constraints Detailed Analysis

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TECHNICAL MEMORANDUM

Glencoe Interchange Area Management Plan
Technical Memorandum #3b
IAMP Opportunities and Constraints Analysis –
Detailed Evaluation of the Screened Concepts

Date: July 31, 2006 **Project** #: 7191

To: SWG Members

From: Matt Hughart, AICP, Andrew Ooms, Marc Butorac, P.E., P.T.O.E.

cc: Glencoe Project Team

This technical memorandum is the fourth in a series of memorandums that are being prepared for the Glencoe Interchange Area Management Plan (IAMP). This memorandum summarizes the more detailed evaluation of the previously screened interchange design concepts at the US 26/Glencoe Road interchange ramp terminals. The purpose of this memorandum is to provide the SWG committee members with a more detailed assessment of the screened concepts and to assist in the process that will ultimately select a limited number of concepts to move forward in the evaluation process.

COMMITTEE EVALUATION PROCESS SUMMARY

PDT Meeting #5 (7/5/06)

At PDT Meeting #5, the PDT used the qualitative, high-level screening criteria to preliminarily select 12 concepts to go forward to the next level of evaluation. Based on this process, it was determined that Concepts #1, #3, #7a, #7b, #7c, #8, #9, #11c, #12, #13, #14a, and #14b should move forward in the evaluation process.

SWG Meeting #5 (7/13/06)

At SWG Meeting #5, the SWG agreed with 8 of the 12 concepts. Of the four remaining concepts, the SWG determined that there was really no value in moving forward with Concept #3 and recommended that it be dropped from further consideration. For Concepts #9, #13, and #14B, the SWG was split on whether they should move forward in the evaluation process. Considering that

there was not a unanimous decision, the SWG recommended that the PDT consider them once more and that the SWG would accept whatever decision the PDT made. As a final recommendation, the SWG asked the PDT to reconsider Concept #22 as a concept to move forward in the more detailed evaluation process.

With these recommendations, the project team re-evaluated Concepts #1, #3, #7a, #7b, #7c, #8, #9, #11C, #12, #13, #14A, #14B, and #22. The evaluation process centered on the traffic operations of each concept (does the concept accommodate the projected traffic demand in the year 2030 according to the design standards) and the overall cost (construction and right-of-way acquisition costs). *Appendix "A"* includes a detailed listing of the traffic operations and cost estimates associated with each concept. For summary purposes, Table 3b-1 illustrates a summary of the evaluation process to date and provides a list of positives and negatives associated with this more detailed level of analysis.

Preliminary PDT Recommendation

Based on the information documented in Appendix "A" and for the reasons outlined in Table 3b-1, the PDT has preliminarily recommended that Concepts #11C, #12, and #14A move forward in the evaluation process. These three concepts have been shown to generally meet most of the evaluation criteria and provide different approaches to solving the objectives established in the Purpose and Need Statement.

Table 3b-1 Concept Summary Evaluation Table

Concept Number	Description	PDT Action from Meeting (7/26/06)	Concept Positives	Concept Negatives
SWG asked PDT to drop this concept.				
3	Standard diamond with PARCLO A loop ramp in northeast quadrant	Dropped per SWG recommendation		⇒ The loop ramp in the northeast quadrant is inefficient as it serves a low volume movement. ⇒ High cost of approximately $40 million. ⇒ The loop ramp component pushes the influence area of the interchange further to the north when compared to a similar design without the loop ramp. ⇒ The loop ramp results in greater property impacts north of US 26.
SWG had split vote on these 3 concepts, asked PDT to reconsider, and agreed to accept PDT decision.				
9	Compressed diamond with flyover ramp	Dropped per SWG recommendation	⇒ Provides free flow movement for heavy west to south demand. ⇒ Glencoe Road overpass can be designed as a 3-lane structure where other concepts require at least 5-lanes.	⇒ The elevated flyover ramp design is more typical of an urban setting and could be considered to be out of character with the North Plains community. ⇒ High cost of approximately $40 million. ⇒ The elevated flyover ramp would increase noise & visual impacts to nearby properties. ⇒ Westbound off-ramps have greater impacts to JSR property in comparison to other concepts. ⇒ The flyover ramp results in greater impacts to EFU land south of US 26. ⇒ The flyover ramp would result in a continuous flow of travel along southbound Glencoe Road, potentially making access to/from rural properties more difficult in the future.
13	Single Interchange Roundabout	Dropped per SWG recommendation	⇒ The Glencoe Road approach legs to the roundabout would only need to be 4 lanes as opposed to 5 lanes on the other concepts. ⇒ No traffic signals are required. ⇒ The smaller interchange footprint would have fewer impacts on adjacent properties as compared to some other concepts. ⇒ Cost may be lower than other concepts due to smaller footprint.	⇒ A non-conventional interchange treatment that would not be consistent with driver expectations. ⇒ Roundabout design has less reserve capacity for long-term traffic growth. ⇒ Future interchange expansion would be more difficult and costly. ⇒ May be more difficult to construct while keeping the existing interchange open to traffic. ⇒ Glencoe Road overpass would be longer, thereby extending property impacts from the approach embankments further to the north and south. ⇒ Large trucks may find it more difficult to navigate compared to a more conventional interchange. ⇒ Difficult speed transition from the freeway to the roundabout interchange.
14B	Tight diamond with US 26 elevated over Glencoe Road	Dropped per SWG recommendation	⇒ Glencoe Road would be at-grade as it crosses under US 26, thereby eliminating some of the embankment and retaining wall impacts likely to be necessary under the other concepts.	⇒ Highest construction cost at approximately $41 million. ⇒ An elevated US 26 would potentially have greater noise and visual impacts to adjacent land. ⇒ To reduce impacts, US 26 would likely require lineal retaining walls next to adjacent properties, thereby increasing costs significantly. ⇒ The design has no real access benefits to adjacent properties in comparison to Concept 14A.
This concept was not in PDT's preliminary list. The SWG asked that it be reconsidered and agreed to accept PDT decision.				
22	Tight diamond at Glencoe Road and ½ interchange at Gordon Road.	Set aside per PDT preliminary recommendation	⇒ Would provide a second freeway access point to North Plains, thereby reducing demand on Glencoe Road. ⇒ Would provide more direct access to the west side industrial areas in North Plains.	⇒ The Gordon Road interchange would have significant impacts to EFU lands. ⇒ Not likely to get required land use goal exception for impacts to EFU land. ⇒ Spacing to next interchange is substandard and is not likely to be approved by the OTC. ⇒ Not consistent with Washington County and North Plains TSP. ⇒ At the policy and project level, Washington County has a substantial investment in the Glencoe Road corridor as the preferred route to/from the communities of Forest Grove/Cornelius/Hillsboro. ⇒ High cost of approximate $38 million. ⇒ Requires improvements to Gordon Road, the Gordon Road overpass, and the intersection of Gordon Road and Zion Church Road in order to accommodate increased travel demand. ⇒ Would create interchange access management concerns along Gordon Road that would affect access to adjacent properties and public streets such as Commercial Street. ⇒ Half interchanges such as the Gordon Road component can be confusing to drivers. ⇒ With Glencoe interchange improvements, a new interchange at Gordon Road is not likely to result in substantial travel time or distance savings for west to south or north to east travelers.

Concept Number	Description	PDT Action from Meeting (7/26/06)	Concept Positives	Concept Negatives
SWG agreed that these 8 concepts should go forward to next level of evaluation.				
1	Wide diamond with PARCLO AB loop ramps in the northwest and southwest quadrants	Dropped per PDT preliminary recommendation	⇒ Is the most efficient interchange design that best accommodates all high volume movements during peak periods.	⇒ A diamond interchange can accommodate the projected travel demand without the property impacts created by the larger loop ramp design. ⇒ High cost at approximately $44 million. ⇒ Major impacts to adjacent businesses in all four interchange quadrants. ⇒ Costly mitigation to minimize wetland impacts. ⇒ Larger loop ramp footprint pushes the influence area o f the interchange further to the north.
7A	Standard diamond with PARCLO B loop ramp in the northwest quadrant	Dropped per PDT preliminary recommendation	⇒ Provides the most efficient design for accommodating the heavy west to south movement during the p.m. peak hour.	⇒ A diamond interchange can accommodate the projected travel demand without the property impacts created by the larger loop ramp design. ⇒ High cost at approximately $40 million. ⇒ Major impacts to existing businesses on the north side of Highway 26. ⇒ Costly mitigation to minimize wetland impacts. ⇒ Larger loop ramp footprint pushes the influence area o f the interchange further to the north.
7B	Single loop PARCLO B in the northwest quadrant	Dropped per PDT preliminary recommendation	⇒ Provides the most efficient design for accommodating the heavy west to south movement during the p.m. peak hour. ⇒ Does not physically displace or impact existing businesses in northeast quadrant. ⇒ Does not impact wetlands in northeast quadrant.	⇒ A diamond interchange can accommodate the projected travel demand without the property impacts created by the larger loop ramp design. ⇒ Advantages of the west to south loop ramp are offset by the creation of a west to north left-turn. ⇒ Even with fewer property impacts, the cost is still high at approximately $31 million. ⇒ Major impacts to adjacent businesses on west side of Glencoe Road. ⇒ Costly mitigation to minimize wetland impacts in northwest quadrant. ⇒ Loop ramp pushes the influence area o f the interchange further to the north.
7C	Standard diamond	Dropped per PDT preliminary recommendation	⇒ Diamond ramps would have fewer impacts to properties north of Highway 26.	⇒ Wide ramp terminal spacing creates major impacts to adjacent business in the southwest quadrant of the interchange. ⇒ High cost at approximately $33 million. ⇒ Costly mitigation to minimize wetland impacts. ⇒ Wider ramp terminal spacing pushes the influence area o f the interchange further to the north when compared to other diamond forms.
8	Two quadrant PARCLO B ramp (Similar to 7A except eastbound off-ramp is a loop)	Dropped per PDT preliminary recommendation	⇒ Provides the most efficient design for accommodating the heavy west to south movement during the p.m. peak hour. ⇒ Does not physically displace or impact existing businesses in the southwest quadrant.	⇒ A diamond interchange can accommodate the projected travel demand without the property impacts created by the larger loop ramp elements. ⇒ Major impacts to adjacent businesses on both sides of Glencoe. ⇒ High cost at approximately $43 million. ⇒ Costly mitigation to minimize wetland impacts. ⇒ Loop ramp pushes the influence area o f the interchange further to the north.
11C	Compressed diamond	Carry forward, PDT preliminary recommendation	⇒ The narrower ramp terminal spacing minimizes displacements of businesses or residences. ⇒ Access "clear zone" is less than other diamonds that involve loop ramp designs. ⇒ Lower cost of approximately $24 million.	⇒ The narrow ramp terminal spacing could potentially require a 6-lane Glencoe Road overpass to accommodate vehicle queuing resulting in traffic impacts along Glencoe Road near the interchange.
12	Single Point	Carry forward, PDT preliminary recommendation	⇒ Has a smaller access "clear zone". ⇒ The narrower ramp terminal spacing minimizes the displacement of businesses or residences. ⇒ Has a relatively small wetland impact. ⇒ Only one traffic signal for the entire interchange.	⇒ Cost is higher at $35 million. ⇒ Glencoe vertical curve would be pushed out to provide flat area for single point intersection.
14A	Tight diamond with Glencoe Road continuing over US 26.	Carry forward, PDT preliminary recommendation	⇒ Lowest cost of approximately $22 million. ⇒ Access "clear zone" is the best of all concepts. ⇒ Does not displace businesses or residences. ⇒ Has a relatively small wetland impact.	⇒ Queuing impacts would likely be greater on Glencoe Road outside of the interchange.

Appendix A

Traffic Operations, Preliminary Construction Cost, and Preliminary Right-of-Way Acquisition Costs

Appendix A

Future year 2030 traffic demand at the Glencoe interchange was identified through a detailed travel demand forecasting effort. Technical Memorandum #2 outlines the future traffic volume assumptions and methodology used to generate the future year 2030 interchange volumes. As outlined in Technical Memorandum #3a, the 33 original interchange concepts went through a qualitative screening process designed to determine which of the concepts merited a more detailed level of evaluation. Based on this process, the project team and Project Development Team (PDT) committee determined that Concepts #1, 3, 7a, 7b, 7c, 8, 9, 11c, 12, 13, 14a, and 14b should move forward in the evaluation process.

An important element of this evaluation is the traffic operations analysis of the interchange forms, particularly at the ramp terminal intersections. Based on this determination, the year 2030 turning movement volumes developed in Technical Memorandum #2 were applied to the individual interchange forms. The year 2030 weekday a.m. and p.m. peak hour turning movement volumes according to each interchange form are shown in Figures 3b-1 and 3b-2, respectively.

INTERCHANGE RAMP TERMINAL OPERATIONS

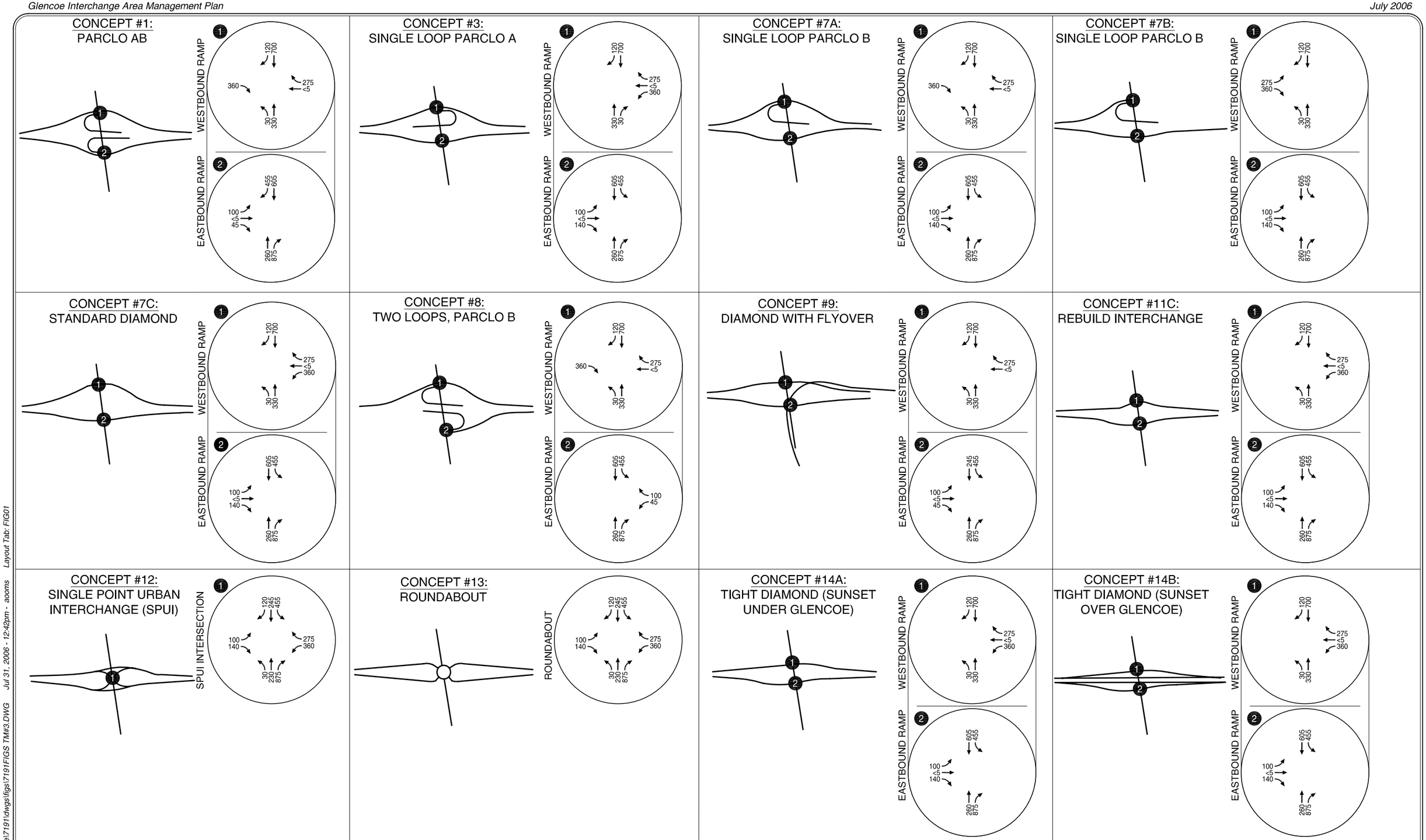
Design Mobility Standard

The Highway Design Manual (HDM) provides guidelines for the applicable mobility criterion that would be applied at the US 26/Glencoe Road ramp terminals. The HDM identifies a volume-to-capacity ratio of 0.65 for US 26 based on its classification as a Statewide Expressway outside of a Metropolitan Planning Organization (MPO), located within the North Plains UGB, and with a speed limit of 45 miles per hour or greater.

Analysis Process

To evaluate the future year operations at the various ramp terminal intersections, a capacity level analysis was performed. Using the projected travel demand in the 2030 horizon year, a preliminary analysis determined that both ramp terminals under all twelve interchange concepts would need to be signalized at a minimum. As a result, the operations analysis was performed using the Synchro modeling program in order to take advantage of the program's ability to analyze the ramp terminals as a coordinated traffic signal system.

Using Synchro, the analysis process investigated the capacity needs of the various interchange forms and the lane geometries at the interchange ramp terminals. As part of this process, the analyses investigated the need for through lanes and turn lane(s) for each of the available movements at the interchange termini in order to achieve maximum reasonable capacity for the movement and to minimize vehicle queuing. Figure 3b-3 illustrates the lane configurations that best meets the 0.65 mobility standard for each of the various interchange concepts.



YEAR 2030 FORCASTED TRAFFIC VOLUMES
WEEKDAY AM PEAK HOUR
NORTH PLAINS, OREGON

FIGURE
3b-1

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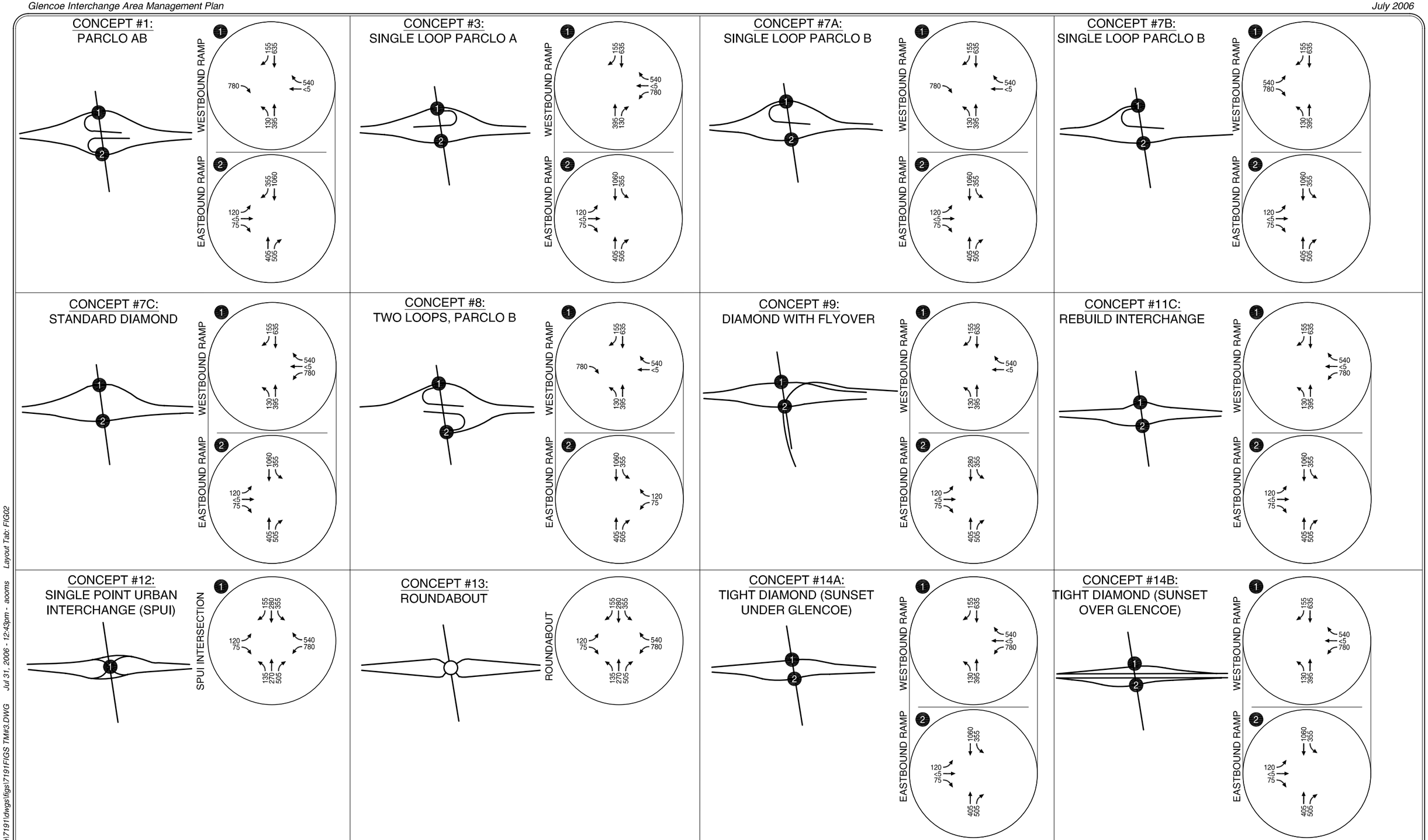

YEAR 2030 FORCASTED TRAFFIC VOLUMES
WEEKDAY PM PEAK HOUR
NORTH PLAINS, OREGON

FIGURE
3b-2

H:\profile\7191\dwgs\figs\7191FIGS TM#3.DWG Jul 31, 2006 - 12:43pm - aooms Layout Tab: FIG02

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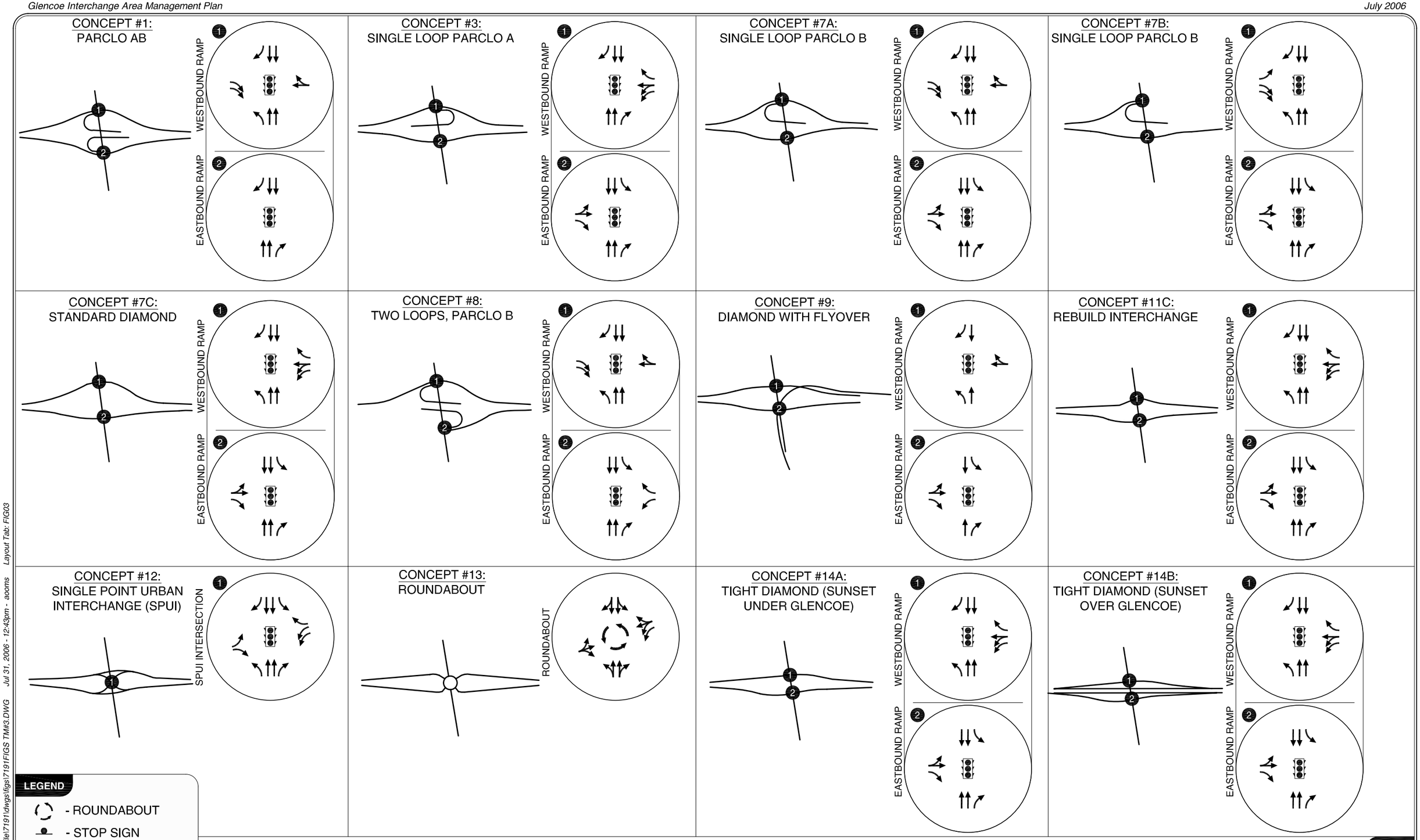

YEAR 2030 ASSUMED LANE CONFIGURATIONS
NORTH PLAINS, OREGON

FIGURE **3b-3**

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Operational Findings

Table 3a-2 summarizes the ramp terminal operations of each interchange concept based on the interchange geometries conceptually illustrated in Figure 3b-3.

Table 3b-2
Interchange Operations Summary

Concept	Ramp Terminal	Year 2030 Interchange Volume to Capacity Ratio	
		Weekday AM Peak Hour	Weekday PM Peak Hour
Concept #1 (PARCLO AB)	WB Terminal	0.40	0.54
	EB Terminal	0.68	0.46
Concept #3 (Single loop PARCLO A, NE quadrant)	WB Terminal	0.40	0.51
	EB Terminal	0.67	0.51
Concept #7A (Single loop PARCLO B, NW quad)	WB Terminal	0.40	0.54
	EB Terminal	0.67	0.51
Concept #7B (Single loop PARCLO B, NW quad)	WB Terminal	0.49	0.70
	EB Terminal	0.67	0.51
Concept #7C (Wide diamond)	WB Terminal	0.44	0.62
	EB Terminal	0.67	0.51
Concept #8 (PARCLO B, NW & SE quads)	WB Terminal	0.40	0.54
	EB Terminal	0.68	0.46
Concept #9 (Diamond form with flyover)	WB Terminal	0.57[1]	0.69[1]
	EB Terminal	0.68[1]	0.61[1]
Concept #11C (Compressed diamond)	WB Terminal	0.44	0.62
	EB Terminal	0.67	0.51
Concept #12 (SPUI)	Single-Point Terminal	0.55	0.65
Concept #13 (Roundabout)	Roundabout	(0.65 – NB Glencoe Road Approach)[2]	(0.76 – WB Highway 26 Off Ramp)[2]
Concept #14A (Tight diamond)	WB Terminal	0.44	0.62
	EB Terminal	0.67	0.51
Concept #14B (Tight diamond – US 26 over Glencoe)	WB Terminal	0.44	0.62
	EB Terminal	0.67	0.51

[1] The volume to capacity analysis at the ramp terminal intersections is reflective of a three-lane cross-section along Glencoe Road.
[2] The operational results for a roundabout are reported differently from a signalized intersection. The noted volume-to-capacity ratios are for the worst or critical approach of the roundabout.

The key findings from Figure 3b-3 and Table 3b-2 include the following:

- All of the diamond or loop ramp interchange concepts can be designed to provide a level of capacity that either meets or is in the immediate range[1] of the 0.65 design mobility standard during the weekday a.m. and p.m. peak hours.
- There is a relatively consistent level of infrastructure improvement associated with each of the diamond and loop interchange concepts.
    - All interchange ramp terminals for all of the concepts will need to be signalized with the exception of Concept #13 (roundabout).
    - With the exception of Concept #9 (westbound US 26 to southbound Glencoe Road flyover) and #13 (single roundabout interchange) all of the interchange forms will require a minimum five-lane cross-section on Glencoe Road. Given that Glencoe Road is a two-lane facility south of US 26 and will ultimately be a three-lane facility north of US 26, a five-lane overcrossing would need to be designed to properly transition to these roadway cross-sections.
    - The major movement during the weekday a.m. peak hour is the northbound Glencoe Road to eastbound US 26 movement at the eastbound ramp terminal. Under all interchange concepts, a separate free right-turn lane is necessary to accommodate this movement. With the exception of Concept #1, this would require a two-lane on-ramp that would transition to one lane prior to merging with US 26 eastbound.
    - The major movement during the weekday p.m. peak hour is the westbound US 26 to southbound Glencoe Road movement at the westbound ramp terminal. Under all interchange concepts (with the exception of Concept #9), this movement will require either two left-turn lanes under the diamond ramp configurations, two right-turn lanes under the loop ramp configurations, or two entering lanes under the single point and roundabout configurations.
- Concept #9's westbound to southbound flyover ramp could potentially allow the overpass bridge to be designed as a three-lane cross-section instead of the five-lance cross-section noted in the other concepts.
- The roundabout under Concept #13 would need to be designed as a two-lane roundabout. While the two-lane roundabout would have enough capacity to accommodate year 2030 traffic demand, the roundabout does not have as much excess capacity as the diamond and loop interchange configurations. As such, the operational life of the roundabout concept would be less than other designs.
- The compressed diamond configuration of Concept #11C will likely require a wider overpass to accommodate side-by-side left-turn lanes at the ramp terminals. All other concepts will likely support a narrower overpass that accommodates back-to-back left-turn lanes.

