Woodburn Transportation System Plan

Volume I
Text

Prepared for

City of Woodburn
and the
Oregon Department of Transportation

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Prepared by

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Preface

The City of Woodburn Transportation System Plan (TSP) was funded by the Oregon Department of Transportation (ODOT). This document does not necessarily reflect the views or policies of the state of Oregon. The preparation of the TSP was guided by the Technical Advisory Committee (TAC) and the Consultant Team identified on the following page.

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Acronyms and Abbreviations

AAGR	average annual growth rate
ADA	Americans with Disabilities Act
ADT	Average Daily Traffic
ATR	Automated Traffic Recorder
CARTS	Chemeketa Area Regional Transportation System
CFR	Code of Federal Regulations
DAR	dial-a-ride
DEIS	Draft Environmental Impact Statement
DLCD	Department of Land Conservation and Development
EIS	Environmental Impact Statement
HCM	Highway Capacity Manual
HOV	High Occupancy Vehicle
IM	Interstate Maintenance
IOF	Immediate Opportunity Fund
IRIS	Integrated Roadway Information System
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITS	Intelligent Transportation System
LCD	Land Conservation and Development
LID	Local Improvement District
LOS	Level of Service
MEV	million entering vehicles
MP	milepost
mph	miles per hour
MPO	metropolitan planning organization
MUTCD	Manual on Uniform Traffic Control Devices
NCHRP	National Cooperative Highway Research Program
NHS	National Highway System
NWRC	Northwest Ride Center
O & C	Oregon & California
OAR	Oregon Administrative Rule
OBPP	Oregon Bicycle and Pedestrian Plan
ODOT	Oregon Department of Transportation
OHAS	Oregon Housing and Associated Services
OHP	Oregon Highway Plan
OPTP	Oregon Public Transportation Plan
ORS	Oregon Revised Statute
OTIA	Oregon Transportation Investment Act

OTP	Oregon Transportation Plan
PCI	pavement condition index
PDO	Planned Unit Development
PMT	Project Management Team
ROW	right of way
RTSP	Rural Transportation System Plan
SDC	Systems Development Charge
SOV	single-occupancy vehicle
SPIS	Safety Priority Index System
STA	Special Transportation Area
STIP	Statewide Transportation Improvement Program
TAC	Technical Advisory Committee
TAZ	Transportation Analysis Zone
TDM	Transportation Demand Management
TEA-21	Transportation Equity Act for the 21st Century
TIA	Traffic Impact Analysis
TIF	Transportation Impact Fees
TPAU	Transportation Planning and Analysis Unit
TPR	Transportation Planning Rule
TSM	Transportation System Management
TSP	Transportation System Plan
TWSC	two-way stop control
UBA	Urban Business Area
UGB	urban growth boundary
v/c	volume-to-capacity
WASHTO	Western Association of State Highway and Transportation Officials
WDO	Woodburn Development Ordinance
WTTN	Western Transportation Trade Network
WVTS	Willamette Valley Transportation Strategy

SECTION 1

Introduction

The city of Woodburn (City), in conjunction with the Oregon Department of Transportation (ODOT), initiated an update of the City's 1996 Transportation System Plan (TSP) in 2002. The City of Woodburn Comprehensive Plan is currently undergoing periodic review as required by state law. Updating the transportation element (Goal 12) of the Comprehensive Plan is Task 3B of the Period Review. In addition to fulfilling the periodic review requirements, planning for near- and long-term transportation system needs is a priority for the City.

Purpose

The purpose of the update is to amend the TSP based on the following criteria:

- State Transportation Planning Rule (TPR) requirements
- Updated transportation model structure consistent with (1) ODOT technical specifications, and (2) local land use designations
- Consistency with plans completed and underway since development of the 1996 TSP

Benefits

The updated Woodburn TSP identifies planned transportation facilities and services needed to support land uses proposed in the Woodburn Comprehensive Plan in a manner consistent with the TPR (Oregon Administrative Rule [OAR] 660-012) and the Oregon Transportation Plan (OTP). Preparation and adoption of an updated TSP for the City provides the following benefits:

- Ensures adequate planned transportation facilities to support planned land uses for the next 20 years
- Provides certainty and predictability for the siting of new streets, roads, highway improvements, and other planned transportation improvements
- Provides predictability for land development
- Helps reduce the cost and maximize the efficiency of public spending on transportation facilities and services by coordinating land use and transportation decisions

This TSP will guide the management and development of appropriate transportation facilities in Woodburn, incorporating the community's vision, while remaining consistent with state, regional, and local plans. This report provides the necessary elements to be adopted as the transportation element of the City's comprehensive plan.

A system of transportation facilities and services adequate to meet the City's transportation needs to the planning horizon year of 2020 is established in this TSP update. The TSP includes plans for a transportation system that incorporates all modes of travel (i.e., auto, bicycle, pedestrian, rail, marine, and public transportation), serves the urban area, and is coordinated with the state and county transportation network.

Regulatory Requirements

The contents of the Woodburn TSP are guided by Oregon Revised Statute (ORS) 197.712 and the Department of Land Conservation and Development (DLCD) administrative rule known as the TPR. These laws and rules require that jurisdictions develop the following:

- Plan for a network of arterial and collector roads
- Public transit plan
- Bicycle and pedestrian plan
- Air, rail, water, and pipeline plan
- Transportation financing plan
- Policies and ordinances for implementing the TSP

The TPR requires that alternative travel modes be given equal consideration with the automobile, and that reasonable effort be applied to the development and enhancement of the alternative modes in providing the future transportation system. In addition, the TPR requires that local jurisdictions amend land use and subdivision ordinances to implement the provisions of the TSP. Finally, local communities must coordinate their respective plans with the applicable county, regional, and state transportation plans.

Public Review of the TSP

The compliance of the plan with the goals and visions of the community was assessed. Results were reviewed by the public through a variety of forums. Throughout the development of the TSP, public input was sought through an Open House, numerous work sessions with the City Council and Planning Commission, and community meetings. In addition, input on the plan was also received via public forums held for the Woodburn Interchange Environmental Assessment. This valuable feedback combined with input from the Technical Advisory Committee has produced a plan that will help to guide the future of Woodburn's Transportation System for the next 20 years.

Goals and Policies

During development of the 1996 TSP, the Woodburn Transportation Task Force, in concert with the city of Woodburn staff, developed five goals and associated policies to guide development and implementation of the TSP. As part of the plan update, the Technical Advisory Committee (TAC) was established to provide direction throughout the project and to endorse continued use of those goals and policies with minor revisions to guide this update. The goals and policies are identified below.

Goal 1

Develop a multimodal transportation system that avoids or reduces a reliance on one form of transportation and minimizes energy consumption and air quality impacts.

Policies

1. Develop an expanded intracity bus transit system that provides added service and route coverage to improve the mobility and accessibility of the transportation disadvantaged and to attract traditional auto users to use the system.
2. Develop a plan for providing travel options between Woodburn and Portland or Salem, including intercity bus service and potential bus/carpool park-and-ride facilities.
3. Develop a bikeway system that provides routes and facilities that allow bicyclists to travel from residential areas to schools, parks, places of employment, and commercial areas. Identify off-street facilities in City greenway and park areas. Ensure all new collector and arterial streets are constructed with bicycle lanes.
4. Identify sidewalk and off-street pathway improvements to improve pedestrian mobility within neighborhoods and between residential areas and schools, parks, places of employment, and commercial areas. Ensure all new collector and arterial streets are constructed with sidewalks.

Goal 2

Develop a street system which will handle projected year 2020 traffic demands in the Woodburn area, and interconnects residential areas with employment centers, schools, parks, churches, and regional transportation facilities.

Policies

1. Develop an updated roadway functional classification plan for the Woodburn area that reflects the desired function of different roadways, and is consistent with current federal guidelines for the designation of major streets in an urban area.
2. Develop a strategy for improving Oregon 219/214, 211, and 99E through Woodburn, including added travel lanes, signalization, and access management.
3. Identify new east-west and north-south collector/minor arterial streets within the City to relieve traffic demands on Oregon 219/214, 211, and 99E, and coordinate with Marion County to construct the street connections needed outside of the urban growth boundary (UGB).
4. Develop updated street design standards for arterials, collectors, and local streets.
5. Identify a final strategy for paving currently unimproved streets in the City.
6. Identify the need for additional public parking provisions in Woodburn, including park-and-ride facilities, as well as a plan to support increased carpooling and transit use in the future.

7. Develop a capital improvement program that fulfills the transportation goals established by the community.

Goal 3

Develop transportation improvements that address overall traffic safety in the Woodburn area.

Policies

1. Develop access management strategies for Oregon 219/214, 211, and 99E through Woodburn, particularly focusing on the section of Oregon 214 between Interstate 5 (I-5) and Cascade Drive, and Oregon 99E south of Lincoln Avenue.
2. Develop a plan for improving pedestrian and bicycle safety for travel to and from local schools, commercial areas, and major activity centers.
3. Identify street and railroad crossings in need of improvement, as well as those that should be closed or relocated.
4. Develop a plan for designated truck routes through the City, and a plan to handle truck and rail hazardous cargoes.

Goal 4

Develop a set of reliable funding sources that can be applied to fund future transportation improvements in the Woodburn area.

Policies

1. Evaluate the feasibility of the full range of funding mechanisms for transportation improvements.
2. Evaluate the feasibility of instituting an added City gas tax for transportation improvements.
3. Identify a traffic impact fee structure for new development in the Woodburn area to fund transportation improvements.

Goal 5

Develop amendments to City land use standards and ordinances to reduce travel demand and promote use of modes of transportation other than the automobile.

Policies

1. Identify a range of potential Transportation Demand Management (TDM) strategies that can be used to improve the efficiency of the transportation system by shifting single-occupant vehicle trips to other modes and reducing automobile reliance at times of peak traffic volumes.
2. Identify revisions to the Woodburn Zoning Ordinance for compliance with the TPR.

SECTION 2

Reviewed Plans and Policies

This section summarizes the plans and policies at the federal, state, regional, and local levels that are directly associated with transportation planning in the city of Woodburn. Although each document reviewed contains many policies, only the most pertinent policies and information were chosen to help focus the discussion. The purpose of this section is to provide a policy framework for the Woodburn TSP update process. New policies considered as part of this study should be consistent with the currently adopted policies listed. This review also serves as the basis for identifying local policies that may be out of date or inconsistent with other policies and can serve as the basis for updating policies to reflect current conditions and to achieve consistency with other federal, state, regional, and local plans.

Documents Reviewed

The following federal, state, regional, and local documents were reviewed. The general intent of these documents and their relevance to the Woodburn TSP are summarized in the remainder of this section of the plan.

- Transportation Equity Act for the 21st Century
- 23 Code of Federal Regulations (CFR) 450
- 49 CFR 613
- Statewide Planning Goals
- 1992 Oregon Transportation Plan
- 1999 Oregon Highway Plan
- 2002-2005 Statewide Transportation Improvement Program
- 1995 Oregon Bicycle and Pedestrian Plan
- 2001 Oregon Rail Plan
- Freight Moves the Oregon Economy (1999)
- Western Transportation Trade Network Phase II Final Report (1999)
- 1997 Oregon Public Transportation Plan
- 1995 Oregon Transportation Safety Action Plan
- Transportation Planning Administrative Rule
- Access Management Administrative Rule
- Statewide Congestion Overview for Oregon (1998)
- Willamette Valley Transportation Strategy (1995)
- Marion County Rural Transportation System Plan (1998)

- Marion County Comprehensive Plan (1981)
- City of Woodburn Comprehensive Plan (1978 and subsequent amendments)
- City of Woodburn Development Ordinance (2002)
- I-5/Woodburn Interchange Refinement Plan (2000)
- 1996 Woodburn Transportation System Plan

Federal Policies

The Transportation Equity Act for the 21st Century (TEA-21) specified changes to transportation planning activities for states and metropolitan planning organizations (MPOs) instituted by the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). The regulations for these state and MPO planning activities are specified in 23 CFR 450 and 49 CFR 613. The planning activities encompass a continuing, cooperative, and comprehensive process that considers all transportation modes. The resulting plans lead to the development and operation of an integrated, intermodal system that facilitates the efficient, economic movement of people and goods. The planning activities also need to specifically address freight movement and bicycle and pedestrian facilities. Additional air quality and congestion management requirements apply to certain MPOs. The state planning requirements are addressed by the OTP and related modal plans and corridor plans. MPO planning requirements are addressed through regional TSPs.

Woodburn is not part of an MPO, and therefore is not subject to TEA-21 or ISTEA planning requirements for MPOs.

State Policies

Statewide Planning Goals

Since 1973, Oregon has maintained a strong statewide program for land use planning. The foundation of that program is a set of 19 statewide planning goals. The TPR and the TSPs identified therein are the results of implementation of Goal 12—Transportation. Oregon's statewide goals are achieved through local comprehensive planning, of which TSPs must be made a part. The goals that apply to transportation system planning in Woodburn are as follows:

- **Goal 1—Citizen Involvement:** Develop a citizen involvement program that ensures the opportunity for citizens to be involved in all phases of the planning process.
- **Goal 2—Land Use Planning:** Establish a land use planning process and policy framework as a basis for all decisions and actions related to use of land to assure an adequate factual base for such decisions and actions.
- **Goal 6—Air, Water, and Land Resources Quality:** Maintain and improve the quality of the air, water, and land resources of the state.
- **Goal 9—Economic Development:** Provide adequate opportunities for a variety of economic activities vital to the health, welfare, and prosperity of Oregon's citizens.

- **Goal 11 – Public Facilities and Services:** Plan and develop a timely, orderly, and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.
- **Goal 12 – Transportation:** Provide and encourage a safe, convenient, and economic transportation system.
- **Goal 13 – Energy Conservation:** Conserve energy.
- **Goal 14 – Urbanization:** Provide for an orderly and efficient transition from rural to urban land use.

1992 Oregon Transportation Plan

The OTP is a policy document developed by ODOT in response to federal and state mandates for systematic planning for the future of Oregon's transportation system. It recognizes the need to integrate all modes of transportation and encourages the use of the mode that is the most appropriate for each type of travel. The Plan defines goals, policies, and actions for the state for the next 40 years. The Plan's System Element identifies a coordinated multimodal transportation system, to be developed during the next 20 years, which is intended to implement the goals and policies of the Plan. The goals and policies of the OTP cover a broad range of issues. The goals and policies most directly applicable to transportation system and facility plans are as follows:

- Goal 1: Characteristics of the System
  - Policy 1A – Balance
  - Policy 1B – Efficiency
  - Policy 1C – Accessibility
  - Policy 1D – Environmental Responsibility
  - Policy 1E – Connectivity among Places
  - Policy 1F – Connectivity among Modes and Carriers
  - Policy 1G – Safety
- Goal 2: Livability
  - Policy 2A – Land Use
  - Policy 2B – Urban Accessibility
  - Policy 2C – Relationship of Interurban and Urban Mobility
  - Policy 2D – Facilities for Pedestrians and Bicyclists
  - Policy 2E – Minimum Levels of Service
  - Policy 2H – Aesthetic Values
- Goal 3: Economic Development
  - Policy 3B – Linkages to Markets
  - Policy 3E – Tourism
- Goal 4: Implementation
  - Policy 4G – Management Practices
  - Policy 4K – Local Government Responsibilities

- Local governments shall define a transportation system of local significance adequate to meet identified needs for the movement of people and goods to local destinations within their jurisdictions.
- Local government transportation plans shall be consistent with regional transportation plans and adopted elements of the state TSP:
  - Policy 4L—Federal and Indian Tribal Governmental Relationships
  - Policy 4M—Private/Public Partnership
  - Policy 4N—Public Participation

1999 Oregon Highway Plan

The 1999 Oregon Highway Plan (OHP) is one modal element of the OTP. The OHP defines the policies and investment strategies for Oregon's state highway system over the next 20 years. Regional and local TSPs must be consistent with the State TSP, which includes the OHP. OHP policies requiring consistency in TSPs are as follows:

- **Policy 1A: State Highway Classification System.** The state highway classification system includes six classifications: Interstate, Statewide, Regional, District, Local Interest Roads, and Expressways. The OHP emphasizes designation of expressways as a subset of statewide, regional, and district highways to provide a high level of access control along highway segments (such as long distances between access points and limited turning movements).
  - State-classified highways in Woodburn include: Oregon 99E, a regional highway, and Oregon 211 and 214, which are both district highways.
- **Policy 1B: Land Use and Transportation.** This policy recognizes the role of both state and local governments regarding the state highway system and calls for a coordinated approach to land use and transportation planning. The policy identifies the designation of highway segments as Special Transportation Areas (STAs), Commercial Centers, and Urban Business Areas (UBAs). Within STAs and UBAs, highways may be managed to provide a greater level of access to businesses and residences than might otherwise be allowed. Commercial centers encourage clustered development with limited access to a state highway.
  - The city of Woodburn does not have a designated UBA, Commercial Center, or STA, and does not recommend the designation of such areas as part of this TSP.
- **Policy 1C: State Highway Freight System.** This policy calls for balancing the need to move freight with other highway users by minimizing congestion on major truck routes. I-5 is a designated freight corridor that runs through Woodburn.
- **Policy 1D: Scenic Byways.** This policy promotes the preservation and enhancement of scenic byways by considering aesthetic and design elements along with safety and performance considerations on designated byways.
  - Oregon 214 is designated as the Silver Falls Oregon Tour Route.
- **Policy 1F: Highway Mobility Standards Access Management Policy.** This policy provides specific mobility standards for the state highway sections, signalized

intersections, and interchanges. Alternative standards are provided for certain locations and under certain conditions.

- **Policy 1G: Major Improvements.** This policy identifies the state's priorities for responding to highway needs: protect the existing system; improve efficiency and capacity of existing system; add capacity to existing system.
- **Policy 2G: Rail and Highway Compatibility.** This policy emphasizes increasing safety and efficiency through reduction and prevention of conflicts between railroad and highway users.
- **Policy 3A: Classification and Spacing Standards.** This policy addresses the location, spacing, and type of road and street intersections and approach roads on state highways. It includes standards for each highway classification, such as specific standards for STAs and UBAs.
- **Policy 3B: Medians.** This policy establishes the state's criteria for the placement of medians.
- **Policy 3C: Interchanges.** This policy addresses the management of grade-separated interchanges to ensure safe and efficient operation between connecting roadways.
  - In April 2002, ODOT in cooperation with the I-5/Woodburn Interchange Advisory Committee, which included representatives of the city of Woodburn and Marion County, identified two alternatives for the I-5/Oregon 214 interchange (see the I-5/Woodburn Interchange Refinement Plan discussion in Section 2.4.6).
- **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.
  - I-5 is the only highway in the state highway freight system that passes through Woodburn. ODOT has identified the section of I-5 through Woodburn as suffering from congestion.

2002-2005 Statewide Transportation Improvement Program

The Statewide Transportation Improvement Program (STIP) identifies the transportation projects that the state will fund during its next 4-year program. The STIP is updated every 2 years. These projects will be integrated into the Woodburn TSP planning process. The 2002-2005 STIP includes $1.8 million for environmental assessment, design, right-of-way (ROW) activities, construction of interchange improvement for Oregon 214 between I-5 and Evergreen Avenue, $2.8 million for pavement overlay of Oregon 214 between Willow Avenue and Mount Angel, and $2.4 million for environmental assessment, design, ROW activities of the interchange improvement at Oregon 214/I-5.

1995 Oregon Bicycle and Pedestrian Plan

The Oregon Bicycle and Pedestrian Plan provides guidance to regional and local jurisdictions for the development of safe, connected bicycle and pedestrian systems. The plan is a modal element of the Oregon Transportation Plan. The plan includes two major sections: (1) policies and implementation strategies, and (2) design, maintenance and safety information. The plan also outlines the elements of the bicycle and pedestrian plan required for TSPs. The goal of the plan is "To provide safe, accessible and convenient bicycling and walking facilities and to support and encourage increased levels of bicycling and walking."

2001 Oregon Rail Plan

The 2001 Oregon Rail Plan includes two major elements: freight and passenger. The 2001 Rail Plan identifies federal and state policies applicable to passenger and freight rail planning, but does not identify any additional policies specific to the plan. The freight element describes existing conditions in the different regions of the state and improvements that are needed. The Willamette Valley Railway track, which connects with the Union Pacific Railway track in Woodburn, requires renewal of its rails, cross ties, and turnouts.

The 2001 Oregon Rail Plan also identifies issues that should be considered in rail planning during local land use planning like preparation of a TSP and comprehensive plan policies to support the TSP. The passenger element identifies the need or feasibility of certain passenger and commuter rail improvements in Region 2; none of these proposed lines would have stops in Woodburn.

Freight Moves the Oregon Economy (1999)

This plan's stated purpose is to demonstrate the importance of freight to the Oregon economy and identify concerns and needs regarding the maintenance and enhancement of current and future mobility within the state of Oregon. The plan discusses the relationship among freight, the economy, and transportation planning, as well as road, rail, waterway, and pipeline facilities, and intermodal facilities. Although the report does not identify any general freight policies to be addressed by TSPs or facility plans, it does identify improvements needed in the State freight system. Congestion relief on I-5 through Woodburn is mapped as one of the needed improvements. No other improvements are recommended for facilities serving Woodburn.

Western Transportation Trade Network Phase II Final Report (1999)

The Western Transportation Trade Network (WTTN) Phase II Final Report was prepared for the 17 states that belong to the Western Association of State Highway and Transportation Officials (WASHTO). As such, the report does not identify specific plans or policies of the state of Oregon; however, it does identify deficiencies and potential performance improvements to the trade corridors passing through and serving Oregon. I-5 is one of the major trade corridors identified in the report. The highway improvements recommended by the WTTN include the following:

- Improve pavement conditions (resurface, enhance maintenance, increase strength).
- Improve roadway geometrics (curves, turning radii).
- Increase lane widths to 12 feet.
- Increase shoulder widths to be in accordance with AASHTO standards.
- Reconstruct existing roadway, including additional lanes.
- Modify existing roadway to control and reduce access.
- Widen roadway; construct with additional lanes.

1997 Oregon Public Transportation Plan

The Oregon Public Transportation Plan (OPTP) forms the transit modal plan of the OTP. The vision guiding the public transportation plan is as follows:

- A comprehensive, interconnected and dependable public transportation system, with stable funding, that provides access and mobility in and between communities of Oregon in a convenient, reliable, and safe manner that encourages people to ride.
- A public transportation system that provides appropriate service in each area of the state, including service in urban areas that is an attractive alternative to the single-occupant vehicle, and high-quality, dependable service in suburban, rural, and frontier (remote) areas.
- A system that enables those who do not drive to meet their daily needs.
- A public transportation system that plays a critical role in improving the livability and economic prosperity for Oregonians.

The plan contains goals, policies, and strategies relating to the whole of the state's public transportation system. The plan is intended to provide guidance for ODOT and public transportation agencies regarding the development of public transportation systems. The OPTP also identifies minimum levels of service, by size of jurisdiction, for fulfilling its goals and policies. The minimum levels of service applicable to Woodburn are as follows:

- Provide daily peak hour commuter service to the core areas of the central city, in this case Salem.
- Provide a guaranteed ride home program to all users of the public transportation system and publicize it well.
- Provide park-and-ride facilities along transit route corridors to meet reasonable peak and off-peak demand for such facilities.
- Maintain vehicles and corresponding facilities in a cost-effective manner and replace vehicles when they reach the manufacturers' suggested retirement age
- Establish ridematching and demand management programs in communities of 5,000 where there are employers with 500 or more workers who are not already covered by a regional ridematching/demand management program.
- Establish ridematching and demand management programs in communities of 10,000.

The Public Transportation Plan also has minimum level of service standards for intercity public transportation, intercity bus, and intercity rail in 2015. The minimum levels of service applicable to Woodburn are as follows:

- Intercity public transportation services would:
  - Provide east/west and north/south connections to places outside the state based on travel density within Oregon's interstate corridors
  - Provide intercity passenger terminals subject to public control to assure open access to all intercity carriers throughout the state

- Provide direct connections, where possible, between intercity services and local public transportation services
- Provide services in compliance with the Americans with Disabilities Act (ADA) requirements for all modes and transfer facilities
- Maintain vehicles and corresponding facilities in a cost-effective manner and replace vehicles when they reach the manufacturers' suggested retirement age

- Intercity bus services would:
  - Provide hourly service to major communities within the Willamette Valley in conjunction with passenger rail service
  - Provide service on a daily basis for round trip purposes, for an incorporated city or group of cities within 5 miles of one another having a combined population of 2,500 and located 20 miles or more from the nearest city with a larger population and economy
  - Provide a coordinated, centralized scheduling system in each county and at the state level for rural and frontier areas
  - Coordinate intercity bus services with intercity senior and disabled services, local senior and disabled services and local public transportation services
- Intercity rail services would:
  - Provide regional rail service offering frequent schedules, through trains, extensive feeder bus networks with convent connections, and an aggressive marketing and passenger amenities program to stimulate changes in transportation preferences and a per-capita reduction in highway travel
  - Coordinate with intercity bus and local public transportation services to ensure timely and convenient connections

1995 Oregon Transportation Safety Action Plan

The Oregon Transportation Safety Action Plan forms the safety element of the OTP. The intent of the plan is to improve safety on Oregon's highways for all users. The policy for safety in the OTP (Policy 1G) is as follows: "It is the policy of the state of Oregon to improve continually the safety of all facets of statewide transportation for system users including operators, passengers, pedestrian, recipients of goods and services, and property owners." Many of the actions identified in the plan are programmatic in nature and may not be addressed best through transportation system or facility plans. The following lists the actions that TSPs and corridor plans could address best:

- Action 19—Safety Considerations in Transportation Planning Documents
  - Consider the roadway, human, and vehicle elements of safety in modal, corridor, and local system plan development and implementation. These plans should include the following:

  - Involvement in the planning process of engineering, enforcement, and emergency service personnel as well as local transportation safety groups
  - Safety objectives
  - Resolution of goal conflicts between safety and other issues
  - Application of access management standards to corridor and system planning

- Action 20—Access Management
  - In planning, consider access management techniques that show significant improvements in safety for the roadway user. Access management techniques, which can stand alone or be combined, may include:
    - Appropriate access and public street spacing and design
    - Proper spacing and coordination of traffic signals
    - Installation of nontraversible medians
    - Proper spacing and design of median openings
    - Provision of lanes for turning traffic
    - Interparcel circulation
    - Use of city and county road infrastructure as an alternative to increase access
    - Protection of the functional area of an intersection
    - Proper spacing of interchanges
- Action 27—Airports and Surrounding Land Uses
  - Continue to consider land use when siting airports to reduce the potential for a crash involving aircraft hitting persons on the ground. Ensure that corridor and local system plans identify existing and proposed public use airport facilities and services and provisions for compatibility with surrounding land use activities.
- Action 64—Rail Crossing Safety
  - Reduce the potential of crossing crashes by eliminating redundant highway-rail intersections. Upgrade warning devices or construct grade separations at the most heavily traveled intersections.

Transportation Planning Rule (OAR 660-012)

The TPR, OAR 660 Division 12, implements Oregon's Statewide Planning Goal 12 (Transportation) and promotes the development of safe, convenient, and economic transportation systems that reduce reliance on the automobile. The TPR requires the preparation of regional transportation systems plans by MPOs or counties and local TSPs by counties and cities. TSP requirements vary by type (regional vs. local) and community size. Through TSPs, the TPR provides a means for regional and local jurisdictions to identify long-range (20-year) strategies for the development of local transportation facilities and services for all modes, to integrate transportation and land use, to provide a basis for land use and transportation decision-making, and to identify projects for the State Transportation Improvement Program. TSPs need to be consistent with the STIP and its modal and multimodal elements.

Access Management Rules (OAR 734-051)

OAR 734-051 states that the purpose of the rules is to govern the issuance of permits for approaches onto state highways. The policy promotes the protection of emerging development areas rather than the retrofit of existing built-up roadways. The rules also provide access management spacing standards for approaches for various types of state roadways and for interchanges. OAR 734-051-0190 specifies that theses standards are to be used in planning processes involving state highways, including corridor studies, refinement plans, state and local TSPs, and local comprehensive plans. The access management rules also include provisions for UBAs and STAs, as discussed in the OHP. The access management rules also describe the development of access facility management plans and interchange area management plans.

Regional and Local Plans and Policies

Willamette Valley Transportation Strategy (1995)

The Willamette Valley Transportation Strategy (WVTS) is a multimodal element of the OTP. The WTVS identifies strategies for addressing eleven key issues influencing transportation development in the Valley. These strategies address the following issues:

- Highways/Roadways
  - Select highway projects that maximize the net benefits to the Valley's transportation system as a whole.
  - Coordinate highway projects with land use policies and other transportation improvements.
  - Make strategic capacity enhancements to controlled access highways.
  - Make strategic capacity enhancements to nonaccess-controlled intercity highways in the state network and to key local facilities such as urban arterials.
  - Maintain regional highway linkages upon which rural communities depend to build viable communities.
  - Improve north-south and east-west links to the existing state highway system.
- Local/Regional Transit
  - Expand existing urban transit district services and systems to serve all parts of the more developed portions of their regions, especially when service can help relieve congestion and reduce the need for costly street improvements.

  - Provide transit service from metropolitan centers to neighboring cities with populations of 2,500 or more.
  - Develop urban transit systems in all cities of 25,000 or more.
- Freight
  - Improve local and state highway networks that provide direct connections to industrial areas and intermodal facilities such as rail/truck reload centers and air and marine ports.
  - Connect networks of collectors and arterials to intermodal freight facilities within MPOs.
- Aviation
  - Consider consolidation of some general aviation facilities where necessary to reduce operational costs and improve efficiency.
  - Through public-private partnerships, improve freight and passenger access to commercial airports by highway, transit, and rail.
  - Manage land uses adjacent to airports to minimize conflicts with airport operations and public safety.
- Bicycles and Pedestrians
  - Include provisions for bicycle and pedestrian use in all new facilities and major construction.
  - Build a stronger network of bicycle and pedestrian facilities, including routes off highway rights-of-way.
  - Connect networks of bicycle/pedestrian routes to intermodal passenger terminals within MPOs.
- Interchange Development
  - Encourage local governments to adopt land use policies and implement transportation strategies that help achieve planned interchange utilization.
- TDM Programs
  - In cooperation with the state, local jurisdictions develop transportation demand management programs that educate and inform the public about motor vehicle use.
  - Institute or expand programs such as ridesharing, park-and-ride, transit promotion, and parking management, especially in metropolitan areas.
  - In partnerships between public and private sectors, expand programs such as trip reduction (commute options), flex time, telecommuting, and parking "cashout" programs, especially in metropolitan areas for both public and private employees.
  - Coordinate employer-based programs with community transportation plan objectives.

  - Expand prepaid group transit pass programs in local communities.
- User Fees
  - Increase parking prices in urban areas of the Valley through a variety of means.
  - Introduce peak period pricing techniques on key transportation facilities.

The strategies emphasize connections between places and modes, reduction of reliance on the automobile, development of facilities with maximum benefit for the Valley, and compact development.

Marion County Rural Transportation System Plan (1998)

Marion County is in the process of updating its 1998 Rural Transportation System Plan (RTSP), and has provided six draft chapters for public review. The following discussion focuses on the 1998 RTSP; however, it does identify completed improvements. The introduction to the 1998 Marion County RTSP indicates that the scope of the plan includes all rural County transportation facilities outside UGBs. Therefore, the 1998 RTSP does not specifically address facilities in Woodburn but it does identify important linkages to the County system. The following lists the 1998 RTSP's 20-year recommended improvements and policies that should be taken into consideration in the development of the Woodburn TSP.

- Roadways
  - Corridor Study: Howell Prairie Road from Oregon 214 to Oregon 99E
  - Special Study: Second I-5 interchange
- Bicycle and Pedestrian Improvements
  - Boones Ferry Road from Woodburn UGB to Crosby Road: Construct 5-foot paved shoulders on both sides of road. (This project has also been identified as a safety widening project, benefiting motorists as well as bicyclists and pedestrians.)
  - Urban bicycle and pedestrian improvements on county roads in cities and communities as identified in local TSPs.
- Public Transportation
  - Commuter Shuttle Service: I-5/Oregon 99E from Woodburn to Salem. (To support both intercity and paratransit services, the RTSP recommends a shuttle service along major, commuting corridors in the county.)

    The Chemeketa Area Regional Transportation System (CARTS) now provides weekday fixed route service between Woodburn and Salem (two routes during both the a.m. and p.m. peak period).
  - Organize and coordinate paratransit service providers on a subregional basis to enhance existing services and develop future services: North County Area (including Silverton, Mt. Angel, and Woodburn)

For example, CARTS through Wheels Community Transportation now provides dial-a-ride services in Marion and Polk Counties.

In addition to identifying specific improvements, the Marion County RTSP also identifies a series of transportation policies. Policies with bearing on the Woodburn TSP include the following:

- Transportation System Planning Policies
  - Policy 1: The general priorities for Marion County, with regard to the County Road System, are in order of importance: (1) preservation and maintenance of the existing road system; (2) safety improvements and enhancements; and (3) capacity enhancements and growth-related projects.
  - Policy 4: It is the County's desire to work with each community to develop and maintain the transportation system with the goals and visions of the communities in mind. Deviation from a community's direction is possible when dealing with issues involving such things as safety, significant added expense, modernization projects, liability, and providing services that are in the best interest of the public.
  - Policy 6: The County shall pursue and encourage implementation of TDM and Transportation System Management (TSM) strategies whenever possible as alternatives to building new transportation facilities.
  - Policy 8: The County recognizes the role of State highways and County arterials as the backbone of the transportation network. These roads are critical for everyday transportation and serve as critical lifelines in emergency situations. The County will support efforts to enhance and maintain the capabilities of these roads
- Bicycle, Pedestrian, and Public Transportation Policies
  - Policy 3: The County shall encourage and facilitate the Salem Area Transit District and other transit providers to obtain the ability to provide services to areas outside of designated UGBs.

Marion County Comprehensive Plan (1981)

The transportation goals and policies included in the Marion County Comprehensive Plan are not all current in terms of relationship to more recent state and county law and policies. Those that continue to be current and applicable to Woodburn are as follows:

- Policy 11: Encourage the establishment of a cost-effective rail passenger service connecting the heavily populated urban centers of the Willamette Valley.
- Policy 12: Encourage the use of underground pipelines that minimize the need for surface shipping and that are compatible with established land uses.
- Policy 14: Marion County will coordinate with other jurisdictions in the area to promote the development of integrated and improved transportation services for the transportation disadvantaged.

City of Woodburn Comprehensive Plan (1978 and Subsequent Amendments)

The City of Woodburn Comprehensive Plan was originally adopted in 1978. The land use element was last amended in March 1996, the Transportation Goals and Policies were amended in 1997, and the Annexation and Growth Goals and Policies were amended in October 1999.

Land Use Goals

- A-4: Streets in residential areas should be used by residents for access to collectors and arterials. Residential streets should be designed to minimize their use for through traffic; however, whenever possible dead-end streets and cul-de-sacs should be avoided.
- Goal A-8: High-traffic generating nonresidential uses should not be located in such a manner as to increase traffic flows on residential streets or residential collectors.
- Goal A-11: Traffic from high-density residential areas should have access to collector or arterial streets without going through other residential areas.
- Goal B-2: Lands for high-traffic generating uses (shopping centers, malls, restaurants, etc.) should be located on well-improved arterials. The uses should provide the necessary traffic control devices needed to ameliorate their impact on the arterial streets.
- Goal B-3: Whenever possible, the City should encourage or require commercial developments which are designed to allow pedestrians to shop without relying on the private automobile to go from shop to shop.
- Goal C-2: Industrial land should be located so as to ensure that road transportation and, secondarily, rail transportation is available to industrial areas.

Transportation Goals and Policies

- Goal K-1: Establish a framework for the development of facilities to move persons and goods in as safe, effective, and efficient manner as possible under projected year 2015 traffic conditions.
- Policy K-1-1: Develop a transportation system that interconnects residential areas with employment centers, commercial areas, schools, parks, churches, and regional transportation networks.
- Policy K-1-2: Develop a street system wherein arterial streets are of sufficient width to accommodate traffic flows without interruption. Collector streets should function to conduct traffic between arterial streets, which serve to accommodate movement within neighborhoods.
- Policy K-1-3: To ensure that state and federal highways with routes through the City are improved in accordance with projected traffic volumes and the elements contained within this plan.
- Policy K-1-4: Develop a public transit system that will provide service and facilities to improve the mobility and accessibility of the transportation disadvantaged.

- Policy K-1-5: The City shall encourage pedestrian safety and foster pedestrian activity, sidewalks shall be provided on all arterial, service collector, and access streets. Where possible, sidewalks should be detached from the curb, separated by a minimum 4-foot-wide parkway strip.
- Policy K-1-6: The City shall encourage large businesses in Woodburn to set up carpool and vanpool matching programs based on employees' residential location and work shift.
- Policy K-1-7: Access to a development site shall be consistent with an adopted access management plan for specific streets.
- Policy K-1-8: Oregon 214 (between the west City limits and Settlemier Avenue/Boones Ferry Road) and Oregon 99E between Lincoln Street and the south City limits. The 1991 Oregon Highway Plan classifies the following as Category 5 Highways:
  - Public roads shall be spaced a minimum of one-quarter mile apart
  - Private driveways shall be full access spaced at least 300 feet apart (which equates to 18 driveways per mile on each side of the roadway)
  - Traffic signals shall be spaced at least one-quarter mile apart
- Policy K-1-9: Where possible, driveway access along Oregon 214 and Oregon 99E shall be consolidated to meet the driveway density guidelines outlined in the Access Management Plan. Where possible, driveway access along the following sections of Oregon 214 shall be consolidated:
  - I-5/Evergreen Road
  - Evergreen Road/Oregon Way
  - Oregon Way/Broughton Way
  - Broughton Way/Settlemier Avenue
- Where possible, driveway access along the following sections of Oregon 99E shall be consolidated:
  - Lincoln Street/Aztec Drive
  - Aztec Drive/Laurel Avenue
  - Laurel Avenue/Oregon 214
  - Oregon 214/End of Curb
- Policy K-1-10: In order to bring Oregon 214 and Oregon 99E into compliance with the Access Management Policy guidelines, the city of Woodburn shall coordinate with ODOT to:
  - Develop parallel road system to provide local access to businesses adjacent to Oregon 214 and 99E, and reduce the traffic volumes on Oregon 99E
  - Install two-way left turn lanes along the sections of Oregon 214 and 99E
- Goal K-2: Develop a transportation system that avoids or reduces a reliance upon any one form of transportation.