[1] As stated previously, the design mobility standard for the interchange is a volume to capacity ratio of 0.65. Recognizing that this is a planning level analysis for the year 2030 and the fact that the Synchro modeling program is a very detailed and sensitive operations package, it was determined that any operational results that fall within 0.05 of the 0.65 design mobility standard is an acceptable result for meeting the operations standard.

Traffic Operations Conclusions

Based on the results of this analysis, it can be concluded that the traffic operations of the interchange configurations is not enough of a differentiating factor in determining the viability of the interchange concepts by itself. As such, the evaluation process will need to investigate other factors that more closely reveal some of the key differentiating elements of the interchange forms. These factors include the following:

- Construction Cost
- Right-of-way and Property Impacts

PRELIMINARY CONSTRUCTION COST ESTIMATES

To evaluate the overall cost of constructing the interchange concepts, a preliminary cost estimate was prepared for each concept. Summary worksheets associated with these estimates are attached. The planning level estimates reflect general costs for the design and construction of all physical elements of the interchange including roadway, structure, traffic signals, illumination, drainage, etc. Table 3b-3 illustrates the preliminary construction cost estimates of each concept.

Table 3b-3
Preliminary Construction Cost Estimates

Concept Number	Order of Magnitude Cost Estimate (in millions)[1]
Concept #1 (PARCLO AB)	$32
Concept #3 (Single loop PARCLO A, NE quadrant)	$30
Concept #7A (Single loop PARCLO B, NW quad)	$30
Concept #7B (Single loop PARCLO B, NW quad)	$24
Concept #7C (Wide diamond)	$27
Concept #8 (PARCLO B, NW & SE quads)	$32
Concept #9 (Diamond form with flyover)	$34
Concept #11C (Compressed diamond)	$20
Concept #12 (SPUI)	$31
Concept #13 (Roundabout)	$19
Concept #14A (Tight diamond)	$18
Concept #14B (Tight diamond – US 26 over Glencoe)	$37
Concept #22 (Gordon ½ Interchange)	$33

[1]It should be noted that these cost estimates are for comparative purposes only and do not reflect actual construction ready estimates.

From a construction cost standpoint, the assessment of each concept revealed the following:

- Concept #14B has the highest estimated construction cost at $37 million. This estimate is primarily reflective of the need to reconstruct and elevate Highway 26 over Glencoe Road. Outside of this concept, the cost estimates of the other concepts ranged from approximately $18 million to $34 million.
- Concept #9 with the flyover ramp has the next highest estimated cost of $34 million.
- Concept #22 has a high cost estimate of approximately $33 million, not including any roadway improvements to Gordon Road.
- Concepts that involve loop ramps are generally more expensive to construct than diamond interchange forms with an average cost of approximately $30 million compared to approximately $19 million for diamonds (excluding Concepts #9, #12, #13, and #14B).
- The cost to construct a single-point interchange (Concept #12) is approximately $31 million. The high cost of this concept is primarily reflective of the need to construct a large overpass structure.
- The concepts with the lowest estimated construction costs are the compressed and tight diamond interchange forms (Concepts #11C and #14A).

RIGHT-OF-WAY ACQUISITION COST ESTIMATES

In addition to the preliminary construction cost estimates, the number of properties affected by the concept and the number of existing structures that would potentially be impacted by the design were evaluated. A summary of this information is presented in Table 3b-4.

Table 3b-4
Properties and Structures Impacted by the Concepts

Concept Number	Number of Properties (Tax Lots) Impacted[1]	Number of Existing Structures Impacted[2]
Concept #1 (PARCLO AB)	18	9
Concept #3 (Single loop PARCLO A, NE quadrant)	17	6
Concept #7A (Single loop PARCLO B, NW quad)	17	5
Concept #7B (Single loop PARCLO B, NW quad)	11	2
Concept #7C (Wide diamond)	14	5
Concept #8 (PARCLO B, NW & SE quads)	15	6
Concept #9 (Diamond form with flyover)	16	4
Concept #11C (Compressed diamond)	11	3
Concept #12 (SPUI)	8	3
Concept #13 (Roundabout)	8	3
Concept #14A (Tight diamond)	8	3
Concept #14B (Tight diamond – US 26 over Glencoe)	8	3
Concept #22 (Gordon ½ Interchange)	12	6

[1] An element of the preliminary design layout touches or bisects a tax lot.
[2] An existing structure would fall within the preliminary alignment of the interchange.

As shown in Table 3b-4, the number of properties and structures impacted are higher under the concepts that involve loop ramps. Concepts that involve diamond interchanges and the single point interchange have narrower footprints in comparison and thus have fewer impacts on adjacent properties. Concept #22, with a new interchange at Gordon Road, would have additional property and structure impacts above and beyond those at the Glencoe Road interchange.

Based on the number of properties and structures impacted, an attempt was made to preliminarily estimate the right-of-way acquisition costs associated with each concept. The planning level estimates reflect generalized costs to acquire land from other property owners, make improvements, pay for damages, demolish existing structures, cover legal expenses and other miscellaneous contingencies. Table 3b-5 illustrates the preliminary right-of-way acquisition costs for each concept along with a summary of the resulting total costs.

Table 3b-5
Preliminary Right-of-Way Acquisition Cost Estimates and Total Cost Summary

Concept Number	Estimated Cost to Acquire Interchange Form Right-of-Way[1 2] (in millions)	Preliminary Construction Cost Estimates from Table 3b-3	Total Cost
Concept #1 (PARCLO AB)	$12	$32	$44
Concept #3 (Single loop PARCLO A, NE quadrant)	$10	$30	$40
Concept #7A (Single loop PARCLO B, NW quad)	$10	$30	$40
Concept #7B (Single loop PARCLO B, NW quad)	$7	$24	$31
Concept #7C (Wide diamond)	$6	$27	$33
Concept #8 (PARCLO B, NW & SE quads)	$11	$32	$43
Concept #9 (Diamond form with flyover)	$6	$34	$40
Concept #11C (Compressed diamond)	$4	$20	$24
Concept #12 (SPUI)	$4	$31	$35
Concept #13 (Roundabout)	$4	$19	$23
Concept #14A (Tight diamond)	$4	$18	$22
Concept #14B (Tight diamond – US 26 over Glencoe)	$4	$37	$41
Concept #22 (Gordon ½ Interchange)	$5	$33	$38

[1] Cost estimate includes land, improvements, damages, demolition of existing structures, legal, and other contingencies.
[2] It should be noted that these cost estimates are for comparative purposes only and do not reflect actual formalized right-of-way acquisition estimates.

From a right-of-way acquisition standpoint, the assessment of each concept revealed the following:

- Concept #1, #3, #7A, and #8 had the highest right-of-way acquisition costs at an average of approximately $11 million. The high costs are reflective of the larger interchange footprints associated with the loop ramp configurations.
- Concepts #11C, #12, #13, and #14A/B have the lowest right-of-way acquisition costs at an average of $4 million. The lower costs are reflective of the narrower footprint of the diamond interchange forms and the need to acquire/impact fewer existing land parcels.

Combining the right-of-way acquisition and construction costs, Concepts #11C, #13, and #14A have the overall lowest costs.

Appendix G5

Technical Memorandum #4a – Interchange Concept Recommendation

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TECHNICAL MEMORANDUM

Glencoe Interchange Area Management Plan
Technical Memorandum #4
Interchange Concept Recommendation

Date: September 29, 2006 **Project** #: 7191

To: SWG Members

From: Matt Hughart, AICP, Andrew Ooms, Marc Butorac, P.E., P.T.O.E.

cc: Glencoe Project Team

In March 2006, the consultant team, Oregon Department of Transportation (ODOT) staff, the Project Development Team (PDT), and the Stakeholder Working Group (SWG) began the task of evaluating the land use and transportation characteristics along the Glencoe Road corridor located within the vicinity of the Highway 26/Glencoe Road interchange. The purpose of this work effort was the development and evaluation of design concepts for a new Highway 26/Glencoe Road interchange. To support and document this process, the following technical memorandums have been produced to date:

- *Technical Memorandum #1 – Existing Transportation Inventory*: This memorandum documented the current operational and geometric characteristics of the transportation facilities within the study area.
- *Technical Memorandum #2 – Year 2030 Forecast Future Conditions*: This memorandum identified how the study area roadways and intersections will operate upon an assumption of future study area buildout through the year 2030 and no improvements to the transportation network beyond those currently identified in the North Plains or Washington County Transportation System Plans.
- *Technical Memorandum #3a – IAMP Opportunities and Constraints Analysis, Qualitative Analysis*: This memorandum documented the development and preliminary evaluation of the interchange design concepts that were developed as part of the committee and public workshop exercises. The purpose of this memorandum was to provide the PDT and SWG members with a qualitative assessment and feasibility

analysis of the initial concepts and to assist in the screening process that would ultimately reduce the number of concepts down for further detailed analysis.

- *Technical Memorandum #3b – IAMP Opportunities and Constraints Analysis – Detailed Evaluation of the Screened Concepts*: This memorandum documents a more detailed quantitative evaluation of the qualitatively screened concepts. The purpose of the memorandum was to provide the PDT and SWG members with a more detailed assessment of the traffic operations, cost, and right-of-way impacts associated with each of the remaining concepts.

Based on the work documented in the above referenced Technical Memorandums, the next task is to develop a recommendation for an interchange design concept that would move forward into the Environmental Assessment (EA) process.

CONCEPT DEVELOPMENT SELECTION AND PROCESS OVERVIEW

For summary purposes, this section provides a brief overview of the interchange concept development and selection process to date.

Initial Interchange Design Concepts

As presented in Technical Memorandum #3a, a series of interchange concepts were developed through two separate workshop exercises involving members of the PDT and SWG committees as well as attendees at a public open house. Following the completion of the workshops, the project team took all of the individual design ideas and developed a total of 33 unique interchange forms/concepts. Given the large number of ideas generated through the workshop process, a preliminary assessment was performed to screen those concepts that did not meet the basic intent of the official project Purpose and Need Statement. Through this assessment, a total of twenty-four interchange forms/concepts were then carried forward for the initial qualitative evaluation using the adopted evaluation criteria.

Qualitative Evaluation

As presented in the second half of Technical Memorandum #3a, the twenty-four interchange forms/concepts underwent a high level screening evaluation process using the formally adopted evaluation criteria under the project goals of Transportation and Access, Land Use, Community and Economic Development, Aesthetics, and Natural and Cultural Resources. Through this screening process, the PDT and SWG determined that thirteen interchange concepts should be carried forward for a more detailed quantitative traffic operations, cost, and right-of-way acquisition evaluation.

Quantitative Traffic Operations, Cost, and Right-of-Way Evaluation

Technical Memorandum #3b documents the more detailed evaluation of the thirteen interchange concepts focusing the evaluation on traffic operations (does the interchange concept accommodate the projected traffic demand in the year 2030 according to the design standards) and the overall cost (preliminary construction and right-of-way acquisition costs). Based on the information documented in Technical Memorandum #3b, the project team, PDT, and SWG determined that Concepts #11C, #12, and #14A would move forward in the evaluation process.

In general, these three concepts were shown to generally meet most of the evaluation criteria and provide different approaches to solving the objectives established in the Purpose and Need Statement. A detailed description of these three concepts is provided below.

Concept #11C – Compressed Diamond

Concept #11C illustrates a more typical diamond interchange configuration with the eastbound and westbound interchange ramp terminals spaced approximately 650 feet apart. This spacing is approximately equivalent to the interchange terminal spacing of the existing interchange. Preliminary analysis of the interchange form indicated the need for signalized ramp terminals and a six-lane bridge section (two southbound travel lanes, side-by-side north and south left-turn lanes, and two northbound travel lanes). Subsequent refinements to the operations analysis indicated that the interchange form would perform adequately with only one northbound travel lane across the bridge structure. To support the anticipation of continued heavy travel demand to/from Highway 26, the westbound off-ramp would require double left-turn lanes to Glencoe Road southbound while the eastbound on-ramp would require a separate northbound right-turn lane on Glencoe Road.

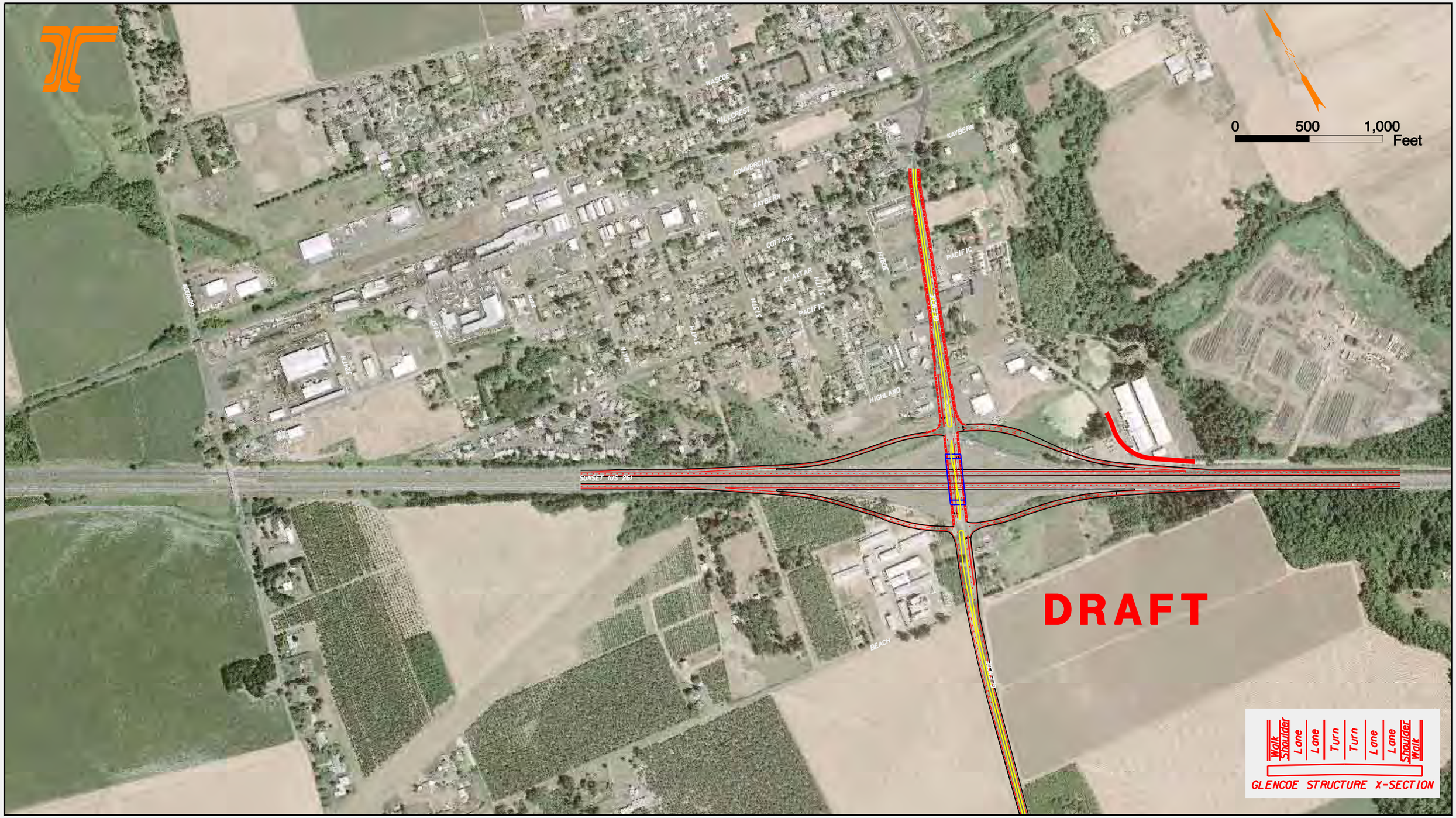
Concept #12 – Single Point

Concept #12 illustrates a special interchange form known as a single point. Under this interchange configuration, left-turn lanes from the Highway 26 ramps and the travel lanes on Glencoe Road are aligned such that they oppose each other, allowing all movements to be controlled by a single signalized intersection located in the middle of the overpass structure. Like the Compressed Diamond interchange, preliminary analysis indicated the need for two southbound travel lanes, left-turn lanes, and two northbound travel lanes. Due to the unique form and structural requirements associated with single point interchanges, future expansion is more difficult than traditional interchanges. As such, preliminary design would likely require all movements to be fully constructed resulting in dual north and south through travel lanes and dual left-turn lanes on both off ramps.

Concept #14A – Tight Diamond

Concept #14A illustrates a tight diamond interchange configuration similar to Concept #11A. However, the eastbound and westbound interchange ramp terminals would be spaced approximately 400 feet apart in order to reduce the overall footprint of the interchange. To accommodate the close spacing of the ramp terminals, special signal phasing is implemented such that vehicle storage along Glencoe Road occurs outside the ramp terminals, not between them. Preliminary analysis of the interchange form indicated the need for signalized ramp terminals and a six-lane bridge section (two southbound travel lanes, side-by-side north and south left-turn lanes, and two northbound travel lanes). Subsequent refinements to the operations analysis indicated that the interchange form would perform adequately with only one northbound travel lane across the bridge structure. To support the anticipation of continued heavy travel demand to/from Highway 26, the westbound off-ramp would require double left-turn lanes to Glencoe Road southbound while the eastbound on-ramp would require a separate northbound right-turn lane on Glencoe Road.

Double line drawings illustrating the preliminary alignment and lane geometries of the three concepts are provided on the next pages.



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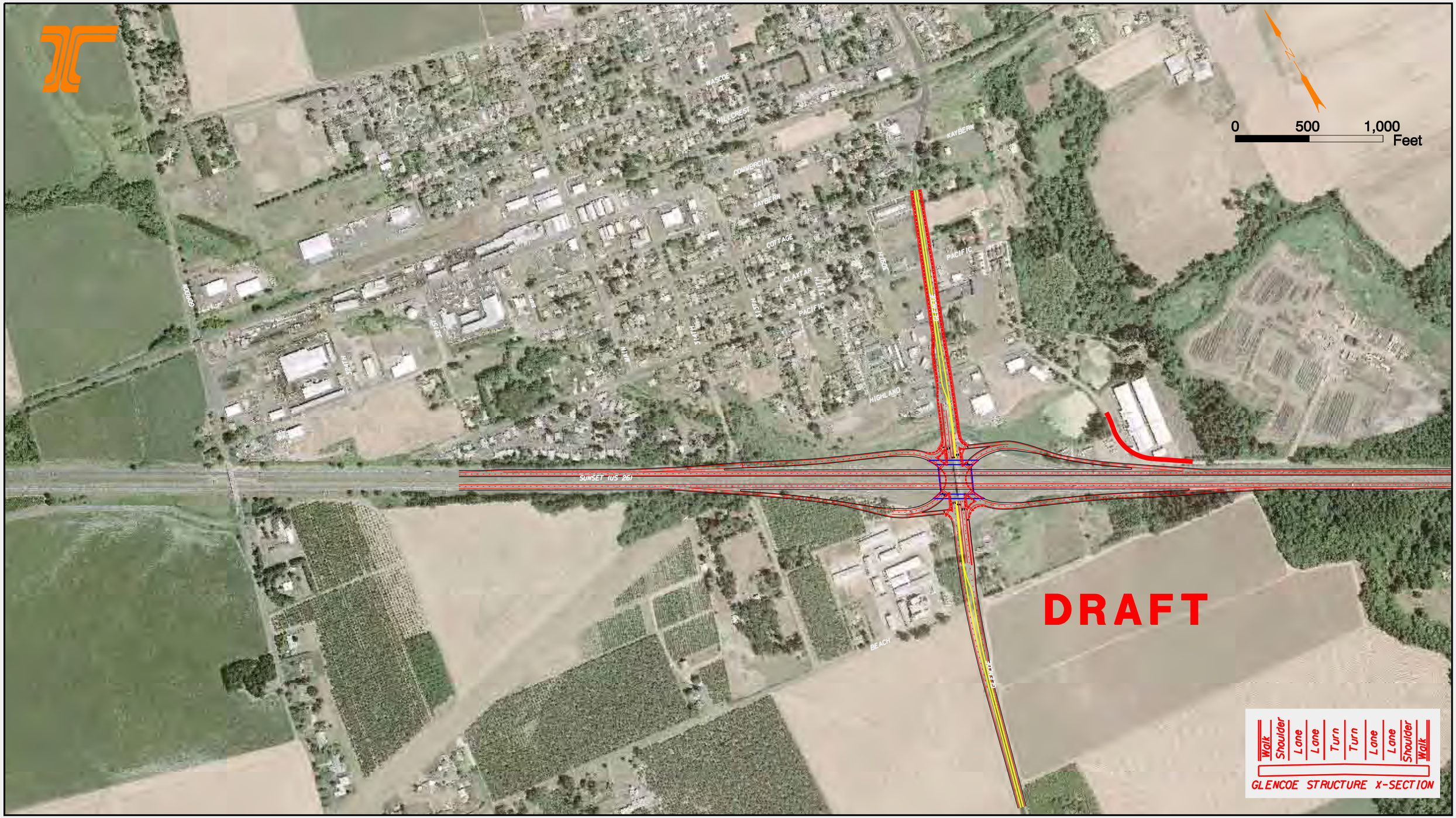
Glencoe IAMP Interchange Double Line Drawings

DOUBLE LINE #11C

Rebuild Ramps and Glencoe



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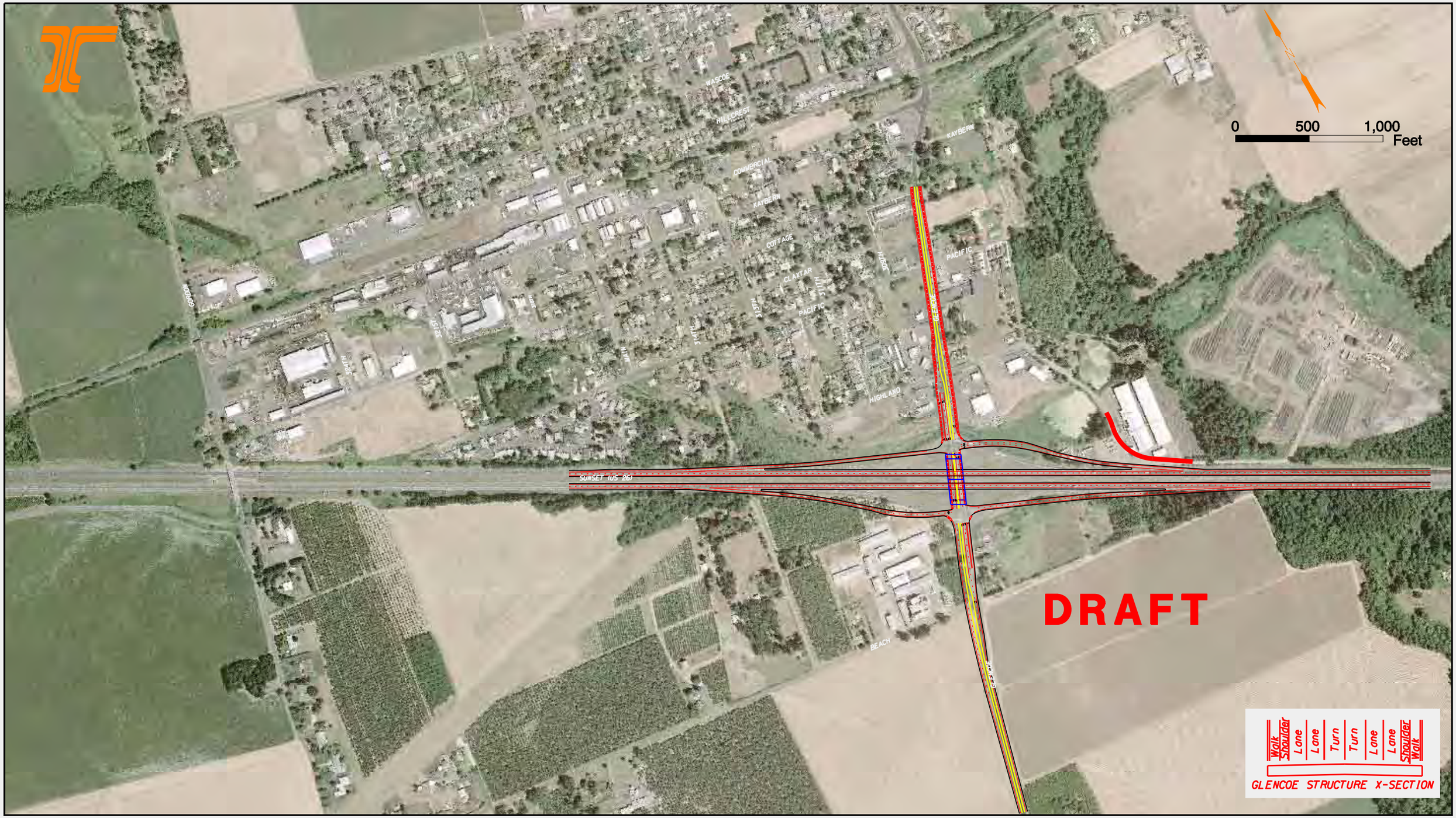
DESIGN UNIT

Glencoe IAMP Interchange Double Line Drawings

DOUBLE LINE #12

Single Point Urban Interchange (SPUI)



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DESIGN UNIT

Glencoe IAMP Interchange Double Line Drawings

DOUBLE LINE #14A

Tight Diamond (Sunset Highway Under Glencoe Road)

PROJECT TEAM INTERCHANGE FORM RECOMMENDATION

Based on the detail provided by the double line drawings, the project team began the task of narrowing down the three concepts to a preliminary interchange concept recommendation. To perform this task, the three concepts were compared against one another.

Single Point Interchange vs. Diamond Interchange Forms

Recognizing that the 11C and 14A diamond configurations are relatively similar interchange forms with different ramp terminal spacing, the evaluation focused on the overall advantages and disadvantages compared to the single point interchange. As documented in Technical Memorandum #3b, it was determined that the single point interchange had a number of potential advantages when compared to the other 13 interchange forms under initial investigation. However, based on the detail afforded by the double line drawings and continued refinements to the overall layout, it has subsequently been determined that the original advantages of the single point interchange are not significant when compared to the 11C and 14A diamond interchange forms that are also under more detailed consideration. Table 4a-1 provides a summary of these findings.

Table 4a-1
Single Point vs. Diamond Interchange Refinement Summary

Original Single Point Advantage Statement	Findings from the Detailed Double Line Design and Additional Analysis
The unique design and alignment of the interchange ramps results in a relatively small impact on the adjacent wetlands to the north.	⇒ The westbound on and off ramps would still impact the wetlands to the north and the degree of impact is relatively similar to the diamond interchange forms.
With a focused single signalized intersection at the interchange, there was a potential to limit the number of driveways and intersections that would be impacted by the ¼ mile access control regulation along Glencoe Road.	⇒ The design of the single point would require right-turn slip lanes on both the eastbound and westbound on/off ramps. Based on preliminary layout of the interchange, the location of the right-turn slip lanes as they intersect Glencoe Road would be similar to the interchange ramp terminal locations of the compressed diamond. As such, there would be no significant reduction in the number of driveways and intersections that would be impacted by the ¼ mile access control regulation along Glencoe Road.
The narrower ramp terminal spacing minimizes the displacement of businesses or residences.	⇒ In comparison to the two diamond interchange forms, the single point interchange would result in no fewer impacts to businesses and residences located within the study area.
The single point operated with the greatest amount of intersection capacity.	⇒ Although preliminary analysis indicated that the single point interchange would provide the greatest amount of overall capacity, both of the diamond interchange forms would meet the design mobility standard in the 2030 horizon year and provide sufficient levels of capacity to meet the long-term needs of the interchange.

As summarized in Table 4a-1, it has been determined that there are no significant differentiating factors when it comes to assessing the overall Transportation and Access, Land Use, Social/Economic, and Natural and Cultural Resource benefits of a single point interchange over

a diamond interchange. However, from a Project Development perspective, there are several significant disadvantages.