- Policy K-2-1: Encourage the development of transit services by route expansion, increasing levels of service and appropriate street design to facilitate movement of transit vehicles.
- Policy K-2-2: Develop a bikeway and pedestrian system that will provide routes connecting residential areas to schools, parks, places of employment, and commercial areas.
- Policy K-2-3: Promote optimum efficiency within the transportation system by the use of traffic management techniques including access controls on major arterials and the utilization of available transit system capacity prior to the construction of major new transportation facilities.
- Policy K-2-4: Encourage the design and development of transportation facilities that can be readily modified to accommodate future demands.
- Policy K-2-5: The city shall encourage a reduction in parking for single-occupancy-vehicle travel. Where carpool/vanpool, or shared parking is provided, minimum parking requirements may be reduced by 10 percent.
- Goal K-3: To provide adequate levels of mobility with a minimum of energy consumption and environmental, social, aesthetic, and economic impacts.
- Policy K-3-1: Encourage the use and development of transportation modes that are the least energy consuming for the movement of people and goods.
- Policy K-3-2: Provide a level of transportation services to the urban area that are compatible with the environmental, economic, and social objectives of the community.
- Goal K-4: To develop an area-wide bicycle and pedestrian plan.
- Policy K-4-1: To make implementation of the area-wide bicycle and pedestrian plan a cooperative effort between the city of Woodburn and all other governmental jurisdictions within the area.
- Policy K-4-2: To develop a comprehensive bicycle and pedestrian system including both on-street and off-street routes, which make pedestrian activity and bicycle riding feasible, safe, and enjoyable as alternative modes of transportation in the area.
- Policy K-4-3: To provide bicycle and pedestrian routes that connect residential areas with the major commercial, employment, recreational and institutional network of the area.
- Policy K-4-4: To provide connections between local bicycle and pedestrian routes and other bicycle and pedestrian routes of a regional, state, and national nature.
- Policy K-4-5: To finance the bicycle and pedestrian system as much as possible with nonlocal funds. Where local funds are required, expenditures will be carefully programmed through the respective capital improvement programs of the various governmental jurisdictions associated with the plan.

- Policy K-4-6: To ensure that all new commercial, industrial, institutional, residential, and recreational developments consider the elements contained within the bicycle and pedestrian plan.
- Policy K-4-7: To establish the administrative capability necessary to implement the area-wide pedestrian plan.
- Goal K-5: Increase safety and improve security for pedestrians, bicyclists and bicycle equipment.
- Policy K-5-1: Provide bicycle and pedestrian routes along arterial and collector streets as these streets are improved, or as programmed into jurisdictional capital improvement plans.
- Policy K-5-2: Establish design standards for all new bicycle and pedestrian facilities that are consistent with state and federal design standards.
- Policy K-5-3: Establish well-signed bicycle and pedestrian routes throughout the area by installing bicycle route signs, curb ramps, and in some cases safety striping on streets and roads designated by bicycle and pedestrian use in the plan.
- Policy K-5-4: Establish a bicycle and pedestrian safety plan by implementing an area-wide educational and recreational program oriented toward teaching bicycle and pedestrian safety.
- Policy K-5-5: Amend subdivision and zoning codes to require provision of bicycle and pedestrian facilities.
- Goal K-6: Increase the acceptability for bicycle and pedestrian use.
- Policy K-6-1: Provide bicycle and pedestrian routes within all state, regional, and local parks and recreation areas by applying for grant assistance to support the development of bicycle and pedestrian systems in parks and open space areas.
- Policy K-6-2: Plan off-street routes along creeks and establish routes that lead to local and regional open space areas. Establish local loop routes that take advantage of local amenities and historical areas.
- Policy K-6-3: Construct pedestrian facilities, rest stops, exercise loops and bicycle courses in selected areas.
- Policy K-6-4: Encourage existing developments to install and construct bicycle and pedestrian facilities whenever improvements are planned.

City of Woodburn Development Ordinance (2002)

The Woodburn Development Ordinance (WDO) combines zoning, specified use standards, development guidelines and standards (including street standards), partition and use standards, administration and procedures, and application requirements in one ordinance. Table 2-1 in this section summarizes TPR requirements from OAR Section 660-012-0045, and indicates where the WDO does or does not comply with the TPR and the steps that can be taken to comply. Section 9 presents wording changes to the WDO recommended to make it consistent with the TPR and the results of the TSP analysis.

The following sections of the WDO are pertinent to the TSP:

Street Standards

Scope

The provision of streets shall be guided by the goals and policies of the Woodburn Comprehensive Plan, the Woodburn TSP, detailed City adopted planning and design guidelines, and the WDO. The right-of-way standards apply to public streets. The improvement and construction specification standards apply to both public and private facilities, including streets, sidewalks, and bikeways under the jurisdiction of the city of Woodburn.

General Provisions

A. The access or driveway for each lot shall be connected to the existing public street system in compliance with Section 3.104.

B. No access permit shall be issued unless the internal street(s), boundary streets(s) and abutting street(s) are constructed pursuant to Section 3.101.02.C, UNLESS or until the applicant has obtained an exception as provided in this section.

C. Design and Construction Standards

   1. All public streets under the jurisdiction of the city of Woodburn shall comply with the applicable cross section design standards noted in Section 3.101.03 and construction specifications of the Public Works Department.

   2. All private streets in manufactured dwelling parks shall comply with applicable City design standards and specifications and state design standards and specifications where state standards and specifications preempt City standards and specifications.

D. Street Right-of-Way and Improvement Standards for Development

   Any development subject to an access permit, Section 3.104, shall be responsible for adequate street rights-of-way and improvements. The standards of Section 3.101.02.D may only be modified subject to the approval of an exception, Section 5.103.12. In no instance may standards be reduced below specified minimum nonvariable standards.

   1. Connecting Street Standards (Figure 6.12)

      a. Right-of-Way Standard. The full right-of-way for the subject street classification, Section 3.101.03, shall be required for connecting street segment without an approved exception or variance.

         The minimum connecting street right-of-way shall be sufficient to accommodate the connecting street improvement standard in Section 3.102.D.1.b below.

      b. Street Improvement Standard. The full street improvement for the subject street classification, Section 3.101.03, shall be provided for a connecting street segment without an approved exception or variance.

The minimum connecting street improvement standard shall be equivalent to:

1) One, 12-foot-wide travel lane in each direction, including curbs, where the classification specifies maximum standard of two travel lanes.

2) Required drainage facilities

3) The pedestrian and bikeway facilities located on one side of the street that comply with the standards for the subject street classification. In locations where the street classification specifies a maximum standard of two travel lanes, the connecting segment on the side with the pedestrian/bikeway facilities shall be completed to standards, including the landscaped parkway strip.

2. Boundary Street Standard (Figure 6.12)

   a. Right-of-Way Standard. The full right-of-way for the subject street classification, Section 3.101.03, shall be required for a boundary street without an approved exception or variance.

      The minimum standard for a boundary street right-of-way shall be no less than the width necessary to accommodate the boundary street improvement standard.

   b. Street Improvement Standard. The full street improvement for the subject street classification, Section 3.101.03, shall be provided for a boundary street without an approved exception or variance.

      The minimum boundary street improvement standard shall be equivalent to:

      1) One, 12-foot-wide travel lane in each direction, including curbs in each direction where the classification specifies a maximum standard of two travel lanes

      2) Required drainage facilities

      3) In addition to the improvements cited in 1) above, the full improvement of the street from the center line to the boundary of the subject property plus any center turn land as described for the street classification.

3. Internal Street Standard. (Figure 6.12)

   a. All public streets within a development shall comply with the full right-of-way and improvement standards of Section 3.101.03 without an approved variance.

   b. All private park streets permitted in manufactured dwelling parks shall comply with the full requirements of Section 2.203.15, as set by statute.

E. Private Streets.

Private streets are prohibited in conjunction with a development approval, EXCEPT where required as private park streets in manufactured dwelling parks, pursuant to ORS Chapter 446 and OAR 918-600.

F. Termination of Streets, Bikeways, and/or Pedestrian Ways.

1. Cul de sac Streets

   a. The maximum length of a cul de sac street shall be 250 feet

   b. The minimum radius of a cul de sac street right-f-way shall be 55 feet.

   c. The minimum improved street radius of a cul de sac shall be 45 feet plus curb, planting strip and property line sidewalk.

2. Temporary Dead End Streets. Streets extensions that result in temporary dead end street, or stub streets, due to incremental construction shall:

   a. Be transmitted to the Woodburn Fire District for review and comment.

   b. Have an all weather sign at the temporary street terminus, installed by the applicant, that states: "This Street is Planned for Future Extension."

   c. Provide either a 1-foot reserve strip deeded to the City, or an alternative method for limiting access approved by the City Engineer, at the temporary end of the right-of-way.

3. Continuity of Public Bikeway and Pedestrian Facilities Located Off-Street. Public bikeway and pedestrian facilities, other than those incorporated in a street right-of-way, shall either:

   a. Provide for a continuous system with each segment originating/terminating with a connection to a public street or to a designated activity center.

   b. Provide stubbed facilities that may extend beyond the limits of an approved development, when such a public facility has been specifically endorsed by the City Council.

G. Block Standards

Block length shall not be less than 200 feet and not more than 600 feet, EXCEPT where the dimensions and alignment of existing blocks and streets adjacent to or in the vicinity of a proposed subdivision, topography, adequate lot size, or need for traffic flow warrant other dimensions. The maximum block length shall not exceed 1,200 feet.

Right-of-Way and Improvement Standards (WDO Figure 6.9)

A. The street right-of-way and improvement cross-sectional standards required for development are depicted in the Woodburn TSP Figure 30, excluding: Local Residential with Parking Both Sides - "Skinny" Street; Local Residential with Parking One Side - "Skinny" Street; and Local Residential Street with No Parking. (See WDO Figure 6.6.)

B. The following additional standards for Local Residential Streets:

1. Local Residential Street with Parking One Side:

a. Right-of-way: 50 feet

b. Public Utility Easement: 5 feet, each side

c. Curb to curb improvement: 29 feet

d. Sidewalks: 5 feet wide, each side

e. Required common, onsite parking over and above the parking requirements under other provisions of the WDO: one (1) space per dwelling unit, located no further than 250 feet from the subject lot.

2. Local Residential without Parking:

a. Right-of-way: 50 feet

b. Public Utility Easement: 5 feet, each side

c. Curb to curb improvement: 24 feet

d. Sidewalks: 5 feet wide, each side

e. Required common, onsite parking over and above the parking requirements under other provisions of the WDO: two (2) spaces per dwelling unit lot, located no further than 250 feet from the subject lot.

Access

Applicability

A. Street Access Required

1. Every lot shall have direct access to an abutting public street or to a public street by an irrevocable access easement.

2. Every joint driveway or cross connection between separate lots shall be established by an irrevocable access easement.

B. Access to City Streets, Permit Required

1. A City permit shall be required for any new or modified vehicular access to a street that is under City jurisdiction. The following types of access shall be subject to such a permit:

a. Site access to or from a City street

b. An extension of an existing City street

c. A new public or private street connecting to a City street

2. A Traffic Impact Analysis (TIA) may be required by the Public Works Director prior to the approval of a City access or street construction permit when the Director estimates a development proposal may generate either 100 or more

additional peak hour trips, or 1,000 or more additional daily trips, within 10 years of a development application. A TIA shall evaluate the traffic impacts projected of a development proposal and the estimated effectiveness of potential traffic impact mitigation measures. The methodology for a TIA shall be consistent with Public Works Department guidelines.

3. Administration of City access permit standards and guidelines.

    a. Type I Applications. Development subject to one of the following Type I applications:

        1) Design review for Single Family and Duplex Residential Dwellings, Section 5.101.01

        2) Property Line Adjustments, Section 5.101.07

        3) Access to a City Street, EXCLUDING Major and Minor Arterial Streets, Section 5.101.12

        shall be subject to the access standards of this Section EXCEPT when the subject property is bound by the requirements of a precedent land use decision that has not been modified by a subsequent land use decision.

4. A City access permit shall be subject to the requirements of the WDO and Public Works Department standards.

C. Access to State Streets, Highways, and Interchanges

Access to transportation facility under the jurisdiction of ODOT shall be subject to the requirements of OAR 734-051.

TABLE 2-1
TPR Requirements and Woodburn Development Ordinance (WDO)

TPR Requirement (OAR 660-012-0045)	WDO Compliance/Recommendations
(1) Each local government shall amend its land use regulations to implement the TSP.	
(a) Certain transportation facilities, services and improvements need not be subject to land use regulations (except as necessary to implement the TSP) and, under ordinary circumstances do not have a significant impact on land use.	Few of Woodburn's land use districts allow transportation facilities and improvements outright, other than streets. Recommend that the WDO be amended to enable the development of transportation facilities, services and improvements that are not be subject to land use regulations (except as necessary to implement the TSP) and, under ordinary circumstances do not have a significant impact on land.
(b) A transportation facility, service, or improvement may be allowed without further land use review if it is permitted outright or if it is subject to standards that do not require interpretation or the exercise of factual, policy or legal judgment.	The WDO does not expressly address the land use review of a transportation facility, service, or improvement. Recommend that the WDO be amended to do so.
(c) Local governments shall provide a review and approval process that is consistent with 660-012-0050 (Transportation Project Development). Local governments shall amend regulations to provide for consolidated review of land use decisions required to permit a transportation project.	The WDO does not expressly address OAR 660-012-0050. Recommend that the WDO be amended to specify a review process for transportation projects.
(2) Local governments shall adopt land use or subdivision ordinance regulations, consistent with applicable federal and state requirements, to protect transportation facilities for their identified functions.	
(a) Access control standards	Section 3.104 of WDO addresses access control standards.
(b) Standards to protect the future operations of roadways and transit corridors	Section 3.104 of WDO provides standards to protect the future operations of roadways and transit corridors.
(c) Control of land use around airports	Not applicable. There are no airports within the land use control of the city of Woodburn.
(d) Coordinated review of future land use decisions affecting transportation facilities	Sections 5.103 and 5.104 of the WDO regarding Type III and Type IV application requirements provided for a coordinated review process of land use decisions affecting transportation facilities.
(e) Process to apply conditions to development proposals in order to minimize impacts and protect transportation facilities	WDO Section 4.101.15 provides the authority to all City decision-making bodies to impose conditions of approval reasonably related to impacts caused by the development or designed to ensure that all applicable approval standards are, or can be, met on Type I, III, and IV decisions.

TABLE 2-1
TPR Requirements and Woodburn Development Ordinance (WDO)

TPR Requirement (OAR 660-012-0045)	WDO Compliance/Recommendations
(f) Regulations to provide notice to public agencies providing transportation facilities and services, MPOs, and ODOT of: land use applications that require public hearings, subdivision and partition applications, applications which affect private access to roads, applications within airport noise corridor and imaginary surfaces which affect airport operations.	WDO Section 4.101.09.13.A.3 provides that the City shall send notice of actions of Type V decisions to affected governmental entities, special districts, providers of urban services, and ODOT. Type V decisions are legislative decisions, which are defined as actions where the City Council enacts or amends the City's land use regulations, comprehensive plan, zoning maps or some other component of any of these documents where changes are such a size, diversity of ownership or interest as to be legislative in nature under state law. The WDO does not appear to provide requirements for issuing notices to the same entities for subdivision and partition applications and applications which affect private access to roads as required by 660-015-0045. Recommend the zoning ordinance be amended to include issuing notices to ODOT and transportation service providers for subdivision, partition, and small annexation applications.
(g) Regulations assuring amendments to land use designations, densities, design standards are consistent with the function, capacities, and levels of service of facilities designated in the TSP.	WDO Sections 5.103.01 (Conditional Use), 5.103.03 (Historically or Architecturally Significant Site, Special Conditional Use), 5.103.08 (Special Use as a Conditional Use), 5.104.02 (Comprehensive Plan Map Change, Owner Initiated), and 5.104.04 (Zoning Map Change, Owner Initiated) indicate that a Transportation Impact Analysis (TIA) may be required as part of the permit application process. The preparation of a TIA provides a means for assuring that property-owner initiated amendments are consistent with the function, capacities, and levels of service of facilities designated in the TSP. WDO does not identify a specific process for City-initiated changes. Recommend that the WDO be amended to identify expressly a process to evaluate consistency between amendments to regulations and the operation of transportation facilities.
(3) Local governments shall adopt land use or subdivision regulations for urban areas and rural communities as set forth in 660-012-0040(3)(a-d):	
(a) Provide bicycle parking in multifamily developments of 4 units or more, new retail, office and institutional developments, transit transfer stations and park-and-ride lots	WDO Section 3.105.02 indicates that all uses required to provide 10 more off-street parking spaces are to provide a bicycle rack within 50 feet of the main entrance. This does not include multifamily developments with 4 units, which are only required to provide 8 parking spaces. Recommend the City revise its development ordinance to require multifamily dwelling units to provide a bicycle rack when 8 or more parking spaces are required.

TABLE 2-1
TPR Requirements and Woodburn Development Ordinance (WDO)

TPR Requirement (OAR 660-012-0045)	WDO Compliance/Recommendations
(b) Provide "safe and convenient" (per subsection 660-012-0045.3(d)) pedestrian and bicycle connections from new subdivisions/multifamily development to neighborhood activity centers; bikeways are required along arterials and major collectors; sidewalks are required along arterials, collectors, and most local streets in urban areas except controlled access roadways	WDO Section 3.107.06(C) includes provisions for pedestrian and bicycle circulation and access. WDO Figure 6.9 shows street sections that include bicycle lanes and sidewalks for arterials, collectors, and most local streets. WDO Section 3.101.02.F.3 addresses the continuity of public bikeway and pedestrian facilities located off-street.
(c) Offsite road improvements required as a condition of development approval must accommodate bicycle and pedestrian travel, including facilities on arterials and major collectors	WDO Section 3.101.02.D.1.b addresses pedestrian and bikeway facilities. WDO Figure 6.9 shows street sections that include bicycle lanes and sidewalks for arterials, collectors, and most local streets.
(e) Provide internal pedestrian circulation within new office parks and commercial developments	WDO Section 3.107.06(C) includes provisions for pedestrian and bicycle circulation and access.
(6) As part of the pedestrian and bicycle circulation plans, local governments shall identify improvements to facilitate bicycle and pedestrian trips to meet local travel needs in developed areas.	
(7) Local governments shall establish standards for local streets and accessways that minimize pavement width and total ROW consistent with the operational needs of the facility.	

I-5/Woodburn Interchange Refinement Plan (2000)

In April 2000, ODOT prepared the I-5/Woodburn Interchange Refinement Plan. The purpose of the plan is to present the results of the refinement planning process conducted for the I-5/Woodburn interchange located at Oregon 214 and I-5. This refinement planning process was a technical exercise to evaluate and screen alternatives, which included stakeholder input, prior to a detailed project development.

The goals of the interchange refinement plan are to develop alternatives that:

- Meet the travel demand associated with the local Comprehensive Plans and background traffic growth rates on I-5 and Oregon 214.
- Meet OHP Major Investment Policy.
- Meet the OHP Mobility Policy.
- Meet OHP Interchange Access Management Policy to the maximum extent possible (including access control and use of medians).
- Meet safety geometric standards or have a high likelihood of receiving concurrence on design exceptions.
- Minimize impacts to adjacent businesses and provide for off-highway traffic circulation in accordance with OHP policy.

- Reduce or minimize impacts where possible through use of guardrails, steeper slopes, and retaining walls.
- Minimize overall costs including engineering, right-of-way acquisition, and construction.

The refinement plan recommended that two alternatives move forward to the environmental study phase: the Standard Diamond Interchange and the Partial Cloverleaf A Interchange. Additional consideration needs to be given to access, local street circulation, and widening to the north, south, or combination for each alternative. The principal characteristics of the two alternatives are provided in Table 2-2.

TABLE 2-2
Alternatives Summary

Alternatives	Standard Diamond*	Partial Cloverleaf A
Transportation	Good volume to capacity; fair progression; fair operations and modal integration	Good volume to capacity; fair progression; good operations and modal integration
Impacts	Affects significant number of parcels adjacent to Oregon 214.	Affects northwest and southeast quadrants adjacent to I-5.
Construction and Right-of-Way Costs	$19.2 million	$15.0 million

Special Notes:

* Widen on both sides of Oregon 214 to avoid significant additional costs not currently reflected in estimate.

1996 Woodburn Transportation System Plan

The following lists the recommended transportation improvements identified in Section 9, "Transportation System Plan," of the *1996 Woodburn Transportation System Plan*. Not included in the following discussion are policy or programmatic actions identified in Section 9, such as the functional classification of roadways, street standards, access management strategies, and TDM options. Changes that have been implemented since the completion of the 1996 plan are noted where appropriate.

Required Street Upgrades

- I-5/Oregon 214 Short-Term Improvements
  - Southbound I-5 Ramp/Oregon 214 Intersection: Add a second left-turn lane and right-turn lane on the southbound I-5 off-ramp; restripe the eastbound intersection approach to include a through lane and a right-turn lane; and add a second left-turn lane to the westbound approach. To date, only the eastbound restriping has been completed.
  - Northbound I-5 Ramp/Oregon 214 Intersection: Signalize; add a second right-turn lane on the northbound I-5 off-ramp; add a second left-turn lane to the eastbound approach; and add a second through lane to the westbound approach. The

intersection is now signalized and a second westbound through lane has been added; none of the other improvements have been completed to-date.

- I-5/Oregon 214 Long-Term Improvements
  - Reconfigure interchange. The specific improvements are to be identified in a refinement plan/interchange management plan (see Section 2.4.6). The plan will also identify the specific alignment for the western portion of the South Arterial (see Minor Arterials below). The South Arterial will have a grade separation from I-5.
- Oregon 214
  - Widen to a five-lane facility from Woodland Avenue past Oregon 99E to the eastern City limits. Improve signal coordination.
  - At Settlemier Avenue optimize signal timing, add a second left-turn lane on the northbound approach; restripe southbound approach to include one left-turn lane, one right-turn, and one through lane.
  - At Oregon 99E add a second left-turn lane to the eastbound intersection approach; restripe the westbound intersection approach to include one left-turn, one right-turn lane, and one through lane; and add a second left-turn lane to the northbound intersection approach. To date, only the dual northbound left-turn lane has been constructed.
- Oregon 99E
  - South of Lincoln Street develop access management and sidewalk improvements as part of a final access management plan prepared in conjunction with future development studies.
  - Improve signal coordination.
  - At the Young Street intersection reconfigure east approach, in particular realign Cannery and George Streets away from the intersection. Also required is a westbound right-turn lane. A westbound right-turn lane is now provided at this intersection.
- Oregon 211
  - This highway is envisioned as either a three- or five-lane road east of Oregon 99E, pending future development and increased traffic volumes.
- Minor Arterials
  - Construct a South Arterial between Oregon 219 on the west and Oregon 99E on the east. This roadway could tie into a modified I-5 interchange. The road would be five lanes between Oregon 219 and Evergreen Road, and three lanes east of Evergreen Road.
  - Widen Front Street to a two- to three-lane road from Boones Ferry Road to Cleveland Street, from Hardcastle Avenue to Oregon 214, and north of Woodburn High School.

- Widen Boones Ferry Road north of Oregon 214 to a three-lane facility. Boones Ferry Road has been recently widened to a three-lane facility in the vicinity of Hazelnut.

- Service Collectors
  - Extend Evergreen Road south to the proposed South Arterial (see Minor Arterials above).
  - To develop bicycle lanes and sidewalks, widen West Hayes Street, Parr Road, and Arney Road to service collector standards.
  - Extend Cooley Road south to Lincoln Avenue to create a new north-south road east of Oregon 99E.
- Access Streets
  - Widen Woodland Avenue north of an extended Arney Road to accommodate bicycle lanes.
  - Widen Brown Street south of Bradley Street to accommodate bicycle lanes.

Intracity Transit Service

- Fixed Route Bus System
  - Initially, expand the existing single bus route to two-way operation, with service every 60 minutes, 7 days per week. One bus will need to be added.
  - As ridership develops, increase frequency to every 30 minutes, at least during peak periods. Three buses will need to be added.
  - Consider minor deviations from the existing fixed bus route to the residential area along Boones Ferry Road and the commercial area along Arney Road as these areas develop.
  - Extend bus service to the Woodburn Industrial Park via Progress Way and Industrial Avenue.
  - In the long-term, consider expanding the fixed route bus system to two routes: east and west of the railroad tracks. Orient routes to a downtown transit center, where intercity bus, and possibly rail service, would connect with the local system. The downtown transit center would be located along Front Street, with an auto passenger dropoff/pickup area and a limited park-and-ride facility.
- Nonfixed Route Systems
  - Continue paratransit service.
  - Continue Woodburn Taxi operations.

Intercity Transit Service

- Initiate shuttle bus service between Woodburn and Portland and Salem. Service to each destination would have two roundtrips during both weekday a.m. and p.m. peak periods, and one midday round trip.

- Priority 1 is service to downtown Portland with a stop at the Tualatin park-and-ride facility. This service could start with one 45-passenger bus and add a second bus if demand justifies it.
- Priority 2 is service to downtown Salem and east to state offices. This service would require one 45-passenger bus. Extension of Salem Transit bus service to Woodburn could replace or supplement the need for intercity shuttle bus service between Woodburn and Salem.

  Fixed route, intercity service is now available through CARTS, which stops at the Woodburn Transit Center.
- Develop a maximum 300-space park-and-ride facility near the I-5/Oregon 214 interchange for the intercity transit service, with easy access from both sides of the interchange. To reduce park-and-ride-oriented traffic through the interchange, this facility might best be located off the proposed South Arterial. The intercity bus park-and-ride facility could be connected with the proposed downtown transit center.

- Conduct a more detailed study of transit system improvements by pursuing a separate "Transit Development Program" study.

Pedestrian Facilities (1996 TSP Figure 33)

- Construct and maintain sidewalks through the City to develop a comprehensive sidewalk system, particularly as new development and road improvements take place.
- Develop an off-street pathway system along existing creek corridors to facilitate nonautomotive travel to schools and recreational, commercial, and employment areas.

Bicycle Facilities (1996 TSP Figure 34)

- Construct bicycle lanes on most roadways classified as service collector roads or higher. System will interconnect with the recommended off-street pathway system.
- Bicycle lanes should be incorporated into any arterial or collector reconstruction project.

Rail Facilities

- If the opportunity arises, strive toward the development of a passenger rail stop in downtown Woodburn.
- When appropriate, rail grade crossings will be modified to ensure safe crossings for motorized and nonmotorized modes of transportation.

Air, Water, and Pipeline Facilities

- There are no significant air, water, or pipeline transportation facilities in Woodburn.

SECTION 3

Existing Conditions and Deficiencies

This section provides an inventory and a deficiencies assessment of the existing transportation facilities within the Woodburn UGB. This system includes pedestrian and bicycle facilities, transit facilities, rail facilities, air transport facilities, pipeline transport facilities, water transport facilities, and roadway facilities. The findings of this analysis serve as a baseline to which the future no-build 20-year conditions can be compared.

Background

The city of Woodburn started out as land purchased for a tree nursery. With the building of the railroad tracks in 1870, the area quickly developed into a town that was an important stop on the Oregon & California (O & C) Railroad.[1] As additional tracks were added in 1880 and again in 1910, the City grew substantially. City development was boosted again in 1954 when I-5 was constructed west of the central city. Today, the City supports a population of 20,100 according to the 2000 census. The diverse City includes a high population of senior citizens and residents of Russian and Mexican descent.

Study Area and Land Use

The study area for the TSP consists of the area within the Woodburn UGB and areas that are being studied for possible UGB expansion as part of the concurrent periodic review and TSP processes. Figure 3-1 presents an aerial photo of Woodburn and its immediate vicinity, with the UGB and City limits superimposed. The Woodburn UGB encompasses approximately 4,042 acres, of which 3,222 acres are included within City limits.

The area within the UGB consists of approximately 46 percent residential housing, 27 percent commercial and industrial uses, and 9 percent open spaces. Major attractors within the City include the Woodburn Company Stores west of I-5, the OGA Members Golf Course at Tukwila north of Hazelnut Drive, Wal-Mart, and the retail and employment areas along both Oregon 214 and Oregon 99E.

Some of the streets shown in Figure 3-1 are private, while others are unimproved. As required in Oregon's TPR, only the more important streets within the study area—those designated as collectors and arterials—and intersections of these streets are addressed in the TSP. Where appropriate, local street issues, such as connectivity, are discussed.

Transportation Modes and Facilities

The city of Woodburn's transportation system provides facilities serving many different transportation modes. Each of these modes, supporting infrastructure, and current deficiencies is identified in the following sections.

[1] The O & C Railroad became the Southern Pacific Railroad in 1887

Pedestrian Facilities

Pedestrian facilities serve a variety of needs. These include:

- Relatively short trips (under a mile) to major pedestrian attractors, such as schools, parks and open spaces, retail centers, churches, and public facilities, such as libraries, recreation centers, and community centers
- Recreation trips—for example, jogging or hiking
- Access to transit (generally trips under ¼ mile to bus stops)
- Commute trips, where mixed-use development is provided, and people choose to live near where they work

Continuous sidewalks should connect neighborhoods and employment centers to pedestrian attractors, be integrated with transit stops, and separate pedestrians from vehicular traffic. In addition, pedestrians need opportunities to cross the street. In support of access and connectivity, the TPR (OAR 660-012-0045) requires that sidewalks be provided on all new public roadways. These include arterials, collectors, and most local streets in urban areas, but exclude controlled access roadways.

Figure 3-2 illustrates the available pedestrian facilities and their relationship to major activity centers within Woodburn. The majority of the sidewalks in Woodburn are provided on local streets. Sidewalks are provided in downtown Woodburn and in most of the residential areas, with the exception of Senior Estates. Sidewalks are also provided on portions of the arterials and collectors, although these are intermittent and often on only one side of the road. In the newer areas, the sidewalks have been constructed to ADA) standards. In the downtown and other older neighborhoods, the sidewalk width, clear zone for pedestrians, and ramp requirements will need to be addressed as properties redevelop or roadway improvement projects occur.

As shown in Figure 3-2, gaps in the existing pedestrian system include the following areas:

- *Oregon 214:* Pedestrian facilities are not provided from 5th Street to Park Avenue in front of Woodburn High School on either side of the road. Sidewalks are also absent west of I-5 and east of Oregon 99E around the commercial areas.
- *Boones Ferry Road*: Pedestrian facilities are not provided on either side of the road north of Oregon 214, which abuts French Prairie Middle School and Lincoln Elementary School.
- *Settlemier Road*: Sidewalks are not provided on the west side of the road north of Hayes Street nor on the east side of the road south of Cleveland Street. These connections would provide a continuous link between the residential areas to the south of Oregon 214 to French Prairie Middle School and Lincoln Elementary School.
- *Hayes Street:* Pedestrian facilities are not provided on the north side of the road across the street from Nellie Muir Elementary School.

- *Cascade Drive*: Sidewalks are not provided on either side of the road between Hayes Street and Oregon 214. This connection would provide a link between the residential area around Hayes Street and the commercial developments on Oregon 214.
- *Lincoln Street*: Pedestrian facilities are not provided on the south side of Lincoln Street between Washington Elementary School and the commercial developments on Oregon 99E.

Bicycle Facilities

Bicycle facilities also serve a variety of trips. These include:

- Trips to major attractions, such as schools, parks and open spaces, retail centers, churches, and public facilities, such as libraries, recreation centers, and community centers
- Commute trips
- Recreational trips

Bicycle facilities should be provided on major streets where the vehicular travel speeds are much greater than the bicycle speeds. The TPR (OAR 660-012-0045) requires that on-street bicycle facilities be provided on all new arterials and major collectors. Bicycle facilities should connect residential areas to schools, retail, and employment centers. Permitting bicycles to mix with vehicles on the roadway is acceptable where the average daily traffic is less than 3,000 vehicles per day. Most local roads in Woodburn support bicycle use without the need for designated bicycle lanes based on the low volumes on those roadways.

Figure 3-3 shows the existing bicycle routes in the city of Woodburn. As shown in the figure, Woodburn has five designated bicycle routes:

- *Oregon 214*: Bicycle lanes are provided intermittently between Boones Ferry Road and Oregon 99E.
- *Oregon 99E*: Bicycle lanes are provided on both sides of the road from the northern City limits to Lincoln Road.
- *Hayes Street*: A bicycle lane is provided on the south side of the road between Nellie Muir School and Settlemier Road.
- *Arney Road*: Bicycle lanes are provided from Robin Avenue to the northern City limits. Bicycle lanes are also provided on Robin Avenue and Sprague Lane west of Arney Road.
- *Parr Road*: A 10-foot separated bicycle lane is provided from Settlemier Avenue to the Heritage Elementary and Valor Middle Schools.

As indicated in the figure, bicycle facilities in Woodburn have little connectivity between residential areas, schools, and commercial centers. Major connections are missing in the locations outlined below.

- *Boones Ferry Road/Settlemier Road*: Bicycle facilities are not provided on Boones Ferry Road and Settlemier Road. This connection would provide a link from residential communities north and south of Oregon 214 to the commercial areas on Oregon 214, French Prairie Middle School, and Lincoln Elementary School.

- *Oregon 214*: Bicycle lanes are not provided west of Boones Ferry Road to connect with the commercial developments near I-5.
- *Front Street*: Bicycle facilities are not provided on Front Street to connect residential areas to the downtown commercial area.
- *Oregon 99E*: Bicycle lanes are not provided south of Lincoln Street to connect with the commercial and industrial uses to the south.

Public Transportation

The Woodburn Transit System provides service Monday through Friday from 9:00 a.m. to 5:00 p.m. The transit routes, shown in Figure 3-4, link residential neighborhoods to commercial areas around I-5 and Oregon 99E and serves nearly 32,000 people per year. Approximately fifty scheduled stops are provided at various locations on the routes. These locations are indicated in Figure 3-4.

The city of Woodburn also provides the Woodburn Paratransit System for those who are disabled or are unable to use the fixed route system. The paratransit van charges $2 for a round-trip ride and operates Monday through Friday from 9:00 a.m. to 5:00 p.m. Reservations must be made 24 hours in advance. Approximately 6,000 to 7,000 people are served each year by the paratransit system.

In addition to the Woodburn Transit System, four service providers offer public transportation in Woodburn, as outlined below.

- *Oregon Housing and Associated Services (OHAS)*: The OHAS operates the WHEELS Community Transportation Program in Marion and Polk County. This provider offers service to elderly and disabled passengers Monday through Friday from 7 a.m. to 5:30 p.m. They offer service to customers needing transportation to medical appointments, for employment and education purposes, and for nutritional shopping. Although WHEELS does not charge a fee for their service, they accept donations.
- WHEELS also provides, for the Chemeketa Regional Transportation System (CARTS), two circular intercity routes that connect Salem, Brooks, Woodburn, Hubbard, Mount Angel, and Silverton. The routes operate concurrently in opposite directions and make four stops each in Woodburn daily. The service operates Monday through Friday from 5:45 a.m. to 7:30 p.m. The service has suggested donations for a fare system. CARTS is an intergovernmental agency composed of Marion, Polk, and Yamhill Counties along with the Salem Transit District.
- *Woodburn Family Clinic*: This service provider runs the Woodburn Medical Express. They offer free service to transport patients to and from appointments with physicians from the Woodburn Medical Clinic and Silverton Hospital clinics. Patients requiring transportation schedule their pickup times with the Woodburn Medical Express.

- *Greyhound*: The Greyhound bus service provides intercity transportation to and from Woodburn. Buses depart three times a day between Portland and Woodburn. The terminal station on Front Street is open from 9 a.m. to 8 p.m. 7 days a week.
- *HUT Transportation*: HUT Transportation is an airport shuttle service that provides service to Portland 7 days a week, 365 days a year. Service is provided at 1½-hour intervals from 4 a.m. to 10 p.m. from Woodburn to Portland. The shuttle cost each way is $20.

Rail Facilities

Figure 3-5 depicts the location of rail crossings and the existing tracks. Nine at-grade crossings and one grade-separated crossing are located along Front Street and Cleveland Street within City limits. Three private rail crossings are not indicated on the map. These crossings are for driveways leading to residential dwellings. Of the 11 crossings indicated on the map, seven are gated.

The Union Pacific Railroad provides through train service and freight service north of Hardcastle Avenue. The Willamette Valley Railroad, a short-line operator, provides freight service along Front Street and Cleveland Street to serve local businesses. Willamette Valley also provides freight service to communities to the east of Woodburn on track leased from Union Pacific Railroad. No passenger train stops are provided in Woodburn. The nearest passenger service is available in Salem, approximately 20 miles to the south. The Amtrak station in Salem operates 7 days a week from 6:30 a.m. to 4:30 p.m.

A local group is currently exploring the possibility of using Willamette Valley Railroad equipment to develop excursion train service to Silverton.

Air Transport Facilities

No commercial or private aviation facilities are located within the Woodburn UGB. Regional freight and passenger service is provided via the Portland International Airport, approximately 33 miles from Woodburn via I-5 and I-205. Although commercial service is not available, passenger service is accessible at the Salem Municipal Airport (via private planes) approximately 20 miles from Woodburn, and at the Aurora State Airport approximately 10 miles from Woodburn.

Pipeline Transport Facilities

There are no major pipeline transport facilities within the Woodburn UGB.

Water Transportation Facilities

There are no water transport facilities within the Woodburn UGB.

Roadway Facilities

Ownership

Public roads in the city of Woodburn are owned and maintained by three different jurisdictions: ODOT, Marion County, and the city of Woodburn. As owners of a roadway, each jurisdiction is responsible for the following:

- Establishing the functional classification
- Maintenance
- Approving construction and access permits

ODOT owns the following facilities within the Woodburn UGB:

- I-5 provides service from the northern Oregon border to the southern Oregon border. I-5 is classified as an Interstate Highway by ODOT and has a posted speed of 65 miles per hour (mph) in the vicinity of the City. The Oregon 214/I-5 interchange is the only interchange that provides a direct connection to the city of Woodburn.
- Oregon 214 within Woodburn is part of the Hillsboro-Silverton Highway, which connects Hillsboro through Newberg, St. Paul, Woodburn, and Mt. Angel to Silverton. Oregon 214 continues south of Silverton to Oregon 22, just south of Salem. Oregon 214 is classified as a District Highway by ODOT. The posted speed varies between 30 and 35 mph within the City limits.
- Oregon 219 is also part of the Hillsboro-Silverton Highway and is classified as a District Highway. According to the Oregon Highway Plan, the Hillsboro-Silverton Highway is considered Oregon 219 to the west of I-5 and Oregon 214 to the east. The posted speed within the City limits is 35 miles per hour.
- Oregon 99E connects from Portland to Salem and is classified as a Regional Highway by ODOT. The posted speed varies between 35 and 45 mph within the City limits.
- Oregon 211 connects Woodburn to Estacada via Molalla and is classified as a District Highway. The designation of the highway begins to the east of the Oregon 214/Oregon 99E intersection. The posted speed within the City limits varies between 35 and 45 mph.

Marion County has jurisdiction over the following facilities within the Woodburn UGB:

- Boones Ferry Road south of Ogle Street
- Parr Road west of Centennial Park west boundary
- Stubb Road
- Boones Ferry Road north of Vanderbeck Avenue
- Lincoln Street from 400 feet east of Oregon 99E

The remaining public facilities are owned by the city of Woodburn.