As outlined in Technical Memorandum #3b and illustrated in Table 4a-2, preliminary construction and right-of-way acquisition costs of the single point interchange were found to be significantly higher than the two diamond configurations. On average, the costs associated with a single point interchange were found to be approximately fifty percent higher than the diamond interchanges.

Table 4a-2
Cost Estimate Summary

Concept Number	Estimated Cost to Acquire Interchange Form Right-of-Way[1] [2] (in millions)	Preliminary Construction Cost Estimates	Total Cost
Concept #11C (Compressed diamond)	$4	$20	$24
Concept #12 (Single Point)	$4	$31	$35
Concept #14A (Tight diamond)	$4	$18	$22

[1] Cost estimate includes land, improvements, damages, demolition of existing structures, legal, and other contingencies.
[2] It should be noted that these cost estimates are for comparative purposes only and do not reflect actual formalized right-of-way acquisition estimates.

Given that the single point interchange has no significant differentiating advantages and its overall cost is estimated to be approximately fifty percent higher than the diamond interchange concepts, the project team is recommending that the single point interchange be dropped from further consideration.

Diamond Interchange Forms

As previously stated, the 11C and 14A concepts are relatively similar diamond interchange forms. From a Transportation and Access, Land Use, Social/Economic, Aesthetics, and Project Development perspective, the two interchange forms have similar advantages and disadvantages. Given that the main difference between the two concepts is the ramp terminal spacing, final determination will need to be based on more detailed geometric design and the pending Environmental Assessment. It is likely that further refinement of the interchange forms will result in a diamond interchange form with ramp terminal spacing ranging from anywhere between 400 and 650 feet.

Appendix G6

Technical Memorandum #4b – Local Circulation/Access Concept Recommendation

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TECHNICAL MEMORANDUM

Glencoe Interchange Area Management Plan
Technical Memorandum #4b
Local Circulation / Access Concept Recommendation

Date: November 1, 2006 **Project** #: 7191

To: PDT / SWG Members

From: Matt Hughart, AICP, Andrew Ooms, Marc Butorac, P.E., P.T.O.E.

cc: Glencoe Project Team

This technical memorandum is the sixth in a series of memoranda prepared for the Glencoe Road Interchange Area Management Plan (IAMP). The analysis in this memorandum focuses on the local circulation/access opportunities and constraints within the vicinity of the Highway 26/Glencoe Road Interchange.

The purpose of this memorandum is to provide the Project Development Team (PDT) and Stakeholder Working Group (SWG) with a summary and assessment of the local circulation/access elements that have been developed through the previous SWG and Local Access workshops. The memorandum concludes with the project team's recommendations about the local access and circulation concepts (groups of elements) that are appropriate to include in the Environmental Assessment (EA) for additional analysis.

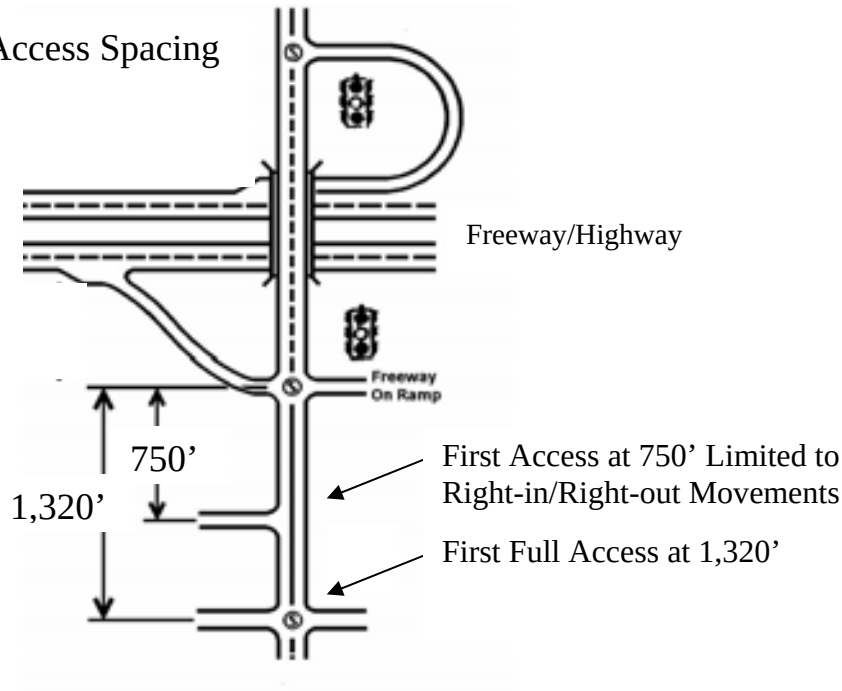
ACCESS SPACING STANDARDS AND CONSIDERATIONS

An important element of an IAMP is to ensure that the new interchange can continue to function in a safe and efficient manner through the long-term life of the capitol investment. When looking specifically at the interchange, its main function is to move large volumes of traffic between the freeway/highway and the cross street. When driveways and public streets are located in close proximity to an interchange, the overall efficiency of the transportation network can begin to deteriorate. Studies have found that driveways and public streets located in close proximity to interchange ramp terminals can be difficult to access, can cause congestion by creating additional turning movement conflicts, and typically have extensive crash histories.

To help ensure the safe and efficient function of all new and existing interchange projects, the State of Oregon has adopted a series of access spacing policies and design standards. These access spacing policies and design standards are designed to ensure that new interchange projects and existing interchange modifications reduce the potential for turning movement conflicts and congestion that can be associated with public streets and private driveways located too close to the interchange ramp terminals.

Based on many years of research at existing interchanges, it was determined that there is an optimal distance between the interchange ramps and the location of the first public street/private driveway on the interchange cross street. The 1999 Oregon Highway Plan (OHP) and Oregon Administrative Rule (OAR) 734, Division 51, specify the desired minimum spacing between the interchange ramps and the next closest full access public street or private driveway to be 1,320 feet. Within this ¼ mile distance, the first public street or driveway shall be no closer than 750 feet from the interchange ramps and shall be limited to right-in/right-out movements. The following graphic illustrates the State of Oregon's desired interchange access spacing standard.

Desired Interchange Access Spacing



Implementing these policies and standards requires analysis of all intersections and accesses located within this 1,320-foot distance to determine if roadway realignments or access consolidations can achieve, or move in the direction of achieving, the desired spacing along Glencoe Road. Figure 4B-1 shows the area affected by the desired access spacing requirement for Glencoe Road, both north and south of the interchange.

With an understanding of these policies and standards, the remainder of this memorandum documents the development of the local circulation/access concept development and evaluation process.

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Glencoe IAMP

Interchange Access Spacing Standard Impacts to Glencoe Road

Figure 4b-1

LOCAL CIRCULATION/ACCESS CONCEPT DEVELOPMENT PROCESS

The local circulation/access concept development process began with a series of workshops with the public at an open house and with individual property owners located along the Glencoe Road study corridor. The objectives of these workshops were to:

- Identify and discuss the impacts that a new Highway 26/Glencoe Road interchange would have on property access and the local circulation system.
- Identify possible elements that make up the short-term and longer-term local circulation/access system within the IAMP study area.

Participants in this process identified individual and groups of individual local circulation/access elements for assessment by the project team. The project team evaluated the locally identified elements based on their respective merits from a land use/transportation planning and policy perspective. The project team then developed concepts from groups of elements that address the short-term actions needed with the construction of the Highway 26/Glencoe Road interchange to keep the existing transportation system connected and identify additional longer-term transportation facilities that may be appropriate to build as the study area develops over time.

For the purposes of the IAMP, the project team defined two categories of local circulation/access options.

- In general, the short-term improvements are those necessary to address the immediate right-of-way and policy related impacts of the interchange development. The short-term improvements represent the mitigation that would be implemented with construction of the interchange.
- Long-term improvements are tied to enhancing the overall circulation and operation of the local transportation system and would be implemented some time following construction of the interchange. .

Based on these definitions and the input received from the local participants, the project team developed and assessed local circulation/access options utilizing the decision framework outlined in Figure 4b-2.

Figure 4b-2 Local Circulation/Access Element Decision Framework

The decision framework provides a threshold screening process to assess the various local circulation/access elements developed for the project. The framework utilized four primary threshold screens in assessing the options:

- Need and timing of the improvement: This screen identifies whether the option is a short-term or longer-term improvement.
- Constructability: This screen evaluates the practicality and feasibility of constructing the improvement option based on topographical, environmental, and general design parameters.
- Applicable land use policies: This screen identifies whether the improvement would be located inside or outside the City of North Plains UGB and thus the applicable policies in determining further assessment.
- Impact and operational assessment: This screen identifies any obvious inherent disadvantages of the improvement option.

Based on the local circulation/access option assessment, the project team recommended local circulation/access concepts for further consideration. In addition, the project team identified potential future circulation projects for the local jurisdictions to consider in enhancing their overall local transportation system in the long run.

The following sections of this memorandum describe each element of the local circulation/access concept development process.

Workshops

The project team conducted several local access/circulation workshops at the outset of the project task. The first set of workshops was held with interested citizens as part of a public open house on August 17, 2006 and at a formal Stakeholder Working Group (SWG) meeting on August 23, 2006. Additional supplemental workshops were held with small groups of local property owners during the first two weeks of September. The specific focus of each workshop is described in detail below.

The first set of workshops included discussions about the following:

- Potential impacts associated with the interchange form;
- ODOT access spacing standards and other policy considerations;
- Introduction to access management and the benefits of different access management techniques; and
- Potential local circulation and access improvement elements to address short-term impacts within the study area.

As part of the workshop, participants and project team members sketched suggestions for various solutions to local circulation and access disruptions that would potentially result from the new interchange.

The second set of workshops provided an opportunity for local property owners who are anticipated to be most affected by the interchange project a forum to:

- Review all of the elements suggested at the previous workshops and discuss the advantages and disadvantages of each; and
- Suggest additional elements or refinements to the elements and indicate preferences for potential solutions.

These elements and a summary of topic areas discussed at the workshops are discussed in detail later in this memorandum

LOCAL CIRCULATION/ACCESS ELEMENTS

For the purpose of dividing up the study area in manageable sections, a North Study Area (north of Highway 26) and a south study area (south of Highway 26) was defined.

North Study Area

The north study area includes those properties and that portion of Glencoe Road located north of Highway 26. Figure 4b-3 illustrates the resulting local circulation and access elements along the Glencoe Road corridor. It should be noted that these elements are a culmination of all of the local circulation/access ideas that have been generated at the workshops, and as a whole, they do not represent a specific concept. A brief description of each element is outlined below.

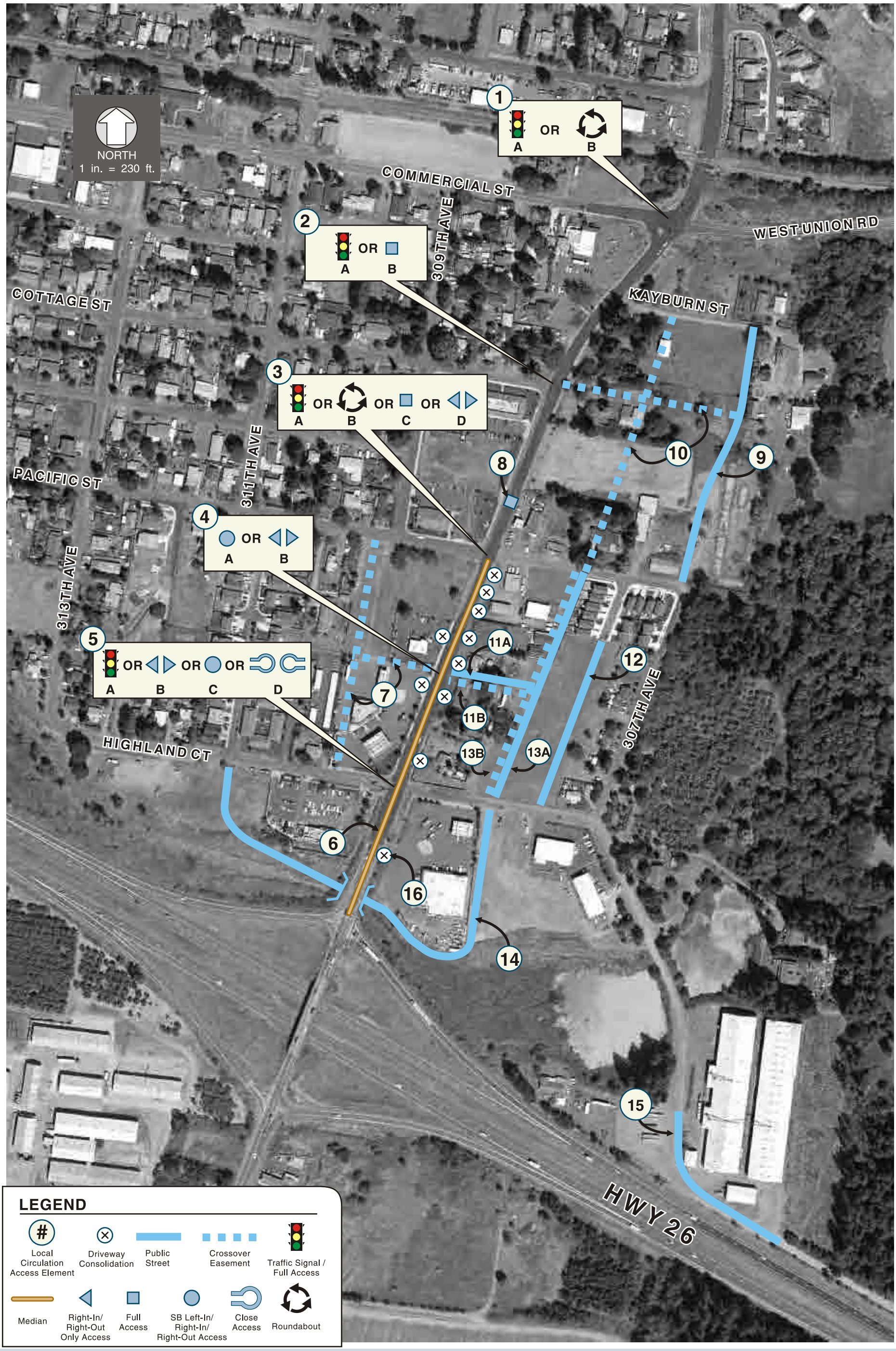
Element #1: This element proposes a traffic signal (#1a) or a roundabout (#1b) at the Glencoe Road / Commercial Street / West Union Road intersection.

Element #2: This element proposes either a traffic signal (#2a) or a full access stop-controlled (#2b) intersection at the Glencoe Road/Cottage Street intersection.

Element #3: This element proposes a traffic signal (#3a) at the Glencoe Road/Pacific Street intersection. As an alternative, Element #3b proposes a roundabout at this intersection. Under a scenario that provides for a median along Glencoe Road, a roundabout would provide a circulating u-turn opportunity for northbound traffic to turn around and access business along the west side of Glencoe Road. Element #3c proposes a full access stop-controlled intersection. Lastly, Element #3d proposes a restricted access right-in/right-out intersection.

Element #4: This element proposes a limited access left-in/right-in/right-out (#4a) or right-in/right-out (#4b) intersection at a location approximately half-way between Pacific Street and Highland Court.

Element #5: This element proposes either a traffic signal (#5a), a left-in/right-in/right-out (#5b), or a right-in/right-out (#5c) traffic control treatment at the Glencoe Road/Highland Court intersection. Under the left-in/right-in/right-out element, the left-in movement would only serve the southbound left-turn from Glencoe Road to Highland Court. As a final alternative, all access (#5d) at the Glencoe Road/Highland Court intersection would be eliminated.



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Glencoe IAMP

North Side Local Circulation/Access Elements

Figure 4b-3

Element #6: This element proposes to develop a median along Glencoe Road from the westbound interchange ramp terminal to Pacific Street. Limited access median breaks would be provided under Element #4a and #5c.

Element #7: This element proposes to develop a series of crossover easements and internal driveway connections between the existing Chevron gas station, the Subway property, and the undeveloped property to the west and north of Subway.

Element #8: This element proposes a full access intersection at a location approximately 1,320 feet north of the westbound ramp terminal. This access was proposed such that the full Division 51 interchange access spacing standards could be achieved assuming a median and other forms of access restrictions to the south along Glencoe Road.

Element #9: This element proposes a continuation of the 307th Avenue corridor between Pacific Street and Kayburn Street. The continuation of this roadway would provide a continuous parallel route to Glencoe Road between Highland Court and Kayburn Street.

Element #10: This element proposes to develop a series of crossover easements for those parcels located between Pacific Street and Kayburn Street. Upon redevelopment of these parcels, internal driveway connections would be established to Kayburn Street, Pacific Street, and a northerly extension of 307th Avenue (see Element #9).

Element #11: This element proposes to develop a new public street (#11a) off of Glencoe Road approximately halfway between Highland Court and Pacific Street. This roadway would be developed in conjunction with access Element #4 off of Glencoe Road and extend back Element #13. As an alternative to a public roadway, a crossover easement (#11b) could be established upon redevelopment of adjacent parcels that would link these properties to an access point at Glencoe Road.

Element #12: This element proposes a continuation of the existing 308th Avenue local residential street to Highland Court.

Element #13: This element proposes to develop a new parallel backage road (#13a) that would serve those commercially zoned properties located between Highland Court and Pacific Street. As an alternative to a public roadway, crossover easements (#13b) could be established upon redevelopment of all properties that would provide a continuous internal driveway connection from Highland Court to Pacific Street.

Element #14: This element proposes a new roadway that would circulate under Glencoe Road linking the east and west sides of Highland Court. This element would be developed in conjunction with Element #5b, #5c, or #6.

Element #15: This element proposes some slight modifications to the existing circulating roadway that would be impacted by the new westbound Highway 26 off-ramp.

Element #16: This element involves the closure of various private driveways along Glencoe Road that are in conflict with the interchange access spacing standards. Some of these driveway

closures are short-term closures (i.e. closed with construction of the interchange) and some would be associated with future redevelopment.

South Study Area

The south study area includes those properties and roadways located south of Highway 26. Figure 4b-4 illustrates the circulation and access elements along the Glencoe Road corridor.

Element #16: This element involves the closure of various private driveways along the southern portion of the Glencoe Road corridor that are in conflict with the interchange access spacing standards.

Element #17: This element proposes a left-in/right-in/right-out (#17a), a right-in/right-out (#17b), and a right-in only (#17c) access at the Glencoe Road/Beach Road intersection. As a final alternative, all access at the Glencoe Road/Beach Road intersection could be eliminated (#17d).

Element #18: This element proposes to relocate the current Glencoe Road/Beach Road intersection to a point located approximately 1,320[1] feet to the south of the new eastbound interchange ramp (#18a). To minimize impacts to the farm land harvesting pattern, a new alignment of Beach Road could be developed that follows the tax lot boundaries and connects to Glencoe Road approximately 1,900 feet to the south of the new eastbound interchange ramp (#18b).

Element #19: These elements would be affiliated with Element #18 and would provide a traffic signal (#19a), a roundabout intersection (#19b), or a full access stop-controlled intersection (#19c) with Glencoe Road.

Element #20: This element proposes a reverse "jughandle" design along Glencoe Road. Affiliated with Element #18a, #18b, or #18c, this element would provide a unique u-turn connection where southbound Glencoe Road traffic would make a left-turn (across on-coming traffic) onto the jughandle. The jughandle roadway would then turn back and merge with Glencoe Road.

Element #21: This element proposes a new roadway that would serve those properties along the east side of Glencoe Road. Connection to Glencoe Road would occur approximately 1,320 feet south of the eastbound ramp terminal.

With the list of local access/circulation elements, the project team assessed the various advantages and disadvantages of the individual elements. This assessment is summarized in Table 4b-1.

[1] This distance may vary as further refinements are made to the preferred interchange form and the associated widening of the Glencoe Road approaches. Current estimates indicate it could be located as much as 1,100 feet to the south of the eastbound ramp terminal to avoid having the connection occur within a taper section along Glencoe Road.

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Glencoe IAMP

South Side Local Circulation/Access Elements

Figure 4b-4

Table 4b-1
Local Access and Circulation Element Evaluation Matrix

Element	Advantages	Disadvantages
1. Glencoe Road / West Union Intersection		
1A. Traffic Signal	- Consistent with North Plains TSP. - Meets capacity needs through 2030.	-
1B. Roundabout	- Meets capacity needs through 2030.	- Roundabout cannot function within close proximity of railroad crossing. - Larger intersection footprint and right-of-way impacts.
2.Glencoe/Cottage Intersection		
2A.Traffic Signal	- Meets capacity needs through 2030.	-
2B. Full Access	- Consistent with North Plains TSP.	- Does not meet long-term capacity needs assuming future development on the east side of Glencoe Road.
3. Glencoe/Pacific Intersection		
3A. Traffic Signal	- Consistent with North Plains TSP. - Smaller intersection footprint results in fewer property impacts and right-of-way acquisition. - Meets capacity needs through 2030.	- Does not efficiently accommodate a high u-turn demand in conjunction with a median along Glencoe Road. Large trucks can not efficiently make u-turns at traffic signals. - Although really close, Pacific Street is located within the 1,320 foot spacing standard. A full access intersection would require a deviation from this standard.
3B. Roundabout	- Roundabout can meet capacity needs through 2030. - Can accommodate a high u-turn demand, thereby alleviating some access restrictions brought about by a median. - The accommodation of u-turns would limit the potential for increased commercial traffic along the residential streets such as 313th Avenue. - Roundabout circulating island could incorporate a City gateway feature.	- Larger footprint requires additional right-of-way compared a traffic signal and has significant impacts to adjacent properties. - Pacific Street is located within the 1,320 foot spacing standard. A roundabout intersection would require a deviation from this standard.
3D. Right-in/Right-out	- Pacific Street is located within the 1,320 foot interchange access spacing standard. A right-in/right-out intersection treatment would be consistent with this standard.	- Would eliminate southbound left-turns from Glencoe Road to Pacific Street. The elimination of this left-turn would completely eliminate southbound access to the east side of Glencoe Road when coupled with other access restrictions along Glencoe Road. - Would eliminate left-turns from westbound Pacific Street to southbound Glencoe Road. Coupled with other access limitations at Highland Court, the elimination of this movement would reduce access to properties on the east side of Glencoe Road and result in significant out-of-direction travel.
4. Mid-Block Access Between Highland Court and Pacific Street		
4A. Left-In/Right-In/Right-Out Access	- May eliminate the need for a full parallel backage road along the east side of Glencoe Road. - Left-turn reduces out-of-direction travel and promotes increased access to adjacent properties. - Left-turn reduces the potential for routing of commercial and industrial traffic through residential areas along 307th Ave.	- Does not meet ODOT interchange access spacing standards for left-turns. - Does not meet WACO spacing standards.
4B. Right-In/Right-Out Access	- Provides limited access to existing businesses consistent with ODOT interchange access spacing standards.	- Increases out-of-direction travel to/from some properties along Glencoe Road. - Would result in the potential for increased industrial and commercial traffic along Pacific Street and 307th Avenue.
5. Glencoe/Highland Court Intersection		
5A. Traffic Signal	- Meets capacity needs through 2030. - Consistent with North Plains TSP.	- Close proximity to westbound ramp terminal would result in vehicle queue conflicts, difficulties in signal coordination, and safety concerns over the long-term life of the corridor. - Does not meet ODOT interchange access spacing standards for left-turns.
5B. Right-In/Right-Out Access	- Provides limited access to existing businesses with less out-of-direction travel. - Although the location of this intersection does not meet ODOT's interchange access spacing standards for right-in/right-out intersections, right-in/right-out movements could function safely and efficiently.	- Would force exiting Highland Court traffic to circulate out-of-direction for certain destinations.
5C. Southbound Left-In/Right-In/Right-Out Access	- SB left-in reduces some out-of-direction travel and would reduce the potential for commercial and industrial traffic through residential areas along 307th Ave. - Can provide additional connectivity in the short term before alternate routes or parallel facilities are in place along the east side of Glencoe Road. - Southbound left-turn can function efficiently in the short-term and in the long-term depending upon development patterns.	- Creates two additional conflict points near the interchange ramp terminal intersections. - Does not meet ODOT interchange access spacing standards for left-turns.

Element	Advantages	Disadvantages
5D. All Access Eliminated	- Consistent with ODOT interchange access spacing standards. - Reduces all conflict points in the immediate proximity of the interchange ramp terminal intersections, thereby increasing roadway capacity and safety.	- Forces out-of-direction travel to/from businesses and residences along both sides of Highland Court. Some of this out-of-direction travel would be forced to utilize existing local streets for access to Pacific Way. - Would force additional industrial and commercial traffic along Pacific Street and 307th Avenue on the east side of Glencoe Road and 313th Avenue on the west side of Glencoe Road.
6. Glencoe Road Median	- Reduces the number of conflict points while improving the safety and efficiency of the Glencoe Road corridor. - Reinforces the turning movement restrictions. - Can be used for gateway and landscaping treatments.	- Restricts access to business driveways and public streets along Glencoe Road. - Has the potential to require additional out of direction travel to/from local businesses.
7. West Side Crossover Easement	- Provides access to existing businesses to the west of Glencoe Road with out the development of new public roadways. - Would allow multiple Glencoe Road driveways to be consolidated.	- Would require property owner agreements and necessitate some potential circulation modifications to existing businesses. - Crossover easements can not be forced upon existing property owners without some form of land use or development application.
8. Full Access at 1,320 feet	- A full access intersection at this location would be consistent with the full 1,320' interchange access spacing standard along Glencoe Road.	- Full access at this location would not efficiently serve traffic demand on the City grid system as the intersection would not connect to any existing public streets such as Pacific Way. - Through traffic may spill into adjacent private parking lots for access to the City grid system.
9. 307th Avenue Extension	- Provides connection between Pacific Street and Kayburn Street and extends the existing street grid to the north.	- Would require right-of-way acquisition that would potentially divide land parcels.
10. Northeast Crossover Easement	- Provides access to existing businesses to the east of Glencoe Road with out the development of new public roadways that could disrupt development patterns. - Would allow multiple Glencoe Road driveways to be consolidated or eliminated.	- Does not provide the level of service of a public street. - Would require property owner agreements at the time of future redevelopment.
11. East Side Access Road		
11A. Public Road	- Provides a dedicated public street that would serve as a collector street for multiple properties.	- Requires right-of-way acquisition. - Public street may reduce the potential to fully plan a large commercial development.
11B. Crossover Easement	- Provides long-term access to properties to the east of Glencoe Road without dedicated right-of-way acquisition.	- Does not provide the level of service of a public street. - Without a consolidated purchase and redevelopment of all properties, it could take longer to establish a connection between Pacific Street and Highland Court using crossover easements.
12. Local Street Connection between Highland and Pacific (308th Ave)	- Provides additional street connection between Highland Court and Pacific Street.	- Complete access between Pacific Street and Highland Court may encourage truck traffic down a residential local street.
13.East Side Backage Road		
13A. Public Backage Road	- Provides a dedicated public street that would serve as a collector street for multiple properties. - Provides an access road to the commercially zoned parcels along Glencoe Road and provides an alternate north-south roadway between Pacific and Highland Court. - Would allow driveways to be closed, improving the safety and efficiency of the Glencoe Road corridor.	- Requires right-of-way acquisition that could impact existing and future uses. - Additional right-of-way needed for a public street may reduce the site's overall commercial development potential.
13B. Crossover Easement	- Provides long-term access to properties to the east of Glencoe Road without dedicated right-of-way acquisition. - Would allow driveways to be consolidated over time, improving the safety and efficiency of the Glencoe Road corridor.	- Does not provide the level of service of a public street. - Without a consolidated purchase of all properties, crossover easements could take longer to establish a connection between Pacific Street and Highland Court.
14. North Glencoe Local Street Underpass	- Expands circulation and access options and eases the impacts associated with a right-in/right-out at Highland Court. -	- Much more expensive than other circulation alternatives. - Will impact existing wetlands and require mitigation to the adjacent floodway. - The underpass would require a longer grading run along Glencoe Road to the north, potentially impacting the ability to provide a connection to Highland Court.
15. Industrial Area Access Modification	- Does not impact existing structures.	- May require additional retaining walls along the westbound off-ramp.
16. North Side Driveway Closures	- Short-term closure of driveway serving Union 76 gas station would improve the overall safety and efficiency of Glencoe Road and the interchange. - Longer-term closure of remaining driveways would eliminate upwards of 170 turning movement conflict points when developed in conjunction with a median and alternative backage road access or crossover easements. - Increases the safety and capacity of Glencoe Road.	- Adjacent properties to Glencoe Road would be required to obtain access via a backage road or crossover easements in the long run, reducing ease of access.
16. South Side Driveway Closures	- Increases the safety and capacity of Glencoe Road.	- Adjacent properties to Glencoe Road would be required to obtain access via a backage road or crossover easement.

Element	Advantages	Disadvantages
17. Glencoe/Beach Road Intersection		
17A. Northbound Left-In/ Southbound Right-In/Eastbound Right-Out Access	- Elimination of the eastbound left-turn would improve the safety and operations of the Beach Road intersection. - Northbound left reduces some out-of-direction travel.	- Does not meet ODOT interchange access spacing standards for right- or left-turns. - Would result in some out of direction travel to/from properties along Beach Road.
17B. Southbound Right-In/Eastbound Right-Out Access	- Elimination of the eastbound left-turn would improve the safety and operations of the Beach Road intersection. - Although the location of this intersection does not meet ODOT's interchange access spacing standards for right-in/right-out intersections, right-in/right-out movements could function safely and efficiently.	- Would result in some out of direction travel to/from properties along Beach Road.
17C. Southbound Right-In Access	- Minimizes the number of vehicular conflict points within the immediate vicinity of the interchange. - Although the location of this intersection does not meet ODOT's interchange access spacing standards for right-in/right-out intersections, right-in/right-out movements could function safely and efficiently.	- Would result in significant out of direction travel to/from properties along Beach Road. - May result in a re-route of truck and residential traffic through North Plains via Gordon Road and Commercial Street.
17D. Access Closed	- Consistent with ODOT interchange access spacing standards. - Eliminates all conflict points in proximity of the interchange ramp terminal intersections.	- Without a re-route of Beach Road, eliminates access to businesses and residences on Beach Road from Glencoe Road. - Would result in significant out of direction travel to/from properties along Beach Road. - Requires all Beach Road businesses and residences to utilize Gordon Road for access. - Would impact emergency response times to properties along Glencoe Road.
18. Beach Road Realignment		
18A. Short realignment	- Realignment of Beach Road intersection would meet ODOT interchange access spacing standards. - Short realignment would cost less.	- Realignment would divide the EFU parcel and impact current farming patterns.
18B. Long realignment	- Realignment of Beach Road intersection would meet ODOT interchange access spacing standards. - Does not divide the EFU parcel or disrupt existing farming patters. - Increases spacing distance from interchange ramps.	- Impacts EFU land around edges of existing field. - Additional roadway length would increase overall right-of-way acquisition and construction cost.
19. Glencoe/Beach Shifted Intersection		
19A. Traffic Signal	- Significantly reduces eastbound vehicle delay on Beach Road.	- Does not meet short-term or long-term traffic signal warrants. - Traffic signal is out of character for a high speed rural roadway.
19B. Roundabout	- Significantly reduces eastbound vehicle delay on Beach Road.	- Roundabout is out of character for a high speed rural roadway. - Adds considerable delay to northbound and southbound through vehicles on Glencoe Road.
19C. Full Access (with NB staging lane)	- Lowest cost alternative. - A NB staging lane on Glencoe Road would reduce the eastbound delay and improve access off of a realigned section of Beach Road.	- May require additional pavement width on Glencoe Road to accommodate a NB staging lane.
20. Jug Handle	- Used in conjunction with a limited access treatment at Beach Road, provides a turnaround point for vehicles destined for Highway 26. - Would reduce out of direction travel for Beach Road vehicles destined for Highway 26.	- Unusual roadway feature. - Requires additional widening of Glencoe Road to accommodate a southbound left-turn lane. - Impacts EFU land.
21. East Side Access Road	- Would provide access to parcels in the southeast corner of the interchange that are impacted by the new interchange construction and retaining walls.	- Would impact EFU land and potentially divide land parcels.

LOCAL CIRCULATION/ACCESS CONCEPTS

In developing the local circulation/access concepts, the project team utilized the assessments of the various elements described above to develop several full local circulation/access concepts. These concepts combine logical groupings of elements that meet or work towards the interchange access spacing requirements while still striving to provide levels of access and circulation to adjacent properties. These concepts are described in detail below.

North Side Local Circulation/Access Concept "A" - Full Division 51 Implementation

North side Concept "A" is illustrated in Figure 4b-5. This concept incorporates the full Division 51 interchange access spacing standards for access to/from Glencoe Road. The following key short-term and long-term elements are included in this concept:

Key Short-Term Elements

- The median would end and full access provided at a driveway located 1,320 feet north of the westbound ramp terminal (#8). This would be the first full access driveway north of the interchange meeting the interchange access spacing standards.
- Pacific Street would be restricted to right-in/right-out access (#3D).
- A median would be constructed along Glencoe Road from the westbound ramp terminal to the first full access driveway (#8). There would be no median breaks along this portion of Glencoe Road.
- The Glencoe Road / Highland Court intersection would be closed (#5d).
- The Union 76 driveway to Glencoe Road would be closed (#16).
- All Glencoe Road access driveways between Highland Court and Pacific Street would remain in the short-term and function as right-in/right-out driveways due to the median.

Key Long-Term Elements

- Crossover easements on the east and west sides of Glencoe Road would be established as properties redevelop over time (#7, #10, #11b, #13b).
- All Glencoe Road access driveways between Highland Court and Pacific Street would be closed as properties redevelop and crossover easements or alternative access is established.
- 307th Avenue would be extended to Kayburn Street as properties redevelop (#9).
- Intersection signalization would be established at West Union Road and Cottage Street when warranted (#1, #2).

Concept Assessment

This concept fully complies with Division 51 interchange access spacing standards along Glencoe Road, which supports the highest level of mobility and safety in the vicinity of the interchange. To accomplish this, Pacific Street would need to be restricted to right-in/right-out movements as this intersection is located within 1,320 feet of the interchange terminal. With

restricted movements at Pacific Street, access to/from the local street system would be significantly impacted. Specifically, southbound Glencoe Road traffic would have no immediate access to any city streets or driveways on the east side of Glencoe Road. Furthermore, there would be no immediate or efficient route available for westbound to southbound movements onto Glencoe Road.

In addition to access modifications at Pacific Street, the Glencoe Road/Highland Court intersection would need to be closed as Highland Court is located within the 750 foot spacing standard for limited access driveways or streets. This closure would severely impact access to/ from all businesses along Highland Court. On the east side of Glencoe, access to Highland Court could still be achieved via Pacific Street and 307th Avenue in the short-term, but this would likely increase industrial and commercial traffic through the adjacent residential areas and cause a significant amount of out-of-direction travel to these land uses. On the west side of Glencoe Road, access to Highland Court from northbound Glencoe Road could still be achieved via Cottage Street and 313th Avenue, but this would also place additional commercial traffic through residential areas, create a significant amount of out-of-direction travel, and severely impact the viability of the McDonalds and Chevron gas station to compete with other similar establishments.

Given the circulation, access, and business impacts noted above, a second concept was developed that deviates from the full Division 51 interchange access spacing requirements while trying to achieve higher levels of access to adjacent interchange properties.

North Side Local Circulation/Access Concept "B" – Division 51 Deviation

North side Concept "B" is illustrated in Figure 4b-6. This concept incorporates several deviations from the full Division 51 interchange access spacing standards for access to/from Glencoe Road. This concept incorporates the following key short-term and long-term projects:

Key Short-Term Elements

- The Pacific Street alignment would remain as is and the Glencoe Road/Pacific Street intersection would be constructed as either a traffic signal (#3a) or a roundabout (#3b).
- A median would be constructed along Glencoe Road up to Pacific Street (#6).
- The Glencoe Road / Highland Court intersection would be reconstructed as a right-in/right-out intersection (#5b).
- The Union 76 driveway to Glencoe Road would be closed (#16).
- All Glencoe Road access driveways between Highland Court and Pacific Street would remain in the short-term and function as right-in/right-out driveways due to the median.

Key Long-Term Elements

- Crossover easements on the east and west sides of Glencoe Road would be established as properties redevelop over time (#7, #10, #11b, #13b).
- All Glencoe Road access driveways between Highway Court and Pacific Street would be closed as properties redevelop and crossover easements are established (#16).

- 307th Avenue would be extended as properties redevelop (#9).
- Intersection signalization could be established at West Union Road and Cottage Street when warranted (#1, #2).

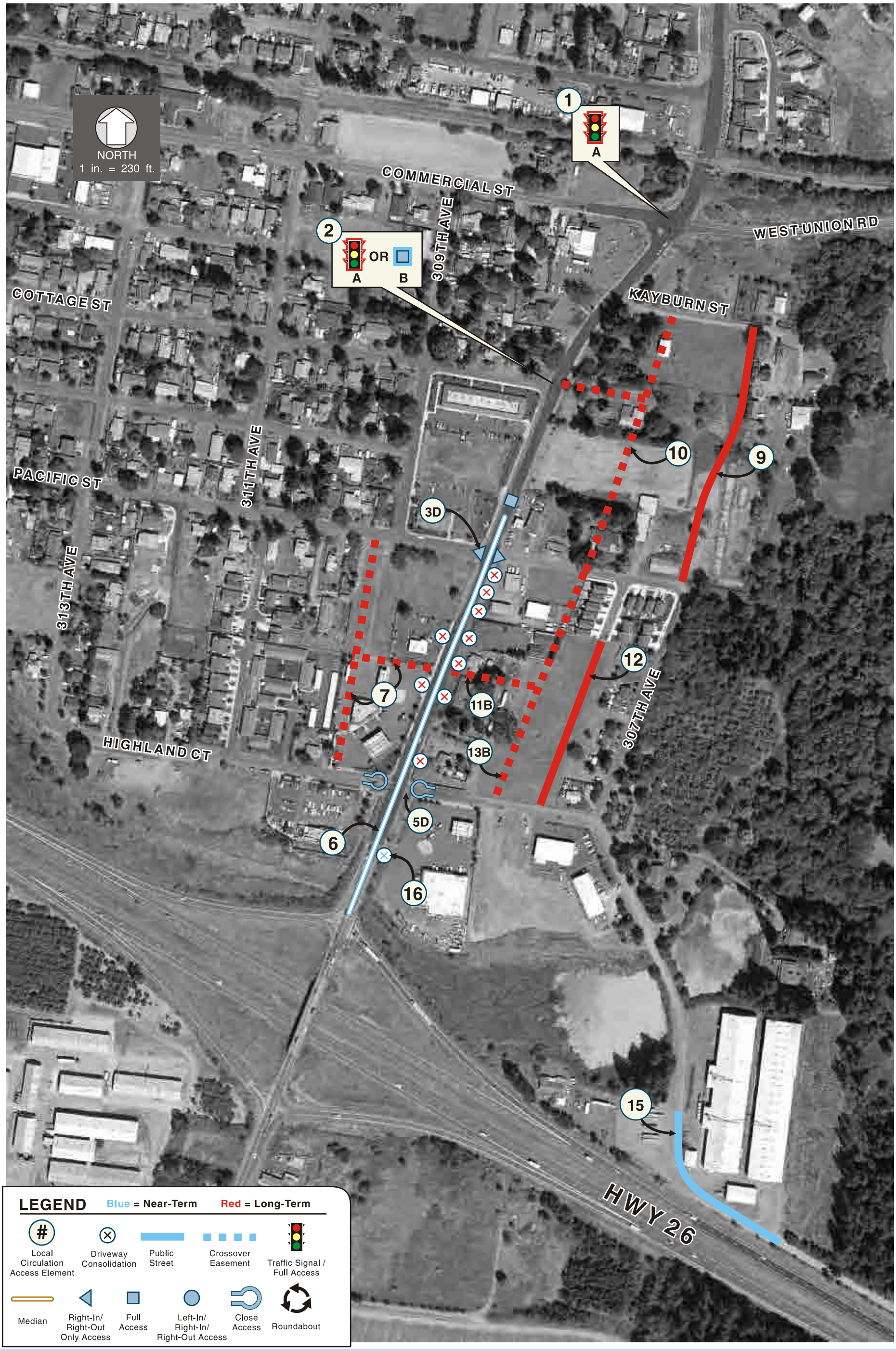
Concept Assessment

Although not officially meeting the full 1,320 foot access spacing standard, the existing alignment of Pacific Street as the first full access intersection along Glencoe Road would work towards the access spacing criteria without compromising the overall safety and efficiency of the corridor. This would require a deviation from the spacing standards, however the ability to avoid significant circulation and access problems associated with a restriction to Pacific Street would be justification for a deviation. To accommodate increased traffic at this intersection, a traffic signal or a roundabout would be needed. Given the roundabout's ability to accommodate a large u-turn demand that would be brought upon by a median on Glencoe Road, this traffic control feature would best meet the needs of the corridor when compared to a traffic signal.

At the Glencoe Road/Highland Court intersection, a right-in/right-out access would not meet the spacing standard for a limited access intersection. However, a right-in/right-out intersection treatment could function in a safe and efficient manner despite its close proximity to the westbound interchange terminal. Furthermore, the provision of right-in/right-out access at Highland Court would offer some level of access to properties and businesses on this roadway. Although access would be provided for certain movements to/from Glencoe Road, there would be some additional commercial and industrial traffic on parallel facilities such as 307th Avenue and 313th Avenue.

Project Team's North Side Local Access/Circulation Recommendation

Given the noted access and circulation impacts associated with that a complete implementation of the Division 51 interchange access spacing standards, it is recommended that the elements associated with Concept "B" move forward as a short- and long-term implementation of the local access/circulation plan for the north side of Glencoe Road.



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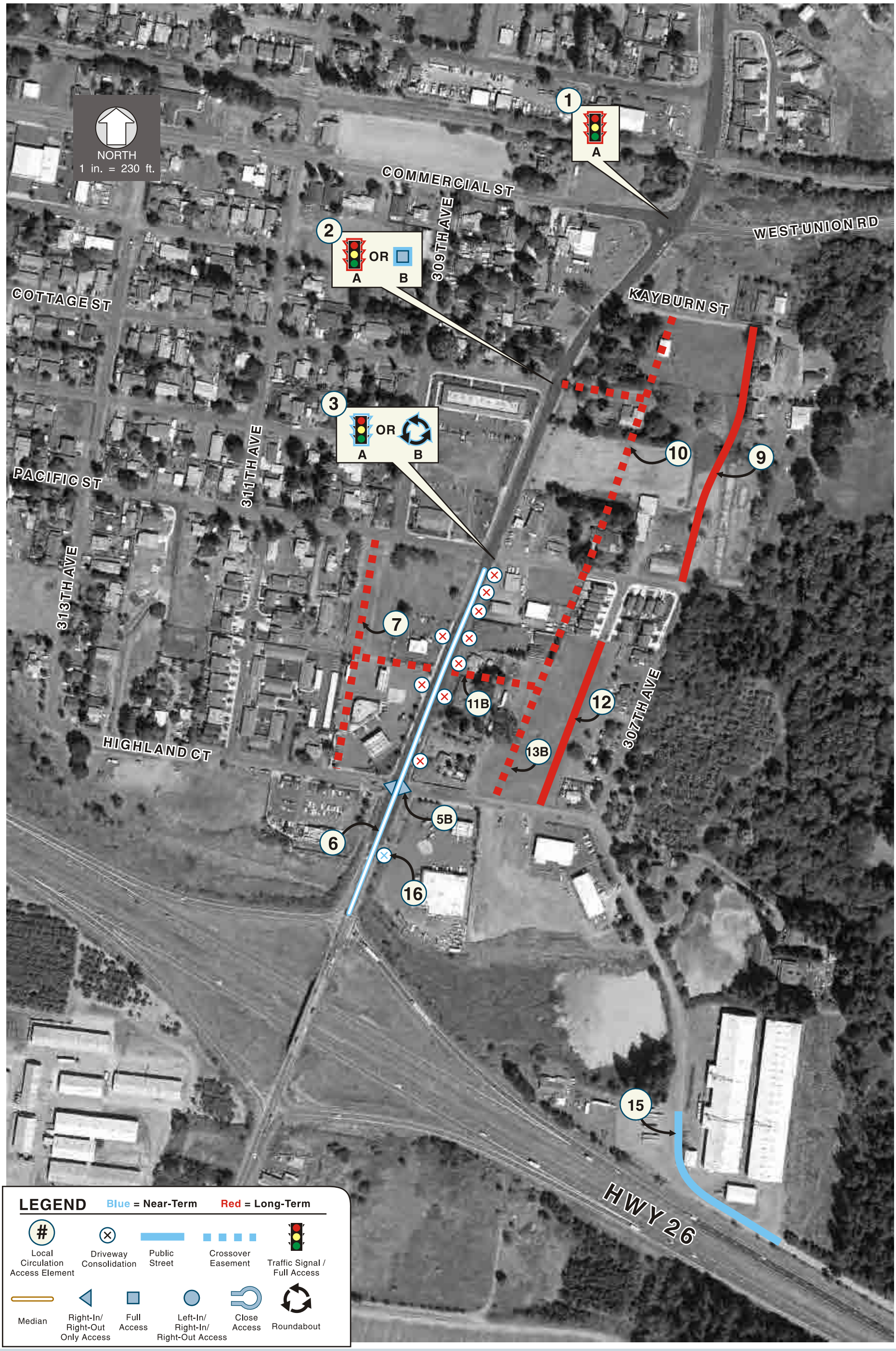
Glencoe IAMP

North Side Local Circulation/Access Concept "A"

Figure 4b-5



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Glencoe IAMP

North Side Local Circulation/Access Concept "B"

Figure 4b-6

South Side Local Circulation/Access Concept "A" – Full Division 51 Implementation

South side Concept "A" is illustrated in Figure 4b-7. This concept incorporates the full Division 51 interchange access spacing standards for access to/from Glencoe Road. The following key short-term and long-term elements are included in this concept:

Key Short-Term Elements

- The existing Beach Road connection would be closed (#17c) and Beach Road would be realigned to the south through the adjacent EFU land and connect to Glencoe Road 1,320 feet to the south of the eastbound ramp terminal (#18a). A full access intersection with Glencoe Road would be provided at this realigned location (#21).
- All Glencoe Road access driveways on the east side of Glencoe Road would be closed (#16).
- A new roadway would be constructed to provide access to those parcels located in the southeast portion of the interchange (#21).

Key Long-Term Elements

No long-term circulation/access elements are defined under this option given that the adjacent parcels are located outside the North Plains UGB and the majority of land is EFU property that is unlikely to redevelop or change use.

Concept Assessment

This concept would meet the basic intent of the Division 51 access spacing standards by closing the existing Beach Road intersection with Glencoe Road and realigning Beach Road such that it would intersection Glencoe Road 1,320 feet to the south of the eastbound ramp terminal. In addition, all driveways to adjacent parcels would be closed and alternate access provided to those parcels via a newly constructed access road. To achieve these spacing standards, this concept requires the acquisition of EFU land on both sides of Glencoe Road and interrupts the existing farming pattern of those fields.

South Side Local Circulation/Access Concept "B" – Division 51 Deviation

South side Concept "B" is illustrated in Figure 4b-8. This concept incorporates several deviations from the full Division 51 interchange access spacing standards for access to/from Glencoe Road. This concept incorporates the following key short-term projects:

Key Short-Term Elements

- The existing Beach Road connection would be modified to right-in/right-out access (#17b).
- All Glencoe Road access driveways on the east side of Glencoe Road would be closed (#16).

Key Long-Term Elements

No long-term circulation/access elements are defined under this option given that the adjacent parcels are located outside the North Plains UGB and the majority of land is EFU property that is unlikely to redevelop or change use.

Concept Assessment

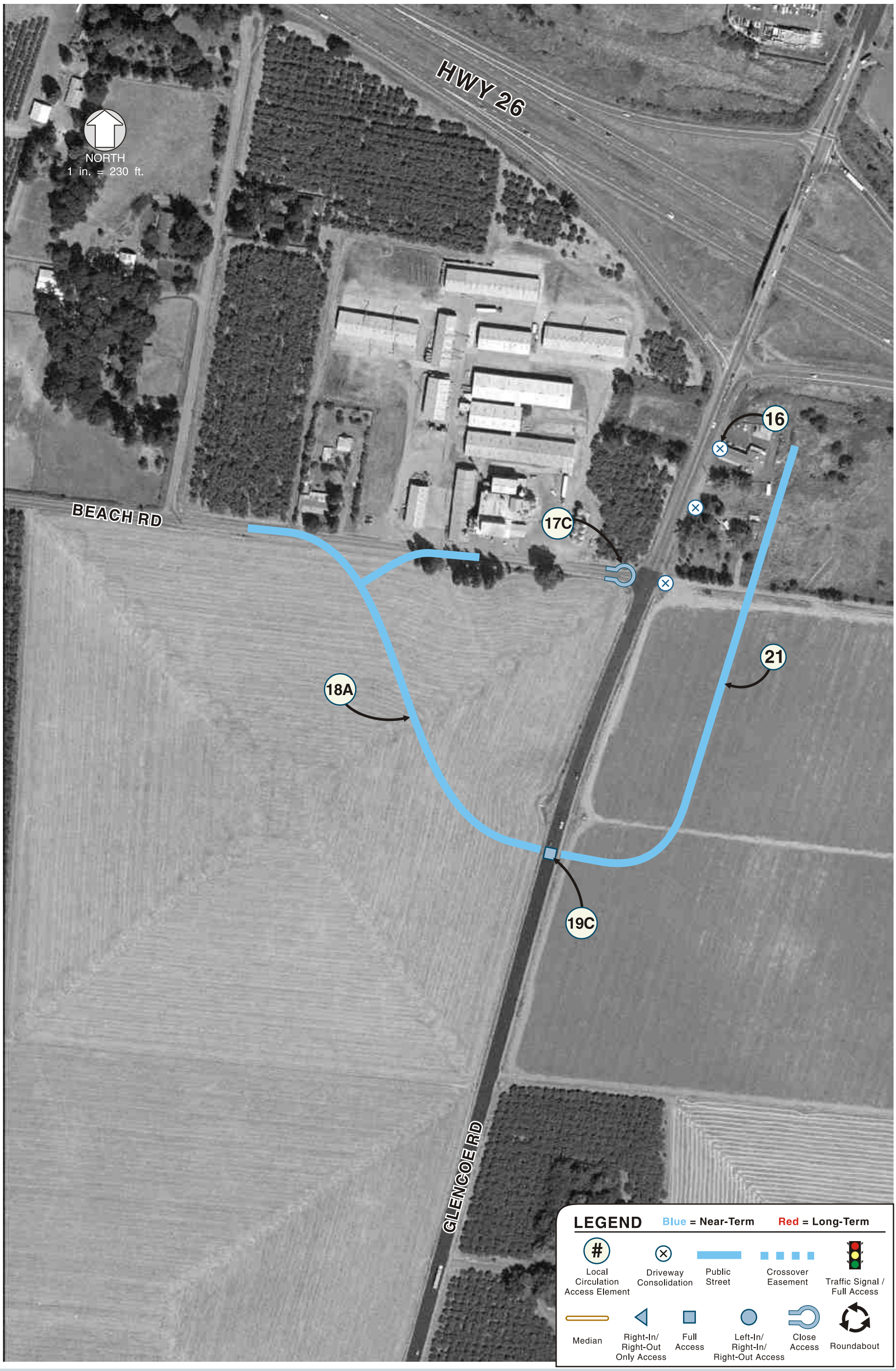
This concept works towards the Division 51 access spacing standards without realigning Beach Road and acquiring large portions of EFU land. Under this concept, the existing Beach Road intersection would be restricted to right-in/right-out movements. To accommodate existing Beach Road traffic that desires to go north on Glencoe Road, a reverse "jughandle" roadway would be constructed along the east side of Glencoe Road approximately 1,900 feet south of the eastbound ramp terminal. This concept requires EFU impacts only on the east side of Glencoe Road. The limited access right-in/right-out intersection would restrict northbound left-turns from Glencoe Road to Beach Road forcing this traffic to utilize alternate routes such as Gordon Road.

Project Team's South Side Local Access/Circulation Recommendation

Given the noted access and circulation impacts associated with that a complete implementation of the Division 51 interchange access spacing standards, it is recommended that the elements associated with Concept "B" move forward as a short- and long-term implementation of the local access/circulation plan for the south side of Glencoe Road.

NEXT STEPS

The PDT and SWG will review and comment on the project team's local circulation/access concept recommendations.



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Glencoe IAMP

South Side Local Circulation/Access Concept "A"

Figure 4b-7

GLENCOE RD

Glencoe IAMP

South Side Local Circulation/Access Concept "B"

Figure 4b-8

Appendix G7

Project Committee and Public Involvement Summary

Appendix G7
Public Involvement of the Glencoe Interchange Project

Appendix G7 of the Volume 2 of US 26/Glencoe Road IAMP Technical Appendices contains a summary of the public involvement efforts that were undertaken as part of the IAMP project from 2006 to roughly 2008.

This effort included the following:

- A series of four public open houses were held from June 2006 to July 2008 to discuss the new Glencoe Road interchange and the IAMP;
- Citizen Advisory Committee meetings held from June 2006 to July 2008 to obtain feedback on a variety of project deliverables, including the purpose and need, evaluation criteria, interchange design concepts and draft IAMP.;
- A newsletter sent out to individuals near the proposed project to provide information and notification of the public open house; and
- A project web site was available to provide project information and upcoming open houses.
- A selection of a preferred interchange concept by the Citizen Advisory Committee.

Glencoe Interchange Project
Stakeholder Working Group meeting #1

7-9 p.m. Wednesday, March 22, 2006
Jessie Mays Community Hall
30955 NW Hillcrest, North Plains

Meeting Summary

Project Staff:
Tom Braibish, Lili Gordon, Amy Gibbons, Tim Wilson, Steve Harry (ODOT)
Rick Kuehn, Pam Wheeler (CH2M HILL)
Jeanne Lawson, Kristin Hull, Kalin Schmoldt (JLA)
Matt Hughart (Kittelson Associates Inc.)
Abe Turki (Washington County)

SWG Members:
Robert "Butch" Kindel (Washington County Fire District #2)
Hal Ballard (Washington County Bicycle Transportation Coalition)
Wayne Holm (Oregon Canadian Forest Products)
Paul Coussens (Property Owner)
Tai Kim (Subway)
Clark Berry (NW ACT)
Robin Biden (Hillsboro School District)
Bob Jossy (Jossy Farms)
Stewart King (North Plains Chamber of Commerce)
Debbie Raber (City of Hillsboro)
Nick Kelsay (City of Forest Grove)
David Smith (North Plains Planning Commission)
Susie Anthony (CPO 8)
Marie Finegan (Washington County Farm Bureau)

Other Attendees:
Jeanne Holm, (Oregon Canadian Forest Products), Matt Hughart (Kittleson Associates), Remi Coussens (Property Owner), Chet Walter, Cheri Olson (Mayor of North Plains), Rick Dobbs

Welcome and introductions
Kristin Hull thanked all for coming to the first Stakeholder Working Group meeting. She briefly described her role as facilitator for the meetings which was followed by a short round of introductions where each person present described their relationship to the project.

Kristin reviewed the meeting agenda and passed out a committee roster.

Project introduction

Project purpose/overview

Tom Braibish gave a short presentation about the current project. Currently there are a variety of problems with the interchange at Glencoe Road. The road has limited pedestrian and bicycle facilities. The overpass has substandard vertical clearance and has short sight distances.

Traffic flow is the big problem. Mr. Brabish referred to a 2005 study that illustrated how the westbound exit and eastbound entrance ramps will fail by 2025. Mr. Brabish described the need for a fix which includes a wider overpass. He explained that project alternatives will look at things like providing a taller structure to provide clearance, expanding the road to three lanes, including a turn lane, and adding pedestrian and bicycle accommodations.

Washington County has also identified the need for a three lane roadway from the interchange through the intersection of West Union Avenue and Glencoe Street. This process also includes potential improvements such as turn lanes, new street lights, etc.

Mr. Brabish noted that the Washington County improvements could have been torn up to construct the ODOT improvements. Instead, ODOT will be working with Washington County to combine interchange improvements with the road improvements.

Mr. Brabish noted that the interchange designs are only in the study phase. He noted that ODOT is required to consider all viable alternatives because of the NEPA process. The question for the group to consider is "what is the preferred alternative?" The design process will provide ideas, but the SWG is going to be the tool for involving the community in the various design options. The design team will be relying on the SWG for input on how the various designs will affect the community. He anticipated the process proceeding for eight or nine months. CH2M HILL has been contracted for the project.

Schedule

Rick Kuehn passed out a simplified process chart and talked about the IAMP process. In addition to the Environmental Assessment which is required by the National Environmental Protection Act (NEPA), there is also an Interchange Area Management Plan (IAMP). The IAMP is a process used to ensure that when a major investment is made, it is compatible with local land use planning and will be functional in the 20 year life-frame.

Mr. Kuehn explained the content of the chart. The chart outlines the chronological flow of the project without using a specific timeline. The chart begins with outlining the need for studies establishing existing transportation problems, future transportation conditions, as well as environmental opportunities and constraints. Mr. Kuehn noted that there have been no specific impact studies yet, as there are no current designs. When more design specifics are known, studies of specific impacts will influence the development of alternatives.

The evaluation and screening process will follow the initial brainstorming phase. During this phase the SWG will help to establish how the various alternatives stack up against one another. The process will begin with a qualitative screening and be followed by a more specific quantitative screening. Ideally, this will yield one or two concepts which will be considered in an EA document.

The group will also help develop an Access Management Plan which considers how local access will be affected. The Access Management Plan will feed into the EA. Once a preferred alternative is selected, the IAMP will be adopted the involved jurisdictions.