Functional Classification

The functional classification defines a street's role and context in the overall transportation system. In addition, it defines the desirable roadway width, right-of-way needs, access spacing, pedestrian and bicycle facilities, as well as other specifications. The city of Woodburn has established a functional classification system for the roadways within the City limits. Figure 3-6 illustrates the existing classifications.

Arterials

Arterials are the highest class of street and serve larger through volumes at greater speeds. Arterials serve as the major truck routes and emphasize regional mobility over access.

The city of Woodburn identifies two types of arterials: major arterials and minor arterials. Major arterials provide service to traffic entering and leaving the area and traffic to major activity centers in Woodburn. Minor arterials feed the major arterial system and support moderate length trips and service to activity centers. Examples of major arterials in Woodburn include Oregon 214, Oregon 99E, and Oregon 211. Examples of minor arterials in Woodburn include Boones Ferry Road, Front Street, and Hardcastle Street.

The arterial system is fairly limited and constrained by the railroad tracks, I-5, and the manner in which land has developed in the City over time.

The Woodburn Development Ordinance (2313) identifies a five-lane cross section for major arterials with 100 feet of required right-of-way. A typical minor arterial cross section would be a three-lane roadway with a total right-of-way of 74 feet. Both major and minor arterials should include bicycle lanes, sidewalks, and parkway (landscaping) strips. In addition, in both major and minor arterials, the through travel lanes should be 12 feet, whereas the center left-turn lane should be 14 feet. None of the arterials are fully built to City standards.

Collectors

Collectors are the intermediate class of street. They provide a link between local roadways and the arterial system. Access and mobility functions are also important. The city of Woodburn identifies two classifications of collectors: service collectors and access streets. The purpose of service collectors is to provide significant linkage with arterials and accommodate a higher volume of traffic, while access streets are meant to provide single-family residential local street access and accommodate lower volumes of traffic. Examples of service collectors in Woodburn include Parr Road, Arney Road, and Evergreen Road. Examples of Access Streets include Hazelnut Drive, Woodland Drive between Arney Road and Willow Avenue, and Astor Way between Country Club Road and Oregon 214.

The collector street system in Woodburn is also fairly limited by the manner in which the City has developed over time.

The city of Woodburn requires 74 feet of right-of-way for service collectors. The cross section includes two 12-foot travel lanes, a 12-foot center left-turn lane, bicycle lanes, sidewalks, and parkway strips. Access streets require 60 feet of right-of-way with two 12-foot travel lanes, bicycle lanes, sidewalks, and parkway strips. The Woodburn Development Ordinance also contains a design for access streets that provides two lanes for parking, resulting in 70 feet of right-of-way; in this scenario, the through travel lanes should be 14 feet wide. Most of the collectors are not built to City standards.

Local Streets

Local streets provide direct access to homes and neighborhoods and feed into collectors. Access is the most important role of local streets.

The local street grid system is well developed between Boones Ferry Road and Front Street south of Oregon 214, and north of Oregon 214 between Boones Ferry Road and I-5. The local street grid system is still developing in the remaining area.

The Woodburn Development Ordinance provides several cross-sections for local streets with and without on-street parking. The required right-of-way ranges from 50 feet to 60 feet. All designs include sidewalks and parkway strips, with variations on parking and lane widths. Only a limited number of local roadways are built to City standards. On local streets, the minimum travel lane width should be 10 feet if parking is provided on-street and 12 feet if parking is not provided.

Traffic Operations

Manual turning movement counts were collected for intersections of arterials and collectors within the Woodburn UGB on typical weekdays in November 2002 and January 2003. All counts were collected during the p.m. peak period (4-6 p.m.), which is when traffic volumes are highest on area roadways. The counts were seasonally adjusted per ODOT's guidelines and then used to evaluate the existing roadways and intersection operations within the city of Woodburn. Appendix A includes the traffic count data for the study intersections.

Roadways

Figure 3-6 presents the existing p.m. peak hour traffic volumes on all collector and arterial roadways. These volumes are two-way volumes derived from the intersection traffic counts. As shown in the figure, Oregon 99E and Oregon 214 carry the most traffic during the weekday p.m. peak hour, with approximately 1,900 and 1,500 vehicles, respectively.

Intersections

Traffic operations at intersections are described by a level of service, which corresponds to a range of delays a driver experiences at an intersection. The level of service ranges from "A" to "F." A level of service "A" corresponds to little delay and good operations, while a level of service "F" corresponds to high delays and poor operation.

Signalized intersections and unsignalized intersections have different measures of level of service. For signalized and four-way stop intersections, level of service is based on the average delay experienced by all vehicles entering the intersection. For two-way stop intersections, level of service is based on the delay experienced by the worse movement, which is usually the left-turn movement on the stopped approach. The city of Woodburn does not have an operations standard for signalized and unsignalized intersections within City limits.

ODOT has specific mobility standards for the state facilities within the city of Woodburn based on the facility's classification and volume-to-capacity ratio. The volume-to-capacity ratio is the degree of saturation of an intersection. The ODOT requirements for intersections on state highways are as follows:

- On Oregon 214, Oregon 211, and Oregon 219, ODOT requires a maximum volume-to-capacity ratio of 0.85 based on the district highway designation.
- On Oregon 99E, ODOT requires a maximum volume-to-capacity ratio of 0.80 based on its classification as a regional highway.

Levels of service analyses were performed at 33 study intersections using the procedures described in the 2000 Highway Capacity Manual. These included 11 signalized intersections, as outlined below.

- *Oregon 214/Woodland Avenue*: This intersection is located east of I-5 and provides access to residential neighborhoods to the north and the Woodburn Factory Stores.

- *Oregon 214/I-5 Southbound Ramp*: This intersection provides the city of Woodburn and other areas of Marion County with access to I-5 southbound.
- *Oregon 214/I-5 Northbound Ramp*: This intersection provides the City and other areas of the county with access to I-5 northbound.
- *Oregon 214/Evergreen Road*: This intersection provides access to the commercial developments on Oregon 214.
- *Oregon 214/Oregon Way/Country Club Road*: This intersection provides access to the residential dwellings to the north and south of Oregon 214.
- *Oregon 214/Boones Ferry Road*: This intersection provides access to residential dwellings to the north and south of Oregon 214. In addition, French Prairie Middle School and Lincoln Elementary School are located in the northwest quadrant of this intersection.
- *Oregon 214/Meridian Drive/5th Street*: This intersection provides access to the business developments to the north and the residential dwellings to the south of Oregon 214. In addition, 5th Street provides a connection to the commercial developments along Front Street.
- *Oregon 214/Oregon 211/Oregon 99E*: This intersection was improved in August 2002 to include additional turn lanes on the northbound approach.
- *Oregon 99E/Hardcastle Street*: This intersection provides access to the residential developments to the east and west of Oregon 99E.
- *Oregon 99E/Lincoln Street*: This intersection provides access to the residential developments and Washington Elementary School to the east Oregon 99E.
- *Oregon 99E/Young Street*: This intersection provides access to the industrial and commercial uses to the east and west of Oregon 99E.

The remaining study intersections are stop-controlled intersections. Figure 3-6 summarizes both the intersection control and the results of the intersection operations analysis for all study intersections. Table 3-1 summarizes the volume-to-capacity ratios for each intersection. The intersection operations are reported as being under, near, or over capacity. The capacity was based on level of service for signalized intersections, and the volume-to-capacity ratio of the critical movement for unsignalized intersections. For analysis purposes, over capacity was defined as not meeting ODOT mobility standards. As shown in the figure and table, all study intersections currently meet ODOT mobility standards with the exception of the Meridian/5th/Oregon 214 intersection. At this intersection, the critical southbound left-turn movement currently operates over capacity. Appendix B contains the year 2002 level of service worksheets.

TABLE 3-1
Existing Operations at Key Intersections (volume-to-capacity [v/c])

Intersection	Existing
Butteville Road/Oregon 219*	0.16
Woodland/Oregon 219	0.45
I-5/Oregon 214 northbound ramps	0.78
I-5/Oregon 214 southbound ramps	0.78
Evergreen Road/Oregon 214	0.90
Oregon Way/Oregon 214	0.72
Cascade Drive/Oregon 214	0.31
Boones Ferry Road/Oregon 214	0.85
Meridian/5th/Oregon 214	> 1
Front Street/Oregon 214	0.73
Park Avenue/Oregon 214	0.51
Oregon 99E/Oregon 214	0.82
Cleveland Street/Oregon 99E	0.67
Hardcastle Street/Front Street	0.35
Lincoln Street/Front Street	0.30
Garfield/Young Street/Front Street	0.42
Cleveland Street/Front Street	0.24
Boones Ferry Road/Crosby	0.27
Parr Road/Settlemier Road	0.20

*Note: Butteville/Oregon 219 refers to the southern intersection of the two roadways

Access Management

Division 51 (OAR 734-051-0010 through 734-051-0560) specifies access management spacing standards for ODOT facilities. Oregon 214 (between the west City limits and Oregon 99E) requires an approach spacing of 400 feet based on its classification as a District Highway. Oregon 99E (between Lincoln Street and south City limits) has a minimum standard of 600 feet between approaches based on its classification as a Regional Highway.

The Woodburn Development Ordinance identifies minimum spacing standards for minor arterials, service collectors, and access streets. Minor arterials require a minimum driveway spacing of 245 feet, while service collectors require 50 feet. Access streets require a minimum driveway spacing of 10 feet. The Woodburn Development Ordinance specifies spacing for major arterials, but refers to the Oregon Highway Plan to control spacing standards on these facilities.

The existing spacing on Oregon 214 and Oregon 99E does not meet minimum Division 51 spacing standards. The built-out commercial nature of the area occurred prior to Division 51 legislation. A detailed discussion of access management strategies along these facilities is provided in Section 6.

Traffic Safety

To identify any potential safety deficiencies or conflict points at the major area intersections, crash data were analyzed for all study intersections. Historical crash data were collected from ODOT for the 5-year period between January 1, 1997, and December 31, 2001. Appendix C includes the detailed crash rate data.

Crash rates for intersections are reported in crashes per million entering vehicles (MEV). A crash rate greater than one may indicate the need for further analysis, as does a pattern amongst the crashes, such as rear-end or side-swipe collisions. Of the evaluated intersections, one intersection had a crash rate greater than one and several intersections experienced a relatively high number of crashes. No fatalities were reported at the study intersections during the study period. The detailed analysis of each of these intersections is discussed below.

Oregon 214/I-5 Southbound Ramp

Twenty-three crashes were recorded during the 5-year study period. This intersection was improved in 2000. Of the 15 crashes recorded in 2000 and 2001, eight involved turning collisions on the westbound approach. The left turns on the east and west approaches are controlled by permitted phasing.

Oregon 214/I-5 Northbound Ramp

During the 5-year study period, 24 crashes were reported at this intersection. This intersection was also improved in 2000. Of the eight reported crashes in 2000 and 2001, the majority (seven) were rear-end collisions and these occurred on all of the intersection approaches. No pattern was established among the crashes that is indicative of an existing safety deficiency at the intersection.

Oregon 214/Oregon Way/Country Club Road

Of the 21 reported crashes at this intersection, the majority (12) were rear-end collisions on the east and west approaches, which is fairly common at a signalized intersection. The remaining crashes involved turning movement collisions and angle crashes. No pattern was apparent from the crash data history that is indicative of an existing safety deficiency at the intersection.

Oregon 214/Oregon 211/Oregon 99E

Sixty-four crashes were recorded during the 5-year study period. The majority (35) of these collisions were rear-end crashes, while 22 involved turning movement collisions. This intersection was improved in August 2002 to provide an additional northbound left-turn and right-turn lane. The crash data available for the study period were recorded before the intersection improvements. The city and state should monitor crash experiences at this intersection.

Oregon 214/Boones Ferry Road

Twenty-three crashes were reported at the Oregon 214/Boones Ferry Road intersection during the 5-year study period. Of the recorded crashes, the majority (13) were turning collisions. Ten of the turning collisions involved a westbound left-turning vehicle and an eastbound through vehicle. The left-turn movements on the eastbound and westbound approaches are controlled by protected and permitted phasing.

Oregon 99E/Hardcastle Avenue

At the Oregon 99E/Hardcastle Avenue intersection, 23 crashes were recorded during the 5-year study period. Of these crashes, nine were angle collisions, seven were turning collisions, and six were rear-end crashes. No pattern was identified among the reported crashes.

Oregon 99E/Young Street

Of the 25 reported crashes at the Oregon 99E/Young Street intersection, the majority (14) were turning movement collisions. Nine of the turning collisions occurred on the north and south approaches in which there is protected and permitted phasing. Of the total recorded crashes, 13 involved property damage only, and 12 involved injuries.

The Traffic Management Section at ODOT maintains a Safety Priority Index System (SPIS), which identifies locations in which operational or maintenance improvements may address safety problems. The SPIS reviews the crash data for the past 3 years and rates highway segments based on crash frequency, crash rate, and crash severity. Each year, the top 10 percent of the SPIS list is reviewed by the Region Traffic Engineers. The top 10 percent SPIS sites are evaluated and investigated for safety problems, and then a benefit/cost analysis is conducted and appropriate projects are initiated. A review of the current SPIS list showed that several highway segments within the Woodburn UGB on Oregon 214 and Oregon 99E fall within the top 10 percent SPIS group. These highway segments are summarized in Table 3-2.

TABLE 3-2
ODOT 2001, Top 10 Percent SPIS Groups

Route	Beginning Milepost	Ending Milepost	Length	1999 ADT	Crash	SPIS
OR-99E	31.59	31.79	0.20	22,200	67	88.63
OR-99E	32.10	32.28	0.18	23,200	23	55.92
OR-99E	32.78	32.96	0.18	23,200	25	64.29
OR-214	36.63	36.79	0.16	10,800	25	55.06
OR-214	36.81	36.91	0.10	19,200	23	46.55
OR-214	36.84	36.95	0.11	19,200	24	48.69
OR-214	37.03	37.12	0.09	19,200	27	52.03
OR-214	39.20	39.34	0.14	17,500	26	49.94

ADT Average daily traffic.
SPIS Safety Priority Index System.

Of the highway segments identified in the top 10 percent SPIS group, three of the study intersections are located within these corridors. These intersections include Oregon 99E/ Hardcastle Avenue, Oregon 214/Oregon 99E, and Oregon 214/Country Club Road.

Truck Freight Transportation

As shown in Figure 3-7, the city of Woodburn designates truck routes and truck ways through the City. Although Woodburn does not sign for truck freight routes and ways, the City does sign where trucks are not allowed.

Truck routes through Woodburn include Oregon 214 and Oregon 99E. By designating these roads as truck routes, the City allows through traffic of motor trucks, truck trailers, and truck tractors on these roadways.

Truck ways are designated as acceptable roads for commercial operation of motor trucks, truck trailers, and truck tractors, but does not allow a through-city route necessary for specialized traffic directional control signs. Truck ways include Front Street within City limits, Young Street between Front Street and Oregon 99E, Boones Ferry Road north of Oregon 214, Parr Road, Progress Road, Industrial Road, and National Road.

Summary of Existing Conditions

The following is a summary of the current condition of the transportation modes serving the city of Woodburn:

Pedestrian: Although sidewalks are provided in the downtown area between Front Street and Settlemier Avenue, key connections are missing between residential areas, schools, and commercial uses. Specific roadways with gaps in the system include Oregon 214, Boones Ferry Road, Settlemier Avenue, and Hayes Street.

Bicycle: Bicycle lanes are provided on portions of Oregon 99E, Oregon 214, and Hayes Street. Bicycle attractors such as schools, parks, and retail centers are not well connected to residential areas by the bicycle routes.

Transit: Transit is provided in Woodburn by the Woodburn Transit System and Woodburn Paratransit System during the week. The Woodburn Transit System provides service on the major facilities within Woodburn, which include Oregon 99E, Oregon 214, Front Street, Boones Ferry Road, and Young Street. Intercity transit is also provided by OHAS, the Woodburn Family Clinic, Greyhound, and HUT Transportation.

Rail: The Southern Pacific Rail Line provides freight service in Woodburn along Front Street and Cleveland Street. No passenger train stops are provided in Woodburn.

Air: Although there are no aviation facilities in Woodburn, passenger service is available at the Salem Municipal Airport and Aurora State Airport. Regional freight and passenger service is provided via the Portland International Airport.

Pipeline: There are no major pipelines within the Woodburn UGB.

Marine: There are no marine facilities within the Woodburn UGB.

Roadways: All study intersections currently operate under capacity and meet ODOT mobility standards with the exception of Meridian/5th/Oregon 214.

Insert Figures 3-1 through 3-7

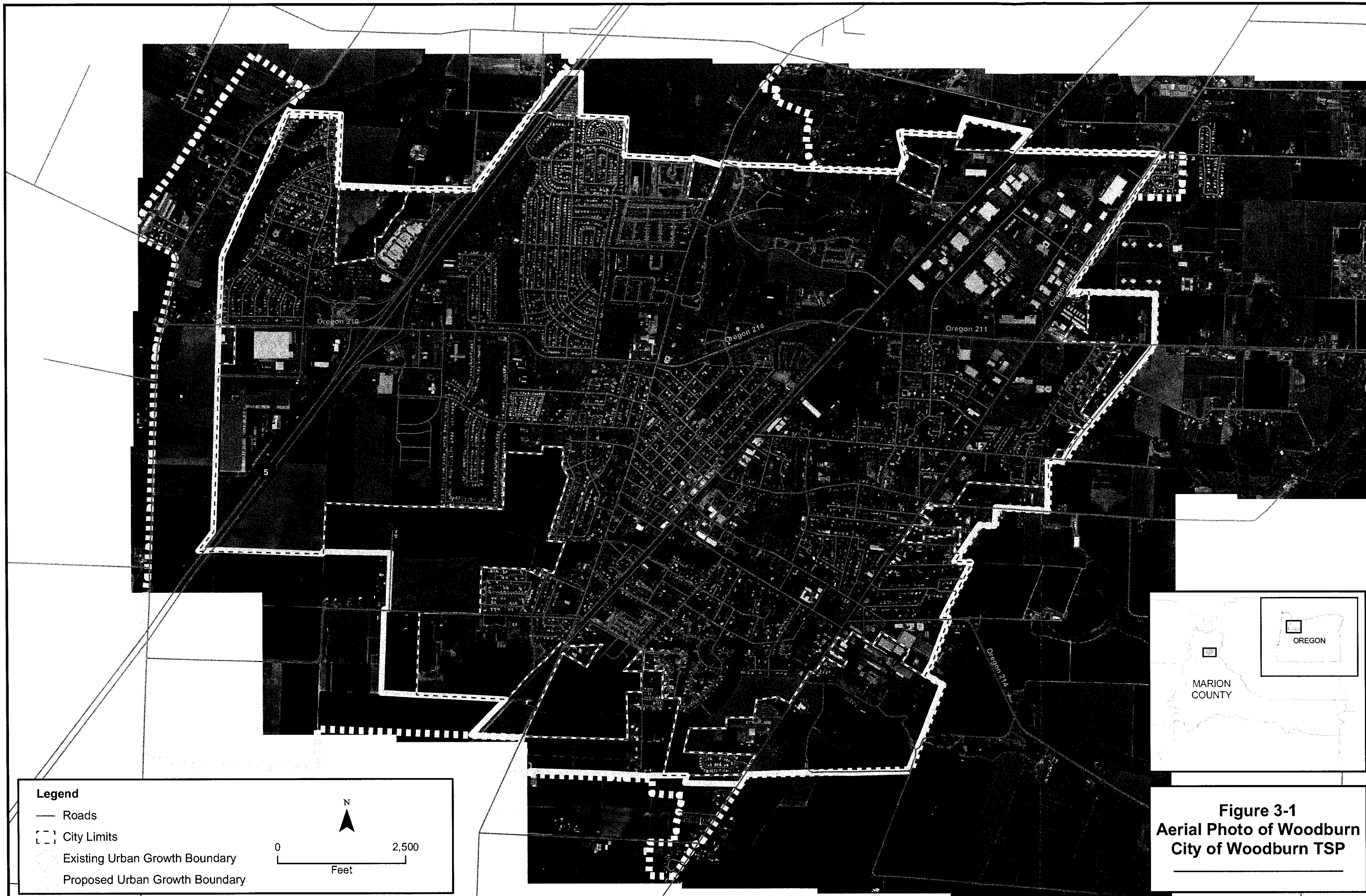

Figure 3-1
Aerial Photo of Woodburn
City of Woodburn TSP

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Figure 3-2
Pedestrian Facilities
City of Woodburn TSP

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Figure 3-3
Bicycle Facilities
City of Woodburn TSP

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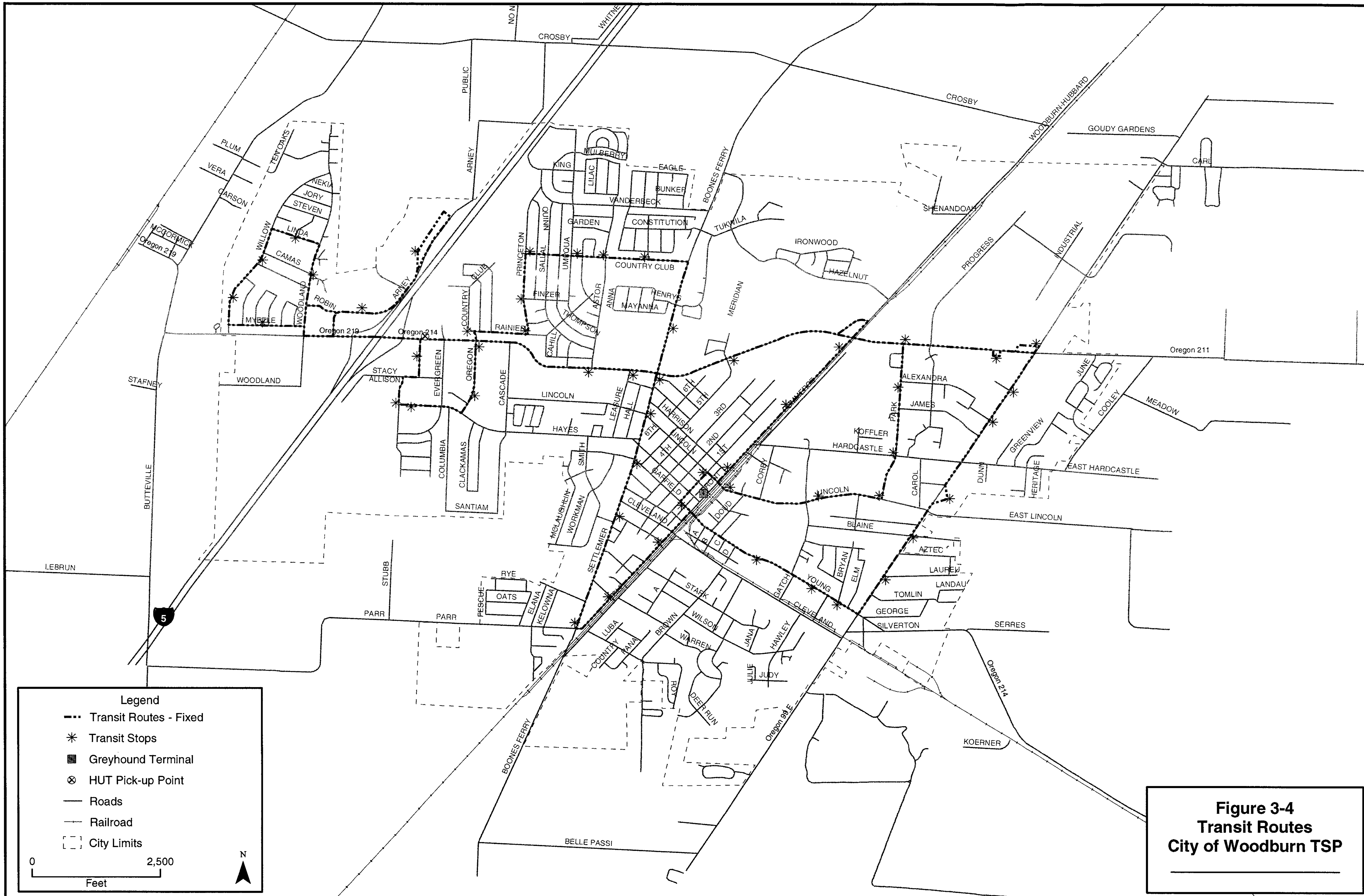

Figure 3-4
Transit Routes
City of Woodburn TSP

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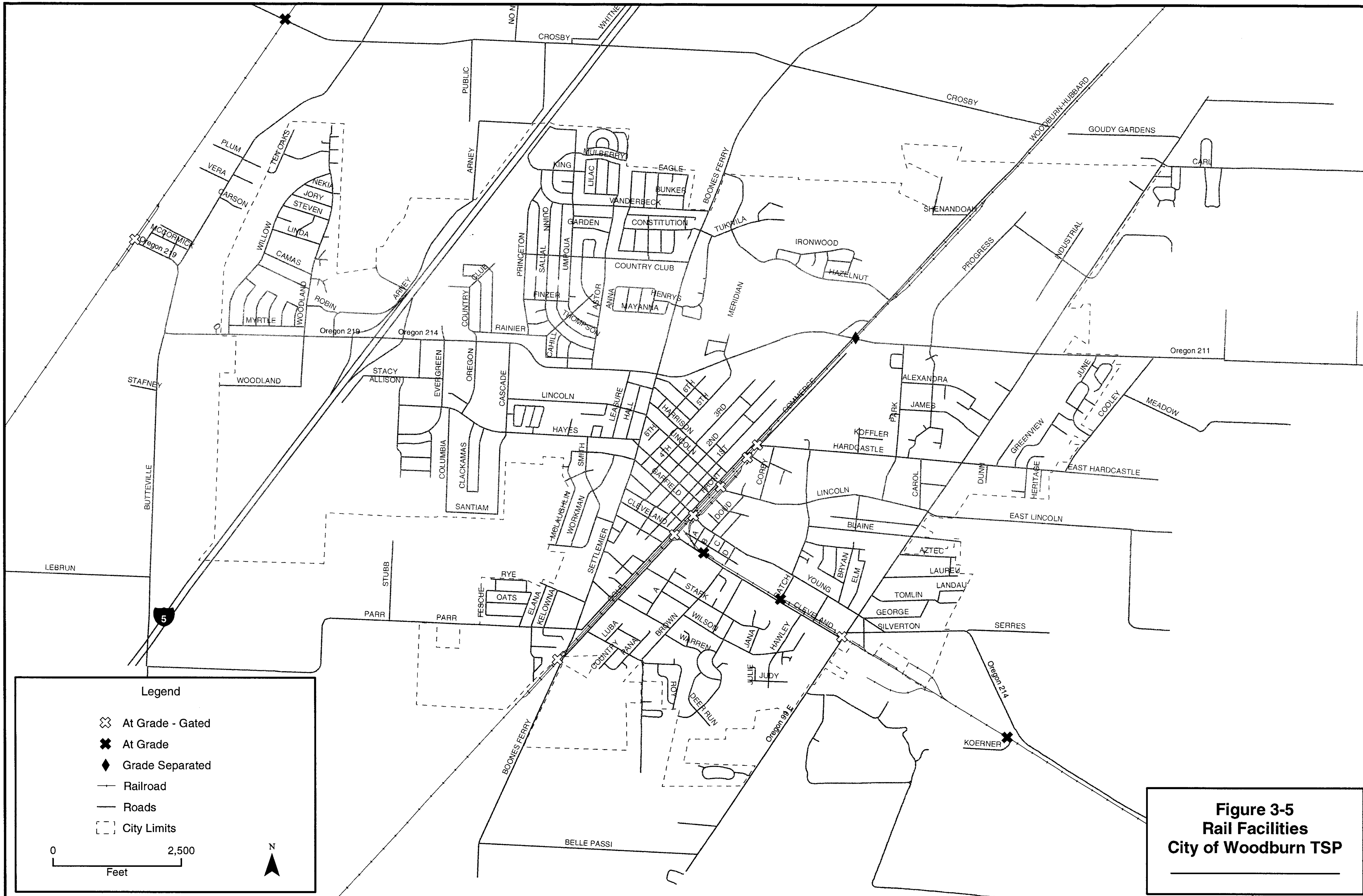

Figure 3-5
Rail Facilities
City of Woodburn TSP

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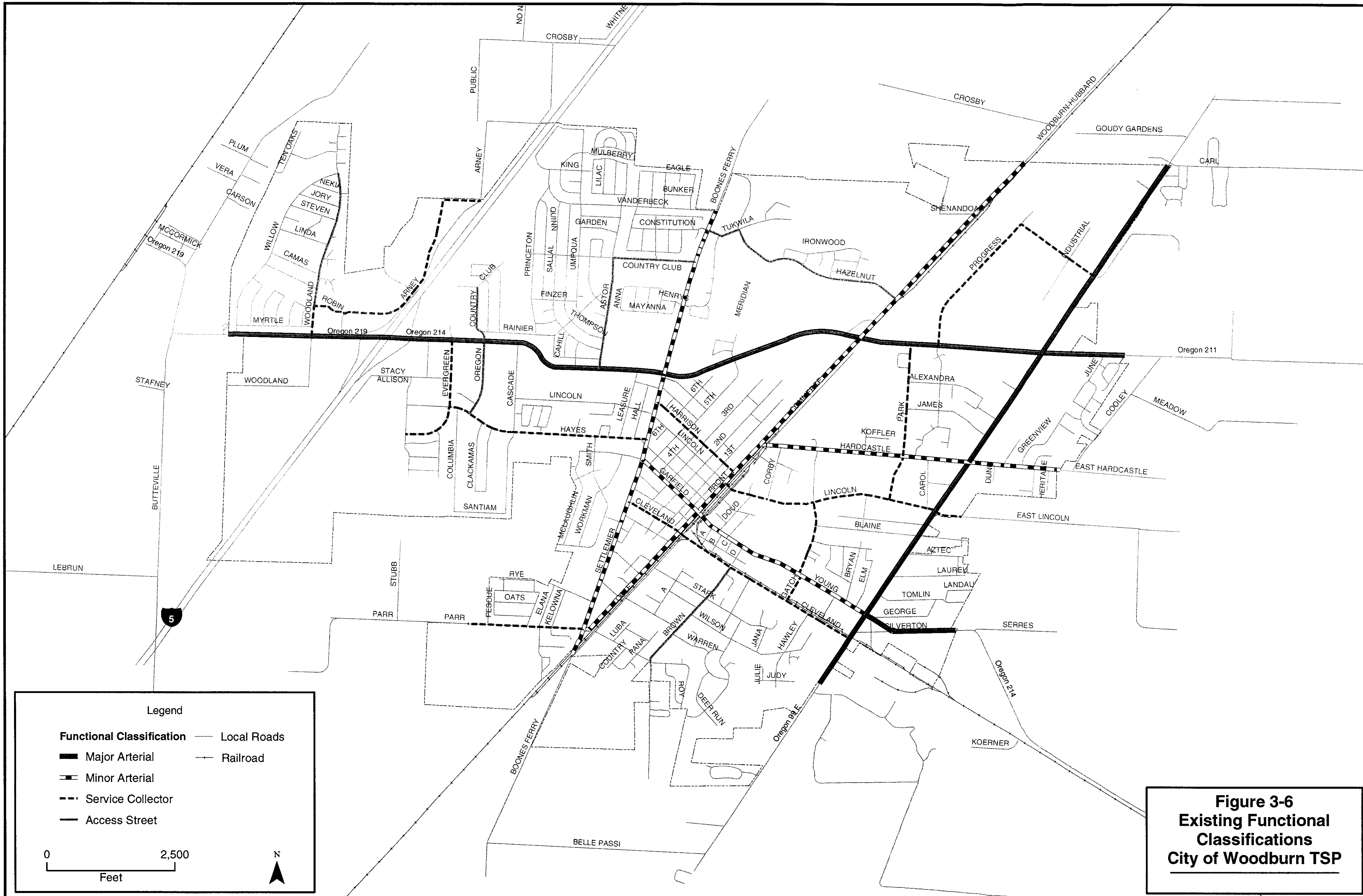

Figure 3-6
Existing Functional Classifications
City of Woodburn TSP

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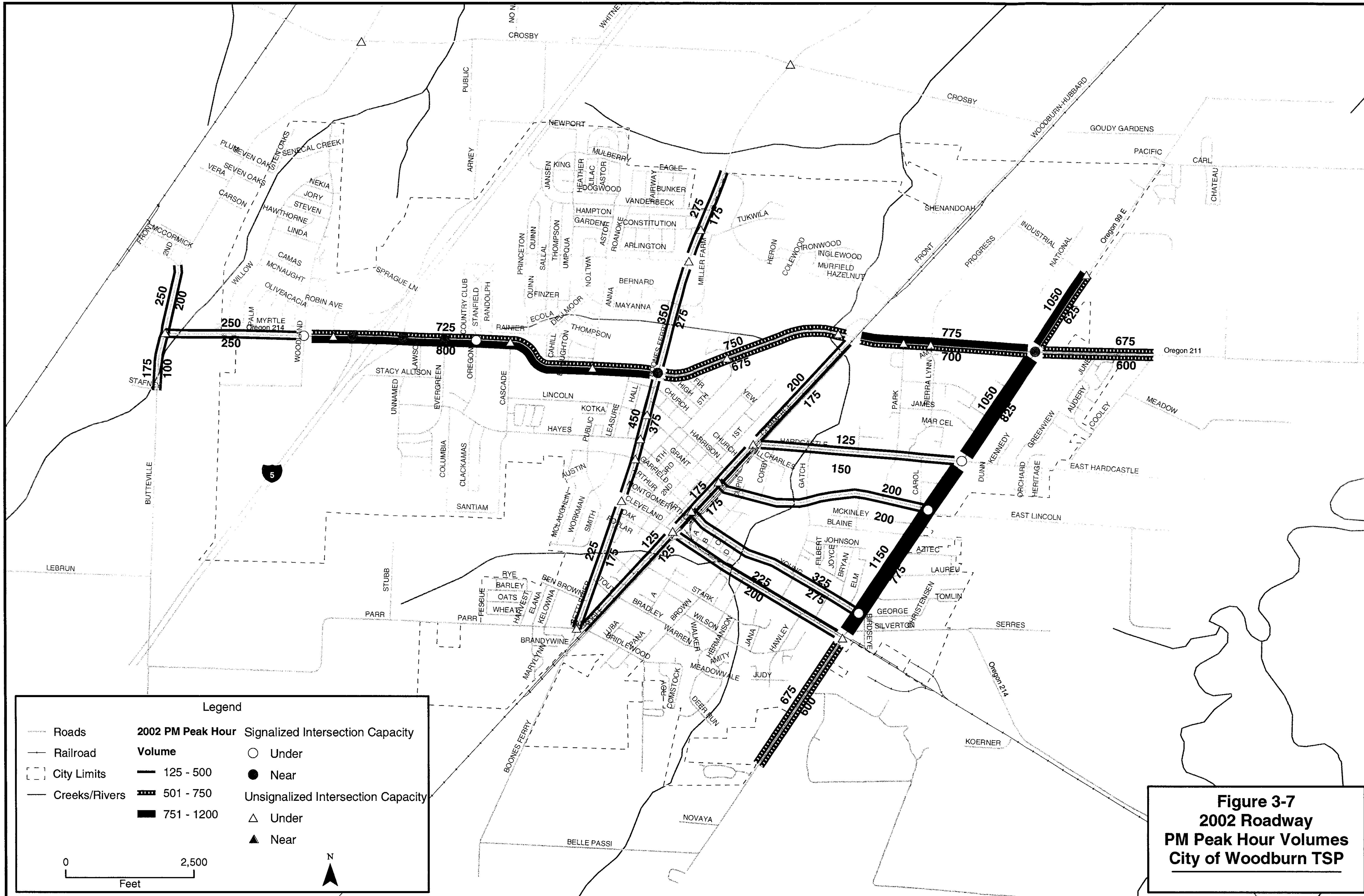

Figure 3-7
2002 Roadway
PM Peak Hour Volumes
City of Woodburn TSP

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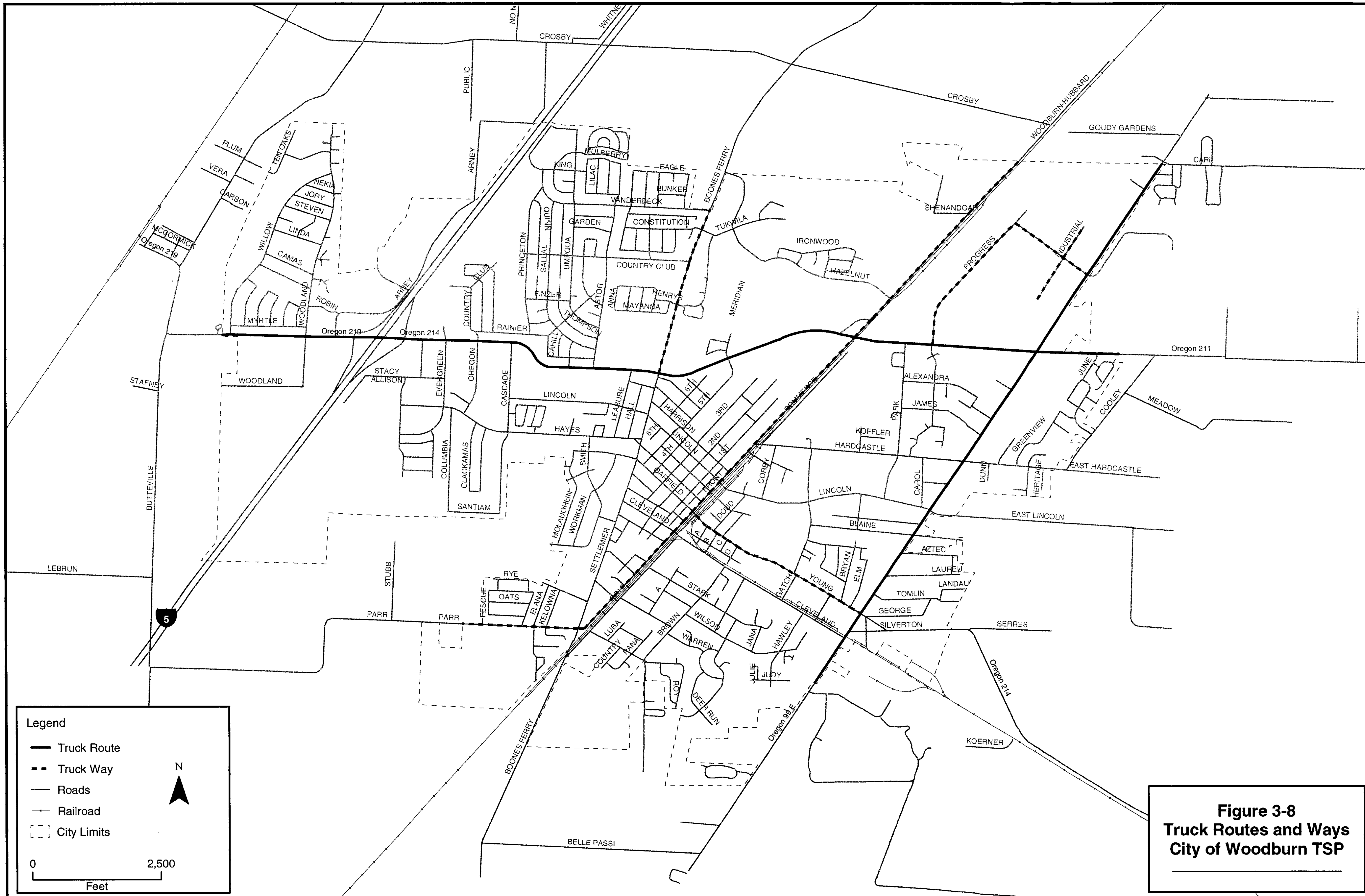

Figure 3-8
Truck Routes and Ways
City of Woodburn TSP

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SECTION 4

Future Transportation Conditions, Deficiencies, and Needs

This section summarizes the anticipated future transportation system deficiencies and multimodal system needs within the Woodburn UGB under forecasted year 2020 no build conditions.

Future Growth Forecasts

Future transportation demand within the city of Woodburn UGB was estimated based on forecasts prepared by ODOT's Transportation Planning and Analysis Unit (TPAU) using the EMME/2 model. These forecasts were prepared under the "No Build" condition, which assumes that minimal and currently committed transportation improvements are made to the existing system. The results of the No Build analysis were used as a basis of comparison for the identification and evaluation of future transportation alternatives.

For modeling purposes, the City was divided into 104 Transportation Analysis Zones (TAZs). Figure 4-1 shows the TAZ system for the City. Household and employment forecasts were allocated for each of the TAZs for the existing year as well as year 2020 for three land use scenarios. These land use scenarios are outlined below and were discussed in greater detail in the April 16, 2003, memorandum titled No Build Model Analysis prepared for the Technical Advisory Committee. This memorandum is included in Appendix D.

Land Use Scenarios

Each land use scenario is based on the medium-range 2020 population forecast of 34,919. A brief description of each scenario is provided in Table 4-1.

TABLE 4-1
2020 Land Use Scenarios

	Residential	Commercial	Industrial
Scenario No. 1 Medium Employment	Intensification	Redevelopment and Infill	Based on Employment Needs
Scenario No. 2 Medium Employment	Current Trends	Redevelopment and Infill	Employment Needs plus one Alternative Site
Scenario No. 3 High Employment	Current Trends	Redevelopment and Infill plus Two New Neighborhood Nodes	Employment Needs plus two Alternative Sites

Each scenario's land use allocation varies based on individual underlying assumptions. In terms of household allocation, Scenario 1 assumes an increase in density over existing levels whereas Scenarios 2 and 3 assume a continuation of current household density trends.

Scenarios 1 and 2 assume the same medium employment growth forecast with significant redevelopment and infill accommodating commercial (retail and service) demand. Scenario 3 assumes development of two new mixed-use centers (nodes) serving commercial development needs. Considerable growth in industrial employment is anticipated in all scenarios, although Scenario 3 is the most aggressive. A summary of the number of households and employment included in each of the scenarios is provided in Table 4-2.

TABLE 4-2
Comparison of Land Uses

	House-	Employees							
Scenario Year 2000	**holds 7,387**	**Agric. 268**	**Indus. 987**	**Retail 2,779**	**Service 1,240**	**Educ. 577**	**Gover. 589**	**Other 1,211**	**Total 7,634**
				Year 2020					
Scenario 1	13,077	268	4,565	4,561	2,136	1,201	841	1,211	14,783
Scenario 2	13,053	268	4,565	4,561	2,136	1,201	841	1,211	14,784
Scenario 3	13,098	268	5,203	4,895	2,306	1,201	841	1,211	15,921

Note: Agric = Agriculture; Indus = Industrial; Educ = Education; Gover = Government.

As shown in Table 4-2, during the next 20 years, the number of households within the Woodburn UGB is anticipated to increase by more than 5,700 units, which equates to an approximately 77 percent increase.

The number of employees in Woodburn is anticipated to increase by more than 7,000, depending on the scenario. This equates to a 94 to 108 percent increase in employees within the UGB. Among the 2020 scenarios, there is an 8 percent difference in the number of employees anticipated within the UGB. This difference primarily occurs in the industrial sector and to a lesser extent in the retail and service sectors. From a locational perspective, Scenario 3 includes higher employment in the Parr Road and Crosby Road corridors.

Given the relatively small differences in p.m. peak hour traffic volumes among the scenarios, Scenario 3 was used to quantify future roadway deficiencies and recommend solutions. This scenario provides for slightly higher traffic volumes in the vicinity of the I-5 interchange (which is one of the most critical intersections in the system) than the other scenarios. In addition, the minor differences in the volumes forecast on other facilities in the City will not affect the future capacity needs identified in the TSP.

Based on Scenario 3 land use assumptions for the No Build deficiency analysis, the highest growth in households and employees between year 2000 and year 2020 is anticipated to occur in the TAZs identified in Table 4-3. Each of the TAZs listed in the table is anticipated to experience an increase of at least 300 households or employees. Appendix D contains a comparison of the employment and households for each TAZ within the UGB.

TABLE 4-3
High-Growth TAZs (Year 2020 Scenario 3—Existing Conditions)

		Households			Employment		
TAZ	**Approximate Location**	**2000**	**2020**	**Growth**	**2000**	**2020**	**Growth**
106	South of Crosby Road, just east of I-5	4	455	451	0	200	200
121	Southeast of Boones Ferry Road/Crosby Road	11	255	244	0	150	150
122	Southwest of Crosby Road/Front	19	0	-19	102	514	412
123	North of Ore 214 between Ore 99E and Front	2	2	0	1,394	2,078	684
130	North of Ore 211 near the Cooley intersection	11	11	0	0	344	344
158	Southwest quadrant of the Ore 214/I-5 interchange	0	0	0	735	1,050	315
159	Southeast of Ore 214/Butteville Road	0	0	0	1	1,216	1,215
160	South and west of Ore 214/Butteville Road	16	16	0	0	475	475
161	South of Hayes between I-5 and Evergreen	0	1,004	1,004	0	1,164	1,164
181	Southeast of Ore 99E/Ore 214	6	6	0	132	517	385
186	Northwest of Parr Road/Settlemier	225	1,050	825	4	28	24
187	North of Parr Road east of I-5	16	636	620	4	1,123	1,119
195	East of Boones Ferry south of Front Ave	12	450	438	0	0	0
201	West of Boones Ferry south of Parr Road	2	230	228	0	200	200

Travel Forecasts

As discussed above, ODOT's TPAU generated No Build forecasts using the EMME/2 model for each of the land use scenarios. The forecasts for Scenario 3 were used in the identification of future transportation capacity needs within the Woodburn UGB. To perform this capacity analysis, year 2020 traffic volume forecasts for intersection turning movements and street segments were derived using the procedures outlined in National Cooperative Highway Research Program (NCHRP) Report 2-55. This procedure accounts for a combination of existing turning movement counts, and base and future year model forecasts, as follows:

- Measured turning movement volumes and patterns are used as a starting point. For example, a particular movement at an intersection might have a volume of 50 vehicles per hour.
- The percentage change in the model's base and future year traffic volume for each movement is calculated. For example, if the model's base year volume is 25 vehicles per hour and the future year volume is 75 vehicles per hour, the movement's volume triples during that time. Tripling the measured volume of 50 vehicles per hour would result in a 2020 volume of 150 vehicles per hour.
- The numerical change (delta) in the model's traffic volumes is also calculated. In the example above, the model's volume for the movement increased by 50 vehicles per hour, from 25 to 75. Increasing the measured volume by 50 vehicles per hour results in a 2020 volume of 100 vehicles per hour.
- The results obtained from the percentage and numerical change calculations are averaged to obtain the 2020 analysis traffic volume. In this example, 150 and 100 would be averaged to obtain a year 2020 volume of 125 vehicles per hour for analysis purposes.

This process was applied to all of the study intersections in Woodburn that exist in the base year model. The reasonableness of the averaging method was reviewed at each location, especially in instances in which the numerical and percentage change yielded very different results (which can often occur on very low volume movements in the base model that increase significantly in 2020) or when the existing model differed significantly from the existing turning movement counts. In these instances, the available data and travel forecasts were reviewed to determine the appropriate year 2020 analysis volumes. In addition, where intersections are closely spaced, with little or no opportunity for access between the intersections, traffic volumes were balanced between the two intersections. Appendix E contains the balanced, adjusted volumes.

Year 2020 Capacity Deficiencies

Based on the methodology described above, year 2020 intersection traffic operations were analyzed for the 33 study intersections identified in Section 3. Figure 4-2 depicts the results of this analysis; the results are also provided in tabular form in Appendix E. As shown in Figure 4-2, the following locations were identified to experience capacity problems if no improvements are made to the existing system:

- Butteville Road/Oregon 214
- I-5/Oregon 214 northbound ramps
- I-5/Oregon 214 southbound ramps
- Evergreen Road/Oregon 214
- Boones Ferry Road/Oregon 214

- Front Street/Oregon 214
- Park Avenue/Oregon 214
- Oregon 214/Oregon 99E
- Cleveland Street/Oregon 99E
- Hardcastle Street/Front Street
- Lincoln Street/Front Street
- Garfield/Young Street/Front Street
- Cleveland Street/Front Street
- Boones Ferry Road/Lincoln Street

Based on the anticipated intersection deficiencies, the following roadway segments are anticipated to exceed capacity in year 2020:

- Oregon 214/Oregon 219 between Butteville Road and Oregon 99E
- Front Street between Hardcastle Street and Cleveland Street

In addition to the identified capacity deficiencies, an analysis was performed to identify areas of high-volume growth within the UGB. Although not identified to operate over capacity in year 2020, the Parr Road, Butteville Road, and Crosby Road corridors are anticipated to experience a high increase in traffic volumes, as compared to today's conditions. Because of the anticipated capacity deficiencies along Oregon 214 between the interchange and Boones Ferry Road/Settlemier Road as well as the high employment and household growth anticipated in each of the three corridors, it is quicker for travelers to use these three corridors to access the I-5 interchange from the west than to travel along Oregon 214 to access the interchange from the east.

Figure 4-2 illustrates the projected year 2020 peak hour volumes on major roadways.

Pedestrian Needs

As discussed in Section 3, several pedestrian system improvements are needed to serve the following trip types: relatively short trips to major pedestrian attractors, recreational trips, access to transit, and commute trips. These improvements include the establishment of continuous sidewalks connecting neighborhoods with employment centers, pedestrian attractors, and transit stops as well as designated pedestrian crossing locations.

The major gaps in the existing pedestrian system are highlighted below.

- *Oregon 214*: Pedestrian facilities are needed between 5th Street and Progress; this section provides access to Woodburn High School and to the fixed route transit system. There are also no sidewalks west of Evergreen or east of Oregon 99E near the commercial areas.

- *Boones Ferry Road*: Pedestrian facilities are not provided on either side of the road north of Oregon 214; this area abuts French Prairie Middle School and Lincoln Elementary School. There are also no sidewalks to connect the adjacent neighborhoods to the transit stop along Boones Ferry Road.

- *Settlemier Road*: Sidewalks are not provided on the west side of the road north of Hayes Street nor on the east side of the road south of Cleveland Street. These connections would provide a continuous link between the residential areas to the south of Oregon 214 to French Prairie Middle School and Lincoln Elementary School.
- *Hayes Street*: Pedestrian facilities are not provided on the north side of the road across the street from Nellie Muir Elementary School.
- *Cascade Drive*: Sidewalks are not provided on either side of the road between Hayes Street and Oregon 214. This connection would provide a link between the residential area near Hayes Street and the commercial developments on Oregon 214.
- *Lincoln Street*: Pedestrian facilities are not provided on the south side of Lincoln Street between Washington Elementary School and the commercial developments on Oregon 99E.
- *Senior Estates/Neighborhoods to the northwest of Boones Ferry Road/Oregon 214*: Continuous sidewalks are not provided in the neighborhoods between Boones Ferry Road and I-5 north of Oregon 214. Sidewalks are needed to serve trips within the neighborhood and to provide access to the transit system, which has stops along Princeton and Country Club Road.
- *Front Avenue*: Sidewalks are needed along Front Avenue between Woodcrest and the northern City limits. These would provide connections between the neighborhoods and the commercial/employment centers as well as to the fixed route transit system.

More than two-thirds of the household growth and 80 percent of the employment growth is forecast outside of the existing City limits. With the exception of Settlemier between Oregon 214 and Parr Road and Oregon 99E between the north and south City limits, pedestrian facilities that would connect these areas of new growth to the existing City system are limited. In addition, extremely limited pedestrian system connections within the areas of new growth are anticipated. Per the TPR (OAR 660-012-0045), any new roadways will need to be constructed with sidewalks. It will also be important to connect these high-growth areas with existing neighborhoods and major pedestrian attractors in the vicinity via the existing roadway system.

As part of the alternatives identification process, pedestrian system improvements that mitigate the existing and anticipated future deficiencies will need to be analyzed.

Bicycle Needs

As discussed in Section 3, the bicycle system should connect residential areas with schools, commercial areas, and employment centers. Designated bicycle lanes should generally be provided on all arterials and on streets carrying in excess of 3,000 vehicles per day. To meet these needs, a number of gaps were identified in the existing bicycle system. These gaps are outlined below.

- *Oregon 214*: Bicycle lanes are provided only intermittently between Boones Ferry and Oregon 99E today. Continuous bicycle lanes are needed between Butteville Road and Oregon 99E.

- *Oregon 99E*: Bicycle lanes are provided today north of Lincoln Road. Bicycle lanes are needed south of Lincoln Road to provide connections to existing commercial and industrial areas.
- *Boones Ferry Road and Settlemier Road*: Bicycle facilities are needed on both facilities to link neighborhoods along the corridors with the commercial areas along Oregon 214, French Prairie Middle School, Lincoln Elementary School, and downtown Woodburn.
- *Front Street*: Bicycle facilities are needed along the entire roadway to connect residential areas to the downtown commercial area.
- *Garfield/Young:* Bicycle facilities are needed on both facilities to connect residential areas with the downtown and the industrial/employment areas in southeast Woodburn.
- *Hardcastle:* Bicycle facilities are needed to connect existing neighborhoods with the arterial system.

As discussed in the pedestrian needs subsection, more than two-thirds of the household growth and 80 percent of the employment growth is forecast outside of the existing City limits. With the exception of intermittent bicycle lanes along Oregon 214, bicycle lanes on Oregon 99E north of Lincoln Road, and a separated bicycle path along Parr Road between Settlemier and Heritage Elementary and Valor Middle Schools, there are very limited bicycle facilities today that would connect these areas of new growth to the existing City system. To serve future bicycle system needs, the gaps in the existing system will need to be addressed. Any new arterial or high-volume collector roadway will need to be constructed with designated bicycle lanes, and connections between the high-growth areas and the existing arterial system, neighborhoods, and major bicycle attractors in the vicinity will need to be provided.

Public Transportation Needs

As discussed in the Section 3, the Woodburn Transit System provides fixed route service on weekdays between 9:00 a.m. and 5:00 p.m. Service is generally provided to the residential, employment, and commercial areas adjacent to Oregon 214, Oregon 99E, Settlemier, Boones Ferry Road, Front, and Young. In the future, the fixed route transit system will need to be expanded to serve areas anticipated to experience high employment and household growth, such as the Parr Road and Crosby Road corridors.

Rail Needs

The Union Pacific Railroad provides through train service and freight service north of Hardcastle Avenue. The Willamette Valley Railroad, a short-line operator, provides freight service along Front Street and Cleveland Street to serve local businesses. Willamette Valley also provides freight service to communities to the east of Woodburn on track leased from Union Pacific Railroad. No passenger train stops are provided in Woodburn.

A potential future issue associated with rail service is the opportunity to remove private grade crossing within the City, by providing alternatives access to parcels. In addition, a local group is currently exploring the possibility of using Willamette Valley Railroad equipment to develop excursion train service to Silverton.

Air Transport Needs

No commercial or private aviation facilities currently are located within the UGB, nor will they likely be needed in the future.

Pipeline Needs

No major pipeline transport facilities currently are located within the UGB, nor are they anticipated in the future.

Water Transportation Needs

No water transport facilities are currently located within the Woodburn UGB, nor are they anticipated in the future.

Future Transportation Needs Summary

Much of the growth in Woodburn is anticipated to occur outside of the existing City limits. As such, careful consideration will be needed to ensure adequate roadway, bicycle, pedestrian, and transit system improvements are provided to link the new growth areas with the existing City system. Additionally, the following deficiencies are anticipated in the future:

- Oregon 214/Oregon 219 is anticipated to operate over capacity (i.e., not meet ODOT mobility standards) between Butteville Road and Oregon 99E. Needed improvements are anticipated at several of the intersections along the corridor as well as at the I-5/Oregon 214 interchange.
- Continuous pedestrian facilities are needed along many of the arterials and collector facilities within the existing UGB to provide essential linkages between neighborhoods, schools, employment centers, and major pedestrian attractors.
- Continuous bicycle facilities are needed on nearly all of the arterials within the UGB.
- The opportunity to remove private at-grade rail crossings within the UGB should be investigated.
- No improvements are anticipated for the air, pipeline, or water modes.

Insert Figures 4-1 through 4-2

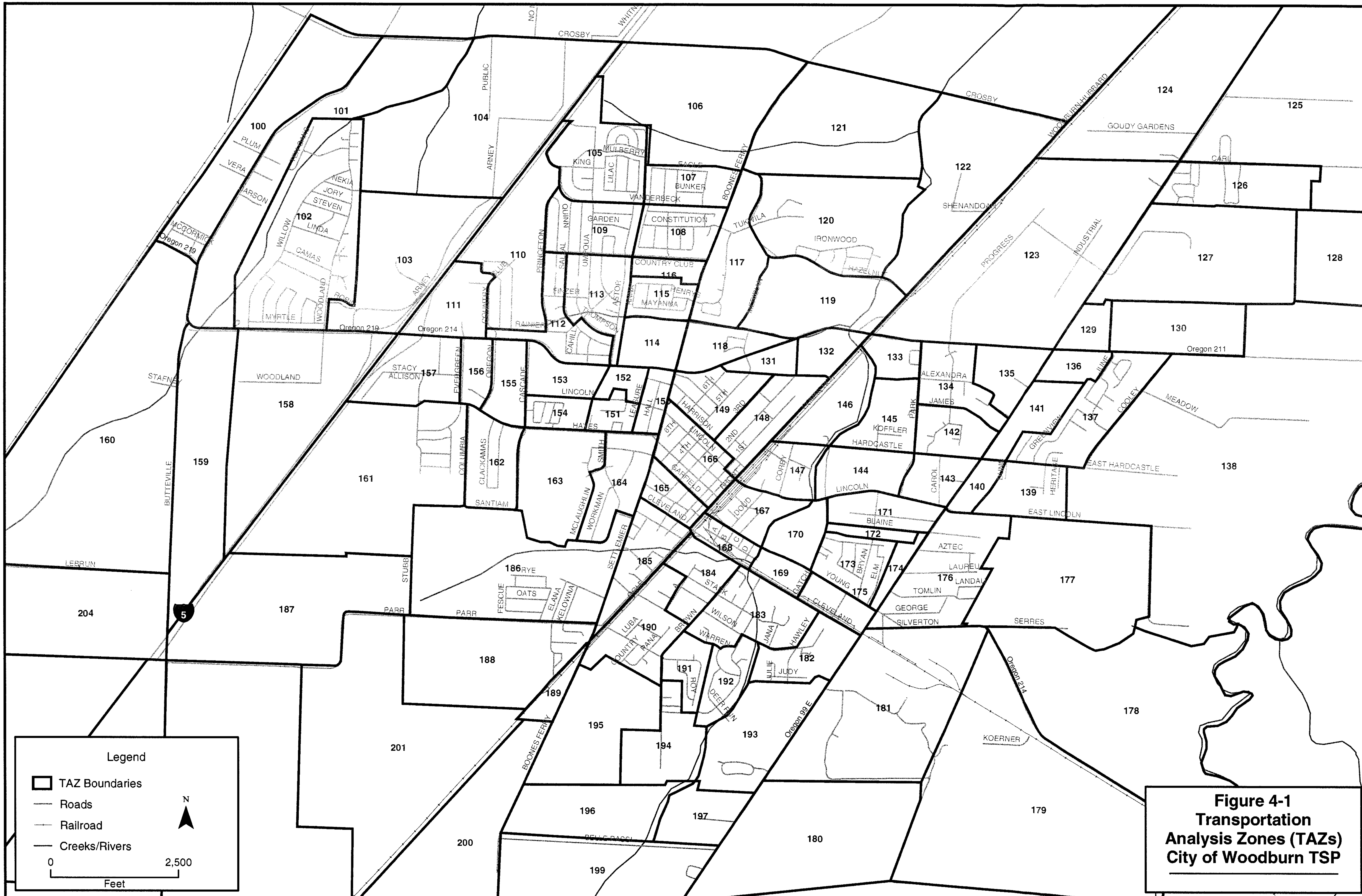


Figure 4-1
Transportation Analysis Zones (TAZs)
City of Woodburn TSP

File Path: \\rosa\proj\ODOT\185701\GIS\data\MapDocuments\ReportFigures\4-01_TAZ_zones.mxd, Date: 04 29, 2004 8:43:32 AM

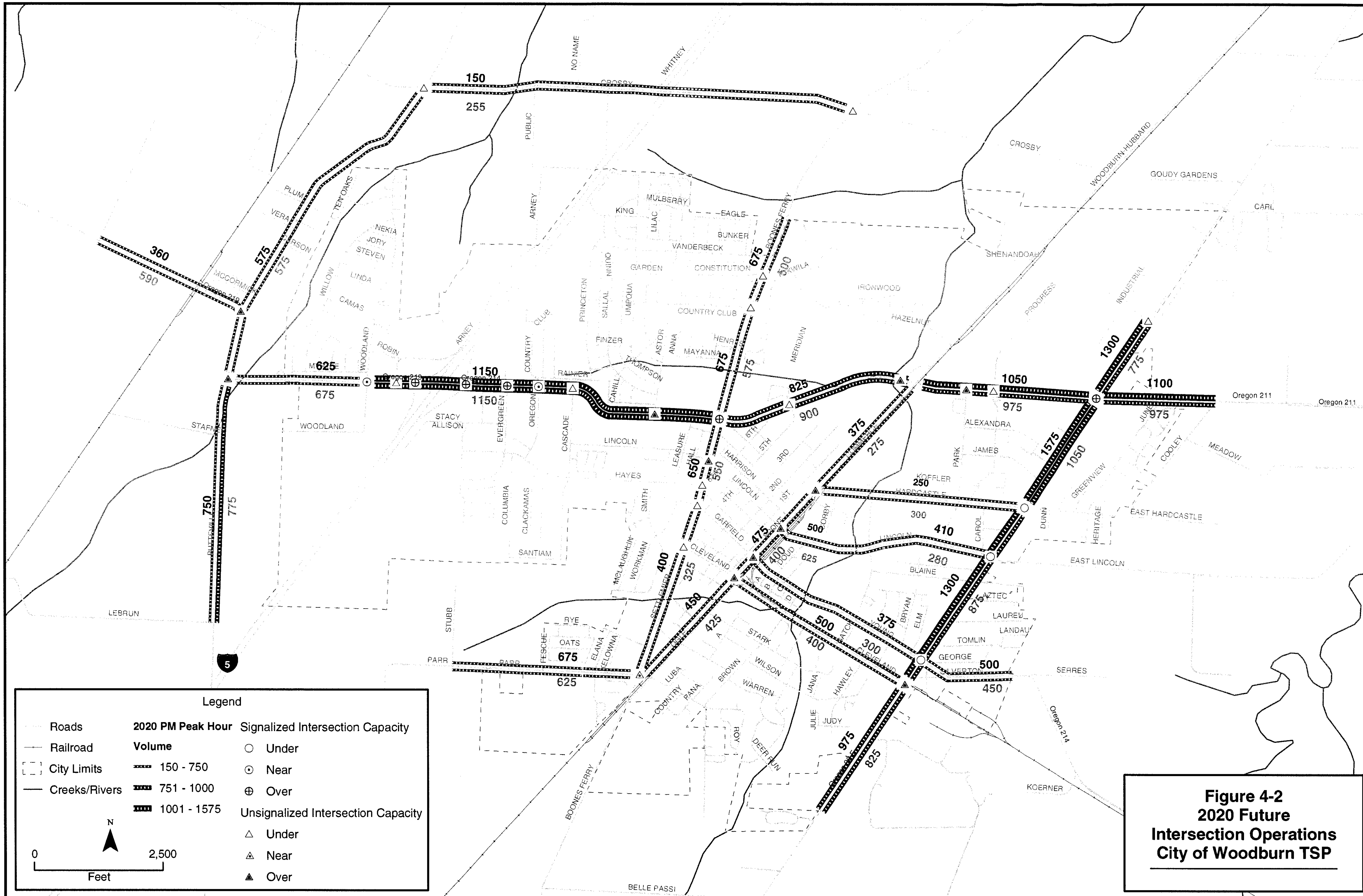


Figure 4-2
2020 Future
Intersection Operations
City of Woodburn TSP

File Path: \\rosa\proj\ODOT\185701\GIS\data\MapDocuments\ReportFigures\4-02_intersection_ops.mxd, Date: 04 29, 2004 8:52:54 AM

SECTION 5

Alternatives Analysis

The Technical Advisory Committee (TAC) selected three alternatives to address deficiencies identified as part of the existing conditions and future no build analyses. This section summarizes the results of the multimodal alternatives analyses conducted for these alternatives.

Alternative 1: Minimum Capacity Improvements

This alternative primarily includes those improvements contemplated as part of the Woodburn Interchange Environmental Assessment as well as those improvements anticipated as part of ongoing land use applications. As such, this alternative includes the following capacity and connectivity improvements:

- Widening Oregon 214 to include four through travel lanes (two per direction) between Woodland Avenue and Oregon Way
- Providing turn lanes at intersections along Oregon 214 between Woodland Avenue and Oregon Way
- Rebuilding the I-5 on-ramps and off-ramps
- Extending Evergreen Road to Parr Road
- Extending Stacy Allison Drive to Parr Road
- Constructing a new collector or service facility between the Evergreen Road and Stacy Allison Drive extensions
- Widen Oregon 99E between Lincoln Street and south City limits

This alternative is conceptually represented in Figure 5-1 and does not represent the preferred alignments or locations.

Alternative 2: Full Widening of Oregon 214 and Construction of the South Arterial

In addition to the improvements included in Alternative 1, Alternative 2 consists of the following:

- Widening of Oregon 214 to a full five-lane section between Butteville Road and Oregon 99E
- Constructing a new loop ramp connection between Oregon 214 and Front Street in the southwest quadrant of the existing intersection
- Upgrading 5th Street to access street standards

- Extending and upgrading Brown Street to the South Arterial
- Upgrading the Crosby Road corridor commensurate with minor arterial standards
- Constructing a "South Arterial" between Butteville Road and Oregon 99E. As part of the South Arterial construction, Parr Road would be terminated at the Stacy Allison Drive extension and Evergreen Road would tie into the South Arterial.

This alternative is conceptually represented in Figure 5-2 and does not represent the preferred alignments or locations.

Alternative 3 (Policy): Full Capacity and Connectivity Improvements

Alternative 3 is a policy-driven alternative that was developed to determine improvements located outside of the UGB that would benefit the overall transportation system (i.e., State, County and City), complementing Alternatives 1 and 2. These projects are of priority to the City but need to be planned for and incorporated into the Marion County Transportation System Plan. In addition to the capacity and connectivity improvements identified in the first two alternatives, Alternative 3 consists of the following improvements :

- Extending the South Arterial from Oregon 99E to Oregon 214, providing a direct alternative route to the Oregon 214/I-5 interchange for trips originating outside of the Woodburn UGB
- Extending Crosby Road to the Goudy Gardens/Oregon 99E intersection

This alternative is conceptually represented in Figure 5-3 and does not represent the preferred alignments or locations.

Urban Growth Boundary Assumptions for Alternatives

Roadway facilities shown outside the UGB are recommended, not planned facilities in the TSP, and are logical extensions and improvements to the planned roadway network. Land use decisions to authorize these as planned facilities and improvements would occur as part of a subsequent UGB amendment adding these areas or a subsequent amendment to the TSP.

Environmental Issues

In addition, at this time, none of the improvements identified in any of the alternatives have known environmental concerns or conditions that would influence the selection of a preferred alternative.

Alternatives Evaluation

The evaluation of each alternative is summarized below.

Roadway System Performance

Based on direction provided by the TAC, the performance of the roadway system was assessed for each alternative using traffic volume forecasts prepared by ODOT's TPAU for Land Use Scenario 3. Section 4 documented the methodology used to calculate roadway and intersection volumes based on information prepared by TPAU.

Year 2020 weekday p.m. peak hour roadway segment volumes for Alternatives 1 through 3 are provided in Figures 5-4, 5-5, and 5-6, respectively. Table 5-1 provides a comparison of traffic volumes anticipated on key roadway segments (for example, those that were identified to operate near or over capacity in the No Build Condition or other facilities anticipated to experience significant increases in traffic volumes, as compared to existing conditions).

TABLE 5-1
2020 Weekday p.m. Peak Hour Roadway Volumes

Roadway Segment	No Build	Alternative 1	Alternative 2	Alternative 3
Oregon 219 west of I-5	1,300	1,650	2,100	1,850
Oregon 214 east of Oregon Way	2,100	2,430	3,100	2,400
Oregon 214 west of Oregon 99E	2,075	1,780	2,800	2,200
Oregon 99E south of Oregon 214	2,625	2,575	2,575	2,525
Front Street north of Hardcastle	650	600	350	450
Parr Road west of Settlemier	1,300	1,300	400	400
Evergreen Road south of Oregon 214	600	750	800	825
Settlemier Ave south of Oregon 214	1,200	1,500	1,525	1,400
Crosby Road west of Boones Ferry Road	950	600	250	475
Butteville Road south of Oregon 219	1,525	1,350	1,525	1,375
Southern Arterial East of Butteville	N/A	N/A	1,000	1,000
Southern Arterial West of Oregon 99E	N/A	N/A	1,500	1,500
Southern Arterial East of Oregon 99E	N/A	N/A	N/A	650

Alternative 1

Table 5-1 shows that under Alternative 1, during the weekday p.m. peak hour a majority of the roadway segments would experience an increase in vehicular volumes. The volumes shown under the No Build condition reflect traffic diverting onto facilities other than Oregon 214. As the capacity increases as a result of the widening on Oregon 214 between Woodland Avenue and Oregon Way, traffic volumes would divert back to Oregon 214. Traffic volumes would decrease on Crosby Road, Butteville Road, and Front Street because of new connections provided by extending Stacy Allison Drive and Evergreen Road.

Alternative 2

Under Alternative 2, during the weekday p.m. peak hour several segments of Oregon 214 are anticipated to experience an increase in vehicular volumes as compared to Alternative 1. The widening of Oregon 214 between Butteville Road and Oregon 99E is the major contributing factor because the increase in capacity would attract vehicles from minor roadways. As with Alternative 1, decreases in the vehicle volumes on Crosby Road and Front Street result from the Evergreen Road and Stacy Allison Drive extensions.

Alternative 3

Similar to Alternative 2, Oregon 214 is anticipated to experience higher volumes under Alternative 3 than Alternative 1. The traffic volume increases on Oregon 214 would be a result of widening the roadway to a five-lane cross-section. Crosby Road would experience slight increases in volumes resulting from its upgrade to a minor arterial standard. Settlemier Avenue would experience increases in vehicle volumes from the construction of the South Arterial. Projected decreases in the traffic volumes on Front Street and Butteville Road are attributable to the increased connection provided by the Stacy Allison Drive and Evergreen Road extensions.

Roadway Performance

Table 5-2 projects the number of lane miles that would operate under, near, and over capacity in the year 2020 for each alternative.

TABLE 5-2
2020 Roadway Segment Performance (Miles [percent of total])

Lane Miles	No Build	Alternative 1	Alternative 2	Alternative 3
Under Capacity	85.15 (68%)	94.21 (71%)	105.81 (76%)	110.67 (77%)
Near Capacity	29.02 (23%)	28.48 (22%)	29.43 (21%)	28.31 (20%)
Over Capacity	11.83 (9%)	9.83 (7%)	4.55 (3%)	4.51 (3%)

Table 5-2 indicates that more than 90 percent of the lane miles on the system are projected to operate under or near capacity in the year 2020 in all scenarios. However, the proposed Southern Arterial and the widening of Oregon 214 between Butteville and Oregon 99E (as included in Alternatives 2 and 3) would significantly reduce the number of lane miles forecast to operate over capacity.

As documented in Section 4, several intersections are anticipated to operate near or over capacity under year 2020 No Build conditions. Table 5-3 depicts the projected volume-to-capacity ratios projected at key intersections for each alternative scenario.

A signal warrant analysis was conducted for the unsignalized intersections that are projected to exceed capacity under the three alternatives. This analysis is presented in Appendix F.

TABLE 5-3
Comparison of Key Intersection Operations (volume-to-capacity [v/c])

Intersection	No Build	Alternative 1	Alternative 2	Alternative 3
Butteville Road/Oregon 219 (north)	> 1	0.81	0.77	0.79
Butteville Road/Oregon 219 (south)	> 1	0.83	0.73	0.74
Woodland/Oregon 219	0.76	0.56	0.73	0.63
I-5/Oregon 214 northbound ramps	0.86	0.54	0.61	0.53
I-5/Oregon 214 southbound ramps	0.91	0.63	0.62	0.59
Evergreen Road/Oregon 214	> 1	0.66	0.77	0.71
Oregon Way/Oregon 214	0.77	0.59	0.73	0.69
Cascade Drive/Oregon 214	0.27	0.85	0.85	0.85
Boones Ferry Road/Oregon 214	> 1	0.74	0.85	0.81
Meridian/5th/Oregon 214	> 1	0.64	0.60	0.46
Front Street/Oregon 214	> 1	0.70	0.76	0.26
Park Avenue/Oregon 214	> 1	0.58	0.55	0.77
Oregon 99E/Oregon 214	> 1	0.85	0.77	0.76
Cleveland Street/Oregon 99E	> 1	0.67	0.47	0.41
Hardcastle Street/Front Street	> 1	0.59	0.25	0.32
Lincoln Street/Front Street	> 1	0.79	0.38	0.32
Garfield/Young Street/Front Street	> 1	0.78	0.40	0.40
Cleveland Street/Front Street	> 1	0.83	0.27	0.26
Boones Ferry Road/Crosby	0.69	0.58	0.31	0.52
Parr Road/Settlemier Road	0.95	0.78	0.22	0.79

Alternative 1

In addition to the roadway segment improvements included in this alternative, intersection mitigation measures would be required to meet ODOT's mobility standards. These improvements include:

- Installing a signal and a southbound right-turn lane at northern Butteville Road/Oregon 219 intersection
- Installing a signal and a northbound right-turn lane at southern Butteville Road/Oregon 219 intersection
- Adding a southbound left-turn lane at the Boones Ferry Road/Oregon 214 intersection
- Installing a signal at the intersection of Meridian Drive/5th Street/Oregon 214

- Installing a signal at the Front Street/Oregon 214 intersection
- Signalizing and adding a southbound left-turn lane at the Park Avenue/Oregon 214 intersection
- Adding a southbound right-turn lane, a westbound right-turn lane, and a westbound left-turn lane to the Oregon 99E/Oregon 214 intersection
- Signalizing the Cleveland Street/Oregon 99E intersection
- Adding a southbound left-turn lane to the Hardcastle Street/Front Street intersection
- Adding a westbound left-turn lane to the Lincoln Street/Front Street intersection
- Adding a southbound left-turn lane to the Cleveland Street/Front Street intersection

With these improvements, all intersections are projected to operate acceptably during the weekday p.m. peak hour. The Cascade Drive/Oregon 214 and Oregon 99E /Oregon 214 intersections would operate at a volume-to-capacity ratio of 0.85, which just meets the mobility standard.

Alternative 2

In addition to the identified roadway segment improvements, intersection mitigations would be required to provide acceptable operations. The required improvements include:

- Installing a signal and a southbound right-turn lane at northern Butteville Road/Oregon 219 intersection
- Installing a signal and a northbound right-turn lane at Butteville Road/Oregon 219 intersection
- Adding a northbound right-turn lane, a southbound left-turn lane and an eastbound right-turn and through lanes to the Boones Ferry Road/Oregon 214 intersection
- Signalizing the intersection of Meridian Drive/5th Street/Oregon 214
- Signalizing the Park Avenue/Oregon 214 intersection
- Adding a southbound right-turn lane and a westbound left-turn lane to the Oregon 99E/Oregon 214 intersection
- Installing a signal at the Cleveland Street/Oregon 99E intersection

These mitigations are projected to provide acceptable operations for the weekday p.m. peak hour.

Alternative 3

Additional intersection mitigations would also be required under Alternative 3 to meet ODOT's standards. The required improvements would include:

- Installing a signal at the northern intersection of Butteville Road and Oregon 219
- Installing a signal and a northbound right-turn lane at Butteville Road/Oregon 219 intersection

- Adding a southbound left-turn lane and a westbound right-turn lane to the Boones Ferry Road/Oregon 214 intersection
- Installing a signal at the intersection of Meridian Drive/5th Street/Oregon 214
- Adding a westbound left-turn lane to the Oregon 99E/Oregon 214 intersection
- Signalizing the Cleveland Street/Oregon 214 intersection; and
- Adding an eastbound right-turn lane to the Parr Road/Settlemier Road intersection

With these improvements, all intersections are projected to operate acceptably during the weekday p.m. peak hour. The Cascade Drive/Oregon 214 and Boones Ferry Road/ Oregon 214 intersections are projected to operate at a volume-to-capacity ratio of 0.85, which just meets the mobility standards.

Based on the operational analysis, Alternative 1 represents the minimum improvements necessary to meet system requirements. Alternative 2 is the preferred alternative to meet the City's long-term transportation goals, while Alternative 3 is desirable, but is dependent on coordination with Marion County. Alternative 2 balances the need for operational and mobility improvements with the constraints of funding and coordination with other jurisdictions. Over the next 20 years, it is the City's priority to coordinate with Marion County to provide an extension of Crosby Road to Goudy Gardens and Oregon 99E, and to extend the southern arterial from Oregon 99E to Oregon 214. The improvements provide needed east-west connections and an alternative route to the Oregon 214/I-5 interchange area.

Transit System Alternatives

Today, the Woodburn fixed route bus service has an annual ridership of approximately 32,000 passengers. The paratransit system has an estimated annual ridership of 6,000 to 7,000 passengers. Compared to the ridership reported in the 1995 TSP, ridership on the fixed route system has increased by approximately 10 percent during the last 8 years whereas the paratransit ridership has nearly doubled.