The final step for the EA will be approval by the Federal Highway Administration of the Revised Environmental Assessment and issuance of a FONSI (Finding of No Significant Impact). The design team will work intensely with the SWG until the end of October, at which point the process moves becomes more technical in nature and consultation with the SWG will decrease.

A member asked about how quickly some alternatives may be eliminated and how many alternatives there may ultimately be to consider. Mr. Kuehn said that some alternatives may be eliminated quickly, and it's really impossible to know how many alternatives there may be at this point.

A member asked if there is currently a defined a study area. Mr. Kuehn responded that there is a physical study area and traffic impact study area which includes the area up to Gordon Road. Mr. Brabish noted that it's still very early in the process and there are no firmly defined areas at this time and areas will change depending on the design plans.

A member asked about projected travel forecasting for 2025. Matt Hughart noted that the traffic models all consider increasing traffic in the established planning horizon. Tom Braibish further noted that the project is only partially funded.

There were some other questions about the study areas, and Mr. Brabish told the group that the areas were still changing.

A member asked if Mr. Brabish was aware of any specific structural deficiencies with the overpass. Mr. Brabish didn't know specifically. Mr. Kuehn pointed out that the overpass is indisputably too low.

Decision-making structure/Committee purpose

Rick Kuehn reviewed the Decision Making Structure handout. He noted it's much easier to advance a project with consensus from the SWG. He noted that a Local Access Group (LAG) will also meet and advise the PDT about specific access issues. The SWG will advise the Project Development Team (PDT), the decision-makers in this process. The PDT will do it's best to abide by the recommendations of the LAG and SWG, but must also consider design standards which must be balanced with the groups' wishes. The PDT is charged with making the technical assessments and decisions and will pass the IAMP and EA to the appropriate agencies for approval.

Committee protocols and ground rules

Kristin Hull introduced Jeanne Lawson who talked about how it is important to decide on committee protocols now in order to facilitate rough spots later on. Jeanne then referred to the draft list of protocols in the binder. She noted that it can be changed or it can stay as it is.

Jeanne then asked the group to think about times when there was a breakdown in the decision making process. The group listed the following issues:

- advisory group came up with a recommendation which the decision making body ignored.
- cliquish behavior where certain ideas were automatically discarded. He noted a need for the ability to agree to disagree and move on.
- members not being able to listen to each other. The larger group fragmented into smaller groups which didn't get anywhere and were unwilling to compromise. The process dragged on too long.

One member expressed hope that there aren't any preconceived plans at this point. He said that everyone at the table is aware of an increasing problem and all would like everything approached openly and honestly without preconceived notions of the way things are going to be.

Jeanne also asked why various processes have worked in the past. A member noted that "clear guidance" could lead to good group process.

Jeanne then went over the protocols and ground rules sheet. She noted that it had been approved by the PDT today. The amended protocols are attached to this meeting summary.

Responsibilities:
The group determined that members should attend all SWG meetings with the understanding that unavoidable conflicts may arise. The SWG requested that the PDT provide materials ahead of time so that the SWG can meet their responsibility to review materials before meetings.

Kristin Hull noted that there is a commitment by the PDT to provide materials by the Friday before meetings. Mr. Kuehn added that as the group must keep on schedule, everyone has an incentive to be on time.

Committee Structure: Jeanne noted that although the first bullet does not mention them, there are two jurisdictional interests present: Hillsboro and Forest Grove.

A member asked why Cornelius wasn't involved in the process given their likely interest. Lili Gordon responded that ODOT had contacted Cornelius but had not heard back. Mr. Brabish noted that there is still the possibility of involving other groups, and said that ODOT will follow up with Cornelius. Jeanne noted that Lili Gordon was the point of contact for adding other stakeholders.

Jeanne then talked about the advantages and disadvantages of allowing alternates. While alternates allow flexibility for committee members, such flexibility may serve as an incentive to not come. Having a changing group makes achieving consensus harder. It also raises the issue of whether alternates should be able to vote when they haven't been tracking the process. Jeanne also noted the issue allowing proxies.

The group discussed the pros and cons of allowing alternates and how alternatives could participate in the process. Initially, some members were uncomfortable with alternates participating in decision-making. Some members also did not want to name alternates ahead of time.

Steve Harry reminded the group that the idea of having a "vote" is misleading. He noted that as this is a consensus seeking process, the process is more important than any vote itself.

The group determined that SWG members should designate alternates ahead of time and would be allowed to designate multiple alternates. Alternates can participate in decision-making processes. Jeanne noted that alternates are not required.

Kristin Hull advised against allowing proxy votes by other committee members.

providing written proxy-votes. A member asked about the problems with written proxy votes. Jeanne answered that such written votes prohibit a decision based upon discussion and leads to a decision before the conversation occurs.

The group was somewhat split about allowing proxy votes. Kristin Hull proposed disallowing proxy votes, but allowing members to provide written comments prior to the meeting which would then be shared before any vote was taken. All agreed that this was a good alternative.

Meeting Guidelines:
A member asked about the final bullet which addresses public comment. Jeanne talked briefly about the reasons for public comment. A member suggested changing the comment period to the beginning of the meeting so that those making comments can go home.

A member noted that there have been times when it is difficult to cut off public comment, and the committee might not want to do it, or have the facilitator do it. For that reason, it might be better to have comments at the end of the meeting. Regardless, comments should be made with the consent of the group. Jeanne stated that the facilitator, Kristin Hull, could make initial judgment and then consult with the group.

There was some further discussion of how to structure public comments, when to have it, and whether it is necessary. Tom Braibish noted that there will be public open houses which will give the public the opportunity to make comments. Jeanne advised the group to think about the issue and to decide at the next meeting.

Decision Making: Jeanne pointed out that there will be times when the group just can't come to consensus. She asked the group to consider what to do in those situations. The group discussed the amount of support required to constitute a group recommendation. The group did not agree but discussed both two-thirds and three-quarters of those present as the threshold for a SWG recommendation. The group agreed to revisit this item at the next meeting.

The group did determine that a quorum would be required for the group to consider a recommendation. Jeanne advised the group to remember that the PDT is the decision making body, and even if a firm decision is not reached, the perspectives shared through deliberation affect the PDT's decisions.

Communications outside meetings: As the group was running short on time, Jeanne read from the rest of the protocols. She suggested adding a final bullet: "The group will act in ways that will respect the group process." The group accepted the communications protocols.

Future meetings
The group agreed to hold future meetings from 7-9 p.m. on Wednesdays. The group will hold meetings on Thursdays instead if they fall during the second week of the month.

Glencoe Interchange Project
Stakeholder Working Group meeting #2

7-9 p.m. Tuesday, April 25th, 2006
Fire District #2 Administrative Offices
31370 NW Commercial Street, North Plains

Meeting Summary

Project Staff:
Amy Gibbons, Lili Gordon, Tim Wilson, Tom Braibish, Steve Harry (ODOT)
Kristin Hull, Kalin Schmoldt (JLA)
Rick Kuehn, Donna Kilber-Kennedy (CH2M Hill)
DJ Heffernan (Angelo Eaton & Association)
Matt Hughart (Kittelson Associates)

SWG Members present:
Tai Kim (Subway)
Mitch Ward (North Plains Planning Commission)
Stewart King (North Plains Chamber of Commerce)
Butch Kindel (Washington County Fire District #2)
Marie Finegan (Washington County Bureau)
Hal Ballard (Washington County Bicycle Transportation Coalition)
Wayne Holm (Oregon Canadian Forest Products)
Clark Berry (NW ACT)
Nick Kelsay (City of Forest Grove)
Bob Jossy (Jossy Farms)
Paul Coussens (Property Owner)
Susie Anthony (CPO 8)
Robin Biden (Hillsboro School District)

SWG Members absent:
Debbie Raber, City of Hillsboro
Joe Darby, Stewart Stiles Truck Line

Other Attendees:
Rick Dobbs
Remi Coussens

Welcome and introductions
Kristin welcomed all to the meeting and briefly discussed the agenda. The key purpose of this meeting is to resolve outstanding issues from the last meeting, learn about the National Environmental Policy Act (NEPA), and identify issues, questions and concerns for the project.

Before adopting meeting #1 summary, a member suggested changing the third paragraph of the second page to reflect that Washington County has identified "and funded" the need for a three lane roadway from the interchange to the intersection of West Union and Glencoe Street. The group agreed.

The first open house is scheduled for Thursday, April 27. Lili distributed a handout regarding the open house and encouraged all SWG members to attend as ambassadors for the project, and listen to comments and report back to the group. She noted that the public may feel more comfortable talking to SWG members than to ODOT. Lili noted that there will be three open houses.

A member inquired about how people were informed about the open houses. Lili said that residents of North Plains had been notified via a newsletter, and residents in surrounding areas had been contacted via city and CPO newsletters.

About three quarters of the SWG indicated that they planned to attend the open house. Kristin noted that there will be some information about the IAMP at the open house which will be presented at the May 11 SWG. She noted that normally the SWG will be the first to be review information, but in this case, it will come as a sneak preview of content.

Adopt protocols and ground rules

Kristin began by recapping the SWG discussion about when to hear public comment at meetings. She proposed a method whereby she would poll those wishing to make comments at the beginning of the meeting and then modify the time devoted to public comment accordingly. The time allotted for public comment would not exceed 15 minutes without approval of the SWG. The group could decide to hear comments at the beginning or the end of the meeting. The SWG accepted this suggestion.

Kristin then addressed the question about what would constitute a group recommendation. She stressed the importance of reaching consensus and told the group that consensus-based recommendations would hold more weight with decision makers than recommendations with dissenting opinions. In instances where consensus cannot be reached, she asked whether approval by two-thirds of the SWG members present was a reasonable threshold for passing along a group recommendation. There were no objections. There was subsequent discussion and it was further determined that 50 percent of the SWG members should be present to take action.

There was some discussion of the process for adding items to the agenda. Anyone wishing to suggest an agenda item should contact Lili at least one week before the meeting. Kristin noted that small items are easier to fit in with less notice, while discussion of larger items might need to be scheduled into later meetings. Members were also encouraged to let Lili know in advance if they were planning to miss any meetings. Kristin noted that SWG member alternates will be included in email notices.

Kristin asked the SWG to review and adopt the changes to the protocols as developed at the last meeting. The changes were accepted.

NEPA 101

Donna Kilber-Kennedy introduced herself as the environmental team lead for the project who will be managing the CH2M Hill staff performing the environmental analysis. She introduced Amy Gibbons with ODOT who will actually write the Environmental Assessment (EA). She then gave a brief presentation on the National Environmental Policy Act (NEPA) and how it relates to the project (presentation is attached).

There was a question about "Class 2" project designations, which Donna stated were "categorical exclusions" and unlikely to apply to this project.

During her explanation, Donna noted that, while there is an expectation that this project will yield a Finding of No Significant Impact (FONSI), it is not certain. FONSIs are issued by the Federal Highways Administration (FHWA).

While discussing cumulative impacts, Rick Kuehn noted that the Tualatin River is another example of resource which could be affected by the accumulation of impervious surfaces.

There was some discussion about what "scoping" involves. Donna noted that there is formal scoping with regulatory agencies. A group of regulatory agencies that meets and reviews ODOT projects, Collaborative Environmental and Transportation Agreement on Streamlining (CETAS), decided the project was not of significant interest to them. Kristin noted that scoping is also an opportunity for community members to identify concerns and questions about the project.

A member asked about the Record of Decision (ROD). Amy answered that they were not anticipating a ROD because a ROD is only issued for a project where an Environmental Impact Statement is prepared.

Tom Braibish then commented briefly on how the timeline for the Environmental Assessment parallels the timeline for the Access Management Plan.

Land use context

DJ Heffernan distributed a handout which outlines three types of documents which pertain to land use regulations affecting planning and permitting. The first group consists of state plans and regulations such as Statewide Planning goals and the Oregon Highway Plan. The second group includes local regulations and plans such as the Washington County Comprehensive Plan and the City of North Plains Comprehensive Plan. The third group documents plans and regulations that are currently under development.

He noted that this process will probably result in the identification of long-range plans which will be incorporated into the Oregon Highway Plan, the Washington County TSP, and the City of North Plains TSP. He also noted that nothing decided today is final. When it comes time to build, there may be additional rules to consider.

There was then some discussion of amending the Washington County Transportation Plan. Tom Braibish noted that there is the potential for amendments if there are changes which affect North Plains. DJ added that there while Glencoe Road will be affected, the land uses around the edge may not need to be amended in the Washington County TSP.

A member asked how the project will coordinate with the updates to the Transportation System Plans and the Transportation Planning Rule. Tim Wilson pointed out that the TSP plans are too broad to affect the project as it currently stands, and noted that the rules that pertain to the project are not currently being updated. DJ added that changes to the TPR are unlikely to affect this project once it has been accepted into the local transportation plans, and are more likely to affect projects which occur after this project is put in place.

A member noted that North Plains is planning to create an Urban Renewal District which includes a gateway feature, and inquired how this project might affect their plans. DJ indicated that there will probably be little effect, though it might be worth letting the design team know about the intent and desire to add a gateway feature.

A member asked if there were any differences between and IAMP for a new interchange versus an IAMP for an existing interchange. Staff responded that the same process will be necessary, and Tim Wilson pointed out that the interchange itself will be completely rebuilt.

Tom Braibish asked about the land use issues that emerged during the Jackson School Road project. Tim Wilson said the project was unique as it was a rural interchange, but designed to handle urban traffic. Steve Harry noted that the primary issues were with access, traffic, presence on farmland, and whether it would be a cloverleaf or diamond interchange.

Tom Braibish asked about the role the SWG will play in the land use process. Staff noted that the process requires public involvement. The SWG will help determine where access and local circulation are needed, as well as evaluate land uses which will lead to the long-term preservation of the facility.

DJ Heffernan added that they also want to look at what land use patterns tell us about development in North Plains. Rick Kuehn noted that separate a Local Access Group, consisting of those directly impacted by the interchange, will be formed in August. Kristin noted that DJ will be available for questions through staff, but will probably not attend SWG meetings until the Local Access Groups are formed.

Tim Wilson noted that this project will not redesign local plans. He stated that revisions to local plans will only be necessary if zoning is found to be inconsistent with the IAMP. Rick added that the group wants to take plenty of time with these issues.

A member asked about the order of events for this process. Rick Kuehn responded that they had "inventoried" the natural and social environment which, as the SWG brainstorms alternatives, will be used to evaluate how transportation and the environment are affected.

Identify issues, questions and concerns

Kristin described this process as a way to gather goal statements and concerns. She outlined the various headings for the topics written on the walls: Transportation and Access, Land Use, Social and Economics, Aesthetics, Natural and Cultural Resources, and Project Development.

A member asked how this interchange compares to others in terms of size. Tim Wilson described it as similar to others on Hwy 26. He said it probably won't be as big as the 185th Ave. interchange, as even with the 20 year growth model. Matt added that the uniqueness of this project is the presence of North Plains, with its UGB to the north and with farming and other uses to the south.

A member asked how the process would be affected if the people in North Plains prefer no growth or slow growth. Tim Wilson responded that it is the state's job to provide access to the city based upon projected need. DJ added that North Plains has tacitly endorsed a certain level of access by designating areas within its UGB for urban development. Staff noted that this process isn't designed

to make those direct considerations. A member commented that expansion and growth were a matter for voter approval.

A member asked about the footprint of impact for the project. Kristin then described the relationship between the county and local processes and the scope of the project. A member asked about projects on the south side of the interchange. Tom Braibish responded that there is a possibility, as the preferred alternative might include improvements which extend to the south side. This was followed by some discussion of the impact on the south side of the interchange. Rick Kuehn noted that traffic coming from the south will affect design, as well as location of access to the interchange.

Kristin then segued into posting sticky notes on the butcher paper. When SWG members had finished writing their comments and posting them under the appropriate headings, Kristin read them aloud. The results of the activity are attached.

There was some discussion of the Gateway Project and which heading it should fit under. Amy noted that no structures qualified for the National Register of Historic Places between Hwy 26 and West Union. A SWG member brought up the issue of the Dersham Overpass which she described as under-used.

Kristin noted that they would be making a similar list at the open house on Thursday. Rick Kuehn added that at the next meeting there will be discussion of screening and evaluation criteria and noted that the list of questions and concerns is important for that process. Kristin also reiterated that this is not the last chance to contribute, and the list will continue to grow.

Public comment
The two members of the public present had no comments.

Next steps and close
- Open house: 5-8 p.m. Thursday, April 27 atNorth Plains Elementary School
- Next meeting: 7-9 p.m. **Thursday**, May 11 at Jessie Mays Community Hall

Action items
- Update SWG #1 meeting notes as adopted
- Update SWG protocols and ground rules

SWG Scoping Activity
4/25/06

Project Development

- Involve Cornelius?
- Use of Gordon overpass
- Why 10 years?
- Funding the project
- Don't construct the interchange in a way that discourages/endangers bicycle use on the shoulders
- Public Involvement
- Direct traffic to the Dersham overpass

Transportation and Access

- Congestion
- Bike and Pedestrian safety
- Freight movement
- Local transportation system impacts
- North and south access from Beach Road and residence on east side of Glencoe
- Access points to local business
- Project affecting business along Glencoe during construction
- A Banks style interchange at Gordon Rd would seem to be much cheaper and less invasive than any Glencoe option. Has this been seriously considered? Can it be? Related to this, what are really trying to accomplish? If it is to relieve congestion would Gordon provide major relief? Have surveys been done to determine who is going where?
- Emergency services
- Alternate route wont handle the volume of traffic Jackson/old Scotch Church
- Access during construction
- Also accommodate Yamhill and Vernonia traffic
- Glencoe south of highway 26:
  - -Business access
  - -For traffic from Hillsboro and Forest Grove and hazards to bicycle commuters
- Don't construct the interchange in a way that discourages or endangers bicycle use on the shoulders

Land Use

- Impact to commercial sign ordinances
- Impact on future development
- Look at 20 year growth potential on south side
- Minimize impact to accesses
- Project affecting zoning and comprehensive plan on south side by county

Social and Economics

- Local business impacts
- Farming impacts

- Width for large farm equipment for access to farming industry on both sides (north and south) of North Plains
- Keep Glencoe open during construction
- Support gateway concept
- Noise impacts
- Property values

Aesthetics

- Blend into wetland environment?
- Visual impacts
- North Plains Gateway project
- Lighting

Natural and Cultural Resources

- Runoff into wetlands during winter-spring heavy rains, will this create a new low area for standing water?
- Maintain and improve drainage
- Wetlands protection

Glencoe Interchange Project
Stakeholder Working Group meeting #3

7-9 p.m. Thursday, May 11, 2006
Jessie Mays Community Hall
30955 NW Hillcrest, North Plains

Meeting Summary

Project Staff:
Aaron Myton, Lili Gordon, Tim Wilson, Tom Braibish, Steve Harry (ODOT)
Kristin Hull, Laura DeGraw (JLA)
Rick Kuehn (CH2M HILL)
Matt Hughart (Kittelson Associates)

SWG Members present:
Tai Kim (Subway)
David Smith (North Plains Planning Commission)
Stewart King (North Plains Chamber of Commerce)
Butch Kindel (Washington County Fire District #2)
Marie Finegan (Washington County Bureau)
Hal Ballard (Washington County Bicycle Transportation Coalition)
Wayne Holm (Oregon Canadian Forest Products)
Bob Jossy (Jossy Farms)
Paul Coussens (Property Owner)
Susie Anthony (CPO 8)
Robin Biden (Hillsboro School District)
Debbie Raber, (City of Hillsboro

SWG Members absent:
Joe Darby, Stewart Stiles Truck Line
Clark Berry (NW ACT)
Nick Kelsay (City of Forest Grove)

Other Attendees:
Rick Dobbs
Bob Horning
Chet Wolter
James Galaway

Welcome and introductions
Kristin welcomed everyone to the meeting and reviewed the agenda. Kristin told the group that the purpose of the meeting is to discuss the summary of the open house, review information about existing traffic conditions, review and discuss the Purpose and Needs and Goals and Objectives, and discuss draft criteria.

Meeting summary #2 was adopted as written.

Open House Report and Summary

Lili Gordon, ODOT, distributed the open house summary and provided a brief overview of the first open house held on Thursday, April 27. Lili noted that 23 people attended and that she hoped to see more participation at future meetings. Access and freight seemed to be the biggest issues raised.

SWG members then shared comments they heard at the open house and at other meetings:

- Consider an interchange at Gordon Road
- Maintain access to businesses along Glencoe Road
- Maintain access during construction
- Improve the Dersham Road interchange
- Shift the interchange to the east (SWG member provided Lili with a map of this option)

The next Open House will be on June 8th, 2006.

Existing Traffic Conditions

Matt Hughart reviewed a presentation on the existing traffic conditions and also handed out a Technical Memo regarding current traffic issues, conditions and intersections (see attached).

A SWG member requested that Matt provide traffic volumes on some nearby roads for comparison. One member suggested that traffic volumes were low and did not match the volumes reported by Washington County. Matt agreed to look into when the study was conducted and possible reasons for skewed data. Matt suggested that the volumes could vary based on time of year and completion of other transportation projects in the area such as Jackson School Road.

Matt discussed the figures illustrating peak hour traffic conditions. He noted that, according to the Washington County Operation standards, only one intersection is currently failing. Again, the committee raised some concerns about the level of service at some of the intersections. Matt reminded the group that he will look at more sophisticated models as he begins to look at forecasted traffic volumes.

Tom Braibish reminded the group that this meeting is looking at framing the problems, not solutions, and that they should keep in mind any ideas or specific concerns that they have for the June meeting.

Matt then reviewed the existing access conditions. Matt noted that there are 31 public and private accesses within the interchange influence area. He noted that this was a preliminary discussion of access and that the SWG and the local access group would spend a significant amount of time on this topic in August and September.

Purpose and Need Statement

Rick Kuehn discussed the draft Purpose and Need with the SWG. He explained that the Purpose Statement should define the transportation problem to be solved, and the Need Statement should provide data to support the problem statement.
A SWG member was concerned that promoting economic growth and commercial development in North Plains was not stated as part of the project's purpose. Staff explained that topics not directly related to the state transportation system are usually referenced in the goals and objectives rather than the project's purpose. The SWG agreed to address this point in the goals and objectives.

The SWG, by consensus, recommended adoption of the Purpose and Need Statement as written.

Goals and Objectives and Draft Evaluation Criteria
Rick then discussed the Draft Goals and Objectives and Evaluation Criteria. He explained that the matrix he was reviewing included four items: goals, objectives, screening criteria and evaluation criteria. Screening criteria would reflect the same topics as the evaluation criteria, but would be evaluated with less detail (i.e. a criteria about impact to wetland areas might be expressed as "does it impact wetland areas" as screening criteria and expressed as "acres of wetland impact" as an evaluation criteria).

Rick reviewed the draft goals, objectives and criteria. The SWG suggested a few changes:
- Reword the transportation and access goal to capture the appropriate design speed
- Add an objective and criteria related to economic growth to the Community and Economic Development section (SWG agreed to have Stewart and David work on this with Kristin off-line)
- Add criteria about transporting groundwater across the Sunset Highway.

A SWG member expressed concern about finding a balance between economic development and transportation access. Rick clarified that the intent is to accommodate public and private accesses within the interchange influence by working with property and business owners and ODOT and that the ODOT standard to not allow access within 1,320 feet of the interchange is an ideal standard but is not inflexible.

Next steps
Kristin reminded the group about upcoming meetings:
- SWG meetings:
  7-9 p.m. Wednesday, May 31
  Jessie Mays Community Hall

  7-9 p.m. Wednesday, June 7
  Jessie Mays Community Hall
- Next public meeting:
  5-7:30 p.m. Thursday, June 8
  North Plains Elementary School

Action items:
- Kristin will work with David and Stewart to develop an objective and criteria related to economic development. This addition will be shared with the SWG at the next meeting.
- Rick and Debbie will work together to find a way to address her concern about the criteria related to access. This change will be shared with the SWG at the next meeting.

Glencoe Interchange Project
Stakeholder Working Group Meeting #4

7-9 p.m. Wednesday, May 31, 2006
Jessie Mays Community Hall
30955 NW Hillcrest, North Plains

Draft Meeting Summary

SWG members present
Wayne Holm (Oregon Canadian Forest Products)
Tai Kim (Subway)
Susie Anthony (CPO 8)
Robin Biden (Hillsboro School District)
Paul Coussens (Property Owner)
Marie Finegan (Washington County Farm Bureau)
Bob Jossy (Jossy Farms)
Debbie Raber (City of Hillsboro)
Bob Horning (North Plains Chamber of Commerce)
Clark Berry (NW ACT)
Butch Kindel (Washington County Fire District #2)
David Smith (North Plains Planning Commission)
Nick Kelsay (City of Forest Grove)
Hal Ballard (Washington County Bicycle Transportation Coalition)

SWG members absent
Joe Darby, Stewart Stiles Truck Line

Staff
Lili Gordon, Tim Wilson, Tom Braibish, Amy Gibbons (ODOT)
Marc Butorc, Matt Hughart (Kittleson Associates)
Rick Kuehn (CH2M Hill)
Kristin Hull, Kalin Schmoldt (JLA)

Meeting purpose:
- Learn about future traffic conditions
- Review and develop recommendations about evaluation criteria
- Learn about Interchange Area Management Plans (IAMP)

Welcome and introductions
Kristin thanked all for coming and asked the one member of the public present if he would like to make a statement to the group during the public comment period. He indicated that he would probably have no comment.

Review agenda – Kristin noted one change to the agenda: the IAMP discussion would come before the Future Traffic Conditions report.

Adopt meeting summary – The meeting summary #3 was adopted as written.
Goals, objectives, evaluation criteria

Review revised criteria – Rick Kuehn distributed the "Goals, Objectives, and Evaluation Criteria" and briefly discussed the highlighted changes and additions.

- The first addition discusses the spacing between the interchange ramp and the first intersection where left-turns are allowed. Rick noted that this criterion was different than the previous criterion which specifies spacing between the ramp and the first driveway.

- On the second change, Rick emphasized the addition of "proper transition" and the removed reference to design speed.

- The third change alters the wording slightly but preserves the same idea. A member asked whether "safe" access is specified in the criteria. Rick responded that "safe" could be added, but felt that "safe" was covered by "efficient." There was some discussion of adding "safe" to the criteria, and Rick noted that "safe" could be added in front of "efficient" in most cases.

- The fourth change makes the reference to the comprehensive plan more specific to North Plains.

- The fifth change is the addition of a new objective and two new criteria related to economic development.

A member suggested adding: "Constructed in a way to allow overpass to remain open during construction," which Kristin added as a criteria under Goal 6. A member noted that they should avoid a "Cedar Hills situation" which created a detour for a long period of time. The group expressed consensus that impacts during construction should be minimized. Kristin suggested leaving it to the PDT to determine specific wording.

A member suggested changing the name on the sheet to reflect that the group was looking at "Glencoe Interchange Alternatives." Rick Kuehn said the name on the worksheet could be changed, although the name of the project is simply "Glencoe Interchange." Kristin emphasized that the sheet is a working document, so it is most important that the group understands the purpose.

A member brought up the question of a Gordon Road alternative and expressed concern that he had not heard anything about the option. He noted that the goal of reducing traffic on Glencoe Road might be accomplished by using Gordon road. Rick Kuehn responded that the team has deliberately avoided discussing specific alternatives, but that the workshop scheduled for the first week of June would be the right place to raise those kinds of ideas. Staff assured the SWG that no alternative was precluded and alternatives would be brought up at the meeting next week.

- The final change was the addition of a criteria regarding adequate agricultural drainage.

A member asked whether there should be a public involvement criterion. Rick Kuehn reminded the group that the purpose of the criteria is to help screen and compare options. He noted that a public involvement plan spans the entire process so it would not help to differentiate between options.

Kristin said that it would appropriate if the group wanted to write out a public involvement statement or incorporate something into the group charter.

Committee recommendation – Kristin asked the SWG if it was ready to recommend adoption of the goals, objectives and criteria to the Project Development Team. The SWG agreed by consensus. Kristin noted that the changes will be made and a final version would be brought back to the group.

IAMP 101

Presentation – Matt Hughart gave a brief introduction to the IAMP process. It is essentially a 20+ year strategy to protect the functions and safety of a highway interchange. A member requested to have the slideshow emailed to the group. Matt noted that an IAMP was not prepared for the existing interchange because they are a fairly new requirement.

Q & A – A member asked about the implementation process and how IAMPs are dealt with and scheduled. Matt responded by describing how after the IAMP is adopted by the SWG and the PDT, then specific projects and improvements are individually adopted and implemented into the city's TSP.

A member asked about the purpose of the Jackson School Road project. To keep the group moving forward, Kristin recommended that the member talk to Steve after the meeting.

Future traffic conditions

Presentation – Matt noted that everyone should have received a copy of the future conditions memo via email, although he brought copies of the memo as well as Appendix D for anyone who is interested.