The population in Woodburn is projected to increase from 20,210 (source: year 2000 census) to approximately 35,000 people in year 2020. This represents a population increase of approximately 73 percent. For the purposes of the TSP, it was conservatively assumed that transit ridership will grow in proportion with the population increase and that increased transit service will be provided to serve the added population. A combined annual ridership of about 66,000 passengers would use the City's fixed route and paratransit systems.

The existing fixed route system operates from 9:00 a.m. to 5:00 p.m. Monday through Friday. Approximately 50 scheduled stops are provided at various locations on the route. As documented in Sections 3 and 4, the majority of major employment, civic, retail and neighborhood centers are being served by the fixed route system today. Some notable exceptions to this are the employment center southwest of the I-5/Oregon 214 interchange and the Woodburn Industrial Park located in the Progress and Industrial corridors.

Another notable deficiency in the existing fixed route service is the times of operation. The 9:00 a.m. to 5:00 p.m. service is not conducive to serving a broad range of employment-related travel because it does not correspond to typical daytime office and service work hours or typical shift hours at manufacturing and industrial employment centers.

Another issue associated with the existing one-way loop operations is that the bus service does not efficiently serve travel oriented in the opposite direction of the bus operation, particularly for short trips.

As identified in Section 4, significant employment and residential growth is anticipated in the Crosby Road, Parr Road, and Butteville Road corridors. Future expansion of the transit system should account for these growth areas.

With the increasing number of people moving to Woodburn and commuting to either the Portland metro area or Salem, there is potential demand for shuttle bus service between Woodburn and these two areas. There currently is no intercity shuttle service serving the general population. The only intercity services offered are through Greyhound, HUT Transportation (service to the Portland International Airport), WHEELS (service to elderly and disabled passengers), and Woodburn Family Clinic.

Transit system alternatives that address existing and Future No Build deficiencies are discussed below.

Intracity Fixed-Route Bus Alternatives

The existing one-way loop route service could be modified to address the existing and future deficiencies in a variety of different ways. Potential alternatives are discussed below:

- *Alternative 1: Increase Service Frequency on Existing Route:* With this alternative, the existing one-way loop route would be maintained, with service extended to a 12-hour period from 7:00 a.m. to 7:00 p.m. and buses operating every 30 minutes. The expanded hours of operation would encapsulate morning and evening peak commuting times and increase the likelihood that transit could be used for employment-related travel. To achieve the increased bus service, an additional bus would likely need to be added to the fleet.
- *Alternative 2: Convert Single Route to Two Way Operations:* Passenger accessibility along the bus route could be improved by changing the existing one-way loop route to two-way operations. Under this alternative, the existing 60-minute service frequency would be provided in each direction of travel. Further, service would be expanded to 7:00 a.m. to 7:00 p.m. on weekdays to incorporate the morning and evening commute periods. This service concept would require an additional bus.
- *Alternatives 3/4: Create Two Routes (East/West) with One-Way or Two-Way Operations:* This alternative would establish an east route and a west route with a common connection in the downtown that could potentially occur at a future transit center. The east-west boundary between the two routes could either be split at Front Street or at Settlemier Avenue. It would be preferable to increase the service frequency to 30 minutes, operating from 7:00 a.m. to 7:00 p.m. time to encapsulate the morning and evening commute hours. These routes could be operated with either one-way or two-way

operations. One-way service would likely require three buses; two-way service would likely require up to six buses.

The primary disadvantage of Alternative 3/4 is that cross-city transit commuting would require a transfer in downtown. The primary advantages include improving service frequency, providing a shorter bus route, and developing a downtown transit center, which could stimulate downtown redevelopment, particularly if tied into an intercity bus or rail station.

Any of these alternatives could be implemented in combination with expanding the service to Saturday or expanding the routes to include the Parr Road and Crosby Road corridors and potentially the South Arterial as appropriate for activity in this area. The connection to Parr Road could occur via the extension of Evergreen Road.

A summary of the alternatives is provided in Table 5-4.

TABLE 5-4
Comparison of Intracity Fixed-Route Bus Alternatives [a]

Alternative	Frequency of Service	Route Length (one-way)	# of Buses Required	Vehicle Miles per Year	Added Vehicle Capital Cost	Vehicle Operating Cost per Year[b]	Estimated Annual Ridership
Existing Conditions	60-minute headways; 9 a.m. – 5 p.m.	14.1 miles	1	31,200		124,200	32,000
1 – Increased Frequency	30-minute headways; 7 a.m. – 7 p.m.	14.1	2	88,000	180,000	352,000	56,000
2 – Single Route with Two-Way Operations	30-minute headways; 7 a.m. – 7 p.m.	14.1	2	88,000	180,000	352,000	56,000
3 – Two Routes with One-Way Operation	30-minute headways; 7 a.m. – 7 p.m.	E – 8.2 W – 6.0	3	88,000	360,000	352,000	59,000
4 – Two Routes with Two-Way Operations	30-minute headways; 7 a.m. – 7 p.m.	E – 8.2 W – 6.0	6	176,000	700,000	704,000	77,000

[a]Assumes bus operation only on weekdays for 51 weeks per year (accounts for no service on holidays).
[b]Based on Transit System Operating Cost of $4.00 per vehicle mile.

The order of preference for City implementation of transit improvements is:

- Increase service frequency of the existing fixed route system
- Convert the single bus route into two-way operations
- Create two routes in the east/west direction, with either one-way or two-way operations

Intracity Paratransit Service

Although improvements in the fixed route system could allow the city of Woodburn to reduce the paratransit service, the existing paratransit system provides an essential service for many elderly and handicapped persons in the community. If City resources are concentrated on expanding the fixed route system, the City may investigate transferring the paratransit system to a local social service agency.

Intercity Transit Service

Currently, there is no shuttle service provided to either the Portland metro area or Salem. The city of Woodburn and ODOT have been investigating the potential to provide service to the SMART bus service in Wilsonville. The existing Shell station in the northeast quadrant of the I-5/Oregon 214 interchange will be removed as part of the interchange reconstruction project. The City and ODOT have discussed the potential use of this property as a park-and-ride for the SMART service. Other potential long-term options to connect to Portland include providing service to Tri-Met via the Tualatin Park-and-Ride; provision of service directly into downtown Portland; or providing service to the commuter rail service planned for the westside of the Metro area.

Access to Salem could be provided through direct service to downtown Salem and the state office building area.

Under any of these options, it is likely that service would be provided during the morning and evening commute hours with a potential mid-day connection. In addition, Woodburn's intracity fixed route system should incorporate a stop at the potential park-and-ride.

If a park-and-ride were developed, additional spaces beyond the anticipated transit demand would attract and serve carpooling to Portland or Salem.

Pedestrian System Alternatives

Sections 3 and 4 identified several pedestrian system improvements for a variety of trip types within the City. These improvements result from the need to provide a continuous system of sidewalks or trails connecting neighborhoods with employment centers, pedestrian attractors, and transit stops. There are two potential ways to address the deficiency in the pedestrian system, as discussed in the subsections below.

Either alternative should include the upgrading of existing sidewalk facilities, as development, redevelopment, or roadway improvement projects occur, to meet current ADA standards for sidewalk width, ramps, and clear zones, among other features.

Alternative 1: Providing Additional Sidewalks to Meet Pedestrian Demands

This alternative would include providing sidewalks on both sides of all existing arterial, collector, and access streets in Woodburn. Priority would be given to those facilities that connect neighborhoods with schools and transit routes and those along arterial and higher-order collector streets.

All new streets, including local streets, would include sidewalks on both sides of the street in accordance with TPR requirements. Under this alternative, there would be no or minimal off-street pathway development.

The primary disadvantage of this alternative is that the retrofitting of all existing arterial, collector, and access streets to include sidewalks on both sides of the roadway would be extremely costly and may not be the most cost-effective way to improve pedestrian access between neighborhoods and major pedestrian generators.

Alternative 2: Balanced Program of Sidewalks on Major Streets and Off-Street Trails

This alternative would balance the retrofitting of existing streets with of an off-street pathway system. A 7-mile pedestrian and bicycle trail system could be developed along the Mill Creek and Goose Creek corridors. This trail system would include connections to adjacent neighborhoods.

Sidewalks on one side of all arterial and collector streets would be provided. In addition, the sidewalk system should incorporate wayfinding signage to direct pedestrians to the off-street trail system.

The two creek corridors provide an opportunity to integrate pedestrian facilities into open space areas, which enhances public access to the open space and provides more direct connections to several of the major pedestrian generators within the City. For example, these corridors are adjacent to or in proximity to all of the schools.

It is recommended that sidewalks meeting ADA standards be constructed on all new streets. The retrofitting of existing streets as new development/redevelopment occurs and as City funding becomes available should be balanced with developing an off-street pathway system.

In addition, techniques for improving pedestrian crossing safety, such as curb extensions and pedestrian refuges, should be implemented where feasible.

Bicycle System Alternatives

Sections 3 and 4 noted the limited bicycle facilities connecting residential areas with schools, commercial areas, and employment centers within the City. Like the pedestrian system, two alternatives can be evaluated for Woodburn: providing exclusive on-street bicycle lanes or combining on-street bicycle lanes and off-street trails that accommodate both pedestrians and cyclists.

The first alternative would include providing designated bicycle lanes on all arterials and those streets for which volume and speed considerations warrant exclusive lanes. Conversely, under the second alternative, on-street bicycle lanes could be provided on all arterial streets and a limited number of higher volume collector streets. This on-street system would be supplemented by an off-street trail system. As described above, this off-street trail system would be developed along the Mill Creek and Goose Creek corridors.

It is recommended that bicycle lanes should be constructed on new streets for which volume and/or speed considerations warrant exclusive lanes. Retrofitting existing streets should be balanced with the provision of an off-street pathway.

Transportation Demand Management

TDM strategies and programs could be implemented to reduce single-occupancy vehicle (SOV) travel in the City, especially for work-related trips. These strategies are central to achieving local and statewide planning goals, including the TPR.

Today, there is limited application of TDM strategies by existing employers and businesses in the City. There are a number of strategies that the City can work with major employers and businesses to implement in the coming years. Examples of these strategies are outlined below.

Transit Fare Subsidies

Opportunities are available for existing and future employers to encourage their employees to take transit to and from work by providing some subsidy to the cost of bus passes. This would be especially effective if the City expands the hours of service for the fixed route transit system to better incorporate the commute periods. Many jurisdictions and transit agencies have instituted partial subsidy programs that allow employees to either receive discounted transit passes or be reimbursed by employers for actual bus fares. The City should investigate the feasibility of implementing a similar program.

Carpool Matching Programs

Employers or the City could sponsor carpool matching programs to pair employees who could share rides to and from work. In some cases, ridesharing occurs in personal vehicles. In other cases, employers purchase vehicles for vanpool use. While these types of programs can be administered by individual employers, a more centralized database maintained by the city or another organization to match employees of different employment locations is a decided advantage. In the Portland Metro area, Carpool Match Northwest has been established to accomplish this objective. A similar program could be established in Woodburn.

Carpool Parking Programs

As an incentive to carpooling, employers could provide preferential parking for carpools and vanpools. The city could enhance the use of this program by reducing the number of parking spaces requirements for new developments if a specific number of spaces were reserved for carpools or vanpools. This concept is typically a part of an overall employee ridesharing program that includes carpool matching and transit subsidies.

Flexible Work Hours

Employers providing flexible work hours could reduce the number of employees commuting to and from work during the a.m. and p.m. peak hours. These peak hours typically represent the highest vehicular demands experienced on the system. Allowing employees to commute to work outside of the traditional commute periods spreads the demands typically experienced during the peak periods to other hours of the day.

Telecommuting

In addition to establishing more flexible work schedules, employers could allow employees to telecommute from home or other offsite locations one or more days per week. This also reduces the travel demand during typical commute periods.

Pedestrian and Transit-Oriented Developments

Providing pedestrian or transit-oriented developments could result in a decreased reliance on the automobile. These developments could be provided in a variety of forms. For example, providing neighborhood retail and service needs at several key locations throughout the City could allow trips to be made by walking, cycling, or short driving distances from neighborhoods. Transit-oriented developments can include a mixture of employment, housing, and retail uses with direct sidewalk connections, bus stop provisions and proper building orientation that also provides opportunities for trips to be made via walking or cycling or short driving distances.

The current land use scenarios being investigated by the City include providing two neighborhood commercial sites as well as a mixed use node with residential and commercial uses.

TDM Strategy Summary

A summary of potential TDM strategies is provided in Table 5-5.

TABLE 5-5
TDM Strategies

Strategy	Development Applicability	Site Design Consideration	Employer Policy	Developer/ Employer Parking Reduction Incentives	Cost	Potential Impact on Trip Reduction
Transit Fare Subsidies	C, S, O, I	No	Yes	Yes	Could be substantial pending employer interest and level of subsidy	Limited until hours of bus operations are expanded
Carpool Matching Programs	C, S, O, I	No	Yes; can also be managed by City	Yes	Minimal	Can be high. Effectiveness increases when is managed at a central location in City.
Carpool Parking Program	C, S, O, I	Yes	No	Yes	Minimal	Moderate
Flexible Work Hours	C, S, O, I	No	Yes	Yes	Minimal	Can reduce peak hour congestion

TABLE 5-5
TDM Strategies

Strategy	Development Applicability	Site Design Consideration	Employer Policy	Developer/ Employer Parking Reduction Incentives	Cost	Potential Impact on Trip Reduction
Tele-commuting	S, O	No	Yes	Potentially	Minimal	Moderate
Transit-Oriented Developments	C, S, O, I	Yes	No	Yes	Can be minimal with proper site planning	Can be high if tied to other TDM measures

C – Commercial, S – Services, O – Office, I – Industrial.

It is recommended that priority implementation be focused on the following strategies:

- Provide transit fare subsidies when the transit system is improved to incorporate the peak periods.
- Establish carpool matching programs for ride-sharing.
- Schedule shift changes to occur outside of peak travel periods.
- Allow employees to work at home 1 day a week.
- Establish neighborhood commercial and mixed-use nodes within the City. As part of these developments, direct sidewalk connections, bus stop provisions, and proper building orientation provide opportunities for trips to be made by way of walking, cycling, or driving very short distances.

Alternatives Analysis Summary

The following is a summary of the alternative analysis for the transportation modes serving the City.

Roadway

Based on the operational analysis, Alternative 1 represents the minimum improvements necessary to meet system requirements. Alternative 2 is the preferred alternative to meet the City's long-term transportation goals, while Alternative 3 is desirable, but is dependent on coordination with Marion County. Alternative 2 balances the need for operational and mobility improvements with the constraints of funding and coordination with other jurisdictions. Over the next 20 years, it is the City's priority to coordinate with Marion County to provide an extension of Crosby Road to Goudy Gardens and Oregon 99E, and to extend the southern arterial from Oregon 99E to Oregon 214. The improvements provide needed east-west connections and an alternative route to the Oregon 214/I-5 interchange area.

Transit

Several alternatives were investigated to improve the effectiveness of transit service in Woodburn. To attract more ridership to the transit service in Woodburn, the improvements outlined below should be implemented over time. These alternatives are listed in order of preference:

- Increase service frequency on the existing fixed bus routes.
- Convert the single bus route into two-way operations.
- Create two routes in the east/west direction, with either one- or two-way operations.
- Consider converting the paratransit system to a local social service.
- Provide a fixed shuttle service between Woodburn and Portland or Salem.

Pedestrian

The City should continue to require that sidewalks that meet ADA standards be constructed along all new streets. Retrofitting existing streets as new development and redevelopment occurs and as City funding is available should be balanced with developing an off-street pathway system.

In addition, techniques for improving pedestrian crossing safety, such as curb extensions and pedestrian refuges, should be implemented where feasible.

Bicycle System

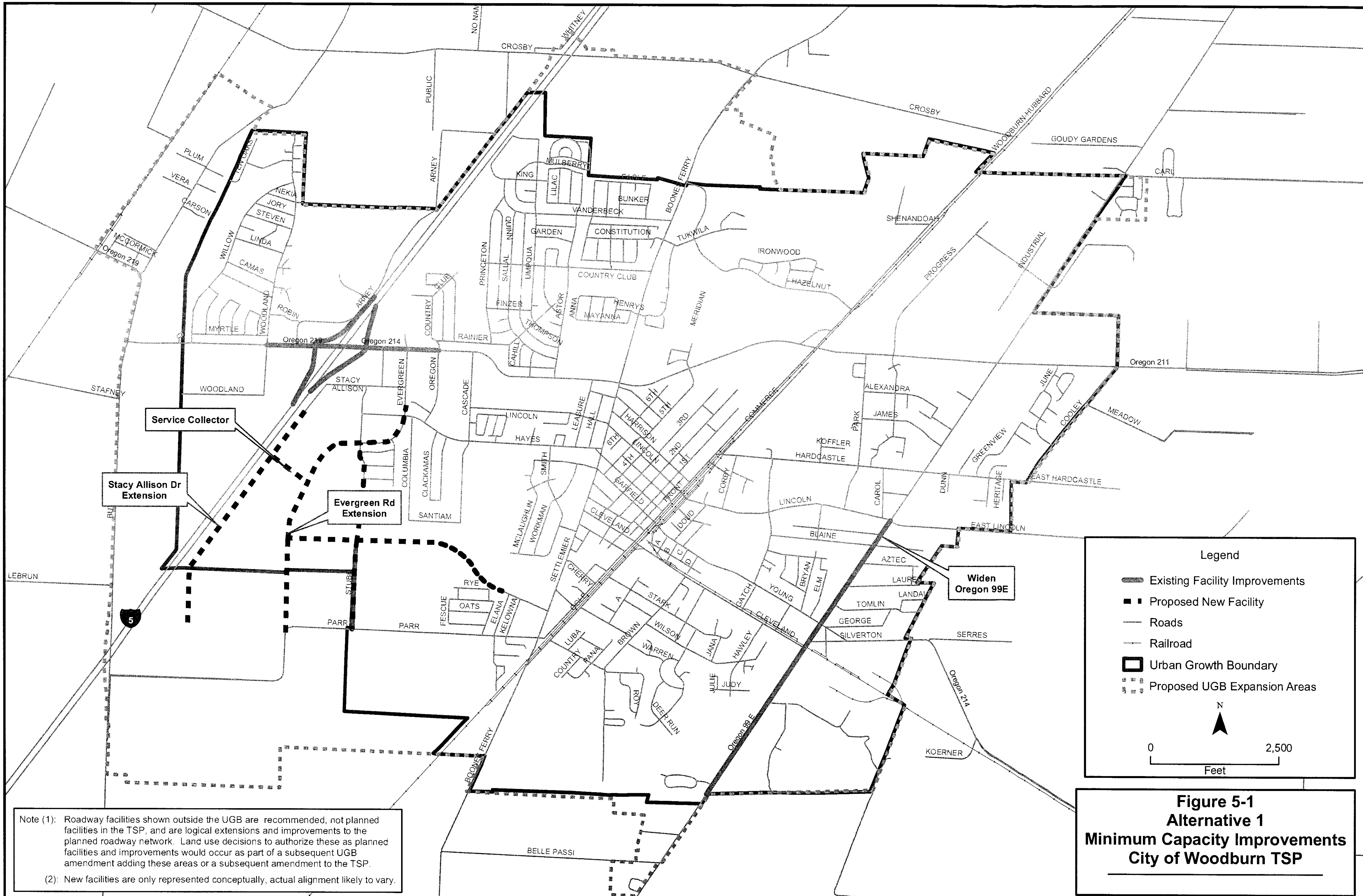
Bicycle lanes should be constructed on new arterial streets and those streets that are forecast to have volume and/or speed conditions that warrant exclusive lanes. Retrofitting existing streets should be balanced with the provision of an off-street pathway.

Transportation Demand Management

To reduce single-occupancy vehicle travel within Woodburn, a number of strategies can be incorporated into the Woodburn Development Ordinance in the form of requirements for new developments and incentives for employers. Priority should be given to the following strategies:

- Provide transit fare subsides when the transit system is improved to incorporate the peak periods.
- Establish carpool matching programs for ride-sharing.
- Schedule shift changes to occur outside of peak travel periods.
- Allow employees to work at home 1 day a week.
- Establish neighborhood commercial and mixed-use nodes within the City. As part of these developments, direct sidewalk connections, bus stop provisions, and proper building orientation provide opportunities for trips to be made by way of walking, cycling, or driving very short distances.

Insert Figures 5-1 through 5-6



Note (1): Roadway facilities shown outside the UGB are recommended, not planned facilities in the TSP, and are logical extensions and improvements to the planned roadway network. Land use decisions to authorize these as planned facilities and improvements would occur as part of a subsequent UGB amendment adding these areas or a subsequent amendment to the TSP.

(2): New facilities are only represented conceptually, actual alignment likely to vary.

Figure 5-1
Alternative 1
Minimum Capacity Improvements
City of Woodburn TSP

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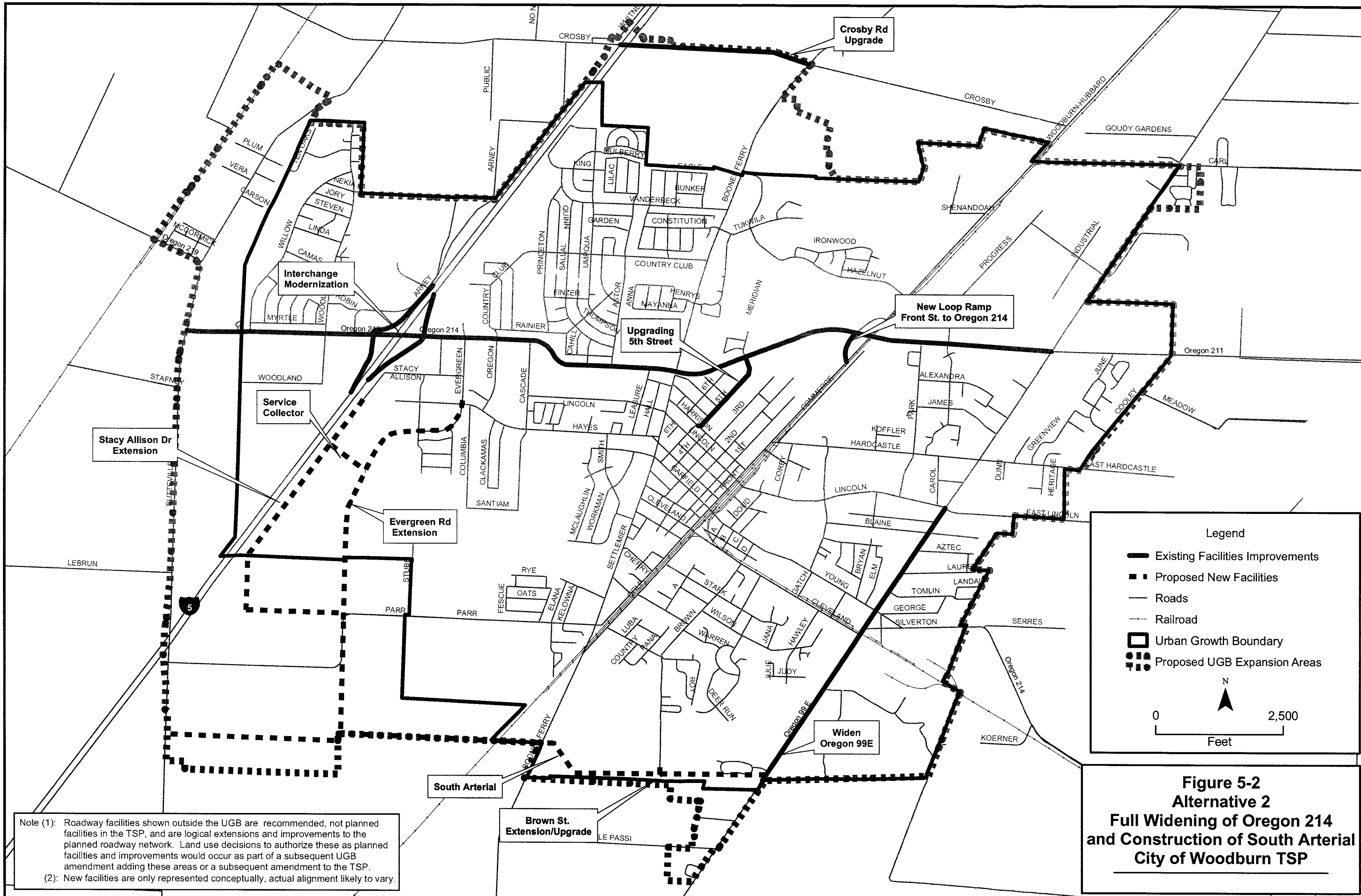

Figure 5-2
Alternative 2
Full Widening of Oregon 214 and Construction of South Arterial
City of Woodburn TSP

Note (1): Roadway facilities shown outside the UGB are recommended, not planned facilities in the TSP, and are logical extensions and improvements to the planned roadway network. Land use decisions to authorize these as planned facilities and improvements would occur as part of a subsequent UGB amendment adding these areas or a subsequent amendment to the TSP.
(2): New facilities are only represented conceptually, actual alignment likely to vary.

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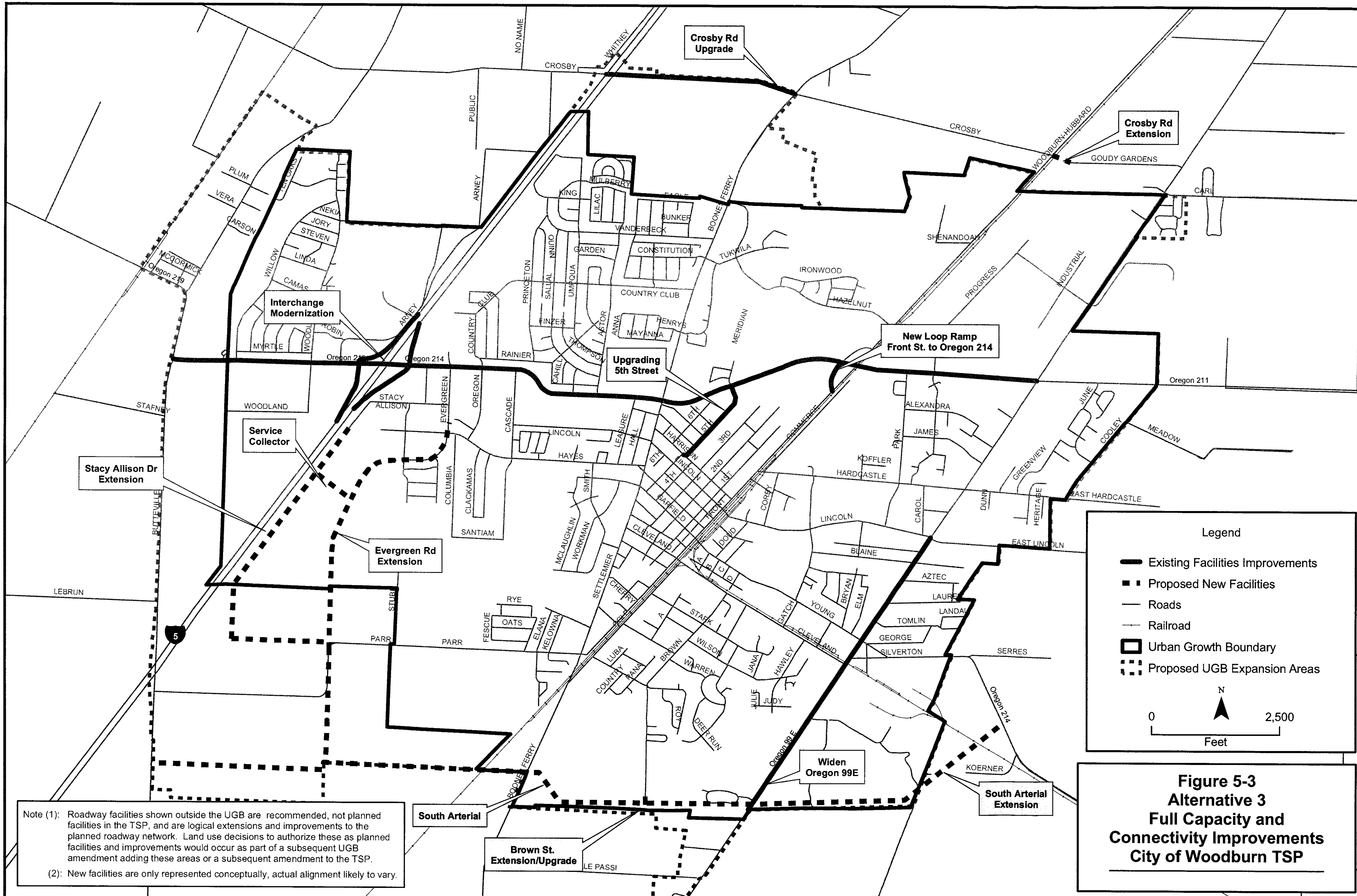

Figure 5-3
Alternative 3
Full Capacity and Connectivity Improvements
City of Woodburn TSP

Note (1): Roadway facilities shown outside the UGB are recommended, not planned facilities in the TSP, and are logical extensions and improvements to the planned roadway network. Land use decisions to authorize these as planned facilities and improvements would occur as part of a subsequent UGB amendment adding these areas or a subsequent amendment to the TSP.

(2): New facilities are only represented conceptually, actual alignment likely to vary.

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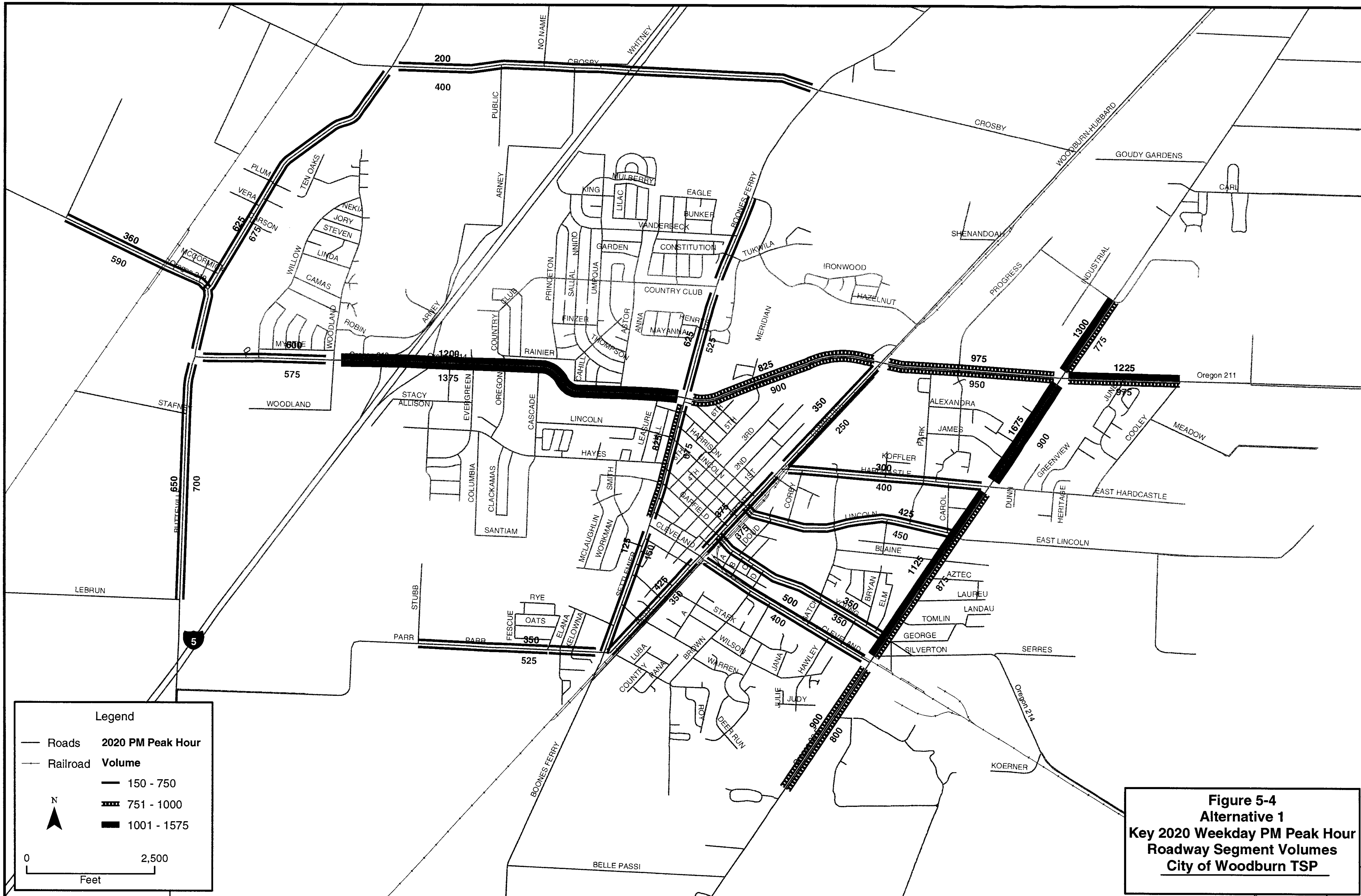

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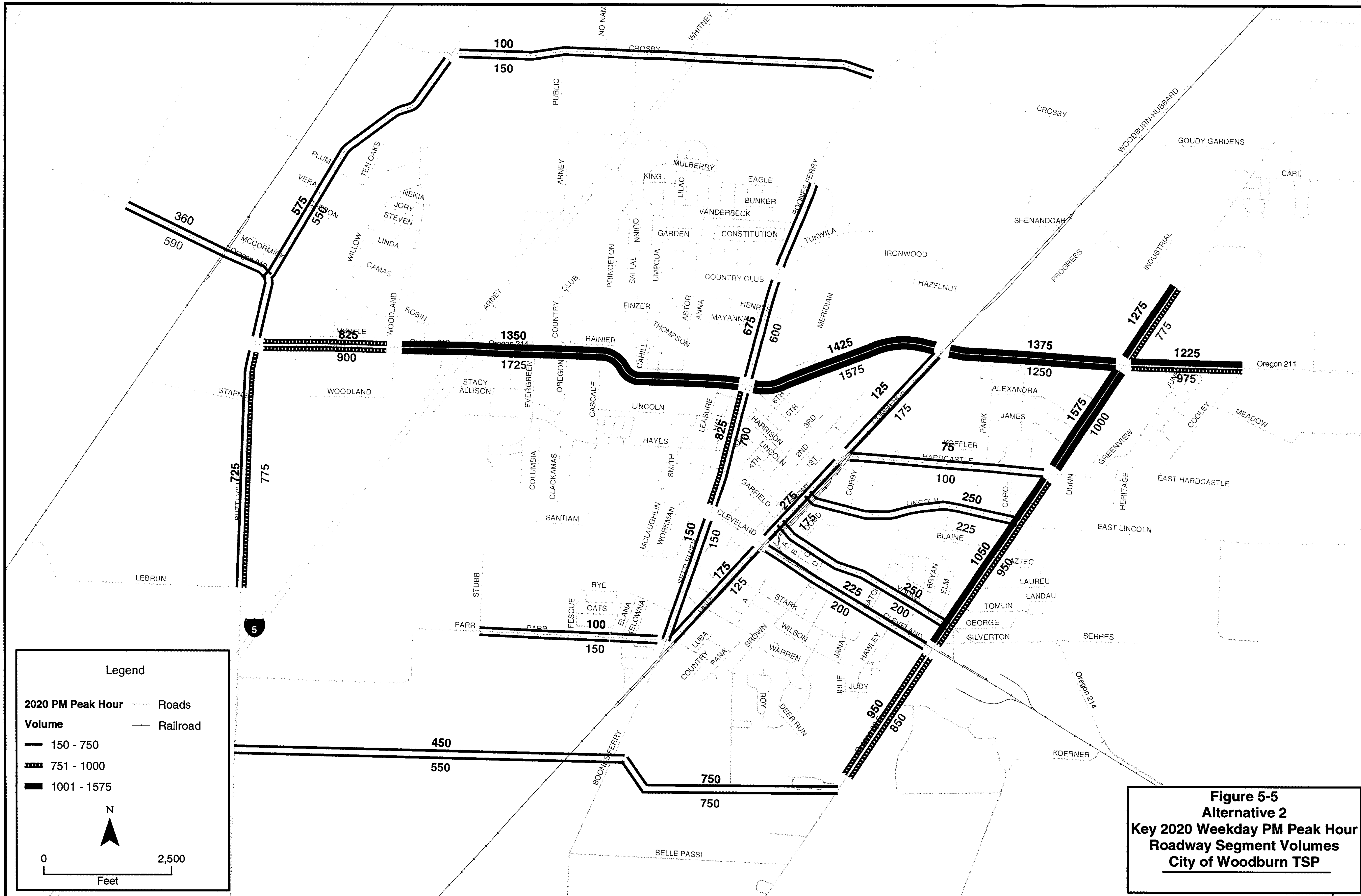

Figure 5-5
Alternative 2
Key 2020 Weekday PM Peak Hour
Roadway Segment Volumes
City of Woodburn TSP

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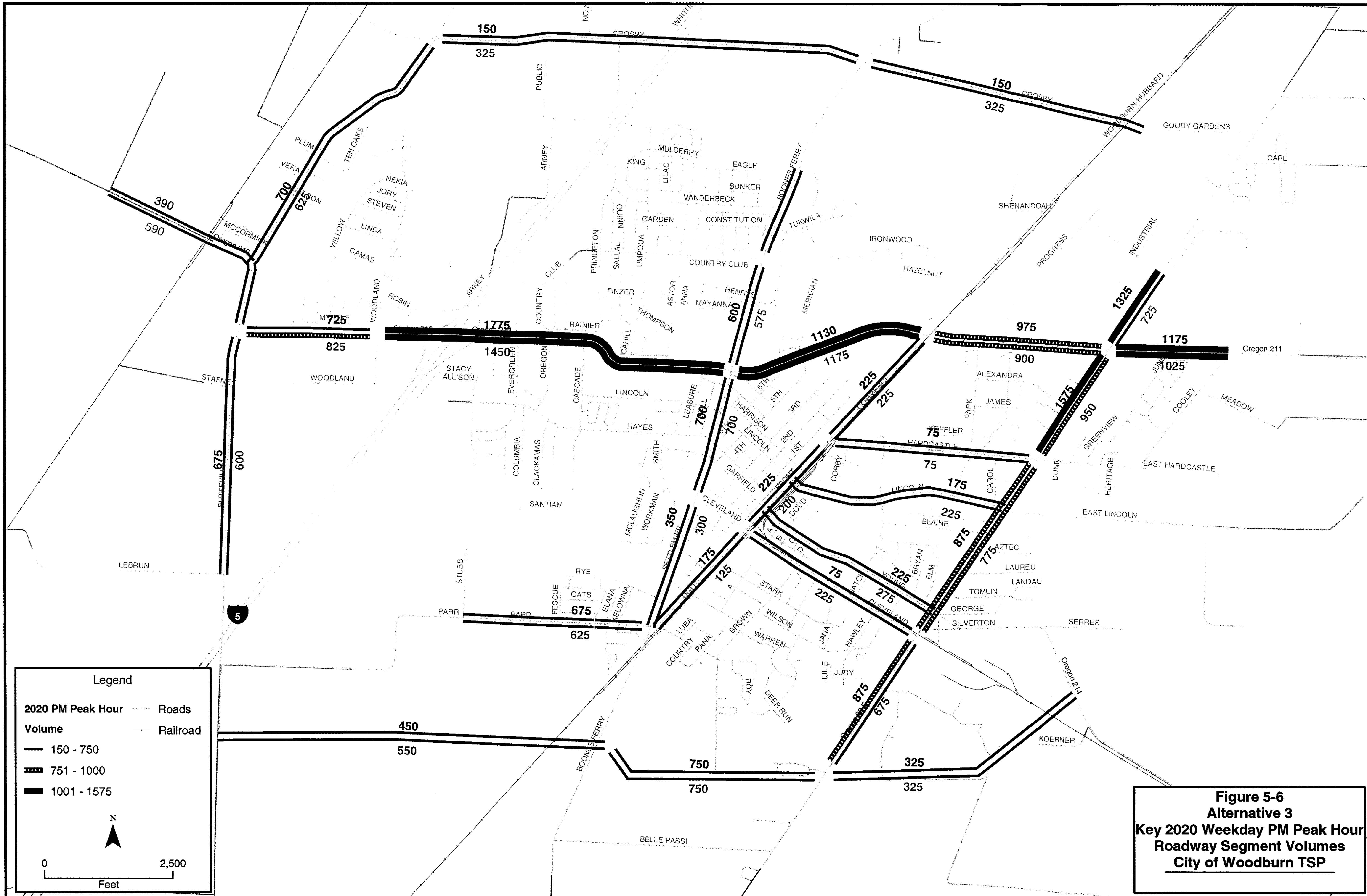

Figure 5-6
Alternative 3
Key 2020 Weekday PM Peak Hour
Roadway Segment Volumes
City of Woodburn TSP

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SECTION 6

Access Management

This section addresses the Oregon Highway Plan and OAR 734-051-000 ("Division 51") requirements as they relate to state highways in Woodburn.