Matt addressed the issue raised at the last meeting about how the traffic counts presented were lower than historical counts. Matt noted that he had done some research and found that there is a siphoning of traffic from Glencoe Road to Jackson School Road since the new interchange opened. He indicated that that is at least part of the reason for lower than expected traffic volumes today. He also noted that some of the difference is expected based on daily variations.

A member noted that Matt's findings seem counter-intuitive. Matt noted that it is good that the SWG recognizes that growth is occurring in these rural locations.

A member mentioned that Washington County had completed traffic counts in 2005 and that the data had been correctly compiled and was ready for use. Matt offered to talk afterwards about getting copies of the newer numbers.

Matt then described the methodology used to complete the traffic forecasts. He discussed how different types of new local development are each expected to create varying number of trips which will be added to the transportation system. Matt noted that he worked with city staff to understand likely potential infill development and new development to determine realistic numbers. Matt explicitly noted when he made assumptions about potential developments which were unplanned. Matt described the process as similar to that used to develop the city's TSP.

A member noted that the presentation describes the Westside industrial area in square feet, and asked why it wasn't represented in acres. Matt responded that trip studies are aggregated based on the size of the building, and the manual uses square footage to correlate building size with number of trips. He noted that only about 30% of each acre of industrial property is used for the building itself, while the rest is used for support structures such as roads, parking and lawn. The member expressed disbelief at the square footage estimates, and Matt offered to review the numbers with him later.

A member pointed out that Hillsboro has annexed 300 acres of industrial land and has approval for annexing more. The member asked how the new trips that will use Glencoe Road are taken into account. Matt responded that, although many changes have occurred since the 2020 model was developed; the update of the model is not yet available. Matt said that he has been working with Washington County to employ the most accurate model possible.

Marc Butorac reiterated that they are working with the best model available. He noted that if it becomes apparent that the current model is inadequate as studies continue, then there will be mechanisms incorporated into the process which will allow the IAMP to evolve as time goes on.

A member noted that he thinks that 2% growth per year is a conservative estimate, and asked about potential commercial development south of the highway. Matt replied that, aside from a small piece of commercial land, there is no planned commercial development south of the highway.

Marc added that it is their mandate to proceed with current expectations. He added that they can create mechanisms to adjust the process if new needs do arise. Rick Kuehn pointed out that the city has taken the official stance that development will occur on the north side of US 26. A member pointed out that some people have interest in seeing industrial growth on the south side of US 26.

Another member indicated that 2% growth seemed small. Matt clarified that Jackson School Road is acting to temper the traffic on Glencoe road, and that traffic volume could be indeed be higher without its influence.

Marc noted that the interchange is a constrained system in that the feeder roads can only accommodate a limited number of vehicles per hour. He noted that because the amount of traffic that can get to the interchange in a one hour period is limited, it keeps the growth potential low.

A member asked how the growth in traffic on Highway 26 would be addressed and whether there is a way to account for people using Hwy 26 who get off and on at Glencoe Road. Matt said that the assumptions for commercial development are oriented towards the growth of highway traffic because many of the commercial establishments in the area (gas stations, fast food) target regional through travel more than local travel. He added that it is also possible to look at the annual growth of Highway 26 itself.

A member had a clarifying question about whether improvements—such as the addition of signals—need to be made to all of the indicated intersections. Matt explained that the need for signals is not just based on side street delays, but traffic volumes at all hours and the persistence of delays. Marc added that some solutions may minimize the need for signals as well.

A member referred to page 12 of the technical memo where it indicates that the ramp is forecast to operate above capacity. Matt noted that that was an error, and it should say that the *standard* has been exceeded, not the *capacity*. He described the rating for ramps as a "V/C" ratio or volume/capacity and indicated that the ODOT standard is 0.85, while the ramp is currently at 0.88.

June 8 workshop

Workshop plan - On Wednesday, June 8, there will be a combined PDT/SWG meeting which will be in the form of an interchange design workshop. The workshop will talk about different interchange forms, their advantages and disadvantages, and the terms used to define them: diamond, loop, cloverleaf, etc. Aerial photographs will be provided for markup.

The next night will be a public open house, structured like the June 8 SWG/PDT workshop, but seeking input from the public. ODOT and team staff will sift through the collected ideas and present the findings to be screened and evaluated.

A member asked if the aerial map could include the Gordon Road area and whether it would be possible to get data from Washington County regarding the percentage of traffic using the exchange which ends up in Forest Grove and Hillsboro. Matt answered that yes, the map does include Gordon road, and he said he would work with the county modeler to try to get the numbers requested. Matt said that he would try to make some estimates for next week's meeting. Another member also expressed curiosity about the final destinations for interchange users.

Public comment - Kristin again asked for comments from the public, there were two:

- Is the project looking at razing the bridge or raising the existing bridge? Rick responded that the project was looking at rebuilding the interchange to current standards.
- A question was raised about whether ODOT would not allow on/off ramps at both Glencoe Road and Gordon Road. Marc replied that current ODOT rules would not allow on and off ramps at both locations, but noted that there are forms which would work. Matt said that there will be more on the subject at the next meeting.

Next steps and close

- Next meeting:
  7-9 p.m. Wednesday, June 7
  Jessie Mays Community Hall

- Next public meeting:
  5:30-7:30 p.m. Thursday, June 8
  North Plains Elementary School
  Workshop from 6-7:30 p.m.

Action items:

- Distribute IAMP 101 to SWG.
- Distribute adopted purpose and need and evaluation framework to SWG at next meeting.

Glencoe Interchange Project
Joint SWG and PDT meeting #4B

7-9 p.m. Wednesday, June 7
Jessie Mays Community Hall
30955 NW Hillcrest, North Plains

Meeting Summary

SWG members present
Wayne Holm (Oregon Canadian Forest Products)
Tai Kim (Subway)
Susie Anthony (CPO 8)
Robin Biden (Hillsboro School District)
Paul Coussens (Property Owner)
Marie Finegan (Washington County Farm Bureau)
Bob Jossy (Jossy Farms)
Debbie Raber (City of Hillsboro)
Bob Horning (North Plains Chamber of Commerce)
Clark Berry (NW ACT)
Butch Kindel (Washington County Fire District #2)
David Smith (North Plains Planning Commission)
Derek Robbins (City of Forest Grove)
Hal Ballard (Washington County Bicycle Transportation Coalition)

SWG members absent
Joe Darby, Stewart Stiles Truck Line

PDT members present
Lili Gordon, Tim Wilson, Tom Braibish, Amy Gibbons, Allan McDonald, Canh Lam, Mark Johnson, Marty Jensvold (ODOT)
Marc Butorc, Matt Hughart (Kittleson Associates)
Rick Kuehn (CH2M Hill)
Kristin Hull, Kalin Schmoldt (JLA)
Abe Turki, Gregg Leion, Washington County
Blake Boyles, Don Otterman, City of North Plains

Meeting purpose:
- Learn about interchange design
- Brainstorm possible interchange designs

Welcome and introductions
Kristin welcomed all to the design workshop. As the members of the PDT and SWG were both present, Kristin led a brief round of introductions.

Review agenda – Kristin noted that Matt and Marc will present materials which will be followed by some drawing by the group members. Kristin also invited members of the audience to participate in the workshop.

Project status
Tom Braibish recalled what the group has already accomplished, noting the discussion of purpose and need, present and future conditions for traffic, and NEPA—noting that NEPA is not just about the natural, but social conditions as well. Tom described this meeting as an opportunity to look at viable interchange geometries. These alternatives will then be held up to the purpose and need, and goals and objectives. Tom then asked Gregg Leion to talk about Washington County's transportation plan.

Greg pointed out that Glencoe Road was selected as the main arterial connection south to Forest Grove and Cornelius. He said that this decision, supported by years of investment of MSTIP funds, was made through an open public process which involved many participants including representatives from North Plains, Forest Grove, and regional farmers. He explained that adding interchanges at other roads would require additional investments in the arterial system and that the County does not have funding for those improvements.

Tom encouraged the group draw upon all of the options it can think of. He emphasized that all ideas will be considered and weighed against the criteria. He noted that some ideas will be more challenging to make work, but may present advantages and benefits that can be incorporated into other alternatives.

Greg added that if there are ideas which don't involve Glencoe road, then there will likely be costs associated with upgrading the road. He pointed out that ideas which involve Gordon Road would have added costs of upgrading it to an arterial. He added that Gordon Road may still be considered, but just wanted to provide some context.

A SWG member pointed out that conditions have changed since 1988. Greg responded that he just wanted to make the point that $16 million in improvements have already been made to support Glencoe Road as the major route. Tom Braibish emphasized that the most important aspect to consider is that the alternatives will need to fit with the local and county plans.

Interchange design 101
Marc Butorac noted that the workshop is not solely to design the interchange but also to educate the group and understanding the context of how interchanges work. Marc noted that nothing is off the table. Marc noted that the public will go through an identical process at the community workshop.

Presentation – Matt described the purpose of the presentation: to teach the parameters and the basic forms of interchanges so that the group can lay out forms on individual aerial maps.

Matt spoke briefly about road hierarchies and the progression from freeway to arterial, to collector, and to street. He noted that you can't go directly from a high order facility (freeway) directly to a low hierarchy facility (street).

Matt showed various examples of interchanges and noted how they take on different forms depending on their environment. He pointed out that urban interchanges are different than rural interchanges. He noted that the "diamond" interchange and its variations are quite common, and described it as a likely candidate for this location. Matt also noted that the parclo-A (partial clover

"advance") and parclo-B (partial clover "beyond") were possible options. He noted that parclos are often good options because they can avoid impacts in one or more quadrants.

Matt described how they must consider design characteristics such as vertical clearance, which impacts the length of roadway approaches, as well as on and off ramps which require a certain distance to allow acceleration and deceleration. He pointed out how loop ramps have to be at the right radius; not too tight or too wide.

Matt also described how access to the interchange itself must be managed. He talked about how approaches must be gradual and described how minimum approach distances can increase quickly depending upon circumstances. He also pointed out that they must design for trucks and vehicles with heavy loads.

A member asked about the full measurement of ramps and whether such measured distance included acceleration lanes. Matt said that yes, acceleration lanes are considered as a part of the ramp length.

Matt also described how driver expectations need to be met, and designs must be consistent with what drivers expect to encounter. He noted that interchange form should be consistent, don't want to introduce unique elements which surprise or confuse drivers into making unexpected maneuvers. (For example, exits on the left side of the roadway.)

Matt addressed interchange spacing requirements, noting that there must a minimum distance between interchange forms extending from the end of one on-ramp to the beginning of the off-ramp at the next. He also pointed out that designs must consider what is happens on side-streets in advance of the interchange forms. He noted that ODOT standards institute a one-quarter mile spacing between the ramp terminal and the first major public intersection or driveway.

A member pointed out that these intersection design standards appear to be setting up a scenario in which there would be substantial impact to the community of North Plains. He asked how much flexibility is possible to reduce such impacts. Matt responded that in many cases it is impossible to meet all of the design standards. Tom Braibish pointed out that details about the functional and socioeconomic impacts were included within the evaluation criteria and will be considered as alternatives are reviewed. He noted that a strict perspective would close all streets and driveways within the project area, but as that is not an option, other options will have to be explored. He noted that the design standards aren't *completely* flexible, but must still be tailored against the potential impacts to North Plains. Allen McDonald pointed out that while ODOT will purchase control of access within one-quarter mile, they may not close all accesses. He cited an example of access to a property which remained open after constructing an interchange, with the stipulation that future development or sale will bring the access up to standards. Kristin noted that the group will talk about specific access issues later and the task for the day is to come up with ideas.

Another member agreed, noting that it will be easier decide whether ideas are good or bad once they are made available to judge.

Interchange design workshop

Matt provided traffic volumes which some members had requested at last week's meeting.

Marc again told the group that there are no bad options.

Marc explained the interchange design tools that were provided to each participant and explained the color coding. He asked participants to record their name and phone number on designs in case the project team had questions. Marc reiterated the call to be creative, as at least $15 million will be spent by the time the project is done, and it will be around for 40 years or more.

Report back on interchange design workshop
After the ideas had been posted on the walls, Marc encouraged the group to stay and browse and ask questions, noting that they would like to get as many options out into the open tonight and in the coming week. Marc also encouraged the group to take home the interchange design tools. Marc then quickly quizzed the tables on interchange types.

Review options – Marc gave a summary of what he had seen, noting that the group will get the chance to see all the ideas at the next meeting. Marc noted:

- Diamonds, both tight and single point.
- Lots of parclo-bs for Westbound 26 to Southbound Glencoe Road. (In the NW quadrant.)
- Parclo A forms for Southbound Glencoe to Eastbound Hwy. 26.
- Split diamonds (Glencoe 313th/316th/Gordon).
- Tight diamonds.
- Gordon road parclo-bs and diamonds.
- Flyover
- Tunneling Glencoe

Next steps and close

- Next public meeting:
  5:30-7:30 p.m. Thursday, June 8
  North Plains Elementary School
- Next meeting:
  7-9 p.m. Thursday, July 13
  Jessie Mays Community Hall

Glencoe Interchange Project
SWG Meeting #5

7-9 p.m. Thursday, July 13
Jessie Mays Community Hall
30955 NW Hillcrest, North Plains

MEETING SUMMARY

Staff present:
Lili Gordon, Tom Braibish, Tim Wilson, Aaron Myton, Amy Gibbons, Steve Harry (ODOT)
Rick Kuehn (CH2M Hill)
Matt Hughart (Kittelson & Associates, Inc.)
Kristin Hull, Kalin Schmoldt (Jeanne Lawson Associates)

SWG members present:
Paul Coussens (Property owner)
Robin Biden (Hillsboro School District)
David Smith (North Plains Planning Commission)
Marie Finegan (Washington County Farm Bureau)
Clark Berry (NW ACT)
Tai Kim (Subway)
Larry Lund (Oregon Canadian Forest Products)
Rick Dobbs (Washington County Fire District #2) – Alternate
Kat Iverson (Washington County Bicycle Transportation Coalition) – Alternate
Bob Horning (North Plains Chamber of Commerce)
Nick Kelsay (City of Forest Grove)
Susie Anthony (CPO 8)
Bob Jossy (Jossy Farms)

SWG members absent:
Debbie Raber (City of Hillsboro)
Joe Darby (Stewart Stiles Truck Line)

Meeting purpose:

- Review interchange alternatives from public meeting, and SWG and PDT workshop
- Review screening of alternatives and confirm alternatives to move forward for more detailed analysis

Welcome and introductions

Review agenda – Kristin began the meeting by thanking participants for coming. Kristin noted that there was much on the agenda to discuss and verified that everyone had received the packet in the mail. Kristin noted that the complete set of 84 ideas gathered at the SWG meeting and the public workshop had been consolidated into 33 unique ideas which were shown in the packet.

Adopt meeting 4 and 4b meeting summaries – A member noted that the word "interchange" was omitted on page three of the meeting 4 summary. There were no other comments.

Kristin added that the interchange workshop summary could be found in the packet.

Rick Kuehn noted that the technical team reviewed the designs and could not identify any possible designs that had not been identified through the workshop process that should be considered. Kristin complimented the group for being so comprehensive.

Evaluation process

Kristin briefly discussed the "Steps to Preferred Interchange Concept" handout. She noted that the group is currently between phase 2 and 3 where the options must be pared from 24 to 12 or so. After the screening evaluation is completed, Matt will complete traffic operations analysis to further narrow the options to those that can accommodate forecasted levels of traffic. Kristin noted there could be more than five options left after that step.

Kristin reminded the group that it is advising the PDT. She told the group that reaching consensus is important and that a unified voice carries more weight than individual feedback.

Interchange designs and screening

Matt led the group through a detailed explanation of the process used to advance the various conceptual drawings (outlined in Tech Memo #4). Matt described how the design sub-team took the 84 sketches and combined them into groups of general forms and common themes. He explained that many concept sketches came up more than once and could be consolidated into 33 unique "block diagram" concepts. Matt noted that some of the ideas had been modified to meet basic design standards—such as making interchange ramps enter Glencoe Road at 90 degree angles—but he added that these changes were mostly minor.

He explained that the design sub-team then reviewed the 33 block diagrams and eliminated those that did not meet the project's purpose statement. This process narrowed the field to 24 designs. The nine options set-aside because they did not meet the purpose statement included:

- **Concept #6** – Doesn't serve traffic that wants to go North on Glencoe Road from Hwy 26 West, nor traffic that wants to go East on Hwy 26 from Glencoe Road southbound.
- **Concept #11a** – Doesn't address deficiencies for Glencoe Road.
- **Concept #11b** – Doesn't address queuing and sight distance related deficiencies for the on and off ramps for Glencoe Road.
- **Concept #19** – Creates an inefficient interchange which forces detours through frontage roads and other streets.
- **Concept #23** – Takes away existing movement and is inefficient as an interchange.
- **Concept #24** – Fails to address deficiencies at Glencoe.
- **Concept #25** – Fails to address the structural deficiencies at Glencoe, and Rick pointed out that it also removes existing access to Glencoe Road.
- **Concept #26** – Fails to address safety or over-crossing issues, height, or sight distance issues.
- **Concept #27** – Fails to address deficiencies at Glencoe.

A member asked about the dotted line which appears in the NE quadrant of many of the concept maps. Matt said that the line demonstrates that some realignment of the existing road in the NE quadrant of the interchange will probably be necessary under that design option.

A member asked how concept #24 was eliminated based on not addressing capacity deficiencies since traffic analysis had not been completed. Tom Braibish explained that the option had been eliminated since it would not address structural deficiencies at Glencoe Road. Kristin proposed revising the report to remove the reference to traffic operations and the group agreed.

Tom noted that the PDT has recommended setting aside options that use Dersham or Gordon roads. He pointed out that those alternatives did not meet the screening criteria as well as the other (non-Gordon/Dersham) options did. Tom reminded the group that the concepts were all reviewed carefully to determine which alternatives best satisfied the most goals. He noted that ODOT staff had looked at the screening criteria in a different way from the consultant team and that the two screening methods resulted in the same set of concepts to advance to the next stage. He explained that is validated the results.

Tom and Kristin explained that the SWG could talk more about the Gordon Road options during the SWG recommendation agenda item, but that the PDT thought it was important to address upfront since there had been interest from the SWG in considering a Gordon Road option. Kristin then invited the group to take ten minutes look at the designs posted around the room.

After the group reconvened, Matt moved on to the next step "High Level Qualitative Evaluation," that uses the formally accepted evaluation criteria. He explained that, since this is the screening level evaluation, the criteria were considered at generalized level.

Matt focused on the evaluation criteria list and summarized the goals. Matt noted that they chose not to look at Goal #6: Project Development because the criteria do not apply at the screening level. For example, Matt noted that it did not seem fair to judge the concepts on cost because cost estimates could not be developed at the current level of detail. Matt also noted that some evaluation criteria were not considered at this level because they were either too specific or would be impractical to apply. The rest were scored to indicate whether the concepts had a positive, negative, or no impact.

A member asked about how impacts to EFU (exclusive farm use zoning) land were measured. Matt responded that they looked at whether the concept divided parcels which would be a more significant impact than just encroaching on the edges of parcels. Kristin noted that, at the next level of evaluation, there will be more specificity regarding the actual degree of impact. Rick Kuehn noted that while exact impacts are unknown, a more stringent evaluation will come.

A member asked why freight movement and emergency response time were not being considered. Rick pointed out that all of the options could probably be designed to accommodate freight and emergency response, so using those criteria would not eliminate any options.

A member asked what the difference was between freight "movement" and freight "mobility." Rick explained that there were two different ways of saying the same thing.

Matt noted that supporting data describing the scoring for each option were available upon request but noted that they are quite lengthy. Tom Braibish offered to post the appendices on ODOT's FTP site, and noted that the SWG could review them if they wanted to examine the rationale behind each score.

Matt drew attention to the table of concepts and their scores. Matt described the table that showed which options satisfied the most criteria under each goal. Matt pointed out that none of the concepts achieved pluses in the "Natural and Cultural Resource" category, acknowledging that there will be inevitable impacts with all of the options.

Matt then pointed out which concepts satisfied the most criteria under four, three, two, one, or none of the goals. Kristin noted that the group should feel free to ask about the options which the PDT and project team have not recommended. Matt then briefly described each of the twelve recommended options:

- **Concept #1** – Parclo AB
- **Concept #3** – Single loop, Parclo A (NE quadrant)
  A SWG member pointed out that westbound traffic wasn't an issue. Matt agreed, and noted that the group should be thinking about how each concept addresses traffic issues. He noted that Concept #3 may not score well at a more detailed level of evaluation because its design increases efficiency for a low-demand direction. Kristin noted that specifics will emerge with the traffic evaluation.

  Another SWG member asked about how aesthetics were judged. Matt responded that they had looked at whether the proposed interchange forms would be out of character with the area. He cited as an example the flyover feature in Concept #9 which creates a high structure which might not appear to belong in North Plains as much as it would belong in downtown Portland. Matt agreed that the criteria was subjective, but pointed out that they tried to make it as objective as possible.

- **Concept #7A** – Single loop, Parclo B (NW quadrant)
  A member asked if the loop ramps could be any tighter than those shown. Aaron Myton noted that the loops shown were about the same radius as the loop ramp to Cornelius Pass Road which is about as tight as they can be.

  A SWG member asked whether it would be possible to bring the westbound Hwy 26 off ramp to intersect at a position south of the where the westbound Hwy 26 on ramp begins. Matt said that doing so would create the need for more signals and flow regulation. Rick added that such an intersection could violate driver expectations. Marty Jensvold also noted that there were emergency access reasons for keeping on ramps directly across from off-ramps.

  A SWG member asked about doubling up lanes to alleviate the need for longer ramps. Matt noted that dual turn lanes can solve other problems by relieving the need to queue vehicles, but added that he didn't know specifically yet where double turn lanes could reduce ramp lengths. Kristin noted that the next set of drawings will show lanes.

- **Concept#7B** – Single loop, Parclo B (NW quadrant)

An audience member noted that this concept does not allow a quick turnaround for vehicles wishing to reenter the highway and asked why the concept wasn't eliminated as was a similar Gordon Road option. Matt acknowledged the point and responded that there may be the potential for a U-turn, and said that the impact probably is not as severe in this concept as it was on Gordon Road.

- **Concept#7C** – Standard diamond

- **Concept#8** – Two loops, Parclo B

- **Concept #9** – Diamond with flyover

- **Concept #11C** – Rebuild ramps and Glencoe Road

  A member asked about the 0/- rating on the bike and pedestrian criteria. Matt noted that all traffic signals can have a pedestrian phase, so they could all accommodate pedestrians and bikes, but none of the concepts provide grade-separation. He pointed out that Concept #8 has the possibility of limiting or impeding the ability of pedestrians to cross the ramp terminals.

- **Concept #12** – Single point urban interchange

Tom Braibish noted that when multiple signals are used, they must be timed so that traffic can clear out or have adequate room to wait for the signal to change. A member asked about the use of smart signals that can sense when traffic gets backed up. Kristin encouraged the group to finish discussion of the concepts and leave the discussion of operational details for later.

- **Concept #13** – Roundabout interchange

- **Concept #14A** – Tight Diamond (Glencoe overpass)

- **Concept #14B** – Tight Diamond (Sunset Hwy overpass)

Kristin asked the group if they would like to discuss any of the concepts that the PDT suggested setting aside. The group asked to discuss #2, #16, #17 and #22.

- **Concept #2** – Similar to concept #1 but with the Glencoe Road shifted east. The concept scored negatively because it would divide parcels and impact businesses north of Hwy 26.

- **Concept #16** – Creates a cloverleaf which would allow the opportunity to eliminate left-hand turns. Matt said that full cloverleaf interchanges are more conducive to high demand intersections as in freeways. He added that not only is the concept out of character, but it would create dangerous merging areas in the middle of the cloverleaf.

- **Concept #17** – A member asked about why the concept gets a minus for proximity to driveways. Matt noted that the concept creates the need for a frontage road to connect

After hearing the explanation for why these were set aside, the SWG agreed with the preliminary PDT recommendation.

- **Concept #22** – Provides an additional interchange at Gordon Road. A member noted that some SWG members were interested in providing an option at Gordon Road, and noted that Gordon will be reaching capacity within a few years.

The group was somewhat split about whether this option deserved further study.

A member asked clarification on why all of the Gordon Road concepts have been eliminated. Matt noted that they found that every option except #22 had failed to address the deficiencies at Glencoe Road. Another SWG member noted that the roads were too close together for two interchanges. Tom added that all the criteria should be looked at and noted that the option performs moderately to poor on most of the goals. Tom noted that a Gordon Road option could improve traffic flow, but asked why a new structure should be created when traffic issues could be addressed in a single interchange.

SWG members noted that a Gordon Road interchange would be an improvement for various surrounding communities, but might increase traffic by the school. Another SWG member noted that access from roads and driveways on Gordon Road would be affected by a new interchange.

A SWG member asked if it would be necessary to close the intersection of Commercial Street at Gordon Road if there was not a signal to go north on Gordon Road. Rick Kuehn noted that interchange spacing requirements do not differentiate between signalized or stop sign intersections, and added that the standards do require that spacing not be worse than before the improvements. The SWG member noted that an interchange at Gordon could improve conditions on both Gordon and Glencoe roads.

Kristin asked how the group was feeling about including Concept #22 and the group was split. Kristin said that the PDT would pass the option on for the operational analysis if the group felt strongly about it, but noted that the PDT had already looked very closely at the option. Kristin proposed tabling the discussion and allowing the PDT to decide what to do in light of the SWG discussion.

A SWG member said he thought it was unreasonable to spend more time on the Gordon Road considerations, and Kristin asked that the SWG let the PDT make the call on the option.

SWG recommendation

Concept #3 – A SWG member pointed out that because there is less need for westbound access, Concept #3 should be removed from consideration. The SWG agreed.

Concept #9 – A SWG member said that Concept #9 was an inelegant solution to the problem and could create a high overpass. Rick Kuehn noted that the PDT had wanted to consider the option in case it was discovered that a similar design was necessary from a traffic operations point of view. However, he noted that as the other options seem able to accommodate the traffic numbers, this design appears to be less necessary.

Matt noted also that there may be some advantages to this form concept which are not obvious. He advised keeping the option in at this point because it accommodates the highest demand at the p.m. peak, could potentially reduce the necessary width for the overpass itself, and could increase the utility of the overpass to pedestrians.

A SWG member pointed out that this option would create an uninterrupted flow of traffic on Glencoe southbound that could create access problems for people who live and work along the road. Kristin noted that about three members were opposed to the concept but the rest of the SWG seemed willing to let the PDT do their analysis.

Concept #13 – There was concern that the concept wouldn't work. Most of the group made the recommendation to drop the option. A member said that it would be dangerous for people in a freeway state-of-mind to try to use this style interchange. Another member said the concept could be useful to look at if it was not too much trouble. Kristin recommended passing the concept on to the PDT.

Concept #14B – A member pointed out that said this style of interchange can be unfriendly to pedestrians and seemed unrealistic. Kristin pointed out that that it was not necessary to exclude options, as they've already been pared down to thirteen or so. Tom acknowledged that there were indeed some practical considerations. A member asked about the use of cost as a criterion. Kristin reminded the group that cost was not a factor at this point and recommended passing the concept on to the PDT.

Kristin summed up, noting that the SWG will recommend dropping concept #3 while passing on #9, #13, #14B, and #22 to the PDT for further review.

Public comment

A member of the audience said that he felt concept #2 should be reconsidered because it provides a nice realignment without affecting businesses and could allow for improved connectivity during construction. Several SWG members noted that the concept would require the removal of many businesses. Matt added that because a grade and corresponding embankment may be necessary, the impact on businesses may be greater than it appears.

A member asked why all of the options which realign Glencoe Road were rejected. Kristin responded that the predominant reason was because of the impact to local businesses. Matt also pointed out that shifting the alignment could still create a situation where vehicles have to back-track to access businesses which are close to the highway.

Next steps and close

Kristin thanked all for coming and noted that the recommendations will be passed on to the PDT.

- Next meeting:
  7-9 p.m. Wednesday, August 2
  Jessie Mays Community Hall
- Next public meeting:
  5-7:30 p.m. Thursday, August 17
  Jessie Mays Community Hall

Glencoe Interchange Project
SWG meeting #6

6:30-9 p.m. Wednesday, August 2
Jessie Mays Community Hall
30955 NW Hillcrest, North Plains

AGENDA

SWG members present:
Paul Coussens (Property owner)
Robin Biden (Hillsboro School District)
Mitch Ward (North Plains Planning Commission) – Alternate
Marie Finegan (Washington County Farm Bureau)
Clark Berry (NW ACT)
Tai Kim (Subway)
Wayne Holm (Oregon Canadian Forest Products)
Rick Dobbs (Washington County Fire District #2) – Alternate
Kat Iverson (Washington County Bicycle Transportation Coalition) – Alternate
Stewart King (North Plains Chamber of Commerce)
Bob Jossy (Jossy Farms)

SWG members absent:
Debbie Raber (City of Hillsboro)
Joe Darby (Stewart Stiles Truck Line)
Nick Kelsay (City of Forest Grove)
Susie Anthony (CPO 8)

Staff present:
Lili Gordon, Tom Braibish, Tim Wilson, Aaron Myton, Steve Harry (ODOT)
Rick Kuehn (CH2M Hill)
Marc Butorac (Kittelson & Associates, Inc.)
Kristin Hull, Kalin Schmoldt (Jeanne Lawson Associates)

Meeting purpose:
- Review evaluation of remaining alternatives
- Recommend alternatives for additional evaluation and public review

Welcome and introductions
Review agenda - Kristin called the meeting to order. She announced that tonight the SWG will review the next set of concepts, hear about what the PDT has discussed, and look at the remaining eight options. She noted that the meeting was longer tonight to allow for more discussion.

Adopt meeting 5 summary – The meeting 5 summary was approved with no comments.

Open house - Kristin noted that there will be an open house on August 17 where the public will be asked about what options they prefer. Kristin added that the group has thus far talked about what

"works," and now it is about what works better, and subsequent meetings will be about refining what works the best. A final recommendation will be determined on August 23.

Local access meetings - Kristin also noted that she, Lili, and Tom are beginning to meet with property owners in the project area to talk about access issues, and added that the SWG will soon be talking about how access issues in the interchange area.

A SWG member suggested employing a "quorum" as a decision making tool if necessary. Kristin clarified that the group had a "quorum" of 50% to make decisions and had agreed on a threshold of 2/3 of those present in support of an option for it to be a group recommendation. She said the group could use this tool if they could not reach consensus, but that reaching consensus was important because recommendations that everyone "can live with" are stronger advice to the PDT.

Initial screening decision
Rick briefly talked about the concepts listed in the handout under table 3b-1.

Concept #3 – Rick noted that the PDT had reviewed the concept and forwarded it to the SWG, but the SWG recommended dropping it since it provided a loop ramp in a direction with low demand. The PDT agreed with the SWG and dropped it from further consideration.

Rick noted that the SWG was split over concepts 9, 13, and14b and asked that the PDT look at those concepts again. The PDT opted to drop all three.

Concept #9 – The flyover concept was dropped. Rick summarized that the concept was out of character with the community, would have a higher estimated cost (around $40 million), would increase impacts to adjacent property owners, and could create substantial noise impacts. He noted that the concept would require either two separate ramps or a ramp that splits. He said this would move the westbound off-ramp far to the east and would create spacing issues with the Jackson School Road interchange. There would also be impacts to EFU lands. On the positive side, Rick noted that the option would allow free-flow movement from Hwy 26 westbound to Glencoe Road southbound, and would also reduce the lane needs on the Glencoe over crossing structure from 5 to 4 lanes.

A SWG member suggested that the section of the table which read "Dropped per SWG recommendation" should be changed to reflect that the SWG did not reach consensus either way and agreed to accept the PDT decision. Kristin said it would be changed.

Concept #13 – Rick described the roundabout option as likely to confuse drivers and make future expansion at the interchange difficult or impossible. He also noted that a roundabout would possibly be difficult to construct while the keeping the interchange open to traffic. With a roundabout design, he said that the vertical alignment of Glencoe would have to extend further north and south because the roundabout needs to be level all the way across the interchange. He added that large trucks may find it difficult to navigate and have difficulty interacting with other vehicles in the roundabout. Finally, he added that it does not maintain as much reserve capacity as other options after 20 years.

Concept #14b – Bringing Highway 26 over Glencoe road was dropped primarily because of the potentially high cost, the large retaining walls necessary, the increased noise, and the impacts to

businesses. The PDT also found that the option didn't provide any operational benefit over the alternatives where Glencoe passes over the highway.

Concept #22 – The concept includes a tight diamond at Glencoe and a partial interchange at Gordon which could divert some traffic off of Glencoe and into the west end of North Plains. Rick noted that the concept would impact EFU lands and the resulting interchange spacing to Glencoe and Dersham would be too close. Rick also noted that supplemental improvements might be necessary on Gordon road if an interchange were to be built there. Rick said that the concept would violate many accepted management policies. The concept could create access management issues on Gordon Road. The concept also appeared to provide no real benefits for travelers going east.

Evaluation of interchange designs

Method/process - Marc discussed briefly the progression to eight final concepts. He said that traffic operations is usually used to screen options, but the traffic analysis did not show significant differences. Consequently, the PDT had to look at other factors like the cost of bridges, ramps, and for right-of-way.

Marc said that they found that almost all of the options could be designed to work from a traffic operations perspective. He noted that the roundabout concept had less capacity than the diamond and loop concepts, and would require a wider overpass to accommodate side by side left turns.

A SWG member asked for the difference between rebuilding the interchange as it is and the tight diamond. Marc responded that a tight diamond design would bring the ramp terminals even closer together.

Marc described how the PDT also looked at construction costs. By looking at recent projects in the region, they were able to approximate the costs of each option and found a range of $18 to $37 million. Concept 14b and 9 had the highest costs, with loop ramp designs costing about $10 million more than diamond interchanges. Compressed and tight diamonds were found to have the lowest estimated construction costs.

Marc talked about right-of-way acquisitions and impacts to business and structures. The PDT compared the number of properties and structures which would be impacted by each design. Loop ramps create the largest footprint and the greatest number of right-of-way impacts. Marc noted that the numbers for Concept #22 do not include right-of-way costs or structure impacts for the partial interchange at Gordon road.

Marc then showed the sum of right-of-way costs plus construction costs, and noted that the numbers were based on similar takes which have occurred over the past several years. The diamond designs performed the best.

PDT recommendation – From the preceding criteria, the PDT recommended three concepts for further study: 11c, 12, and 14a.

Concept #11c – The concept would build the ramp terminals at roughly the same points, but would have longer on/off ramps and slightly different ramp geometry.

Marc noted that this option might require six lanes on the Glencoe structure. This was assumed in the cost estimate.

Concept #12 – The Single Point Urban Interchange (SPUI) would be unique in that it would be located atop the interchange instead of beneath it like other examples in Salem and Vancouver. This option necessitates a wide and flat over crossing area. Marc noted that the SPUI would need only one signal, and would create fewer north/south delays.

A SWG member asked whether the SPUI would be confusing to drivers. Marc said that in his experience people have adapted quickly. He said that the accident history is similar to other configurations because the intersection only has one signal. Marc added it does cost about $12 million more than the diamond options.

A SWG member noted that SPUIs are difficult for trucks to negotiate.

A SWG member mentioned that the extended ramps would require raising Highland Court. Rick responded that the difference in elevation was manageable. Tom added that while the road needs to be flat, it doesn't necessarily have to be horizontal. He said that there is some flexibility in how the structure itself is laid out, and Highland Court would not be closed because of the design.

A SWG member asked why the SPUI is still an alternative. Tom pointed out the advantage of having a narrow footprint. Another SWG member asked about the likelihood of this option being selected given budget constraints. Tom responded that there might still be benefits to looking at this option alongside others, allowing for the comparison of pros and cons. Tom agreed that cost is indeed an issue.

A SWG member asked about the safety history of single-point interchanges and whether drivers would be familiar with the concept. Rick noted that he was unaware of any large accident records from his personal experience. He added that the left turns in SPUIs are not sharp, and while they might have a slightly higher number of accidents on average than regular intersections, they are comparable or slightly better than the average for two separate intersections—which they serve to replace. He did note that some can be poorly designed with inadequate sight lines. A SWG member emphasized that as the interchange is part of a major truck route, more data is necessary.

Marc noted that SPUIs might be shown to provide an operational benefit, which he said the PDT would like to explore further.

A SWG member requested a photograph of what a SPUI might look like.

Kristin asked whether the SWG could live with giving the PDT another chance to consider the SPUI further and show to the public at the open house.

A SWG member asked whether the SPUI will require merging from five lanes to two lanes on Glencoe Road. Marc noted that all of the options will require similar merging.

A SWG member asked whether any thought had been given to raising Glencoe Road and lowering Highway 26 and how that might affect Highland Court. Kristin responded that all of the concepts

will pose manageable impacts to Highland Court. Tom noted that Highway 26 is already close to the floodplain.

A SWG member asked about whether right turn lanes at the intersection would turn into their own lane. Marc said no.

A SWG member requested that more detailed drawings be brought next time which show distinct lanes.

Concept #14a – The concept has the lowest cost, but increases queuing impacts on Glencoe road. Marc noted that the design will have adequate traffic capacities, though that could require another lane. Rick noted that the concept could be designed to shift queuing to the outside of the overpass. A SWG member said he was pleased with the Jackson School Road interchange design, and that it seemed simple. Marc responded that that interchange is akin to Concept #11c, while this concept is narrower by 50-75ft.

In response to a SWG member's question about providing capacity, Marc noted that all of the concepts will provide about the same capacity, and each will have about the same lifespan.

A SWG member asked about the term "clear zone," which Rick defined as the 1,320 feet from the interchange where access is moderated or restricted.

A SWG member asked how far four lanes would extend on either side of the interchange. Aaron said they don't know yet.

A SWG member asked about how width estimates figure into right-of-way. Marc said that there is a 90 foot minimum. Rick added that the embankments also affect the width of impact.

A SWG member asked whether these were "throw-away overpasses?" Marc indicated that they were designed for a life-span of 50 years. Tom noted that diamond interchanges can be widened, extending their useful life. Marc said that the SPUI can be expanded or retrofitted, but those considerations would increase the cost today. Tom mentioned that although expandability was not part of the evaluation criterion, it was noted.

No one objected to carrying Concept #14a forward for consideration.

SWG recommendation
The other five options (of the eight) were those that the PDT did not think warranted further consideration.

A SWG member asked about the PDT's basic assumptions, the 2030 traffic needs. Tom replied that they have to make design decisions based upon what they know will happen, and a design change cannot be made based on speculation. He said that they had modeled within the existing UGB and considered a scenario which looks at what a fully urbanized North Plains would look like. Rick said that they also used the Washington County model to address outside traffic moving through this interchange. Marc added that the NEPA process requires proceeding according to existing comprehensive plans because they are known and have been adopted. Kristin offered to talk more

after the meeting about how the assumptions were made since the group had reviewed this information at an earlier meeting.

Kristin asked the SWG whether they agreed that the five options should be eliminated. The SWG agreed by consensus. Kristin said they would look at the options with the lane drawings on the 17th, and meet again on the 23rd.

Kristin briefly discussed the open house: the first two hours will be a public meeting followed by a presentation at 7:30. The presentation will talk about local access, what that means, and who it affects. Affected parties will be invited to attend.

Public comment

Kelly Stadelman said that she owns property on Glencoe road and was concerned that the options being presented would land lock her property. Kristin noted that they were planning to meet with property owners to talk about such issues, and offered to talk after the meeting about when they could set up a meeting.

A SWG member said that he didn't think he could pick a favorite plan until he has seen all the details. Tom said that the double line drawings will include lanes and approximate widths, though local access options have yet to be worked out. The SWG member requested an aerial and tax-lot overlay. Tom said that these won't be the final plans, but should be close, while and certain elements, such as the vertical geometry, the radius of turns, and widths of lanes will be as correct as possible. This will be the means for evaluating the right-of-way and dealing with access. The drawings will also make it clear which structures will be affected by the interchange itself.

Next steps and close

- Next public meeting:
  5:30-7:30 p.m. Thursday, August 17
  Jessie Mays Community Hall
  (Kristin noted that *5:00* should be *5:30*.)

- Next meeting:
  7-9 p.m. Wednesday, August 23
  Jessie Mays Community Hall

Glencoe Interchange Project
SWG meeting #7

7:00-9:00 p.m. Wednesday, August 23
Jessie Mays Community Hall
30955 NW Hillcrest, North Plains

MEETING SUMMARY

SWG members present:
Debbie Raber (City of Hillsboro)
Nick Kelsay (City of Forest Grove)
Marie Finegan (Washington County Farm Bureau)
David Smith (North Plains Planning Commission)
Robin Biden (Hillsboro School District)
Tai Kim (Subway)
Hal Ballard (Washington Co. BTC)
Susie Anthony (CPO 8)
Wayne Holm (Oregon Canadian Forest Products)
Clark Berry (NW ACT)

Staff present:
Laura DeGraw (Jeanne Lawson Associates)
Kristin Hull (Jeanne Lawson Associates)
Rick Kuehn (CH2M Hill)
Marc Butorac (Kittleson & Associates, Inc.)
Matt Hughart (Kittelson & Associates Inc.)
Steve Harry (ODOT)
Aaron Myton (ODOT)
Tom Braibish (ODOT)

SWG members absent:
Stewart King (North Plains Chamber of Commerce)
Paul Coussens (Property Owner)
Butch Kindel (Washington Co Fire District 2)
Bob Jossy (Property Owner)

Meeting purpose:
- Review double line drawings of three remaining concepts
- Discuss streetscape choices
- Learn about local access and circulation and suggest local access ideas for consideration

Welcome and introductions
Kristin welcomed the group and said that the SWG would not make a final recommendation on interchange design today. She told the group that the PDT had reviewed the double-line drawings for the final three options and felt that they did not have enough information to distinguish which of the three should be the preferred option. The meeting summary #6 was adopted, Kristin clarified that the 6 lanes on 11C includes bike and pedestrians.

Review double-line drawings
Marc Butorac reminded the SWG about the analysis that had already been completed for the remaining three design concepts. He explained that all three options have the same operational capacity. He reminded the group that the two diamond alternatives cost about the same amount while the single point interchange would cost more. The options have similar impacts to buildings but have different environmental impacts. The PDT has asked staff to do more work to understand community impacts and environmental impacts before the PDT and SWG work to make a final recommendation.

Aaron Myton reviewed the double-line drawings. A SWG member asked if all access to local streets and driveways would be eliminated up to the 1320' mark on the maps. Marc stated that they would talk about answer in detail during the local access discussion which was the next agenda item.

Aaron then answered questions from the SWG about the three design concepts.

Q: Is the single point interchange easily navigated?
A: Yes, if the single point interchange is designed to allow for adequate sight distances it is generally easy for drivers to navigate.

Q: Are accidents more common at single point interchanges than at more traditional diamond interchanges?
A: No, accident histories tend to be very similar for diamonds and single point interchanges when you consider the two signal for the diamond interchange. The single point interchange design is fully accepted by state transportation departments.

Q: Does the single point interchange have more capacity than other interchange designs?
A: It has slightly more capacity than the other designs.

Q: How do bikes and pedestrians navigate the single point interchange?
A: Pedestrians are prohibited from crossing across the interchange (i.e. east-west across Glencoe) because there are not gaps in traffic. The east-west pedestrian crossing would have to be accommodated on either side of the interchange.

Q: Does the single point interchange have twice the capacity of the diamonds?
A: All designs have comparable capacity. The diamonds could be easily expanded in the future, so they are shown with fewer lanes. The single point would be difficult to expand later, so it would be constructed with additional lanes up front.

Kristin closed the discussion by telling the group that the SWG would discuss these designs again at the next meeting with more information. The goal of the next meeting will be to come to consensus about a preferred option.

Streetscape choices
Marc introduced the streetscape exercise by explaining the pieces and scales. He explained that the purpose of exercise is to get the opinions and input of the SWG about the variables such as width of

median and type of sidewalks (curb-tight, tree wells or landscaped buffer). Marc asked the group to think about both aesthetics and impacts.

Kristin Hull reminded the group that this would not be the only time the group works on streetscape ideas. Marc told the group to think independently of local access at this time and that local access will be a discussion during the next couple meetings.

Q: Are the existing improvements going to remain on the west side of Glencoe?
A: The project will compare the options about where to widen Glencoe Road. The SWG will be asked to provide input about this.

The SWG broke into groups and discussed different streetscape options.

Kristin and Marc listed the tradeoffs the groups talked about.

Local access and circulation 101
Marc discussed issues and concepts of local access and circulation tools. He reviewed a presentation called "Local access and circulation 101."

After the presentation, Marc asked the SWG to work in small groups to identify local access and circulation options.

After the group completed their work, Marc reviewed some of the ideas that were identified including:

- A roundabout or signal and Pacific Street
- Right-in/right-out/left-in at Highland Court
- Underpass to provide access to Highland Court
- Backage roads

Rick pointed out that the SWG may not like everything in the final decision, but should understand why ODOT makes certain decisions. Rick also reiterated that the PDT does not know what the final solution will be, but that they will work though tradeoffs and get feedback from community and stakeholders.

Kristin reminded the group that they could draw more ideas and send them to Lili by next week.

Public comment
There was no public comment.

Next Steps and Close
Next meeting:
7-9 p.m. Wednesday, September 20, 2006
Jessie Mays Community Hall

Glencoe Interchange Project
SWG meeting #8

7-9 p.m. Wednesday, October 4, 2006
Jessie Mays Community Hall
30955 NW Hillcrest, North Plains

AGENDA

SWG members present:
Robin Biden (Hillsboro School District)
Stewart King (North Plains Chamber of Commerce)
Clark Berry (NW ACT)
Chet Wolter (Josey Farms)
Tai Kim (Subway)
Marie Finegan (Washington County Farm Bureau)
David Smith (North Plains Planning Commission)
Paul Coussens (Property Owner)
Derek Robbins (City of Forest Grove)
Kat Iverson (Washington County Bicycle Transportation Coalition)
Susie Anthony (CPO8)

Staff present:
Tom Braibish (ODOT)
Lili Gordon (ODOT)
Aaron Myton (ODOT)
Rick Kuehn (CH2M)
Matt Hughart (Kittleson Associates, Inc.)
Kristin Hull (JLA)
Kalin Schmoldt (JLA)

Meeting purpose:
- Recommendation about preferred alternative
- Local access and circulation

Welcome and introductions
Review agenda - Kristin thanked all for coming and led a brief round of introductions. She summarized the agenda for tonight's meeting, noting that there will be discussion of the three design alternatives and the PMT's recommended option. Kristin noted that the issue of greatest interest will probably be the local access plan, and explained that the group would not be making a decision on local access tonight, but would be having discussion that would further shape the recommendation to the PDT. That recommendation will be discussed at the next SWG meeting.

Kristin asked if anyone was planning to present comments at the end of the meeting. No one expressed the desire to comment. Kristin said that there would be time at the end of the meeting if anyone wanted to comment then.

Adopt SWG #7 summary - Clark Berry asked to be included on the list of attendees for the SWG #7 summary. A SWG member pointed out that Butch Kindel represents Washington Co. Fire District 2, not 1.

Analysis of remaining alternatives
Matt introduced himself and the planning role of Kittleson Associates. He explained that he will revisit the design concepts and alternatives and the process by which they have arrived at this. He described the screening involved and gave a presentation to cover how they reached their recommendation.

Matt briefly covered the three finalist concepts and their characteristics. He then explained how they compared the single-point interchange (#12) with the two diamond forms (#11C and #14A.) That analysis revealed that the single-point interchange could cost up to 50% more than the diamond designs. A SWG member asked how realistic the cost estimates were. Tom Braibish said that the price variability could be 20-30%, but that variability would be consistent across the different designs. He added they had less cost-saving flexibility with the single-point design.

Matt then described how the single-point interchange does not demonstrate any significant benefits over the diamond concepts while the disadvantage—the impact effect on wetlands, access spacing, and compliance with mobility standards—was similar. A SWG member noted that the compressed diamond design appeared to have a greater impact on structures in the SW quadrant than the single-point, and asked why the two diamonds were being compared as one against. Matt pointed out that the apparent impacts to structures in the drawing were misleading because of the resolution and scale of the maps. He said that they were confident they could design around the structures to the southwest.

A SWG member asked if there were any advantages that the single-point interchange has over a diamond. Matt said there were some small advantages in terms of capacity, but pointed out that the diamonds were expected to meet the necessary standards as well. Tom Braibish added that the single-point has the disadvantage of more surface area, more storm water runoff, and would not be as expandable in the future.

For the above reasons, the project team recommended that the single-point interchange be dropped from consideration. Kristin asked for the SWG response to the recommendation, and the group agreed that the decision made sense.

Preferred alternative recommendation
Matt described the next steps of comparing and combining the resulting diamond forms. Through analysis of traffic volumes, they determined that both interchanges were workable. Kristin explained that the team combined the two diamonds designs into one, as there was little difference between the two diamond forms. She noted that the final design would decided by ramp spacing and signal timing.

Aaron Myton briefly described the natural resources to the north, including streams, floodway, and wetlands. He explained that because the wetlands to the NW were already the result of mitigation, for every acre filled in that quadrant would require six new acres to be created in the NE. In order to minimize the impacts to businesses and wetlands, he explained how the northern ramps were shifted south, while still trying to avoid impacts to the business in the SW quadrant.

A SWG member asked about the width of the actual footprint for Glencoe Road and how it would affect the McDonalds property. Aaron said that efforts are being made to minimize impacts to the McDonalds property. Tom Braibish added that the diamond design offers increased flexibility for the footprint. Rick Kuehn reiterated that the outside northbound lane on Glencoe has been ruled unnecessary under the revised design, resulting in a narrower footprint, with widening predominantly to the east north of the interchange. Several members of the public expressed concern about the impacts to structures by the new off-ramp in the NE quadrant, Kristin referred them to the ODOT right-of-way personnel present and offered to talk after the meeting.

A SWG member asked about how signal timing compensates for shorter ramp spacing. Tom explained how queuing and signal timing relate, and noted that the signal designers indicated that 400 ft spacing between ramps was appropriate. Tom also pointed out that the ramp angles had been skewed slightly from 90 degrees to further reduce impacts. A SWG member asked about considerations for slow-start trucks. Matt replied that variability in vehicles was considered in their calculations.

A SWG member asked about the new and current grade for Glencoe. Aaron said it was currently 3-4 degrees, and would be remade at 3 degrees. He explained several variations that would be made to compensate for headlights.

Local access and circulation
Kristin explained that the purpose of tonight's meeting is to bring the SWG up to speed on the input from the local access group. Tom noted that the process has been very open and public, and emphasized that what the SWG is going to see is still a work in process. Tom reiterated that they are not making a recommendation yet, although a recommendation is anticipated at the next meeting.

Steve Harry discussed background on the conversation: The Oregon Transportation Commission has rules to ensure that interchanges are safe, operable, and preserve the investment of tax dollars. He noted that the commission is fairly adamant about the rules, understands that building within developed areas can require some flexibility. The discussions with the local access group have brought up potential deviations from these rules.

Options & Discussion – Matt discussed the 1,320 ft spacing and why it is what it is. He noted that the great variability of speeds within interchanges can result in a dangerous mix of traffic. He noted that the fewer conflicts in the area of the interchange, the safer and more efficient it will be. Matt also emphasized that strict adherence to the rules is not always possible in urban areas, and the project team has been soliciting input from the SWG and the public as to what exceptions need to be made.

Matt addressed the map and handouts showing the various access options. He noted that there are about 20 streets and driveways with access issues. He explained that the ideas laid out in the handout offer ideas for consolidating those driveways or providing alternative access. Because the list is was long, he welcomed specific questions, but proceeded to cover the key points only.

One potential deviation would be to allow full access at Pacific Street. The standards would allow some other deviations, such as a right-in, right-out at Highland—as close as 750 ft from the interchange—because it currently presents no significant safety issues. Matt added that straight-

across movement is not be allowed with right-in, right out access. A SWG member asked about the possibility of a U-turn at Pacific. Matt noted that some traffic control feature may be necessary to allow U-turns, such as a roundabout. He added that the ability for trucks to do U-turns may be limited on Glencoe as the alignments thus far are not wide enough. Tom Braibish noted that traffic flow issues would be discussed at the next PDT meeting. The SWG member indicated his preference for the ability to make a U-turn at Pacific.

A SWG member asked about considerations for emergency vehicle access on Highland Court. Matt said that the only way to reliably restrict left turns would be to install a median of some sort. He pointed out that such a barrier would not necessarily preclude emergency access by emergency vehicles. Tom said they would be sure to consider emergency access in their discussion, and pointed out that he believed the OTC would support the use of a median.

A SWG member pointed out that the gas stations will rely on tanker trucks and will need the ability to turn around. Tom responded that turnarounds will come down to the use of backage roads and cross-over easements. He talked briefly about future access reconsiderations as properties are developed or change hands.

A SWG member pointed out that a roundabout would adversely impact businesses in the area of the intersection. Matt agreed that roundabouts can create more extensive property impacts. The SWG member also expressed concern about the ability to bypass accidents within a roundabout and the potential future development of in the area around Pacific Street. Tom explained that roundabouts have various passable curbs which allow emergency access, and also noted that roundabouts have a record of reducing serious accidents, though he wasn't aware specific studies pertaining to trucks. Rick noted that roundabouts are able to handle high traffic volumes, and although they slow traffic down, they keep it moving steadily. A SWG member expressed concern with the public not understanding how roundabouts function.

A SWG member asked whether roundabout geometry was even feasible. Matt responded that he did not yet know specific sizes, but estimated that roundabouts could be reasonably 150-200 ft in diameter.

A SWG member asked what a crossover easement was. Tom explained that it is an agreement between property owners to allow traffic to flow through shared parking lots via internal driveways or drive-aisles.

A SWG member asked about how crossover easements occur and who pays the costs. Matt explained that they are voluntary when it comes to existing businesses, but new development can be required to provide crossover easements through the city's development code. Tom said he would look into who would pay for crossover easements if they were included in the recommendation.

A SWG member asked about pedestrian and bicycle access within roundabouts. Tom noted that cyclists are encouraged to walk their bikes. Pedestrians are provided with striped crosswalks and splitter refuges.

A SWG member asked who makes the final decision regarding local access. Tom explained that ODOT Region 1 will make the recommendation that will have to be approved by the county, the city council, and the OTC. The SWG member asked about potential delays from lawsuits or further

objections from members of the public. Steve Harry noted that they have yet to be sued, and said there would be little ground for stopping the project after it is approved. Tom noted the challenges inherent with a rural city dealing with urban scale traffic issues. Steve Harry noted that ODOT is within the law so long as it provides access to businesses in some form. Tom pointed out that the roundabout design serves people coming in off the highway, and there is some question about whether that is the group that needs to be served. He also briefly talked about the relatively newness of the Division 51 policy.

A SWG member suggested that option #7 be a road instead of an access-easement. Another SWG member questioned whether there would be adequate space for a public street. Matt agreed that spacing was tight in some spaces.

A SWG member asked about #14 and why it wasn't on the map. Tom explained that that option impacted wetlands and increased the footprint and embankment necessary to the north. Furthermore, the option was significantly more expensive and less compatible with the diamond designs.

A SWG member asked about the possibility of a roundabout at Highland Ct. Tom responded that Highland is too close to the interchange for a roundabout. Matt explained that queuing for the interchange it would lead to stopped traffic within the roundabout.

Kristin suggested moving to the south side and answering further north side questions at the end of the meeting.

Matt described the rural character of the southern side, and pointed out that it still has urban traffic levels. He noted that Beech Road faces some of the same access issues as Highland Court. He explained that even now it's difficult to turn left from Beech onto Glencoe northbound.

Matt pointed out that a simple solution would be to realign Beech Road. Tom noted that the road curvatures in the drawings were conceptual and not exact. Matt also addressed the challenges of realigning through EFU land. Another option would realign the road along the tax-lot lines. Matt said that a full-access intersection is likely in the area and noted that there are treatments which can resolve some of the issues inherent with such intersections.

A SWG member asked about the appearance of two "Cs" for option 17. Matt said that was an error.

A SWG member expressed concern about the impacts to the Arco station. Tom agreed that they needed to consider access to the five parcels in the southeast quadrant.

Matt briefly described option 20. He noted that restricting Beech to a right-in, right-out would restrict northbound access from Beech and one possible solution would be to create a mini U-turn further down Glencoe. He noted that the option still presents problems as it creates a left-turn across heavy traffic northbound.

A SWG member asked about right-in/out access to Beech eastbound. Project staff noted that there currently is no Beech eastbound and Tom expressed concern that the OTC would not approve of creating a new road. Matt described how some signalized intersections would be infeasible to include on county roads.

Public comment
Kristin again asked for public comments. There were none.

Next steps and close
Kristin noted that it is possible that the next meeting date could change, and noted that the dates are available on the project website.

Matt added that they will continue to look at the advantages and disadvantages of the various options and then meet with the PDT. He said they would bring a recommendation to the next meeting.

Next meeting:
7-9 p.m. Wednesday, October 18
Jessie Mays Community Hall

Glencoe Interchange Project
SWG meeting #9

7-9 p.m. Wednesday, November 1, 2006
Jessie Mays Community Hall
30955 NW Hillcrest, North Plains

DRAFT SUMMARY

SWG Members Present:
Stewart King (North Plains Chamber of Commerce)
Marie Finegan (Washington County Farm Bureau)
Paul Coussens (Property Owner)
Robin Biden (Hillsboro School District)
Tai Kim (Subway)
Wayne Holm (Oregon Canadian Forest Products)
Rick Dobbs (Washington County Fire District #2)
Susie Anthony (CPO8)
Clark Berry (NW ACT)
Bob Jossy (Jossy Farms)

Members absent:
Hal Ballard (Washington County Bicycle Transportation Coalition)
Nick Kelsey (City of Forest Grove)
Debbie Raber (City of Hillsboro)
David Smith (North Plains Planning Commission)

Staff:
Lili Gordon (ODOT)
Tom Braibish (ODOT)
Rick Kuehn (CH2M Hill)
Matt Hughart (Kittleson Associates)
Kristin Hull (JLA)
Kalin Schmoldt (JLA)

Meeting purpose:
- Review local access recommendation
- Provide feedback to PMT on local access
- Discuss next steps

Welcome and introductions
Kristin called the meeting to order and thanked everyone for coming. Kristin noted that this would be the last SWG meeting for a few months. She noted that tonight's agenda includes a discussion of local access and providing feedback to the PMT about their recommendation.