ODOT Policies

The OHP, adopted in 1999, provides guidance regarding development, management, and financing of state highways within Oregon during the next 20 years. The TPR (OAR 660-012-000) requires that local transportation system plans be consistent with the OHP. Policies contained within the OHP that relate to implementing the Woodburn TSP include the adopted highway mobility standards and the access management standards for Oregon 214, Oregon 211, and Oregon 99E.

Within the OHP, all state facilities are classified into one of five categories indicating level-of-importance within the system. These categories guide "planning, management, and investment decisions" regarding the facilities. The categories, in order of importance, are Interstate Highways, Statewide Highways, Regional Highways, District Highways, and Local Interest Road.

Oregon 214 and Oregon 219 within the Woodburn UGB are classified as District Highways and maintain a posted speed of 30 to 35 mph. Oregon 211 is also a District Highway and has a posted speed of 35 to 45 mph. Oregon 99E is classified as a Regional Highway and maintains a posted speed of 35 to 45 mph.

In accordance with the OHP, the objective of a regional highway is to link regional centers, statewide or interstate highways, and economic or activity centers of regional significance. Within urban areas, the primary management objective is to provide moderate to high-speed operations and the secondary objective is to provide access to adjacent land uses. District Highways link small urban areas, rural centers, and urban hubs, often function as county/city arterials and collectors, and serve local access and traffic. Within urban areas, the primary management objective is to provide moderate to low speed operations with an emphasis on traffic flow, pedestrian and bicycle movements.

The OHP outlines Highway Mobility Standards for each highway classification. These standards are used to "maintain acceptable and reliable levels of mobility on the state highway system." The mobility standard is defined as the maximum volume-to-capacity ratio for peak operating conditions. In accordance with Action 1F.1 of the OHP, the mobility standard for Oregon 99E is 0.80 whereas the mobility standard for Oregon 214 and Oregon 211 is 0.85.

The OHP also outlines access management policies and standards. These policies are implemented through the OAR 734-051-000 ("Division 51"). These spacing standards do not retroactively apply to legal roadways and accesses that were in-place prior to the adoption of the policies. Rather, they apply to situations of redevelopment or change in use, roadway improvement projects, and new access points. The access spacing standards for each of the state facilities in Woodburn are as follows:

- On Oregon 99E, the access spacing standard for both public and private approaches is 600 feet along segments that have a posted speed of 35 mph and 750 feet along those segments that have a posted speed of 45 mph (i.e., south of Cleveland and approximately 1,200 feet north of the Oregon 214 intersection to the UGB).
- The access spacing standard for public and private approaches on Oregon 211 is 400 feet in the section of roadway with a posted speed of 35 mph and 500 feet in the section that has a posted speed of 45 mph (i.e., approximately 1,000 feet east of Oregon 99E to the UGB).
- On Oregon 214 and Oregon 219, the access spacing standard for both public and private approaches is 400 feet. Access spacing standards along Oregon 214/219 from the I-5 ramps is 1,320 feet for full access intersections and 750 feet for right-in-right-out intersections.

An analysis of the existing access configurations along Oregon 214/219 and Oregon 99E is provided below.

Oregon 214/219 Access Analysis

The Oregon 214/219 access analysis addresses Woodland Avenue to Cascade Drive, Cascade Drive to Boones Ferry Road/Settlemier Avenue, and Settlemier Avenue to Oregon 99E.

Woodland Avenue to Cascade Drive

Today, Oregon 219 is a five-lane roadway between Woodland Avenue and I-5. This section of the highway currently carries approximately 11,000 vehicles per day. Oregon 214 is a three-lane roadway with intermittent sidewalks between I-5 and Cascade Drive. This section of the highway currently carries approximately 15,000 vehicles per day. In 2020, the roadway volume is anticipated to increase to approximately 23,000 vehicles per day under the No Build Condition and 32,000 vehicles per day if Oregon 214 is widened and the interchange is rebuilt.

In this section, a relatively high frequency of crashes have been experienced in the last 5 years at both I-5 ramp termini intersections, and at the Evergreen and Oregon Way intersections.

Figure 6-1 illustrates the existing street and private accesses along this section of the highway. As shown, public street accesses are provided at Woodland Avenue, Arney Road (limited to right-in-right-out), the frontage road, Lawson Avenue, Evergreen Road, Oregon Way/Country Club Road, and Cascade Drive. There are no private access points provided in this segment to the west of I-5. To the east along the south side of Oregon 214, there are private accesses provided at the following locations:

- Chevron gas station between the frontage road and Lawson Avenue
- Union 76 gas station between Lawson Avenue and Evergreen Road

- Dairy Queen and Mid Valley Bank between Evergreen Road and Oregon Way

On the north side of Oregon 214, private accesses are provided at the following locations:

- The Shell gas station between the frontage road and Lawson Avenue
- Patterson's Restaurant across from Lawson Avenue
- The private roadway system serving Denny's, Best Western, and Wendy's between Lawson and Evergreen
- Crossroads shopping center between Evergreen Road and Oregon Way

None of these accesses meet the access spacing standards outlined in Division 51. As part of the I-5 interchange and Oregon 214 improvement project, the following access modifications will be made to this segment of the highway:

- The frontage road will be closed.
- Lawson Avenue will be limited to right-in-right-out.
- All private accesses will be closed, with the exception of a consolidated access into the Dairy Queen and Mid Valley Bank; this access will be restricted to right-in-right-out.

Cascade Drive to Boones Ferry Road/Settlemier Avenue

Between Cascade Drive and Boones Ferry Road/Settlemier, Oregon 214 maintains a three-lane curbed cross-section with a travel lane in each direction and a center turn lane. Under existing conditions, average daily traffic (ADT) on this segment of roadway is approximately 20,000 vehicles per day. This number is anticipated to increase to 22,000 vehicles per day under the 2020 No Build Condition and 26,500 vehicles per day between Cascade Drive and Boones Ferry Road/Settlemier Avenue if Oregon 214 is widened to five lanes and the interchange is rebuilt. The existing conditions crash analysis did not reveal any apparent existing safety deficiencies in this corridor.

Figure 6-1 depicts the existing street and driveway accesses to Oregon 214 between Cascade Drive and Boones Ferry Road/Settlemier Avenue. Public street accesses are provided at Broughton Way, Astor Way, and Leasure Street. Each of these locations is unsignalized. The intersection of Oregon 214/Boones Ferry Road/Settlemier is signalized. A discussion of the existing private access points and potential access alternatives is outlined below. These projects are opportunity-driven based on property conversion or future roadway projects.

- Access to vacant commercial land is provided approximately 280 feet east of Cascade Drive on the north side of Oregon 214. Although this driveway does not meet the 400-foot spacing requirement set forth by the OHP, alternative access to this property is constrained by the existing residential development to the north. When this property develops in the future, adequate sight distance should be provided at the access point along with appropriate internal circulation opportunities.
- Access to vacant commercial land is provided on the south side of Oregon 214 approximately 350 feet east of Broughton Way. Alternative access to this property is somewhat constrained by existing development to the west, although there may be

potential for alternative access to the south via Lincoln as properties in the vicinity build out.

- Three accesses are provided for the Fire Station on the south side of Oregon 214 in a less than 200-foot segment in the vicinity of Broughton Way; one of these accesses is an actuated emergency traffic signal for fire trucks.
- Between Broughton Way and Astor Way access is provided to an apartment complex on the south side of Oregon 214. This access is located approximately midway between the two public roadways (approximately 225 to 250 feet from each). Alternative access is constrained by the manner in which the apartment complex was constructed.
- Two accesses are provided on the south side of Oregon 214 in the vicinity of Astor Way intersection. The eastern access serves an existing commercial development and the western access serves a day care center. As these properties redevelop in the future, Oregon 214 operations may be enhanced by consolidating these two access points and potentially the access to the apartment complex to the west. Ideally, this consolidated access would be located directly across from the Astor Way intersection.
- A residential property is provided access to the north side of Oregon 214 just east of the Astor Way intersection. As this property redevelops in the future, access should be provided to Astor Way rather than the highway.
- Between Astor Way and Settlemier Avenue, five access points serve existing single-family residences on the south side of Oregon 214. As properties redevelop in this vicinity, the driveways should be consolidated and provided access via Leasure Street instead.
- Near the Oregon 214/Settlemier Avenue intersection, access is provided into an office building on the south side of Oregon 214. The local street to the south provides alternative access to this property.
- An access serving existing commercial development is provided on the north side of Oregon 214 approximately 110 feet east of Leasure Street. With the exception of the residential driveway adjacent to Astor Way and the driveway providing access to vacant land near Cascade Drive, this is the only access point on the north side of Oregon 214 between Astor and Settlemier. Private access in this section is primarily constrained by the existing golf course development.

Settlemier Avenue to Oregon 99E

Between Settlemier Avenue and Oregon 99E, Oregon 214 maintains a three-lane curbed cross-section with a travel lane in each direction and a center turn lane. Under existing conditions, ADT on this segment of roadway is approximately 15,000 to 17,000 vehicles per day. This is anticipated to increase to 17,000 to 21,000 under the No Build Condition and 23,000 vehicles per day if Oregon 214 is widened to five lanes and the interchange is rebuilt.

The existing conditions crash analysis did not reveal any apparent existing safety deficiencies in this corridor, with the exception of the vicinity of the Oregon 99E/ Oregon 214 intersection. The segment of Oregon 214 in the vicinity of Oregon 99E is listed in the Top 10 percent sites within the SPIS. This intersection was improved in August 2002.

ODOT should monitor the crash pattern at this intersection to determine if the geometric improvements reduce the crash experience at this location. In addition, auto/pedestrian conflicts have been reported and the city of Woodburn and ODOT are working on possible solutions.

Figures 6-2 through 6-4 depict the accesses along Oregon 214 between Settlemier and Oregon 99E. For the most part, accesses along this segment of roadway are limited to public streets between Settlemier Avenue and Progress Way. Each of these public streets is unsignalized at its intersection with Oregon 214. Some private access points serve existing commercial development between Front Street and Oregon 99E. As properties redevelop in this vicinity, access consolidation may be possible.

Oregon 99E Access Analysis

Access to Oregon 99E was evaluated between Lincoln Street and the south City limits. In the 1990s, ODOT improved the section of Oregon 99E north of Lincoln Street. This improvement project included limitation of one private access on both sides of the road in this section. According to Division 51 standards, no accesses would be allowed in this section. However, the existing configuration represents a consolidation of access points that serve multiple uses. In the section south of Lincoln Street, a number of private access points remain, as described below.

The section of Oregon 99E between Lincoln Street and the south City limits is approximately 4,000 feet long. In this section, the highway is a five-lane roadway with some intermittent curbs and sidewalks and a number of private access points. All of the intersections along this corridor are unsignalized except Lincoln Street and Young Street (Oregon 214). The land uses along this corridor will likely redevelop in the future. As this redevelopment occurs, the driveways should be better delineated, and in some cases, consolidated or closed. In addition, ODOT and the City are currently pursuing a modernization project along this section of the highway that is a candidate for funding under the 2006-2009 STIP. If funding becomes available for this project, the following section of the TSP should be amended, as appropriate.

Lincoln Street to Oregon 214/Young Street

Between Lincoln Street and Young Street/Oregon 214, Oregon 99E carries approximately 20,000 vehicles per day. This is anticipated to increase to 22,000 vehicles per day in the year 2020. The Lincoln Street/Oregon 99E and Young Street/Oregon 214/Oregon 99E intersections are both within segments of roadway included in ODOT's top 10 percent SPIS list. A detailed analysis of the crashes at both locations did not reveal any apparent patterns indicative of existing geometric or operational deficiencies.

Existing Public Access Points

Figure 6-5 depicts the existing public access points on Oregon 99E between Lincoln Street and Oregon 214/Young Street. Public street accesses are provided at McKinley Street, Blaine Street, Aztec Drive, Laurel Street, Tomlin Avenue, and George Street. Each of these locations is unsignalized. The Lincoln Street and Young Street/Oregon 214 intersections are signalized.

None of the driveways in this section meet the OHP spacing requirements. In fact, the public streets are spaced at a distance less than the 600 feet specified in the OHP. For this reason, whenever possible, access to properties abutting the highway with access to the City streets should be directed away from Oregon 99E. A discussion of the existing private access points and potential access alternatives is outlined below. These projects are opportunity-driven based on property conversion or future roadway projects.

Existing Private Access Points

Between Lincoln Street and McKinley Street, three private accesses serve a small retail development on the west side of Oregon 99E. These accesses could be readily consolidated in the future. There may be opportunities to provide the commercial development with alternative access to either Lincoln Street or McKinley Street.

Between Lincoln Street and E. Blaine Street, six private access points serve existing commercial uses on the east side of Oregon 99E. With two exceptions, the current site layouts of the properties do not lend themselves to access consolidation. However, as properties redevelop in the future, alternative site layouts, cross-over access easements, and alternative access via Lincoln Street and/or Blaine Street could reduce the number of access points in this segment of Oregon 99E.

Between E. Blaine Street and Aztec Drive, three private accesses serve an existing development on the west side of Oregon 99E. This development also has access to E. Blaine Street. As these properties redevelop in the future, at least two Oregon 99E accesses might be closed.

Between Aztec Drive and Laurel Street, three accesses serve an office building and small retail development on the east side of Oregon 99E. The site layouts for these properties are such that the access points could be readily consolidated in the future; in addition, access is provided to one of the properties via Laurel Street.

Between Aztec Drive and Laurel Street, four private accesses serve two developments on the west side of Oregon 99E. These may be readily consolidated into two access driveways in the future. There are no alternative accesses to public streets available for these properties unless a frontage or backage road system was developed to either Blaine Street or Young Street.

Between Laurel Street and Oregon 214, fourteen private accesses on the west side of the Oregon 99E exist. At a minimum, five of these accesses could readily be closed through the use of shared access agreements or consolidating multiple accesses for the same property. Building setbacks on many of the properties in this segment might allow for internal circulation between many of the parcels.

On the east side of Oregon 99E, there are eleven private accesses between Oregon 214 and Laurel Street. Some of the parcels in this segment also have access to Tomlin Avenue. At a minimum, five of these accesses could be readily closed or consolidated in the future without significant impacts to businesses in this corridor. In addition, alternative access to both Tomlin Avenue and Laurel Street should be investigated as properties in this corridor redevelop. A future north-south roadway between George Street and Laurel Street to the east of Oregon 99E could provide alternative access to these properties as well.

Oregon 214 to the South City Limits

Between Oregon 214 and the south City limits, Oregon 99E currently carries approximately 13,000 vehicles per day. This number is anticipated to increase to 18,000 vehicles per day in the year 2020. As discussed in Section 3, no existing safety deficiencies were identified in this segment of Oregon 99E.

Existing Public Access Points

Public streets are provided at Silverton Avenue and Cleveland Street; both of these intersections with Oregon 99E are unsignalized. These streets are spaced approximately 150 feet apart. In addition, the railroad tracks cross Oregon 99E just to the north of Cleveland Street.

Figure 6-6 depicts the existing accesses on Oregon 99E between Oregon 214 and the City limits to the south. None of the driveways in this section meet the OHP spacing requirements. For this reason, whenever possible, access to properties that abut the highway with access to the City streets should be directed away from Oregon 99E. A discussion of the existing private access points and potential access alternatives is outlined below. These projects are opportunity-driven based on property conversion or future roadway projects.

Existing Private Access Points

On the west side of Oregon 99E between Young Street and Cleveland Street, two driveways serve a gas station, one driveway serves an apartment complex, and two driveways access vacant developable land. As properties develop/redevelop in this corridor, access should be provided to Young Street and access points should be consolidated. Establishing any alternative access to Cleveland Street is constrained by the railroad tracks.

Between Young Street and Cleveland Street, there are four accesses on the east side of Oregon 99E. Two of these accesses could be readily closed in the future without impact existing operations. Consideration should be given to establishing a standard commercial driveway width on the access. In addition, there may be opportunities for establishing alternative access for these properties to Cannery Road and/or Silverton Avenue.

On the west side of Oregon 99E between Cleveland Street and the south City limits, eight private accesses serve existing uses. The current building setbacks on these properties constrain the ability to consolidate accesses in this segment until properties redevelop in the future.

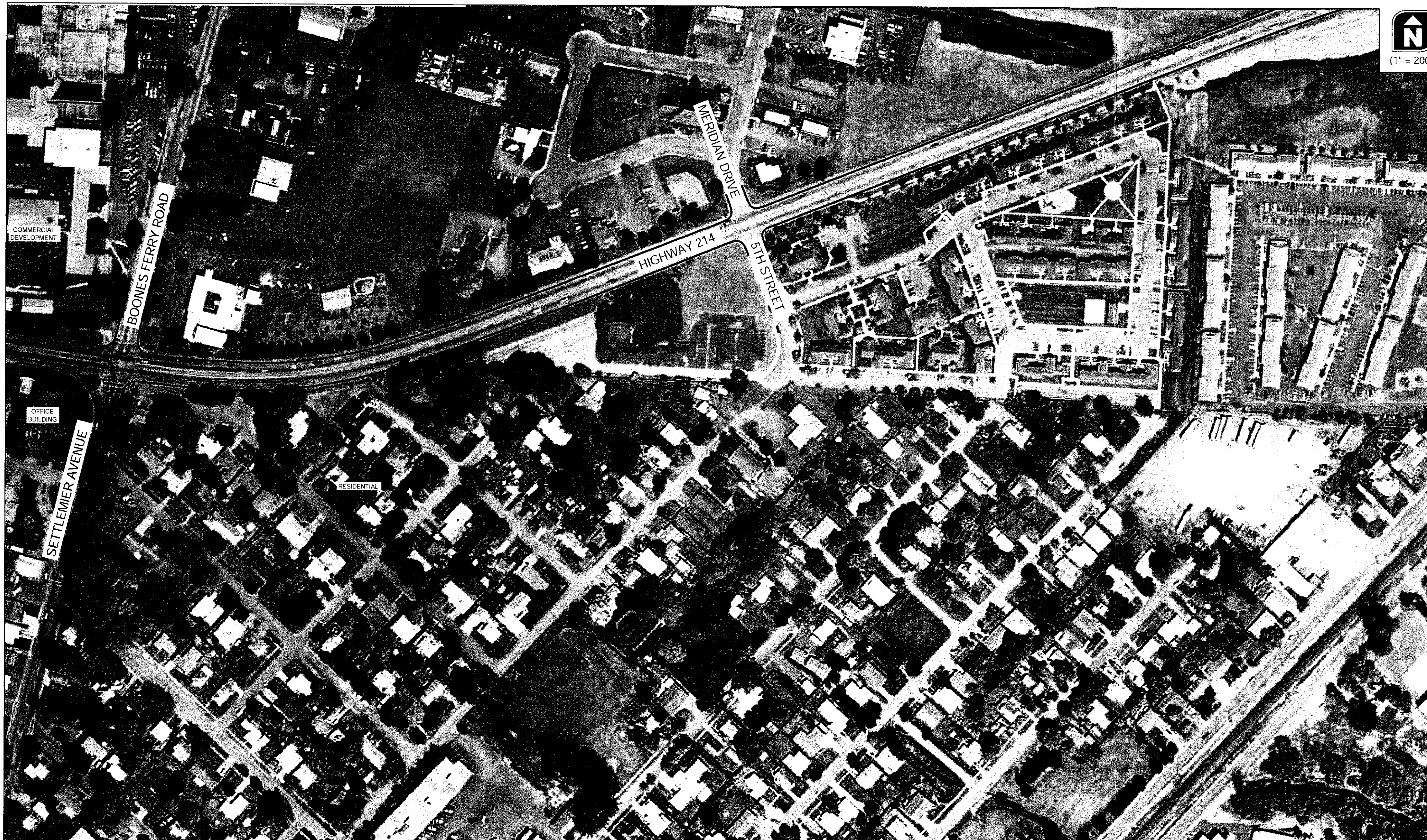
On the east side of Oregon 99E in this same segment, eight private accesses serve multiple properties. Two of these accesses could readily be closed in the future without impacting existing business operations. As properties redevelop in this corridor, cross-over easements may help to consolidate the number of accesses.

Insert Figures 6-1 through 6-6

OREGON 214 EXISTING ACCESS:
CASCADE DRIVE TO SETTLEMIER AVE / BOONES FERRY RD
WOODBURN, OREGON

FIGURE **6-1**

5367Figs



OREGON 214 EXISTING ACCESS:
SETTLEMIER AVE / BOONES FERRY RD TO OREGON 99E - SECTION I
WOODBURN, OREGON

FIGURE 6-2

5367Figs

OREGON 214 EXISTING ACCESS:
SETTLEMIER AVE / BOONES FERRY RD TO OREGON 99E - SECTION II
WOODBURN, OREGON

FIGURE 6-3

5367Figs

**OREGON 214 EXISTING ACCESS:
SETTLEMIER AVE / BOONES FERRY RD TO OREGON 99E - SECTION III
WOODBURN, OREGON**

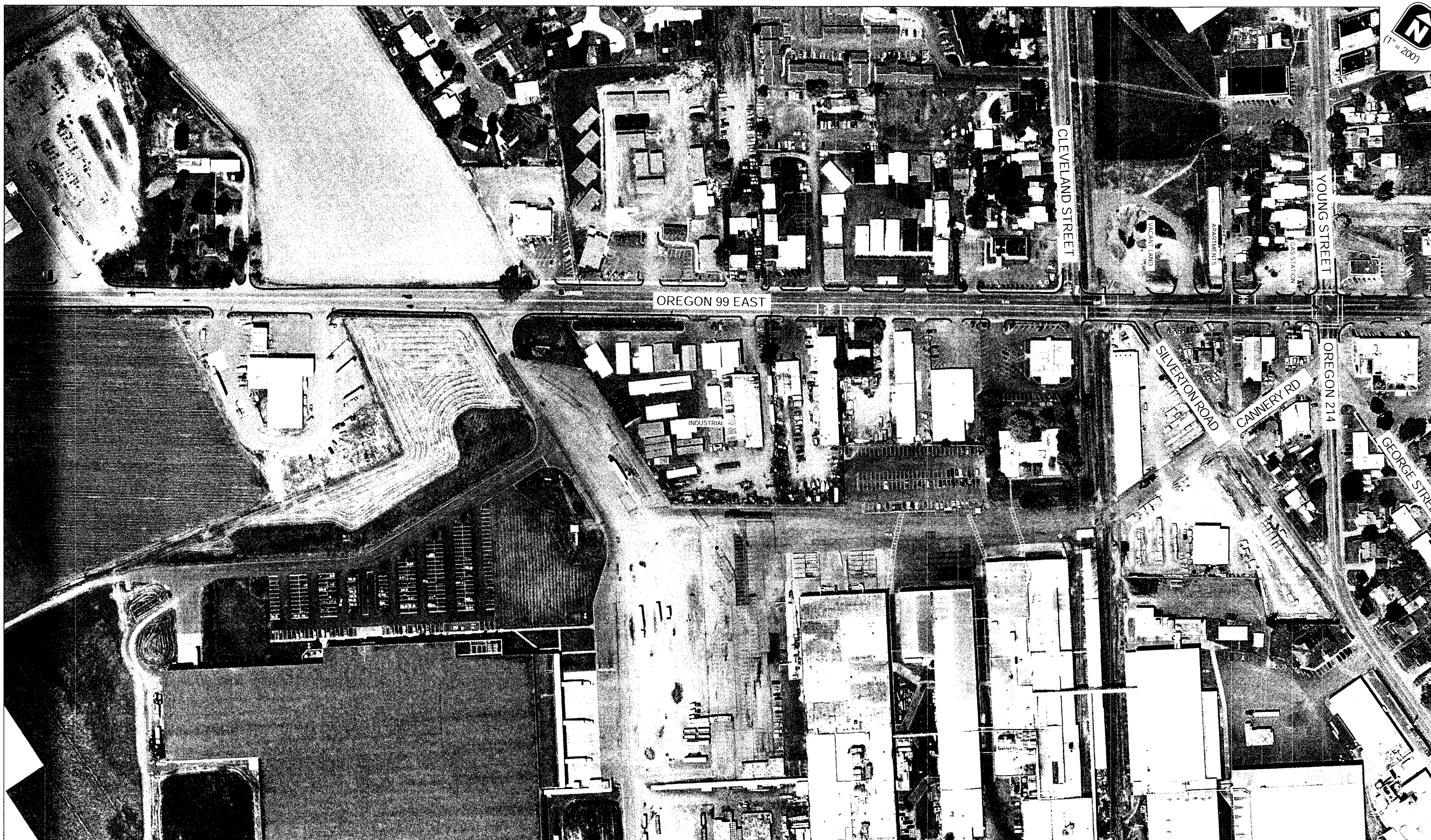
FIGURE
6-4

5367Figs

**OREGON 99E EXISTING ACCESS:
LINCOLN ST TO OREGON 214 / YOUNG ST
WOODBURN, OREGON**

FIGURE
6-5

5367Figs



OREGON 99E EXISTING ACCESS:
OREGON 214 / YOUNG ST TO SOUTH CITY LIMITS
WOODBURN, OREGON

FIGURE **6-6**

5367Figs

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING / TRAFFIC ENGINEERING

SECTION 7

Modal Plans

This section summarizes the preferred transportation system for the Woodburn UGB to be implemented over the next 20 years The transportation improvements in this section were included based on the analysis of relevant plans and policies, existing and future no build conditions, and the alternatives analysis. This section contains the following subsections:

- Street system plan
- Intracity and intercity transit facilities plans
- Pedestrian plan
- Bicycle plan
- Rail facilities plan
- Air, water, and pipeline transport facilities plans
- Transportation demand management programs

Street System Plan

The Woodburn street system plan addresses anticipated operational and circulation needs through the year 2020. The street system plan consists of functional classification designations, street design standards, recommended capacity and connectivity improvements, access management strategies, and traffic operations standards.

Functional Classification Plan

The purpose of classifying streets within the UGB is to create a balanced system that facilitates mobility for vehicles, transit, pedestrians, and cyclists. Street functional classification identifies the intended purpose, the amount and character of traffic, the degree to which nonauto traffic is emphasized, and the design standards. It is essential that the street functional classification consider the adjacent land uses.

The functional classification designations specified in the 1996 TSP are recommended as part of the updated TSP. The primary classification designations are discussed below.

- *Freeway*: In accordance with the Oregon Highway Plan, the primary function of the interstate is mobility, because freeways connect major cities, regions within Oregon, and other states, and serve as major freight routes. The freeway should provide "safe and efficient high-speed continuous-flow." The freeway has full access control with access limited to the interchange. Only motorized vehicle traffic is served.
- *Major Arterial*: Primary functions are to serve local and through traffic as it enters and leaves the urban area, connect Woodburn with other urban centers and regions, and provide connections to major activity centers within the UGB. Per the OHP, emphasis

should be on traffic flow, pedestrian and bicycle movements. On-street bicycle lanes and sidewalks should be provided.

- *Minor Arterial*: Primary functions are to connect major activity centers and neighborhoods within the UGB and to support the major arterial system. Minor arterials should have a higher degree of access, shorter trip lengths, lesser traffic volumes, and lower travel speeds than major arterials. Like major arterials, emphasis should be on traffic flow, pedestrian and bicycle movements. On-street bicycle lanes and sidewalks should be provided.
- *Service Collector*: Primary function is to provide connections between neighborhoods and major activity centers and the arterial street system. Some degree of access is provided to adjacent properties, while maintaining circulation and mobility for all users. Service collectors carry lower traffic volumes at slower speeds than major and minor arterials. On-street bicycle lanes and sidewalks should be provided.
- *Access Street*: Primary function is to connect residential neighborhoods with service collectors or arterials. On-street parking and access to adjacent properties is prevalent. Slower speeds should be provided to ensure community livability and safety for pedestrians and cyclists. In many cases, cyclists can "share the road" with motor vehicles because of low traffic volumes and speeds. Sidewalks or pathways should be provided for pedestrians.
- *Local Streets*: Primary function is to provide direct access to adjacent land uses. Short roadway distances, slow speeds, and low traffic volumes characterize local streets. Cyclists can share the road with motor vehicles. Sidewalks or pathways should be provided for pedestrians.

Figure 7-1 shows the functional classification designations for all existing and future streets within the proposed Woodburn UGB. In the figure, the alignment of future streets is conceptual, meaning that the end points of the streets are often fixed but the alignment between the end points may vary depending on the design requirements and right-of-way constraints at the time in which the street is constructed. It should be noted that, at this time, there are no known environmental concerns or issues associated with any of the new roadways shown in the figure.

In addition, the construction of new roadways in the area being studied for UGB expansion is contingent upon the expansion occurring. If the UGB is not expanded, the roadway system is anticipated to operate acceptably in the absence of these facilities.

The designation for all streets is as follows:

- *Freeway*: I-5
- *Major Arterial*: Oregon 219, Oregon 214, Oregon 99E, and Oregon 211
- *Minor Arterial*: Southern Arterial, Boones Ferry Road, Settlemier Avenue, Evergreen Road, Front Street, Hardcastle Avenue, Young Street (between Oregon 99E and Front Street), and Butteville Road

- *Service Collector*: Parr Road, Crosby Road, Lincoln Street (Front Street to Oregon 99E), West Hayes Street (Settlemier Avenue to Evergreen Road), Arney Road, Progress Way/ Industrial Avenue, Park Avenue, Gatch Street (Lincoln Street to Cleveland Street), Cleveland Street (Settlemier to Oregon 99E), Woodland Drive (Arney Road to Oregon 214), Stacy Allison, Robin Avenue, the extension of Evergreen Road into Crossroads Shopping Center, Harrison, Garfield (Settlemier to Front Street), Park (Oregon 214 to Lincoln), Cooley (Oregon 211 to Hardcastle)
- *Access Street*: Woodland Drive (north of Robin Avenue), the extension of Woodland Avenue to Butteville Road south of Oregon 219, Oregon Way, Astor Way (Country Club Road to Oregon 214), Country Club Road (Astor Way to Boones Ferry Road), Hazelnut Drive (Tukwila to Front), Tukwila (Hazelnut to Boones Ferry), Meridian (Oregon 214 to Hazelnut), 5th Street (Oregon 214 to Harrison), Brown Street (Cleveland Street to Southern Arterial), extension of Stubb Street to Evergreen, extension of Ben Brown to the Stubb Street extension, and, Country Club Road (Oregon 214 to Rainier).

The remaining streets within the UGB are designated as local streets.

Street Design Standards

Street design standards are based on the desired functional and operational characteristics, such as vehicular volume, capacity, operating speed, safety, and level of pedestrian and bicycle use. The standards are necessary to ensure that the system of streets, as it continues to develop within Woodburn, can safely and efficiently serve motorists, cyclists, and pedestrians while also accommodating the orderly development of adjacent lands.

The street design standards are shown in Figure 7-2 for each of the functional classifications. These standards will be incorporated into or referenced by the Woodburn Development Ordinance. The identified cross sections are intended for planning and design during new road construction, and for the upgrade of existing streets as development and redevelopment occurs. The typical roadway cross sections include right-of-way, number of travel lanes, on-street parking, bicycle and pedestrian facilities, and planting strips. On both access and local streets, the inclusion of planting strips will be determined at the time of development approval. In instances where no planting strip is provided, the sidewalk is to be curb-tight. In addition, on major and minor arterials, a raised median can be constructed in lieu of the center turn lane to achieve access management and safety objectives.

On local streets, the City has options for residential and commercial streets with parking or local industrial streets without parking, both of these options require a 60-foot right-of-way.

The street cross-section standards are also summarized in Table 7-1.

TABLE 7-1
Typical Street Cross Sections

Facility	Right-of-Way	Travel Lanes	Median Type[a]	Bicycle Lanes?[b]	Sidewalks[c]?	On-Street Parking?	Planting Strip?
Major Arterial	100 feet	4	CTL or Raised Median[d]	Yes	Yes	No	Yes
Minor Arterial	74 feet	2	CTL or Raised Median[c]	Yes	Yes	No	Yes
Service Collector	72 feet	2	CTL	On facilities designated in Figure 7-4	Yes	No	Yes
Access Street	66 feet	2	None	No	Yes	Yes	Yes
Local Street	50 - 60 feet	2	None	No	Yes	Optional[e]	Yes

CTL = center turn lane
ADT = Average Daily Traffic

[a] Center turn lane and median not required on streets designated as historic corridors unless warranted.
[b] Bicycle lanes not required on streets designated as historic corridors.
[c] To minimize adverse impacts on farming, new or upgraded facilities that are co-linear with the Urban Growth Boundary shall not include curb, gutter, and sidewalks on the street side abutting agricultural land.
[d] Raised median may be constructed in lieu of the center turn lane to achieve access management and safety objectives.
[e] Option is determined at time of development approval.

Historic Designation

To preserve the older areas of the community while still providing for safety and mobility, a historic area has been designated. The streets within this area are lined by mature shade trees that are an important part of Woodburn's heritage and represent a significant benefit to the community. While typical arterials and collectors may require widening to meet street design standards that would necessitate the acquisition of right-of-way and impact the trees, the historic designation does not require widening for bicycle lanes or a center turn lane, unless a turn-lane is warranted for safety reasons. At these locations, the existing pavement would be used to the extent possible to preserve the corridor. This historic designation applies to all arterial and collector roadways within the historic area including the following:

- Settlemier between Ben Brown and ORE 214
- Harrison between Settlemier and 2nd
- Lincoln between Settlemier and 2nd
- Garfield between Settlemier and 2nd
- Cleveland between Settlemier and 2nd
- Hayes between Hall and Settlemier

Needed Street Upgrades

Over time, many of the existing streets within the City will be upgraded, and will be improved in compliance with the cross sections in Table 7-1. Priority short-term upgrades for the City are as follows:

- Oregon 214/219/I-5 interchange: Reconstruct to a Partial Cloverleaf Design in accordance with the Environment Assessment (EA). As part of the EA and TSP processes, the City is adopting an Interchange Management Overlay zone to preserve capacity at the interchange. This overlay zone will be adopted into the Woodburn Development Ordinance (WDO). Specific ordinance language is included in Section 9 of this document.
- Oregon 214/219: as part of the interchange reconstruction, widen to a major arterial standard between Woodland and Oregon Way.
- Oregon 214/219: Widen to a full five-lane cross section with sidewalks and bicycle lanes per the major arterial standard between Butteville Road and I-5.
- Parr and Butteville Road: As new development occurs in the corridors within the UGB, upgrade to reflect the transition from the currently rural-character roadways to those more urban in nature. Improving Parr Road (a service collector) and Butteville Road (a minor arterial) to urban standards is essential to serve the Southwest Industrial Area (SWIR).

Other important projects to be constructed in the intermediate to long-term (approximately 2010-2020) include the following:

- Oregon 99E: As redevelopment occurs in the corridor, upgrade to be compliant with major arterial standards. This would ensure continuous pedestrian and bicycle facilities along the route as well as the implementation of access management strategies. Currently, the City and ODOT are pursuing potential funding for a modernization project between Lincoln and the south City limits. Although the specifics of the project are not available at this time, it is likely that this could include the construction of curbs and sidewalks where gaps currently exist, as well as access consolidation.
- Crosby Road: As new development occurs in the corridors within the UGB, upgrade to reflect the transition from the currently rural-character roadways to those more urban in nature.
- Boones Ferry and Front: Upgrade to ensure that continuous pedestrian and bicycle facilities are provided along the corridors.
- Settlemier: Upgrade to ensure that continuous pedestrian facilities are provided along the corridor.
- Oregon 214/219: Widen to a full five-lane cross section with sidewalks and bicycle lanes per the major arterial standard between I-5 and 99E.

Other existing streets within Woodburn will be upgraded to the appropriate standards as development and redevelopment occur.

New Streets

The following new streets and streets extensions are planned over the next 5 years:

- Widening Oregon 214 to include four through travel lanes (two per direction) between Butteville Road and Oregon 99E and the provision of turn lanes at intersections between Woodland Avenue and Oregon Way
- Reconstructing I-5 on-ramps and off-ramps
- Extending Evergreen Road to Parr Road (Evergreen Road, a minor arterial street, will be extended south to the northern edge of the SWIR by developers in 2006)
- Extending Stacy Allison Drive to Parr Road
- Constructing a new service collector between the Evergreen Road and Stacy Allison Drive extensions
- A grid system of access and local streets should be constructed as part of the UGB expansion area between Stacy Allison and Settlemier to the north of Parr Road. The construction of this system would occur with development and within the constraints of the existing built environment. This grid system should provide connectivity options for pedestrians, cyclists, and motorists and also help reduce reliance on the historic Settlemier corridor.