The SWG approved the meeting #8 summary. A SWG member noted that "PDT" should be "PMT", and another noted that the spelling of "Beech Rd." should be changed to "Beach Rd."

No members of the public asked to address the group at this time.

Response to questions
Matt responded to some questions raised at a previous meeting: One question concerned how traffic volumes at the Glencoe interchange compared with interchanges at Murray and Market Street in Salem. Matt noted that the interchanges in question were not subject to the same access control standards that are in place today. In the case of Murray, he said that there are driveways and streets inside of the 1320' spacing standard. Matt said there was little in the way of data indicating safety deficiencies, although he reiterated the goal of designing for safety and efficiency in the long term. Matt offered to share the data in detail after the meeting.

Local access recommendations
Tom emphasized that much work has been done to facilitate local access and mitigate the impacts of the Division 51 standards. Tom explained how Division 51 restricts access within 1320' of an interchange ramp though an exception can be made for right-in/right-out movements at 750'. Tom said that the team recognizes the implications of Division 51 in a developed area like North Plains, so they had to consider how to balance the standards with community needs.

On a map of the north side of Hwy 26, Tom directed attention to the point 1320' feet from the interchange. He told the group that ODOT recommends allowing full access at Pacific even though it is just shy of 1320' because it is an existing public street. He noted that many options had been discussed at each driveway and directed attention to figure 4b-6 that shows a composite of all the ideas.

Tom noted several key features: the right-in/right-out between Highland and Pacific; full closure between the ramps and Highland; a right-in/right-out at Highland; converting all existing driveways on Glencoe to right-in/right-out; and building a raised median between the ramps and Pacific. Tom said he felt the OTC would approve those ideas, but raised the question of how access should be provided.

Tom mentioned a roundabout as a good possibility that provides a U-turn option and provides an opportunity for a gateway feature. He noted that the roundabout would include a single lane that could accommodate a two trailer truck. The roundabout diameter would be about 175', including a 25' roadway.

Tom noted backage and frontage roads as potential access options, but added that the current roads standards for North Plains would require between 45' and 65' for right-of-way for a public road and would pose a significant impact. Tom then described some benefits of crossover easements, which would not be a requirement for current property owners, but which could be enforced as a condition of property redevelopment.

Matt described how crossover easements could be used to close driveways and provide access over time. The example demonstrated how a series of developments along a road could systematically set the stage for future connections between adjacent properties if required by the city. He explained the long term goal of creating shared driveways and

reducing the total number of access points to Glencoe. Matt explained that such crossover easements would be negotiated by future developers with the city of North Plains Planning Commission and City Council.

A SWG member asked whether Division 51 standards were being universally applied in Oregon. Tom explained that Division 51 is applied when ODOT builds a new interchange or improves an existing interchange.

A SWG member asked where the 1320' access spacing requirement came from. Tom referred the member to a discussion in the memo and noted that the number is the result of numerous studies from around the country. That said, Tom reiterated that the team is looking for comments and suggestions on how to better mitigate impacts.

A SWG member asked about how easements are dependent on specific land owners and whether they could back out of their obligations. Matt explained that there are cases where developers can work with the city to move or alter the easements, but those cases depend on the city.

A SWG member asked if there were limitations to how long an easement could be avoided. He noted that there is little to motivate Subway and Chevron to create a crossover when they can settle for right-in/right-out. Tom noted that crossover easements were being discussed as a way to permit return traffic. He noted that although they cannot force easements on current landowners, future redevelopment could mandate such easements. Tom pointed out that several older structures were likely to be redeveloped sooner than newer ones. He added that the concept easements were in fact conceptual and could be in different places. He emphasized that they would not be replacing public streets, but simply facilitating access. Tom also noted that how the access restrictions affect traffic in the neighborhoods will be considered in the IAMP.

A SWG member noted that it appeared that southbound traffic wishing to head northbound would have to use neighborhood streets to turn around. He suggested that if the easements would indeed be a long time in coming, then it would be preferable to not install the median until the easements are established. Another SWG member expressed skepticism that any changes with easements would actually happen.

Roundabout at Pacific – Tom showed a concept roundabout. The roundabout would be 175' from edge to edge including the sidewalk.

A SWG member noted that the roundabout would provide the option for northbound traffic wishing to access the west side of Glencoe. He also noted that the roundabout could serve as a gateway feature.

A SWG member asked about speed in roundabouts. Matt said that roundabouts are designed to slow traffic to 20-25 mph.

A SWG member asked about closures proximate to the roundabout. Tom said that would be a county discussion.

A SWG member noted the potential for expansion to the east on Pacific and expressed doubt that the roundabout would have the required capacity in the long term.

A SWG member asked about the center of the roundabout and whether it would obstruct views. She noted a roundabout in Bend that is was purposefully designed to reduce sightlines. Matt responded that such a design is possible, but would be up to the community and is a long way off.

A SWG member asked whether the group's opinion mattered at all. Tom said that opinions definitely matter. Tom described some benefits of carrying the roundabout on to the Environmental Assessment, and emphasized that they need a solution that can be adopted by the city and the county. He added that if the roundabout is excluded then another solution will need to be found for how to handle return traffic.

A SWG member asked whether a roundabout could function for high volumes of traffic in the future. Matt pointed out that they were figuring regional growth into the scope of the roundabout and said that a single lane roundabout should be adequate for the next 20+ years under their projections. He also noted that any more growth than that would require revisiting the other intersections on Glencoe as well.

A SWG member asked about using the roundabout to access eastside properties when approaching southbound. Tom said that the roundabout wouldn't specifically help such access.

A SWG member asked about the cost of a roundabout. Tom said that the cost is the cost of right of way and could be about $1 million.

A SWG member shared her experiences with roundabouts and assured the group that they do work.

A member of the public asked whether roundabouts work in urban areas. Matt explained how properly placing roundabouts is important so as to prevent queuing from signalized intersections that are too close. He said they can and do function quite well when placed properly. Kristin also noted that Pacific will be regulated differently in the future than it is now.

A SWG member noted that there are plans for a signal at Cottage.

Kristin asked whether the SWG would recommend a roundabout or a signalized intersection.

A SWG member asked for traffic volume averages. Matt said that although he didn't have the specific numbers at the meeting, he recalled that the frequency of traffic is expected to double, although that does not directly correlate with volume.

A SWG member noted that a roundabout would be the only way to provide for school bus access to the west side of Glencoe.

Right-in/right-out driveways and raised median – A SWG member expressed interest in having public streets instead of crossover easements.

Kristin asked whether right-in/right-out makes sense. A SWG member reiterated that he felt it unwise to install the median while restricting access to right-in/right-out without appropriate crossover easements and the rest of the system in place. He again noted his concerns with providing emergency access as well as forcing traffic to drive through residential neighborhoods. Another SWG member agreed, calling for public streets. He noted that such streets might reduce the need for right-in/right-out restrictions. Tom said that the move to restrict access will come after alternate routes are established.

Dan Brown noted that funding is an issue when the scope is expanded to include backage roads. He also noted that said that actual volumes rerouted through the area should be considered, as he didn't anticipate movement through neighborhoods as becoming common. Tom added that they have been considering the impacts of backage roads versus crossover easements.

A SWG member asked whether streets would be an added expense. Tom replied that public roads could be incorporated into the TSP and Tim added that developers could theoretically pay for public roads. Tom said that they had to work within the scope of available funding and named several funding sources. He predicted challenges if the project pushes beyond the estimated $25 million, but added that public roads would not necessarily be publicly funded. Kristin recommended that questions be directed to Tim on the issue.

A SWG member pointed out several parcels that were unlikely to be developed for a while.

Right-in/right-out at Highland Ct. – A SWG member expressed concern that the 1320' access standard would destroy businesses in the area and cited examples of locations where higher traffic volumes get along fine with a lower standard. The member felt that under current traffic volumes left turn lanes would be reasonable. He also reiterated that roundabouts work well. Kristin thanked the member and reiterated that the case for the 1320' number has already been made.

Driveway closure – Kristin noted the closure of one driveway that is well within the 750' minimum. The group had no objections. A SWG member pointed out that with the new grading of Glencoe, the drop-off would be significant.

Beach Rd right-in/right-out – Tom told the group that Beach Road could be made into a cul-de-sac or changed to a right-in/right-out street at Glencoe. He said that another issue is access to properties on the east side. Tom noted that any new access road would have to become a public roadway.

Tom said that the preliminary recommendation includes a right-in/right-out at Beach Road, acquiring properties on the east side of Glencoe, and the addition of a raised median. He said that the peak volume on Beach Road is currently 15 vehicles per hour. He noted that without a turnaround, vehicles would have to travel to Jackson School Road.

Several SWG members said the proposal was a good idea, others said the restrictions would hurt Jewett Cameron and businesses south of Hwy 26.

A SWG member was concerned that traffic danger would shift to Zion Church and Gordon Road. Kristin said that it sounds like the member thinks a signal is needed. Tom said that he was hearing the desire for a good return route to Hwy 26.

A SWG member expressed concern about access to businesses from Glencoe. A SWG member asked about access for school buses coming from Hillsboro. Tom agreed with the need for a turnaround.

A SWG member asked how truck traffic might be deterred from going through North Plains. Tom replied that weight restrictions on through-traffic could be one option. A SWG member said that such restrictions would put more traffic on Zion Church Road and Gordon Road.

Kristin summarized the concerns: safety for return route; possible weight restrictions in North Plains; and providing access for local businesses and school busses.

A SWG member asked for an option that connects Beach Road farther to the south. Tom replied that because Beach Road is owned by the county, the county would decide if and when Beach Road should be reconnected.

A SWG member asked whether contact has been made with Jewett Cameron. Kristin said they have spoken and about the right-in/right-out option.

A SWG member said she hoped to avoid having to travel far out of her way.

A SWG member said that the City Council is most concerned about businesses and their survival. Consequently, they would like to see a signal at Highland Court that would allow southbound traffic to access businesses to on the east side. Tom said that they had looked at several U-turn options, but found that there either isn't the geometry or the movement to allow for U-turns at the ramp terminals or at Highland Court.

Street profile and design
Tom provided a quick review of the PDT conclusions. He said that they found a single northbound lane to be justified. He said that the city had a preference for 8' sidewalk with street trees and bike lanes at the road shoulder. Tom said that the PDT is looking to recommend that the median be narrowed as much as possible, from 16' to 12-14'. He said that the city has agreed that the street profile makes sense.

Public comment
Chet Wolters: Chet said that he lives on Beach Road, and a roundabout is needed on the south side of Hwy 26. He said they would have a long way to travel south to turn around and traveling North through North Plains would be difficult. He also said that most of the people on Beach Road need to go east on a regular basis.

Kelly Stadelman: Kelly said she was concerned about how an access road would affect her property and the vision for her area of North Plains. She said that it appeared that the area directly north of Hwy 26 would be primarily appropriate for commercial property, not homes. She didn't like the idea of building homes abutting commercial properties. She said that widening Glencoe would take some of her property and parking spots, while a backage road would do the same. She reiterated her objections to making the area residential, hoping instead to keep it commercial and use the existing roads as access roads.

Bill Stadelman: Bill said that the towns that are producing the increased traffic are from the south side of the freeway, and asked what is causing the traffic on the north side to invoke the 1320' rule. Tom replied that the 1320' and 750' rules are independent of traffic growth and are requirements of the interchange to ensure safety and function. He added that a new interchange would have to meet the requirements carte blanche; but in this case some flexibility is necessary. Kristin referred Bill to Matt for further information. Tom noted that figures for the north side came from the city's comprehensive plan and what reasonable buildup is expected to occur.

Kristin summarized: a roundabout seems to make sense, although there are other concerns about the area north of the interchange. She said that access on the south side and whether right-in/right-out on Beach road makes sense is still up in the air. Kristin asked for other key messages. She acknowledged the skepticism at the 1320' spacing standarse.

A SWG member noted that the predominant use of the interchange is currently from outside the city and he was uncomfortable penalizing people who live close to the interchange to benefit people who live far away. He recommended coming up with the best idea and then trying for funding as opposed to discounting options simply because they seem expensive.

Next steps

Final project open house - Kristin noted that the open house next Wednesday will be an opportunity for the community to review the same information as at this meeting and invited the SWG to attend.

EA and IAMP – Tom said that after the open house, they would be taking the various alternatives and plugging them into the Environmental Assessment while looking at ways to mitigate environmental impacts. He said that the process is likely to take until March or April. In March or April a draft IAMP will be prepared for presentation to North Plains, Washington County. It will be presented to the OTC in June or July. If all goes well, the design phase will follow. Tom noted that there is funding for development, design, and some right-of-way acquisition. Once funding is determined, a discussion of road improvements will begin. A plan should emerge about two years after OTC approval. Tom added that the SWG will be on hiatus during the EA and IAMP work. The April meeting will be largely informational.

Rick added that there will be a formal hearing when the EA is published.

Tom thanked the group for their comments and participation in the public process. He noted the many challenges of building in an urban area and the various opinions presented

by the group. Kristin said she has also enjoyed working with the committee and the community, and promised to keep the group informed.

Close

Next meeting:

- TBD – April or May

Glencoe Interchange Project
SWG meeting #10

7-9 p.m. Wednesday, December 11, 2008
Jessie Mays Community Hall
30955 NW Hillcrest, North Plains

DRAFT SUMMARY

SWG Members Present:
Stewart King (North Plains Planning Commission)
Bob Horning (North Plains Chamber of Commerce)
Marie Finegan (Washington County Farm Bureau)
Paul Coussens (Property Owner)
Rick Dobbs (Washington County Fire District #2)
Susie Anthony (CPO8)
Clark Berry (NW ACT)
Bob Jossy (Jossy Farms)
Nick Kelsey (City of Forest Grove)
Hal Ballard (Washington County Bicycle Transportation Coalition)

Members absent:
Debbie Raber (City of Hillsboro)
Robin Biden (Hillsboro School District)
Tai Kim (Subway)
Wayne Holm (Oregon Canadian Forest Products)

Staff:
Lili Gordon (ODOT)
Tim Wilson (ODOT)
Rick Kuehn (CH2M HILL)
Matt Hughart (Kittleson Associates)
Kristin Hull (CH2M HILL)
DJ Heffernan (Angelo Planning Group)
Abe Turki (Washington County)

Meeting purpose:
- Present local access plan section of Interchange Area Management Plan.
- Discuss next steps for Glencoe Road and interchange projects.

Welcome and introductions
Kristin called the meeting to order and thanked everyone for coming. Kristin noted that this would be the final SWG meeting. She noted that tonight's agenda included a presentation of the local access plan negotiated between the City and ODOT and a presentation of next steps for adoption of the IAMP, design and construction of the Glencoe Road widening project and further work on the interchange. Kristin noted that a summary of SWG #9 was included in members' packets.

No members of the public asked to address the group at this time.

Project status update
Rick Kuehn updated the committee on the work that had occurred since November 2006 – the last time the SWG met. He reminded the group that they had approved an interchange type in 2006. Agreement on the interchange type launched a discussion of local access that began with individual and group meetings with property owners adjacent to Glencoe Road and included SWG meetings and an open house. He explained that this process came to a standstill when the City and ODOT could not agree on the restriction of southbound left turns from Glencoe Road to Highland Court.

To resolve this issue, ODOT provided consultant assistance to the City in considering visions for future land use in the interchange area. While the aspirations of the sub-committee charged with developing a land use vision for the interchange area have not been adopted by the City formally (this adoption would require a full public process), the visioning process resulted in support for a new roadway north of 309th Avenue and a backage road adjacent the Chevron and Subway properties south of Glencoe Road.

After the land use sub-committee completed their work, the City continued to negotiate with ODOT about access restrictions on Glencoe Road. Rick explained that Matt would describe the results of that discussion in detail.

A SWG member asked who was involved in this negotiation and in the land use sub-committee. Rick explained that the land use sub-committee included City Council and Planning Commission members as well as Bob Horning as a representative of the North Plains Chamber of Commerce. He said that the negotiations between the City and ODOT were led by David Hatcher.

A SWG member asked if issues on Glencoe Road south of US 26 were considered. Rick explained that this process focused on the areas within the City of North Plains.

Interchange Area Management Plan (IAMP)
Matt told the group that he would walk through section 5 of the IAMP, the local access section. Matt reviewed the access management plan noting that the plan includes both short and longer-term improvements. He noted that the median on Glencoe Road would be constructed along with the interchange, a long-term project.

He highlighted the following:

- South of US 26, a median would be constructed from US 26 to a point about 1300' south of the ramps. This median would result in right-in/right-out access at Beach Road. He also noted that the properties on the east side of Glencoe Road south of US 26 would be purchased.
- North of US 26, a roundabout would be constructed by Washington County at Pacific Street and Glencoe Road along with the project between Pacific and West Union.

- North of US 26, a median would be constructed from US 26 to Pacific Street when the interchange is constructed. The median would have a break to allow access at Highland Court. Access would be restricted at Highland Court as triggers are met.
- Access north of Pacific Street would be subject to Washington County and City of North Plains requirements.

Matt noted that the roundabout, improvements to Glencoe Road between Pacific and West Union and the new local roadways east and west of Glencoe Road were short-term projects – meaning they could be constructed in 1-5 years. He noted that the interchange was a long-term project and likely would not be constructed for at least 5 years.

A committee member requested that we email out a PDF of the roundabout concept.

A SWG member said that he was still not happy with the access management plan in North Plains because it restricted left turns to and from businesses on Glencoe Road would result in business traffic using residential streets even with backage roads.

A SWG member expressed his dissatisfaction with right-in/right-out access at Beach Road and noted that he had opposed this restriction in 2006 when the SWG met last. Another property owner said that he preferred what is shown in the access management plan because realigning Beach Road would impact his property.

David Hatcher, Mayor-elect of North Plains, explained his reasoning in accepting the access management plan. He explained that he did not like the plan, but understood that it was the right thing to do for the community and that it represented a reasonable compromise.

Next steps

IAMP – DJ Heffernan reviewed the next steps for the approval of the IAMP. He told the group that the IAMP will be adopted into the City and County's transportation system plans through their regular legislative processes. He noted that adoption of the IAMP by the City and County will require state land use approvals from the Department of Land Conservation and Development (DLCD). The Oregon Transportation Commission (OTC) will adopt the IAMP into the Oregon Highway Plan after approval by the local jurisdictions. In response to a question, DJ noted that the OTC could adopt the IAMP without local approval, but that it was unlikely.

Interchange – Tim Wilson explained that, before the interchange could be constructed, ODOT would be required to complete an environmental assessment (EA) consistent with the National Environmental Policy Act (NEPA). The process of completing an EA would take about a year. After the EA is completed, ODOT would advance the project through final design and construction. ODOT currently only has funding to complete the IAMP and does not have funding for the environmental or design phases, or for construction. Tim told the group that the project could receive funding through the Governor's transportation package during the 2009 legislature.

Glencoe Road – Abe Turki told the group that Washington County could move forward on designing the roundabout and improvements from Glencoe Road from Pacific to West

Union as soon as the City confirms their support for the roundabout. The project could go to construction as soon as spring 2010 and would be completed in two construction seasons.

Public comment
Councilor David Smith: Councilor Smith said that ODOT was just showing the same plan that they had presented two years ago without making any changes requested by the community. He said that he would like to approve an IAMP, but could not support this plan.

Close
Kristin closed the meeting by thanking the SWG members for their commitment of volunteer time to the project.

Glencoe Interchange Project
April 27, 2006
Open House #1 Summary
North Plains Elementary School

ODOT hosted the first open house for the Glencoe Interchange Project on April 27, 2006 at North Plains Elementary School. Twenty-three community members signed in at the open house. Participants at the open house were invited to review information about the schedule and scope of the study and introductory information about the National Environmental Policy Act and Interchange Area Management Plans as well as provide input about issues, concerns and questions that community members would like to see addressed during the study process.

Of the attendees, seven people completed comment forms. Four of those who completed the comment form reported that their property could be affected by the project. Of those who completed the comment form:

- Five identified themselves as living in the interchange area
- Three identified themselves as owning a business in the interchange area
- One identified his or herself as a commuter who lives in North Plains.
- One identified his or herself as a trucker/delivery/business user of the highway.

Both on comment forms and on butcher paper, participants were asked to list questions, concerns and comments related to the study's major topics. Many participants had questions and concerns about local access to businesses in the area near the interchange, how the improved interchange would address truck traffic and construction.

Specifically, participants listed focused on the following:

- **Transportation and access –** Regarding transportation and access, comments reflected an interest in designing the interchange to accommodate the increasing traffic, especially truck traffic from surrounding communities. In addition, comments noted the importance of providing access to businesses in the interchange area and providing for local circulation, particularly on Highland Court.
- **Land use, social, economic and aesthetics –** Only one comment was recorded under the land use heading; it suggested that more retail should be located near the interchange area. Comments related to the social, economic and aesthetic context of the project focused on property values and impacts to the senior housing on Highland Court.
- **Natural and cultural resources –** Comments related to natural and cultural resources focused on the wetlands and habitat areas near U.S. 26.
- **Project development –** Comments about project development included a request to consider an interchange at Gordon Road and many comments and questions about access during construction and the duration of construction.

Full text of comments received

Transportation and Access

- What will the impact to Highland Road and local traffic be?
- What local access changes are expected?
- Be sure to plan adequately for all traffic using the interchange.
- Address railroad crossing at Glencoe Road just north of West Union Road.
- How will the widening of the overpass impact apartments on Highland Road?
- It would be nice to have better transportation for seniors living at Highland Court Apartments.
- How much will the grade change between Glencoe Road and North Plain's residential areas?
- Trucks are a big problem. Trucks going toward Cornelius, Hillsboro and Forest Grove use the interchange at Glencoe Road to avoid traffic signals on other routes.
- Design should accommodate traffic (especially trucks) from surrounding cities.
- Annexation is increasing traffic on Glencoe Road.
- I am concerned about maintaining access westbound on Highland Court.
- Design should not discourage access to businesses in the interchange area. If access is difficult, some people will not patronize businesses.

Land use

- I hope that more retail would be located in the area near the Highland Court Apartments (grocery store, pharmacy, etc.).

Social, economic and aesthetic context

- Concerned about impact on residents of senior apartments.
- Need adequate access to North Plains. Presume interchange will match others on US 26 like Jackson School Road.
- Concerned about reduced property values as a result of reduced access.
- Concerned about noise impacts to properties in the northwest quadrant and the senior housing on Highland Court.
- Concerned about affects to businesses in the interchange area.
- Need a nice, flashy sign that proclaims: "North Plains Gateway to the Coast."

Natural and cultural resources

- Concerned about impacts to wetlands. How will impacts be mitigated?
- How will protected species of birds residing in wetlands be protected?
- Concerned that wetlands will drive design decision.
- Private airstrip and instrument landing system for Hillsboro Airport in the area.

Project development

- How much input will the residents of North Plains have during project development?
- Keep us informed.
- Consider an interchange at Gordon Road. This interchange could be used by traffic going to Pumpkin Ridge Golf Course and Mountaindale area. Development is occurring in rural areas resulting in more traffic in North Plains.
- How long will construction last? Will Glencoe be closed during construction?
- Prefer that access remain open during construction.
- Build the overpass wide enough to accommodate future widening of the Sunset Highway.

Glencoe Interchange Project
Interchange Design Workshop Summary
June 8, 2006
North Plains Elementary School

The Oregon Department of Transportation (ODOT) hosted an interchange design workshop on June 8, 2006 to engage community members in brainstorming designs for the Glencoe Interchange Project. Thirty-six people attended the meeting and eleven submitted comment forms. There were also many interchange designs submitted that were generally categorized into about twenty unique designs.

Of those who completed comment forms, eight lived in the interchange area, one owned property in the interchange area, two owned businesses in the interchange area and one represented an agency. Five respondents noted that their property could be affected by the interchange project (Nature's Needs, Mc Donald's, Beach Road resident and Gordon Road resident).

Objectives

Participants were asked to mark the objectives that are most important.

The three objectives that the most participants said were important were transportation and access objectives: reduce congestion and improve traffic flow in the interchange area (9); provide improvements that are safe for all modes (7); provide reasonable access to interchange area businesses (7).

Six participants thought that minimizing impacts to existing businesses and residences in the interchange area was important. Five participants thought that supporting continued economic development in North Plains and providing timely solution that performs as designed throughout its design life were important.

Other objectives that were noted as important included:

- Provide good response time for emergency vehicles (4)
- Minimize impacts to the livability, quality and integrity of established residences (4)
- Consider aesthetics in the design of the interchange and Glencoe Road (4)
- Minimize and mitigate adverse impacts to surface and groundwater resources (4)
- Interchange will accommodate future widening of Sunset Highway (US 26) (4)
- Minimize impacts to lands zoned Exclusive Farm Use (EFU) (3)
- Avoid or minimize impacts to habitat systems (3)
- Provide a solution that minimizes construction impacts (3)
- Meet sound engineering practices and safety requirements (3)
- Avoid impacting cultural sites and resources where practicable (2)
- Provide a project that is affordable and cost-effective (2)
- Develop land use measures to protect the operational integrity of the project from land use impacts. (1)

Designs

Twenty-seven unique designs were compiled from the ideas submitted at the Stakeholder Working Group/Project Development Team workshop and the public workshop. Key interchange forms suggested at the workshop included:

- Diamonds
- Single point urban interchanges
- Parclo B forms for westbound US 26 to southbound Glencoe Road
- Parclo A forms for southbound Glencoe Road to eastbound US 26
- Split Diamonds (Glencoe Road and 313th, Glencoe Road and Gordon Road)
- Tight diamonds
- Parclo B forms on Glencoe Road

Other comments

- Maintain access to Nature's Needs property.
- Consider an interchange at Gordon Road.
- Four lane overpass would be great.
- Consider diamond interchange like Helvetia/Shute Road.
- Do not consider an interchange at Gordon Road.

Glencoe Interchange Project
Open House #3 Summary
8/17/06

ODOT hosted the third open house for the Glencoe Interchange Project on August 17, 2006 at Jessie Mays Community Hall. About twenty-five community members signed in at the open house. Participants at the open house were invited to review the progress of the study and provide input on the three remaining options.

Of the attendees, five people completed comment forms. Two of those who completed the comment form reported that their property could be affected by the project. Of those who completed the comment form:

- Two identified themselves as living in the interchange area
- One identified his or herself as a commuter who lives in North Plains
- Two identified themselves as being personal or recreational users of the interchange

Participants were asked if each concept should:

- Definitely be carried forward
- Should be carried forward
- Neutral/don't know
- Should not be carried forward
- Definitely should not be carried forward

All participants agreed that 11C (diamond) and 14A (tight diamond) should be carried forward. Most participants thought that 12 (single point) should be carried forward. Specifically:

- Four participants thought that Concept 11C (diamond) should or definitely should be carried forward.
- Two participants thought that Concept 12 (single point) should or definitely should be carried forward, two didn't know and one thought it definitely should not be carried forward. One person thought it might be confusing to drivers.
- Three participants thought that Concept 14A (tight diamond) definitely should be carried forward and two didn't know. One person noted that it took up less room than option 11C and another person thought that it was simple.

Of the participants who told us which concept they liked best, one liked the tight diamond and one liked the single point best.

Other comments included:

- I want to leave North Plains without being stopped south of freeway. Trucks, buses all need to go south on Glencoe to schools, businesses, etc.
- No ramp meters to Portland.
- The intersection at Jackson School Road and West Union Road needs to be improved.

Glencoe Interchange Project
Open House #4 Summary
11/8/06

ODOT hosted the fourth open house for the Glencoe Interchange Project on November 8, 2006 at North Plains Elementary School. About thirty-six community members signed in at the open house. Participants at the open house were invited to review the preferred interchange design as well as ODOT's local access recommendation and the SWG's input about the access recommendation.

Participants generally said the interchange design made sense.

Comments on the local access recommendation included:

- Maintain access off Glencoe to Beach Road – just like Jackson School Road
- Prefer signal to roundabout at Pacific Street (2)
- Need signal at Highland Court with full access
- Need a signal at Zion Church Road and Gordon Road
- Need noise walls along US 26 (especially on the south side of US 26, west of Glencoe Road)
- Prefer roundabout at Pacific Street to a signal
- No access west on Beach Road is a problem – alternate routes are not safe or usable. One of the following improvements would need to be made:
    - Gordon at Scotch Church would require a signal to be safe
    - Pave road by sawmill near Dersham Road