The following new streets and street extensions are planned the intermediate to long-term (next 10-15 years):

- Constructing the South Arterial from Butteville Road to Evergreen Road
- Constructing the South Arterial from Evergreen Road to Oregon 99E
- Terminating Parr Road to the east of Butteville Road and connecting it into the South Arterial
- Extending Evergreen Road from Parr Road to the South Arterial
- Extending and upgrading Brown Street to the South Arterial
- Constructing a new loop ramp connection on Oregon 214 with Front Street in the southwest quadrant of the existing intersection

Over the next 20 years, it is the City's priority to coordinate with Marion County to provide an extension of Crosby Road to Goudy Gardens and Oregon 99E, and to extend the southern arterial from Oregon 99E to Oregon 214. The improvements provide needed east-west connections and an alternative route to the Oregon 214/I-5 interchange area.

Access Management

Managing access to Woodburn's road system is necessary to preserve the capacity and enhance the safety of the arterial street system. Access management minimizes the number of points where traffic flow may be disrupted by traffic entering and exiting the roadway.

Section 6 outlined strategies for consolidating and managing access along the state facilities located within the City. From a policy perspective, the City and ODOT should consider the need for conditioning each land use action that is located within the vicinity of a state facility with one or more of the actions listed below. This would help to maintain or improve traffic operations and safety along the state facilities in Woodburn. It should be noted that these projects are opportunity-driven based on property conversion or future roadway projects.

- Cross-over easements should be provided on all compatible parcels (topography, access, and land use) to facilitate future access between adjacent parcels.
- Opportunities for alternative access to nonstate facilities should be investigated and implemented when reasonable access can occur (consistent with the State's Division 51 access management standards).
- Right-of-way dedications should be provided to facilitate the future planned roadway system in the vicinity of the proposed development.
- Half-street improvements (sidewalks, curb and gutter, bicycle lanes/paths, and/or travel lanes) should be provided along all site frontages that do not have full buildout improvements in place at the time of development.

On all existing and new arterial, service collector, and access streets within its jurisdiction, the City should manage access to provide safe and efficient vehicular, pedestrian and bicycle operations. The Woodburn Development Ordinance includes access standards for public streets and private accesses and policies related to the establishment of cross-over easements where appropriate and feasible. These standards should be implemented as development and redevelopment occurs along the City facilities.

Traffic Operations Standards

Along state facilities, the OHP governs the applicable traffic operation standards. The following mobility standards are included in the 1999 OHP:

- Oregon 211/214/219: a maximum volume-to-capacity ratio of 0.85 should be maintained based on its classification as a district highway.
- Oregon 99E: a maximum volume-to-capacity ratio of 0.80 should be maintained based on its classification as a regional highway.

For City streets the following mobility standards are used for evaluation:

- Level of Service (LOS) "E" for signalized intersections
- Volume-to-capacity ratio less than 1.00 regardless of LOS
- Volume-to-capacity ratio of less than .90 on the critical movement should be maintained, provided the queues on the critical approach can be appropriately accommodated

The evaluation of traffic operations is conducted using the methodology outlined in the most recent edition of the Highway Capacity Manual.

The projects included in the TSP's Implementation Plan collectively achieve these LOS and mobility standards.

Transit Plan

Woodburn's transit plan includes improvements to the existing intracity fixed route transit system, developing an intercity transit system, and the continued use of paratransit for special needs services. The details of each of the components of the plan are outlined below.

Intracity Fixed Route Transit

Improvements to the fixed route transit system should be implemented incrementally over time. The top priorities are outlined sequentially below.

- *Increasing Service Frequency on Existing Route:* Initially, the existing one-way loop route should be maintained, with service extended to a 12-hour period from 7:00 a.m. to 7:00 p.m. at 60 minute headways. An expansion of the hours of operation of the fixed route service would encapsulate morning and evening peak commuting times thereby increasing the likelihood that transit could be used for employment-related travel. As ridership increases, service frequency should be provided every 30 minutes during peak periods and every 60 minutes during nonpeak periods on the weekdays. The feasibility of weekend service should also be investigated in the future.
- *Converting Single Route to Two Way Operations:* To improve passenger accessibility, the existing one-way loop route should be modified to two-way operations. This service concept would be operated under the increased frequency described above.
- *Creating Two Routes (East/West) with One-Way or Two-Way Operations:* An east route and a west route with a common connection in the downtown should ultimately be established. The common connection could be provided at a new transit center in the downtown that may be tied to an intercity bus and/or rail station. The east-west boundary between the two routes could either be split at Front or at Settlemier. It would be preferable to increase the service frequency to 30 minutes on both routes between 7:00 a.m. to 7:00 p.m. These routes could be operated with either one-way or two-way operations.

In addition to the incremental approach identified above, the route should be expanded as growth occurs to include the Parr Road and Crosby Road corridors and potentially the South Arterial. The connection to Parr Road could occur via the extension of Evergreen Road. The route should also be expanded to include the Woodburn Industrial Park located in the Progress and Industrial corridors.

Intercity Transit

The feasibility of an intercity transit system should be further investigated. Top priority should be given to establishing a shuttle service to downtown Salem and the state office building area. As a second priority, shuttle service should be investigated between Woodburn and the Tualatin Park-and-Ride. Ultimately, the provision of service into downtown Portland may be feasible. Under any of these options, it is likely that service would be provided during the morning and evening commute hours with a potential mid-day connection.

The City and ODOT should continue to investigate the feasibility of establishing a park-and-ride in the northeast quadrant of the I-5/Oregon 214 interchange as part of the interchange reconstruction project. If a park-and-ride were developed, consideration should be given to provide more spaces than the anticipated intercity transit demand to accommodate carpooling to Portland and/or Salem. In addition, Woodburn's intracity fixed route system should incorporate a stop at the potential park-and-ride and should connect to any future north-south MAX line.

Special Needs Transportation

Although improvements in the fixed route system could allow Woodburn to reduce the paratransit service, the existing paratransit system provides an essential service for many elderly and handicapped persons in the community. If City resources are concentrated on expansion of the fixed route system, the City may investigate transferring the paratransit system to a local social service agency.

Pedestrian Plan

Providing a connected network of pedestrian facilities is important for:

- Serving shorter pedestrian trips from neighborhoods to area activity centers, such as schools, churches, and neighborhood commercial uses
- Providing access to public transit
- Meeting residents' recreational needs

The City's street standards call for sidewalks to be provided along all new streets. As development and redevelopment occurs, and as City funding permits, gaps in the existing sidewalk system should be filled. In particular, gaps on key roads such as Oregon 214 and Boones Ferry Road/Settlemier Avenue should be filled to provide continuous pedestrian connections. The Pedestrian Plan, depicted in Figure 7-3, identifies the sections of the City's arterial and collector system where gaps currently exist. In future development areas, the sidewalks will be constructed to ADA (Americans with Disabilities Act) standards; in the downtown and other older neighborhoods, the existing sidewalk width, clear zone for pedestrians, and the ramp requirements will need to be addressed as properties redevelop and/or roadway improvement projects occur.

Earlier drafts of this plan identified the need for sidewalks on Country Club west of Astor Way, on Astor Way between Country Club and ORE 214, on Oregon Way between ORE 214 and Hayes, and on both sides of Cascade between ORE 214 and Lincoln. Considerable input from the public was received about the conflict between needed construction of these sidewalks and the mature nature of the neighborhoods that they would serve. In addition, those who commented felt that pedestrians can continue to safely "share the road" with motorists and cyclists. Based on this input, the City Council requested the removal of these sidewalks in the TSP (except the east side of Cascade). Figure 7-3 reflects these modifications.

Retrofitting existing streets to include sidewalks should be balanced with developing an off-street pathway system. A 7-mile pedestrian and bicycle trail system is recommended along the Mill Creek and Goose Creek corridors. This trail system would include connections to adjacent neighborhoods. The sidewalk system should incorporate wayfinding signage to direct pedestrians to the off-street trail system.

The two creek corridors provide an opportunity to integrate pedestrian facilities into open space areas, which not only enhances public access to the open space but also provides more direct connections to several of the major pedestrian generators within the City, such as the schools.

More than two-thirds of the household growth and 80 percent of the employment growth is forecast outside of the existing City limits. With the exception of Settlemier between Oregon 214 and Parr Road and Oregon 99E between the north and south City limits, there are very limited pedestrian facilities today that would connect these areas of new growth to the existing City system. In addition, there are limited pedestrian system connections within the areas of new growth anticipated. Per the TPR (OAR 660-012-0045) and the City cross-section standards, any new roadways would need to be constructed with sidewalks. It would also be important to connect these high growth areas with existing neighborhoods and major pedestrian attractors in the vicinity via the existing roadway system.

Finally, as traffic volumes grow, it becomes more difficult for pedestrians to cross streets. Two common means of improving pedestrian crossing safety are constructing pedestrian refuges and curb extensions. Pedestrian refuges are provided in the middle of streets, allowing pedestrians to cross one direction of traffic at a time. Curb extensions extend the sidewalk into the parking lane, shortening the crossing distance for pedestrians.

Bicycle Plan

The bicycle plan establishes a network of bicycle lanes and routes that connect Woodburn's bicycle trip generators to provide a safe, interconnected bicycle system. Bicycle lanes are to be provided on the arterial and service collector streets designated in Figure 7-4. The bicycle lanes have been designated on streets that provide for a connected network of safe and comfortable facilities for cyclists. On other roadways, it is typically appropriate for bicyclists to share a lane with other vehicles. This on-street system should be supplemented by an off-street trail system along the Mill Creek and Goose Creek corridors, as discussed under the Pedestrian Plan.

Although bicycle lanes are not provided on arterial and service collector streets within the historic area, a signed bike route will be provided on Settlemier, Garfield, Meridian, and 5^{th} to guide bicyclists into the downtown area. The signage would direct cyclists north of ORE 214 into the downtown via 5^{th} and Meridian. Cyclists originating south or ORE 214 would be signed into the downtown via the east-west facilities.

Figure 7-4 shows the City's bicycle plan. As portions of the City's streets are widened, either through adjacent development or public works projects, bicycle lanes would be provided where indicated on the plan.

Rail Facilities Plan

As the opportunity arises, the City should pursue a potential rail passenger stop. Current discussions focus on extending the commuter rail planned between Wilsonville and Beaverton down to Salem. If this occurs, the City should seek a passenger stop. This stop could occur west of Butteville Road, north of Oregon 219. If this stop is established, the intracity fixed route transit system should incorporate a stop at the rail station.

The City should also continue to investigate the opportunity to remove private grade crossings by providing alternative access to parcels as development and redevelopment occurs.

Air, Water, and Pipeline Transport Facilities Plans

There are no significant air, water or pipeline transportation facilities in Woodburn and none will likely be needed in the future.

Transportation Demand Management (TDM)

TDM programs seek to improve the efficiency of the transportation system by shifting single-occupant vehicle trips to other modes, or away from times of peak traffic volumes. When implemented by a number of employers, TDM measures may avoid the need for some roadway capacity improvement projects, or at least defer the need farther into the future. Examples of these measures include:

- Subsidizing the cost of transit passes and tickets.
- Establishing carpool matching programs for ridesharing.
- Providing reserved spaces near building entrances for carpools.
- Allowing employees to work at home 1 day a week.
- Scheduling shift changes to occur outside of peak travel periods.
- Establishing neighborhood commercial and mixed-use nodes within the City. As part of these developments, direct sidewalk connections, bus stop provisions and proper building orientation to provide opportunities for trips to be made via walking or cycling or short driving distances.

These types of strategies can be adopted into the Woodburn Development Ordinance in the form of requirements for new developments and incentives for employers.

Insert Figures 7-1 through 7-4

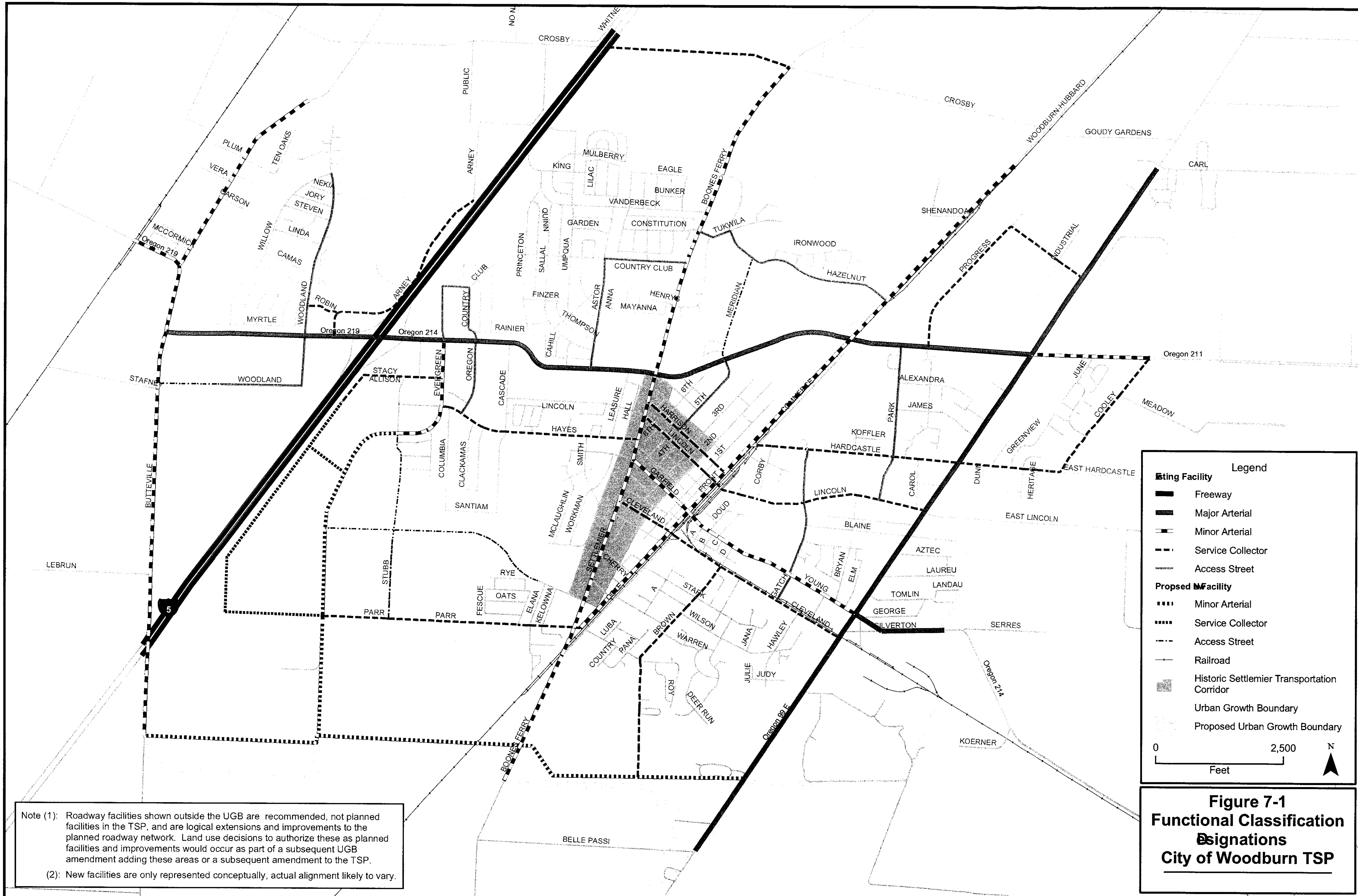


Figure 7-1
Functional Classification Designations
City of Woodburn TSP

Note (1): Roadway facilities shown outside the UGB are recommended, not planned facilities in the TSP, and are logical extensions and improvements to the planned roadway network. Land use decisions to authorize these as planned facilities and improvements would occur as part of a subsequent UGB amendment adding these areas or a subsequent amendment to the TSP.

(2): New facilities are only represented conceptually, actual alignment likely to vary.

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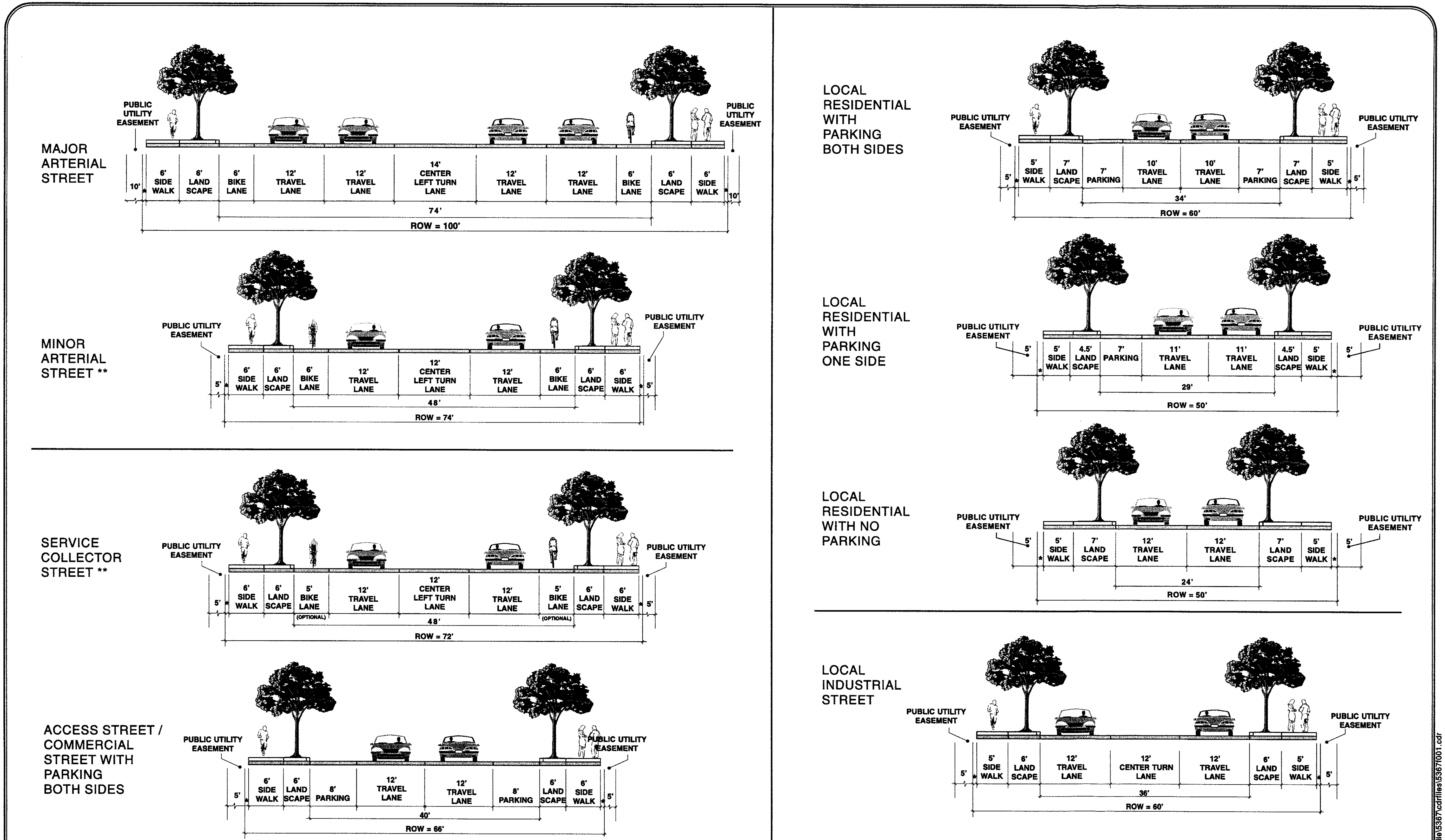
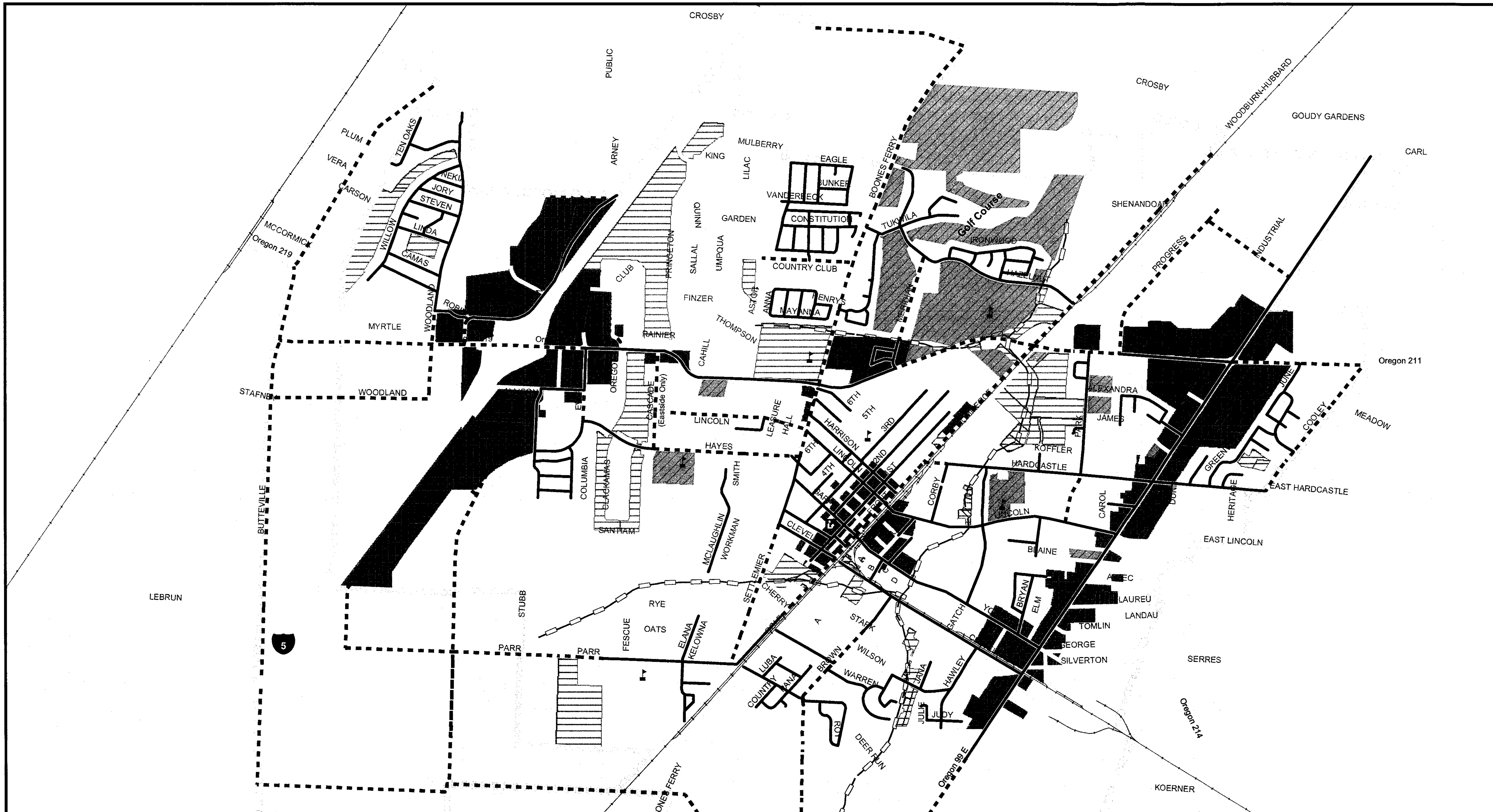


* ROW includes 1 foot between sidewalk and property line
**Streets designated as Historic Corridors do not require bicycle lanes or center turn lane.

FIGURE 7-2
Street Design Standards



Legend

School	Commercial Zoning
Library	Parks and Open Spaces
Recommended Sidewalks	Other Zoning
Existing Sidewalks	Public Use
New Off-Street Pathway	Existing Urban Growth Boundary
Railroad	Proposed Urban Growth Boundary

0 2,500
Feet
N

Note (1): Roadway facilities shown outside the UGB are recommended, not planned facilities in the TSP, and are logical extensions and improvements to the planned roadway network. Land use decisions to authorize these as planned facilities and improvements would occur as part of a subsequent UGB amendment adding these areas or a subsequent amendment to the TSP.

(2): New facilities are only represented conceptually, actual alignment likely to vary.

Figure 7-3
Pedestrian Plan
City of Woodburn TSP

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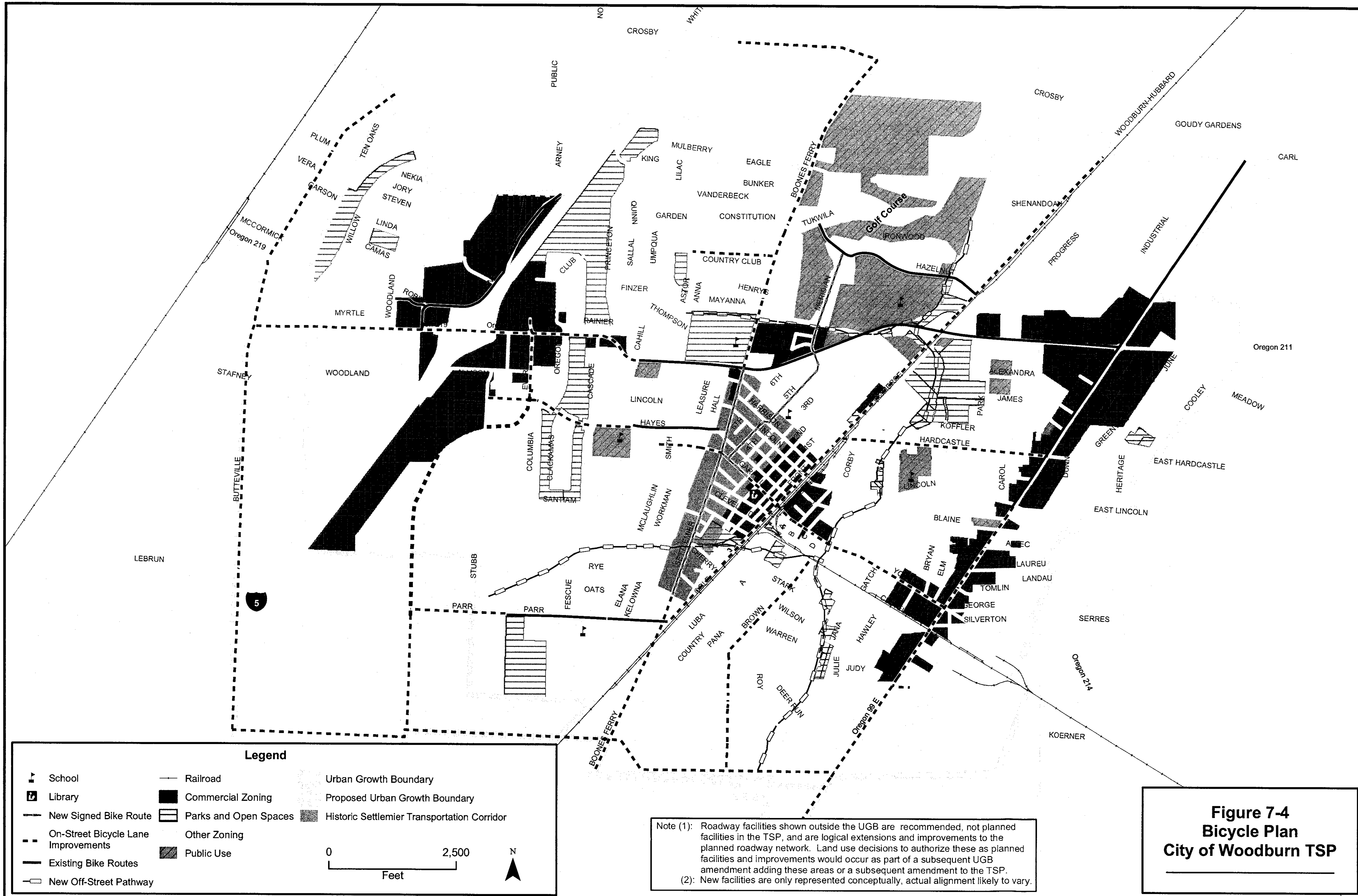


Figure 7-4
Bicycle Plan
City of Woodburn TSP

SECTION 8

Transportation Funding and Improvement Costs

This section summarizes the funding and financing required to implement the transportation system plan. Federal, state, regional, and local sources that can be directly applied to transportation-related projects and services in the city of Woodburn are discussed.

In this section, the terms funding and financing are distinguished and defined separately in the following ways. Funding describes any mechanism that generates revenue. Financing refers to ways to spread the impact of funds collection through the issuance of debt obligation to be repaid over time, with interest. This section presents a review of existing mechanisms that can serve as the basis for identifying additional sources and options for funding and financing. The contents of this section serve as an update to the 1996 Woodburn Transportation System Plan.

Regulatory Requirement

The Transportation Planning Rule (OAR 660-12-040) requires that a funding plan be included in TSPs for cities with populations over 2,500. This financing plan was developed in response to the list of proposed improvement projects presented in sections 5 and 7 of the Woodburn TSP. An analysis of existing and potential funding mechanisms for funding the proposed improvements is provided.

The City will need to establish new funding mechanisms to finance its transportation system improvement needs during the next 20 years, both in maintenance and new construction. Selection of additional funding mechanisms must consider a number of criteria to ensure that they are appropriate for the City to include:.

- Legal Authority
- Financial Capacity
- Administrative Cost
- Equity
- Political Acceptability
- Stability

Existing Transportation Funding in Woodburn

Year 2002 transportation-related expenditures in Woodburn totaled $1,611,303 versus revenues of $4,819,672. Road-related expenditures represented 86 percent of the total transportation-related expenditures for 2002. Revenues for road-related funding needs represented 95 percent of total revenues. Revenues for both road-related and transit-related transportation funding exceeded expenditures.

Road-Related Funding

Table 8-1 presents itemized road-related revenues and expenditures for the 5 previous fiscal years. Revenues are itemized by source of funds. Expenditures are divided into cost categories. Transit-related revenues are reported separately in Table 8-2.

TABLE 8-1
Road-Related Funding in Woodburn

	1997-98	1998-99	1999-2000	2000-01	2001-02
			Revenues		
Working Capital Carryover	1,493,104	1,696,614	2,186,578	2,424,545	2,706,399
Interest from Investments	4,224	5,769	6,316	7,861	8,336
State Highway Trust Fund	690,045	695,835	754,253	766,843	842,069
State Revenue Sharing	35,000	40,000	40,000	40,000	40,000
Federal ISTEA Revenue	0	0	0	0	0
City Gas Tax	98,783	108,967	108,517	105,620	102,766
Fees and Assessments	547,719	795,772	548,412	718,501	806,212
Bond Proceeds	0	0	0	0	0
Other Revenues	26,412	78,630	41,414	17,960	50,410
Total Revenues	2,895,287	3,421,587	3,685,490	4,081,330	4,556,192
			Expenditures		
Personnel	299,145	310,667	321,460	346,114	362,004
Materials and Services	301,460	322,141	310,774	336,910	341,568
Capital Outlay	361,410	384,441	388,611	401,497	399,650
Bonds and Assessments	0	0	0	0	0
Transfers/Contingencies/UNAP	236,658	241,760	240,100	290,410	286,550
Total Expenditures	1,198,673	1,235,009	1,260,945	1,374,931	1,389,772

Source: City of Woodburn Budget

The City has a number of large, stable contributors to road-related transportation revenue. The State Highway Trust Fund, the City's Transportation Impact Fees (TIF), and the City gas tax all contribute significantly to available revenue. During the past 5 years, revenues from the State Highway Trust Fund have risen from $690,045 to $842,069, an increase of 22 percent. The Transportation Impact Fee program, which was instituted in 1994-1995, has increased dramatically from $547,719 to $806,212 (47 percent). The City gas tax revenue has remained steady at around $100,000 per year during the same period.

The largest category of expenditure during the past 5 years has been capital outlay, which comprised about 30 percent of total expenditures on average. Personnel and material and services costs typically represent 45 to 55 percent of total expenditures. Remaining expenditures are associated with transfers to other City departments and accounts for operating facilities and replacing equipment.

Transit-Related Funding

Table 8-2 presents itemized transit-related revenues and expenditures for the 5 previous fiscal years. Revenues are itemized by source of funds. Expenditures are divided into cost categories.

TABLE 8-2
Transit Funding in Woodburn

	1997-98	1998-99	1999-2000	2000-01	2001-02
			Revenues		
Working Capital Carryover	51,817	60,690	47,451	32,264	41,671
Property Taxes	77,711	85,317	96,447	93,853	105,979
Interest from Investments	976	1,110	1,240	1,976	2,630
Revenue from Other Agencies	36,215	78,626	160,331	48,530	91,790
Transit Fares	24,210	22,920	21,641	20,850	21,410
Total Revenues	190,929	248,663	327,110	197,473	263,480
			Expenditures		
Personnel	88,802	94,520	99,650	107,650	116,760
Materials and Services	35,937	39,615	41,246	41,562	41,740
Capital Outlay	0	60,577	147,450	0	56,531
Transfers/Con-tingencies/UNAP	5,500	6,500	6,500	6,500	6,500
Total Expenditures	130,239	201,212	294,846	155,802	221,531

Source: City of Woodburn Budget

Outlook for Existing Transportation Funding Sources

The State Highway Fund should be a relatively stable source of revenue for Woodburn. Because these funds are distributed to cities based on population, Woodburn's share could increase or decrease depending on how it grows relative to the state average. Nonetheless, Woodburn's share of state funds will probably not increase as fast as its street maintenance requirements, especially as the system expands to serve current and future demands.

Revenue from the City's $0.01/gallon gas tax will gradually erode with inflation if not increased. Because the tax is based on quantity rather than price, tax revenues do not increase with gasoline prices. In fact, increases in gasoline prices may actually decrease tax revenue as higher prices reduce demand.

Revenues from development and impact fees will remain important sources of revenue for Woodburn. Bonds financed by Local Improvement Districts (LIDs) and fees from Systems Development Charge (SDC) will be largely dependent on the willingness of property owners to form LIDs and to initiate development projects that trigger SDC fees. Both may be dependent on population growth to increase property values and the general economic outlook from which to gauge risk. To the extent that these revenues are accurately set to the full cost of transportation improvements, they should allow Woodburn to construct basic capital improvements to serve commercial and residential development.

In summary, it is expected that sources of transportation revenue will remain relatively stable. Population growth should help support LID-financed improvements and SDCs assessed to new development will allow the City to put some resources toward future improvements. In addition, population growth may continue to give the City a slightly bigger share of the State Highway Fund.

The Oregon Transportation Investment Act (OTIA) was passed by the 2001 Oregon Legislative Assembly and is funded through bond proceeds derived from increased DMV fees. OTIA currently provides $650 million (including $150 million local matching funds) for 173 construction projects that will improve pavement conditions, increase lane capacity, and improve bridges throughout Oregon. Projects were selected with extensive input from local communities and other stakeholders. In 2002, the Oregon Transportation Commission allocated these funds for modernization, preservation, and bridge projects throughout the State. This signals a willingness and by the State Government to address transportation needs throughout the state.

The 2004 budget lays the groundwork for a $247 billion, 6-year reauthorization proposal, as compared to the current TEA-21 level of $218 billion. Of the proposed total, $195 billion would fund the highway program (up from $168 billion) over 6 years, and $45 billion would fund the transit program (up from $41 billion). Federal funding is typically distributed through the state.

Cost Estimates for Transportation System Improvements

Preferred improvements to the Woodburn transportation system were presented in Section 7. Estimated costs for these improvements were developed and grouped into three categories that include existing facility upgrades, construction of new facilities and existing facility extensions, and intersection improvements. In all, about $136 million (in 2004) dollars of road and transit service improvements for the City have been identified for the next 20 years. Table 8-3 shows proposed improvement costs and associated owning jurisdiction. Table 8-4 shows capital and operating costs for transit improvement alternatives.

TABLE 8-3
Proposed Transportation Improvements

Project Title	Estimated Capital Cost	Owning Jurisdiction
	Next Five Years (2005-2010)	
Reconstruct I-5 interchange and Improve OR 214 between Woodland Avenue and Oregon Way	$50,000,000	State
OR 214 widening between Oregon Way and OR 99E and Woodland to Butteville Road*	$21,950,000	State
Park-and-ride near OR 214/I-5 Interchange	$1,750,000	State
Upgrade of Parr Road to service collector standards	$3,000,000	County/City
Upgrade Butteville Road south of Highway 219 to minor arterial standards	$7,500,000	County/City
Ext. Evergreen Road to Parr Road	$4,730,000	City
Ext. Stubb to Evergreen	$3,900,000	City
Ext. Ben Brown to Evergreen Extension	$4,700,000	City
Service class facility between Evergreen Road and Stacy Allison Drive extensions	$2,260,000	City
Ext. Stacey Allison Drive to Parr Road	$5,980,000	City
Total	$105,770,000	
	Ten to Fifteen Years (2010-2020)	
Upgrade of Crosby Road to service collector standards	$3,300,000	County/City
Upgrade Butteville Road south of Highway 219 to minor arterial standards	$4,900,000	County/City
OR 99E widening between Lincoln Street and south city limits	$5,750,000	State
5th Street upgrade to access street standards	$1,400,000	City
Add northbound right, southbound left, eastbound right turn lanes and eastbound through-lane to Boones Ferry/OR 214	$900,000	State
Signalize Meridian Drive/5th Street/OR 214	$400,000	State
Signalize Park Street/OR 214	$400,000	City/State
Add eastbound right-turn lane to Parr Road/Settlemier Road	$380,000	City
Signalize Front/OR 214 ramps	$600,000	State
Increase service frequency on transit routes	$180,000	City
Upgrade Front Street between Cleveland and Parr Road to minor arterial standards	$950,000	City
Upgrade Front Street between Hardcastle and Hazelnut to minor arterial standards	$1,150,000	City
Upgrade Boones Ferry and Front to provide continuous sidewalks and bicycle lanes	$975,000	City
Add loop ramp in southwest quadrant of OR 214/Front Street intersection	$1,800,000	State

TABLE 8-3
Proposed Transportation Improvements

Project Title	Estimated Capital Cost	Owning Jurisdiction
Add southbound right-turn and westbound left-turn lane to OR 99E/OR 214	$580,000	State
Convert transit route to two-way operations	$180,000	City
Off-street pathway along Mill and Goose Creek Corridors	$750,000	City
OR 99E widening between south city limits and south UGB	2,900,000	State
Signalize southern Butteville Road/OR 214 intersection and add northbound right-turn lane	$275,000	State
Signalize northern Butteville Road/OR 214 intersection and add southbound right-turn lane	$750,000	County/City
Signalize Cleveland Street/OR 214	$400,000	State
South Arterial between Parr Road and OR 99E	$11,780,000	City
Ext./Upgrade of Brown to South Arterial	$780,000	City
Two transit routes with one-way or two-way operations	$360,000 - $700,000	City
Sidewalks on existing service collectors, access and local streets	$540,000	City
Bicycle lanes on Garfield, Hardcastle, Young	$700,000	City
Total	$43,080,000	
Grand Total	**$148,850,000**	

*This project would likely be phased over both short and long-term horizons. The highest short-term priority is improvement of segments West of I-5.

TABLE 8-4
Capital and Operating Costs for Transit Improvements

Alternative	Estimated Capital Cost	Operating Cost
1 – Increased Frequency	$180,000	$352,000
2 – Single Route with Two-Way Operations	$180,000	$352,000
3 – Two Routes with One-Way Operations	$360,000	$352,000
4 – Two Routes with Two-Way Operations	$700,000	$704,000
Grand Total	$1,420,000.00	$1,760,000.00

Financing Needed for Transportation System Improvements

The projects identified represent an ambitious program of roadway and transit improvements for the City. The plan identifies over $50 million in transportation infrastructure improvements, which does not include the cost of the I-5 interchange improvement project that has been identified as a high priority for funding or other state highway projects. Constructing these improvements likely will require a higher level of transportation expenditures than Woodburn has made in the past. In the past 5 fiscal years, Woodburn has spent between $1.3 and $1.6 million for road improvements and transit service. Depending on how the projects are eventually sequenced and staged, the improvements identified may require Woodburn to spend twice the amount (annually) they have averaged during the past 5 years.

It is expected that Woodburn will want to pursue additional funding for transportation from the following sources:

- State or Marion County funds.

  Obtain funds from the state for improvements to the state highway. Explore cost sharing with the County for mutually beneficial projects.

- Local Improvement Districts.

  For public improvement projects with localized benefit (e.g., neighborhoods), property owners pay all or a portion of the project cost.

- Urban Renewal Districts.

  Formed to finance projects to remove "blight" (typically, poor-quality buildings or inadequate streets). Property taxes allocated to district based on "division of tax" calculation for the renewal district.

- Transportation Impact Fees.

  For projects that do not relate directly to new development or directly benefit property owners, spread the cost and provide funding from existing transportation funding sources such as TIF fees.

- General Obligation Bonds.

  Obtain bond backing from property tax revenue if determined by City staff and the governing body to be fair and viable.

The likely funding sources for transportation improvements in Woodburn are presented below. Woodburn should pursue funding sources at the federal, state, and local level and develop strategies to maximize the potential for each of these sources to implement its transportation improvements.

Federal and State Sources

Woodburn should access federal funds by working with ODOT. A key action will be to get improvement projects listed as part of the STIP in order to qualify them for funding in the adopted plan every 2 years. The City should also work with ODOT to determine the potential for project funding under the upcoming highway bill reauthorization.

The state has a number of programs that can be tapped for improvements related to congestion relief, footpaths and bikeways, and other special projects.

County Sources

Woodburn may be able to secure an occasional cost-sharing arrangement with Marion County and should seek to coordinate with the County on transportation improvements within the County in order to partner on projects wherever possible.

Local Sources

Woodburn should continue to seek funds from property owners who directly benefit form transportation improvements that enable new development.

SECTION 9

Implementing Ordinances

This section presents recommended changes to the Woodburn Development Ordinance (WDO) in order to comply with implementation provisions of the Oregon Transportation Planning Rule (TPR) as codified in OAR 660-012-045.

Also included in this section is the new ordinance establishing an overlay district intended to preserve planned capacity improvements to Woodburn's I-5 Interchange with Oregon Highway 214. The discussion of recommended changes is generally organized by referencing the applicable section(s) of the TPR that prompts a change in the WDO, followed by the recommended revisions. Revisions are presented with deletions shown ~~strikethrough~~ and additions shown underlined. The new code language has been developed to meet TPR requirements based on Woodburn's existing regulatory framework. In addition, the Model Transportation Planning Rule Ordinances and Policies for Small Jurisdictions and the Model Development Code & Users Guide for Small Jurisdictions have been used as references for recommended code revisions. This section only addresses those provisions of OAR 660-12-0045 with which the WDO does not currently comply.

OAR 660-12-0045(1)(c)

In the event that a transportation facility, service or improvement is determined to have a significant impact on land use or to concern the application of a comprehensive plan or land use regulation and to be subject to standards that require interpretation or the exercise of factual, policy or legal judgment, the local government shall provide a review and approval process that is consistent with 660-012-0050. To facilitate implementation of the TSP, each local government shall amend its land use regulations to provide for consolidated review of land use decisions required to permit a transportation project.

To comply with the above TPR requirement, the following additions are proposed to the procedures for noticing ODOT identified in Section 4.101.09, "Public Notices: Type II, III, IV and V."

Regulations to provide notice to public agencies providing transportation facilities and services, MPOs, and ODOT of:

(A) Land use applications that require public hearings;

(B) Subdivision and partition applications;

(C) Other applications which affect private access to roads; and

(D) Other applications within airport noise corridors and imaginary surfaces which affect airport operations.

4.101.09 Public Notices: Type II, III, IV and V

<u>D. Notice to Affected Agencies.</u>

<u>1. Prior to issuing a decision regarding a Preliminary Partition Approval (*Section 5.102.01*) or Access to a City Major or Minor Arterial Street (*Section 5.102.04*), the Community Development Director shall distribute such applications that require</u>

preparation of a Transportation Impact Analysis to affected transportation facility and service providers and owning jurisdictions. These agencies shall be given 30 calendar days to review the application and to suggest any revisions in the public's interest to protect the operation of transportation facilities and services.

2. Type IV applications and Type III applications for Preliminary PUD Approval (*Section 5.103.07*), Preliminary Subdivision Approval (*Section 5.105.09*) and Conditional Use Permits(*Section 5.103.01*) for transportation system facilities and improvements that require a Transportation Impact Analysis shall be sent to affected transportation facility and service providers and owning jurisdictions. These agencies shall be given 30 calendar days to review the application and to suggest any revisions in the public's interest to protect the operation of transportation facilities and services.

OAR 660-12-0045(2)(a)

Access control standards

NOTE: Section 7 of this TSP recommends that the City of Woodburn and ODOT consider the need for conditioning each land use action located within the vicinity of a state facility with one or more of the actions listed in Section 7 under Access Management. Following City and ODOT review and direction, proposed changes to WDO Section 3.104 will be provided.

OAR 660-12-0045(2)(f)

Regulations to provide notice to public agencies providing transportation facilities and services, MPOs, and ODOT of:

(A) Land use applications that require public hearings;

(B) Subdivision and partition applications;

(C) Other applications which affect private access to roads; and

(D) Other applications within airport noise corridors and imaginary surfaces which affect airport operations.

The proposed changes to Section 4.101.09 that are recommended for compliance with OAR 660-12-0045(1)(c) also address OAR 660-12-0045(2)(f).

OAR 660-12-0045(2)(g)

Regulations assuring that amendments land use designations, densities, and design standards are consistent with the functions, capacities and levels of service of facilities identified in the TSP:

To address the requirements of OAR 660-012-045(2)(g), revisions to Sections 5.104.02 and 5.104.04, "Comprehensive Plan Map Change, Owner Initiated" and "Zoning Map Change, Owner Initiated," are proposed.

5.104.02 Comprehensive Plan Map Change, Owner-Initiated

B. Application Requirements. An application shall include a completed City application form, filing fee, deeds, notification area map and labels, written narrative statement regarding compliance with criteria, location map, and the following additional exhibit:

1. Transportation Impact Analysis (TIA), as applicable.

   The application shall be reviewed to determine whether it significantly affects a transportation facility, in accordance with Oregon Administrative Rule (OAR) 660-012-0060. If the review indicates that a transportation facility could be significantly affected, a TIA may be required. Significant means the proposal would:

   a. Change the functional classification of an existing or planned transportation facility. This would occur, for example, when a proposal causes future traffic to exceed the capacity of "collector" street classification, requiring a change in the classification to an "arterial" street, as identified by the Transportation System Plan; or

   b. Change the standards implementing a functional classification system; or

   c. Allow types or levels of land use that would result in levels of travel or access that are inconsistent with the functional classification of a transportation facility; or

   d. Reduce the level of service of the facility below the minimum acceptable level identified in the Transportation System Plan. . . .

4. Approval Criteria. Amendments to the comprehensive plan and land use standards which significantly affect a transportation facility shall assure that allowed land uses are consistent with the function, capacity, and level of service of the facility identified in the Transportation System Plan. This shall be accomplished by one of the following:

   a. Limiting allowed land uses to be consistent with the planned function of the transportation facility; or

   b. Amending the Transportation System Plan to ensure that existing, improved, or new transportation facilities are adequate to support the proposed land uses consistent with the requirement of the Transportation Planning Rule; or,

   c. Altering land use designations, densities, or design requirements to reduce demand for automobile travel and meet travel needs through other modes of transportation.

5.104.04 Zoning Map Change, Owner-Initiated

B. Application Requirements. An application shall include a completed City application form, filing fee, deeds, notification area map and labels, written narrative statement regarding compliance with criteria, location map and the following additional exhibit:

   1. Transportation Impact Analysis (TIA), as applicable.

      The application shall be reviewed to determine whether it significantly affects a transportation facility, in accordance with Oregon Administrative Rule (OAR) 660-012-0060. If the review indicates that a transportation facility could be significantly affected, a TIA may be required. Significant means the proposal would:

      a. Change the functional classification of an existing or planned transportation facility. This would occur, for example, when a proposal causes future traffic to exceed the capacity of "collector" street classification, requiring a change in the classification to an "arterial" street, as identified by the Transportation System Plan; or

b. Change the standards implementing a functional classification system; or

c. Allow types or levels of land use that would result in levels of travel or access that are inconsistent with the functional classification of a transportation facility; or

d. Reduce the level of service of the facility below the minimum acceptable level identified in the Transportation System Plan.

C. Criteria.

1. Evidence proving a need for the proposed use and the other permitted uses within the proposed zoning designation.

2. Evidence that the subject property best meets the need relative to other properties in the existing developable land inventory already designated with the same zone considering size, location, configuration, visibility and other significant attributes of the subject property.

3. Amendments to the comprehensive plan and land use standards which significantly affect a transportation facility shall assure that allowed land uses are consistent with the function, capacity, and level of service of the facility identified in the Transportation System Plan. This shall be accomplished by one of the following:

   a. Limiting allowed land uses to be consistent with the planned function of the transportation facility; or

   b. Amending the Transportation System Plan to ensure that existing, improved, or new transportation facilities are adequate to support the proposed land uses consistent with the requirement of the Transportation Planning Rule; or,

   c. Altering land use designations, densities, or design requirements to reduce demand for automobile travel and meet travel needs through other modes of transportation.

Because Transportation Impact Analysis could be required for comprehensive plan map and zoning map changes in addition to access to City streets, Exhibit Q, "Transportation Impact Analysis (TIA) Requirements," in Section 6 of the WDO should be revised as follow:

Q. Transportation Impact Analysis (TIA) Requirements

A Transportation Impact Analysis required for either a street~~,~~ (or access to a street)~~,~~ that is under City jurisdiction, a comprehensive plan map change, or a zoning map change shall be conducted to the specifications of the Public Works Department.

OAR 660-12-0045(3)(a)

Bicycle parking facilities as part of new multi-family residential developments of four units or more, new retail, office and institutional developments, and all transit transfer stations and park-and-ride lots;

WDO Section 3.105.02, "General Provisions for Off Street Parking and Loading," indicates that all uses required to provide 10 or more vehicle parking spaces must also provide a bicycle rack within 50 feet of the main entrance. This provision excludes multifamily dwelling units with four units, because only eight vehicle parking spaces are required, which is below the minimum trigger for providing bicycle parking. The following changes to Section 3.105.02 of the WDO would require multifamily residential developments with four or more units to provide a bicycle rack.

3.105.02 General Provisions for Off-Street Parking and Loading

H. On-Site Vehicle Parking and Loading Area Improvement Requirements

10. On-site Bicycle Parking Requirements. All uses required to provide 10 or more off-street parking spaces and residential structures with four or more units shall provide a bicycle rack within 50 feet of the main entrance. The number of required rack spaces shall be one plus one per ten vehicle spaces, with a maximum of 20 rack spaces.

OAR 660-12-0045(7)

Local governments shall establish standards for local streets and accessways that minimize pavement width and total right-of-way consistent with the operational needs of the facility.

As currently written, the street standards in Section 3.101.03 are not identified as minimizing the amount of pavement required for streets and accessways. The proposed changes to Section 3.101.03.A would provide an unequivocal statement to that effect. Changes to Section 3.101.03.B are recommended to make the WDO and TSP consistent.

3.101.03 Right-of-Way and Improvement Standards ~~*(Figure 6.9)*~~

A. The street right-of-way and improvement cross-sectional standards required for development are depicted in Figure 7-2 and Table 7-1 of the Woodburn Transportation System Plan ~~Figure 6.9 of the WDO. 30, EXCLUDING: Local Residential W/ Parking Both Sides -"Skinny" Street; Local Residential W/ Parking One Side -"Skinny" Street; and Local Residential Street W/ No Parking. (See Figure 6.6)~~. These standards are based on the functional classification of each street as shown in Figure 7-1 of the Woodburn Transportation System Plan. The street right-of-way and improvement standards minimize the amount of pavement and ROW required for each street classification consistent with the operational needs of each facility, including requirements for pedestrians, bicycles, and public utilities.

B. The following additional standards for Local Residential Streets: ~~*[Note: Items a through d for both Local Residential Street with Parking One Side and Local Residential without Parking should be shown in an updated TSP Figure 30 and an updated WDO Figure 6.9.]*~~

   1. Local Residential Street with Parking One Side:
      ~~a. Right of way: 50 feet.~~

      ~~b. Public Utility Easement: 5 feet, each side.~~

      ~~c. Curb to curb improvement: 29 feet.~~

      ~~d. Sidewalks: 5 feet wide, each side.~~

~~e.~~ Required common, onsite parking over and above the parking requirements under other provisions of the ***WDO***: One (1) space per dwelling unit, located no further than 250 feet from the subject lot.

2. Local Residential Street without Parking:

~~a. Right of way: 50 feet.~~

~~b. Public Utility Easement: 5 feet, each side.~~

~~c. Curb to curb improvement: 24 feet.~~

~~d. Sidewalks: 5 feet wide, each side.~~

d. Required common, onsite parking over and above the parking requirements under other provisions of the ***WDO***: Two (2) spaces per dwelling unit lot, located no further than 250 feet from the subject lot.

2.116 Interchange Management Area (IMA) Overlay District (new)

2.116.01 Purpose

The purpose of this overlay district is to preserve the long-term capacity of Woodburn's I-5 Interchange with Highway 214, in coordination with the Oregon Department of Transportation (ODOT).

Preserving the capacity of this interchange is an essential element of the City's economic development strategy, because continued access to I-5 is necessary to attract and maintain basic employment within the Woodburn Urban Growth Boundary (UGB). This chapter complements the provisions of the Southwest Industrial Reserve (SWIR) Overlay District by ensuring that industrial land is retained for targeted basic employment called for in the Woodburn Economic Opportunities Analysis (EOA) and Woodburn Economic Development Strategy (EDS). This chapter also ensures that needed industrial, commercial and residential land within the IMA Overlay District is protected from commercial encroachment.

These goals are met by establishing trip generation budgets as called for in Transportation Policy H-7.1 of the Woodburn Comprehensive Plan. The parcel budgets are intended to be high enough to accommodate peak hour trips anticipated by the 2005 Woodburn Comprehensive Plan (WCP) and Transportation Systems Plan (TSP), but low enough to restrict unplanned vehicle trips that could adversely affect the interchange.

2.116.02 Boundary of the IMA Overlay District

The boundary of the IMA Overlay District is shown on the Woodburn Comprehensive Plan Map and Zoning Map (Figure 9-1 in this section).

2.116.03 Applicability

The provisions of *Section 2.116* shall apply to all Type II - V land use applications that propose to allow development that will generate more than 20 peak hour vehicle trips (based on the latest Institute of Transportation Engineers Trip

Generation publication) on parcels identified in ***Table 2.116.1***. The provisions of ***Section 2.116.07*** shall apply to all properties within the boundary of the IMA.

2.116.04 Vehicle Trip Budgets

Section 2.116 establishes a total trip generation budget for planned employment (commercial and industrial) land uses within the Interchange Management Area – defined as the IMA Trip Budget, and a trip budget for each vacant commercial or industrial parcel – defined as the parcel budget.

A. The IMA District Trip Budget

The IMA Trip Budget for commercial and industrial uses identified on Table 2.116.1 is 2,500 peak hour vehicle trips. (An estimated 1,500 additional peak hour residential trips are planned within the IMA District.) The IMA Trip Budget will be allocated to parcels identified on Table 2.116.1 on a first developed – first served basis.

B. 2005 (Initial) Vehicle Trip Budget by Parcel

The parcel budget for each vacant commercial or industrial parcel within the IMA Overlay District is shown on Table 2.116.1. Parcel budgets are based on 11 peak hour trips per developed industrial acre, and 33 peak hour trips per developed commercial acre.

1. The parcel budget for each parcel will be reduced in proportion to actual vehicle trips generated by new development on any portion of the parcel.
2. The City *may* allow development that exceeds the parcel budget for any parcel in accordance with Section 2.116.06(B).

Table 2.116.1. Vehicle Trip Budget by Parcel (Parcel Budget)

Assessor Map and Tax Lot Number	Applicable Comprehensive Plan Designation	Vacant Buildable Acres	Maximum Peak Hour Vehicle Trips
052W11 00300	SWIR	88	968
052W13 01100 052W14 01500 052W14 01600	SWIR	96	1056
052W14 00200 052W14 00600	SWIR	22	242
052W14 00800 052W14 00900 052W14 01000 052W14 01100	SWIR	109	1199
052W14 01200	SWIR	4	44
052W23 00100	SWIR	46	506
052W12AC 04301	Commercial	2	66

Assessor Map and Tax Lot Number	Applicable Comprehensive Plan Designation	Vacant Buildable Acres	Maximum Peak Hour Vehicle Trips
052W12C 00604	Commercial	1	33
052W12C 00605	Commercial	3	99
052W12C 02100	Commercial	7	231
052W12C 02200	Commercial	6	198
052W12C 02300	Commercial	7	231
052W12C 02400	Commercial	2	66
052W13 01600	Commercial	5	165
052W14 02000	Commercial	8	264
052W14 02100	Commercial	5	165
052W14 02300	Commercial	6	198
052W13BD 00900 (westerly portion) 052W13BD 01500 052W13BD 01600 052W13BD 01700 052W13BD 01800	Nodal Commercial	9	297

2.116.05 Administration

This chapter delineates responsibilities of the City and ODOT to monitor and evaluate vehicle trip generation impacts on the I-5 interchange from development approved under this section.

A. TIA (Traffic Impact Analysis)

A TIA is required for all land use applications subject to the provisions of ***Section 2.116.*** The TIA must meet City and ODOT administrative rule (OAR Chapter 734, Division 51) requirements and shall include an evaluation and recommendation of feasible transportation demand management (TDM) measures that will minimize peak hour vehicle trips generated by the proposed development.

B. ODOT Coordination in Land Use Reviews

For a land use application subject to the provisions of Section 2.116:

1. The City shall not deem the land use application complete unless it includes a TIA prepared in accordance with Exhibit Q, TIA Requirements.

2. The City shall provide written notification to ODOT when the application is deemed complete. This notice shall include an invitation to ODOT to participate in the City's facilities review meeting.

3. ODOT shall have at least 20 days to provide written comments to the City, measured from the date completion notice was mailed. If ODOT does not provide written comments during this 20-day period, the City staff report may be issued without consideration of ODOT comments.

C. City Monitoring Responsibilities

The details of City and ODOT monitoring and coordination responsibilities are found in the approved Woodburn – ODOT Intergovernmental Agreement (IGA).

1. The City shall be responsible for maintaining a current ledger documenting the cumulative peak hour trip generation impact from development approved under Section 2.116, compared with the adopted IMA Trip Budget.

2. The City may adjust the ledger based on actual development and employment data, subject to review and concurrence by ODOT.

3. The City will provide written notification to ODOT when land use applications approved under Section 2.116, combined with approved building permits, result in traffic generation estimates that exceed 33% and 67% of the adopted trip generation budget.

D. Vesting and Expiration of Vehicle Trip Allocations

This section recognizes that vehicle trip allocations may become scarce towards the end of the planning period, as the I-5 Interchange nears capacity. The following rules apply to allocations of vehicle trips against the adopted trip budget:

1. For commercial and industrial land use applications, vehicle trip allocations are vested at the time of design review approval.

2. Vehicle trips shall not be allocated based solely on approval of a comprehensive plan amendment or zone change, unless consolidated with a subdivision or design review application.

3. Vesting of vehicle trip allocations shall expire at the same time as the development decision expires, in accordance with Section 4.102.03-04.

2.116.06 Allowed Uses

Generally, permitted and conditional uses allowed in the underlying zoning district are allowed subject to other applicable provisions of the WDO and Section 2.116.

2.116.07 Comprehensive Plan and Zoning Map Amendments

This section applies to all Comprehensive Plan Map amendments within the IMA Overlay District. This section does not apply to Zoning Map amendments that result in conformance with the applicable Comprehensive Plan Map designation, such as Zoning Map amendments that occur when land is annexed to the City.

A. Transportation Planning Rule Requirements.

Applications for Comprehensive Plan Map amendments, and for Zoning Map amendments shall determine whether the proposed change will significantly affect a collector or arterial transportation facility, and must meet the requirements of Oregon Administrative Rule (OAR) 660-012-0060 and WDO Section 5.104.02-04.

B. Limitations on Comprehensive Plan Amendments.

To ensure that the remaining capacity of the I-5 Interchange is reserved for targeted employment opportunities identified in Chapter 4 of the Economic Opportunities Analysis (EOA) and needed housing, this section imposes the following prohibitions on Comprehensive Plan Map amendments within the IMA Overlay District:

1. Comprehensive Plan Map amendments that will increase the net Commercial land area within the IMA Overlay District shall be prohibited.

2. Comprehensive Plan Map amendments that allow land uses that will generate traffic in excess of the IMA Trip Budget shall be prohibited.

2.116.08 Interchange Capacity Preservation (ICP) Standards

Land use applications subject to the provisions of Section 2.116 shall comply with the following:

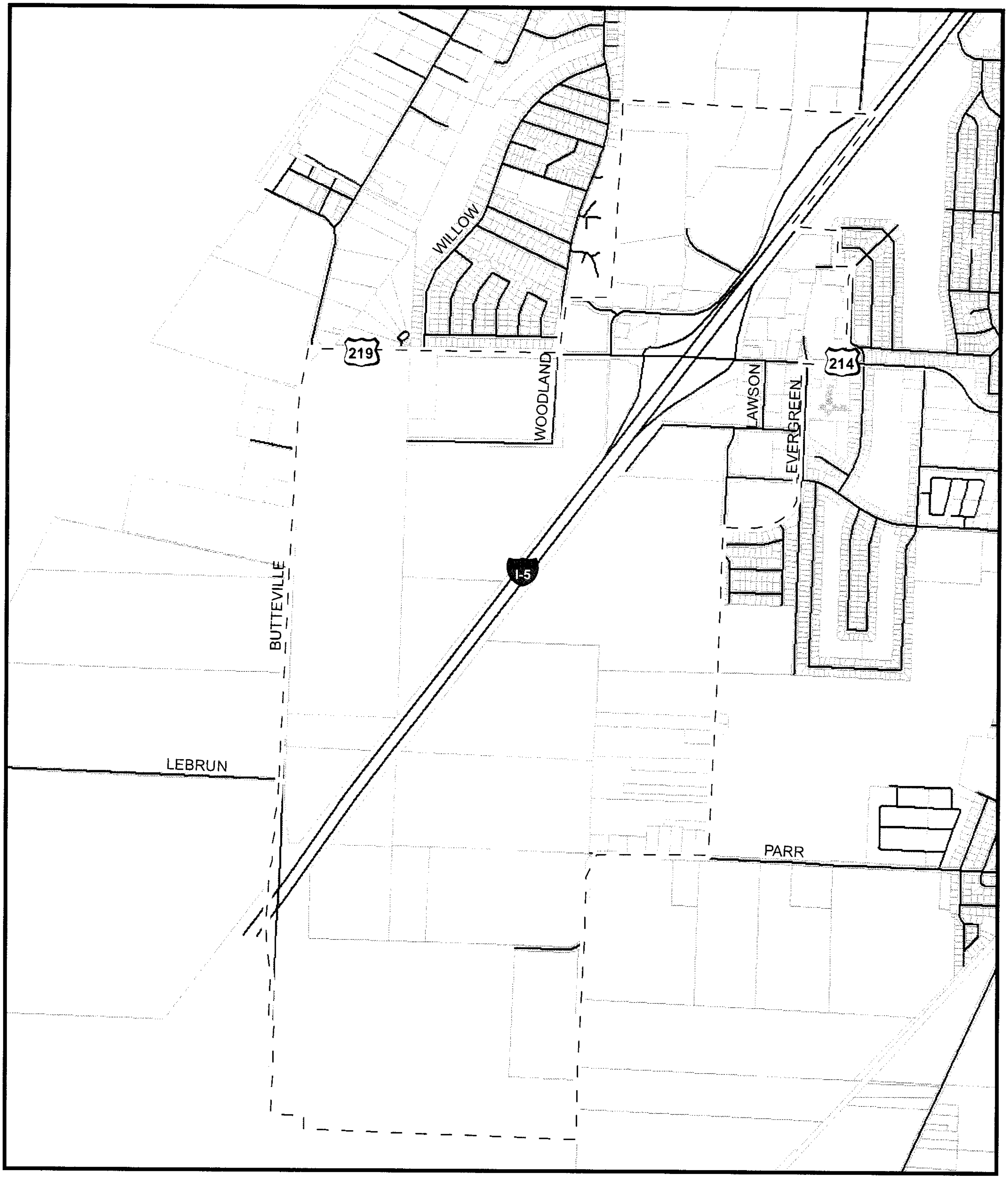
A. Cumulative Impact Standard. Peak hour vehicle traffic generated from the proposed development shall not, in combination with other approved developments, exceed the IMA District Trip Budget of 2,500.

B. Parcel Specific Impact Standard. Peak hour vehicle trips generated by the proposed development shall not exceed the maximum peak hour vehicle trips specified in Table 2.116.1 for the subject parcel, EXCEPT:

1. Development of uses listed in Table 2.1.21 (Section 2.114.03, SWIR Zone Permitted Uses) may be allowed to exceed the maximum, if the development will contribute substantially to the economic objectives found in Chapter 2 of the Woodburn Economic Development Strategy (EDS).

2. Residential development on a parcel zoned Commercial shall be allowed to exceed the maximum.

C. Transportation demand management (TDM) measures shall be required to minimize peak hour vehicle trips and shall be subject to annual review by the City.



Legend

Tax Lots

Overlay Zone

Roads

N
W E
S

0 750 1,500 2,250 3,000

Feet

Figure 9-1
Interchange Management Area (IMA)
Overlay District

CH2MHILL

File Path: \\rosa\proj\ODOT\185701\GIS\data\MapDocuments\figure9-1_ima_overlay.mxd, Date: October 12, 2005 12:46:36 PM

Woodburn Transportation System Plan

Volume II
Appendixes

Prepared for

City of Woodburn
and the
Oregon Department of Transportation

October 2005

Prepared by

CH2MHILL
and Kittelson & Associates

PDX\041470023.DOC

Printed on Recycled and Recyclable Paper

Appendix A

Traffic Count Data

Quality Counts, LLC
16285 SW 85th Avenue, Ste 105
Tigard, OR 97224
Ph: (503)620-4242

File Name : 00000404
Site Code : 00000404
Start Date : 01/14/2003
Page No : 1

Groups Printed- Cars - Trucks - Buses and RVs

	Butteville Rd. From North				Hwy 214 From East				Butteville Rd. From South				none (OPEN FIELD) From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	0	1	11	0	12	0	8	0	6	0	0	0	0	0	0	0	38
04:05 PM	0	7	16	0	8	0	6	0	10	2	0	0	0	0	0	0	49
04:10 PM	0	3	13	0	15	0	8	0	7	3	0	0	0	0	0	0	49
04:15 PM	0	2	12	0	13	0	8	0	0	2	0	0	0	0	0	0	37
04:20 PM	0	3	14	0	15	0	11	0	6	8	0	0	0	0	0	0	57
04:25 PM	0	2	13	0	11	0	10	0	3	2	0	0	0	0	0	0	41
04:30 PM	0	3	8	0	18	0	5	0	5	4	0	0	0	0	0	0	43
04:35 PM	0	5	12	0	8	0	5	0	5	1	0	0	0	0	0	0	36
04:40 PM	0	3	18	0	8	0	7	0	3	3	0	0	0	0	0	0	42
04:45 PM	0	4	14	0	11	0	8	0	4	0	0	0	0	0	0	0	41
04:50 PM	0	1	17	0	10	0	10	0	4	1	0	0	0	0	0	0	43
04:55 PM	0	6	21	0	9	0	6	0	4	0	0	0	0	0	0	0	46
Total	0	40	169	0	138	0	92	0	57	26	0	0	0	0	0	0	522
05:00 PM	0	3	10	0	9	0	10	0	7	1	0	0	0	0	0	0	40
05:05 PM	0	9	12	0	16	0	7	0	10	1	0	0	0	0	0	0	55
05:10 PM	0	8	13	0	13	0	8	0	7	2	0	0	0	0	0	0	51
05:15 PM	0	7	13	0	10	0	7	0	6	1	0	0	0	0	0	0	44
05:20 PM	0	5	15	0	15	0	6	0	2	2	0	0	0	0	0	0	45
05:25 PM	0	4	14	0	19	0	10	0	7	1	0	0	0	0	0	0	55
05:30 PM	0	7	8	0	9	0	7	0	9	1	0	0	0	0	0	0	41
05:35 PM	0	5	12	0	9	0	7	0	8	3	0	0	0	0	0	0	44
05:40 PM	0	0	5	0	14	0	10	0	5	1	0	0	0	0	0	0	35
05:45 PM	0	3	10	0	14	0	11	0	2	0	0	0	0	0	0	0	40
05:50 PM	0	6	12	0	8	0	7	0	8	1	0	0	0	0	0	0	42
05:55 PM	0	4	6	0	10	0	6	0	3	1	0	0	0	0	0	0	30
Total	0	61	130	0	146	0	96	0	74	15	0	0	0	0	0	0	522
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	101	299	0	284	0	188	0	131	41	0	0	0	0	0	0	1044
Apprch %	0.0	25.3	74.8	0.0	60.2	0.0	39.8	0.0	76.2	23.8	0.0	0.0	0.0	0.0	0.0	0.0	
Total %	0.0	9.7	28.6	0.0	27.2	0.0	18.0	0.0	12.5	3.9	0.0	0.0	0.0	0.0	0.0	0.0	

Quality Counts, LLC
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File Name : 00000404
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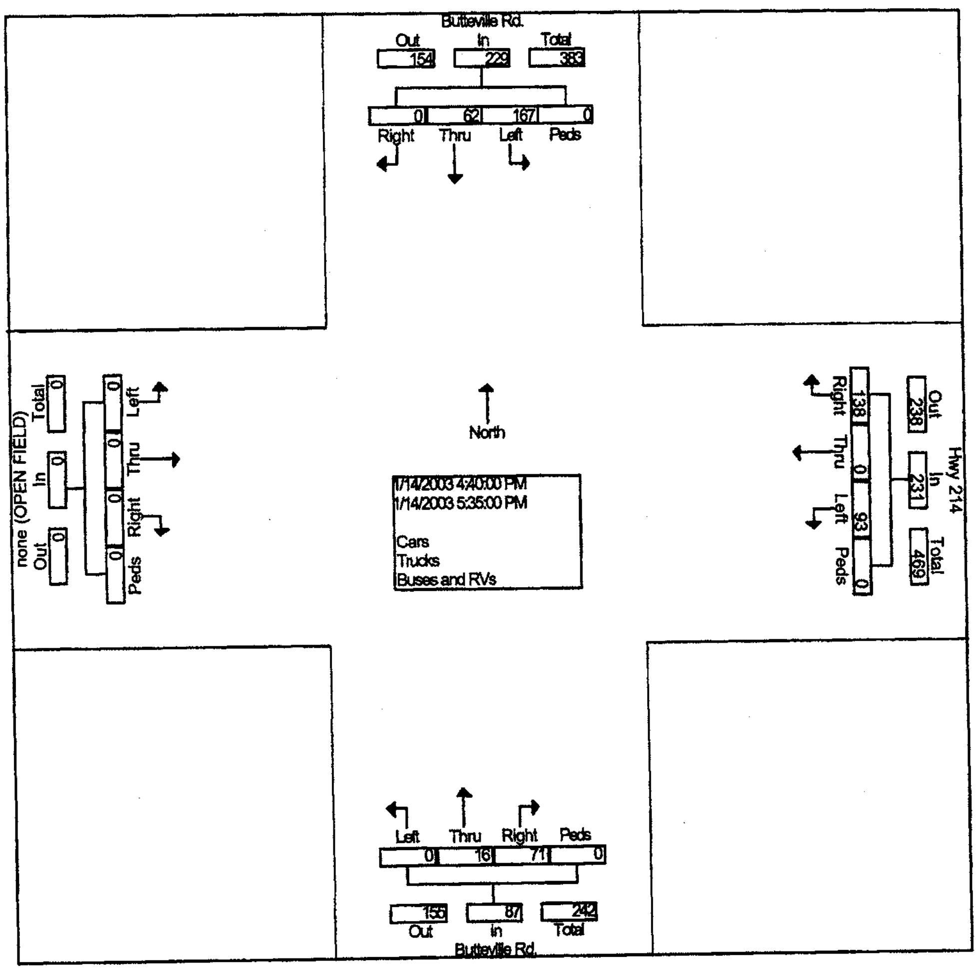
Page No : 2

	Butteville Rd. From North					Hwy 214 From East					Butteville Rd. From South					none (OPEN FIELD) From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 04:00 PM to 06:00 PM - Peak 1 of 1																					
Intersection	04:40 PM																				
Volume	0	62	167	0	229	138	0	93	0	231	71	16	0	0	87	0	0	0	0	0	547
Percent	0.0	27.1	72.9	0.0		59.7	0.0	40.3	0.0		81.6	18.4	0.0	0.0		0.0	0.0	0.0	0.0		
05:25 Volume	0	4	14	0	18	19	0	10	0	29	7	1	0	0	8	0	0	0	0	0	55
Peak Factor																					0.829
High Int.	04:55 PM					05:25 PM					05:05 PM					3:55:00 PM					
Volume	0	6	21	0	27	19	0	10	0	29	10	1	0	0	11						
Peak Factor					0.707					0.664					0.659						



Quality Counts, LLC
16285 SW 85th Avenue, Ste 105
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Ph: (503)620-4242

File Name : 00000408
Site Code : 00000408
Start Date : 01/15/2003
Page No : 1

Groups Printed- Cars - Trucks - Buses and RVs

	Woodland Ave. From North				Newberg (214) Hwy. From East				Woodland Ave. From South				Newberg (214) Hwy. From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	0	1	22	0	7	19	1	0	10	2	2	0	0	23	4	0	91
04:05 PM	3	0	31	0	10	27	7	0	16	0	1	0	0	14	3	0	112
04:10 PM	2	0	37	0	10	17	6	0	7	0	1	0	0	17	1	0	98
04:15 PM	2	0	36	0	6	13	3	0	5	2	1	0	1	19	3	0	91
04:20 PM	0	0	26	0	12	16	6	0	3	0	0	0	2	15	0	0	80
04:25 PM	1	1	24	0	13	21	5	0	3	0	0	0	0	21	0	0	89
04:30 PM	2	1	32	0	14	23	4	0	4	1	0	0	0	19	0	0	100
04:35 PM	0	1	33	0	12	27	5	0	6	1	1	0	0	17	2	0	105
04:40 PM	2	0	31	0	11	15	3	0	5	1	1	0	0	33	1	0	103
04:45 PM	2	1	20	0	21	23	3	0	5	0	1	0	0	26	2	0	104
04:50 PM	0	0	19	0	16	12	7	0	12	0	0	0	0	26	4	0	96
04:55 PM	3	0	36	0	13	17	4	0	3	0	0	0	0	15	2	0	93
Total	17	5	347	0	145	230	54	0	79	7	8	0	3	245	22	0	1162
05:00 PM	0	0	39	0	12	18	3	0	8	0	1	0	0	20	3	0	104
05:05 PM	0	0	20	0	17	19	7	1	12	1	0	0	0	19	0	0	96
05:10 PM	1	1	31	0	15	18	2	0	7	1	0	0	0	23	2	0	101
05:15 PM	0	0	22	0	8	21	4	0	7	0	0	0	0	30	4	0	96
05:20 PM	3	1	25	0	16	27	0	0	11	1	1	0	0	16	1	0	102
05:25 PM	2	0	21	0	12	19	7	2	5	0	0	0	0	12	1	0	81
05:30 PM	0	1	27	0	18	24	0	0	4	2	0	0	0	18	1	0	95
05:35 PM	1	1	25	0	11	31	3	0	5	2	0	0	0	22	2	0	103
05:40 PM	4	1	26	0	11	13	7	0	5	1	2	0	13	4	1	0	88
05:45 PM	3	0	33	2	11	20	1	0	5	0	0	2	12	5	1	3	98
05:50 PM	0	0	20	0	7	13	6	0	6	1	1	1	0	14	2	0	71
05:55 PM	1	0	15	0	8	26	3	0	3	1	0	0	0	27	2	0	86
Total	15	5	304	2	146	249	43	3	78	10	5	3	25	210	20	3	1121
Grand Total	32	10	651	2	291	479	97	3	157	17	13	3	28	455	42	3	2283
Apprch %	4.6	1.4	93.7	0.3	33.4	55.1	11.1	0.3	82.6	8.9	6.8	1.6	5.3	86.2	8.0	0.6	
Total %	1.4	0.4	28.5	0.1	12.7	21.0	4.2	0.1	6.9	0.7	0.6	0.1	1.2	19.9	1.8	0.1	

Quality Counts, LLC
16285 SW 85th Avenue, Ste 105
Tigard, OR 97224
Ph: (503)620-4242

	Woodland Ave. From North					Newberg (214) Hwy. From East					Woodland Ave. From South					Newberg (214) Hwy. From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:55 PM - Peak 1 of 1																					
Intersection	04:25 PM																				
Volume	14	6	332	0	352	168	241	47	1	457	83	6	5	0	94	0	265	21	0	286	1189
Percent	4.0	1.7	94.3	0.0		36.8	52.7	10.3	0.2		88.3	6.4	5.3	0.0		0.0	92.7	7.3	0.0		
04:35 Volume	0	1	33	0	34	12	27	5	0	44	6	1	1	0	8	0	17	2	0	19	105
Peak Factor																					0.944
High Int.	04:55 PM					04:45 PM					05:05 PM					04:40 PM					
Volume	3	0	36	0	39	21	23	3	0	47	12	1	0	0	13	0	33	1	0	34	
Peak Factor					0.752					0.810					0.603					0.701	

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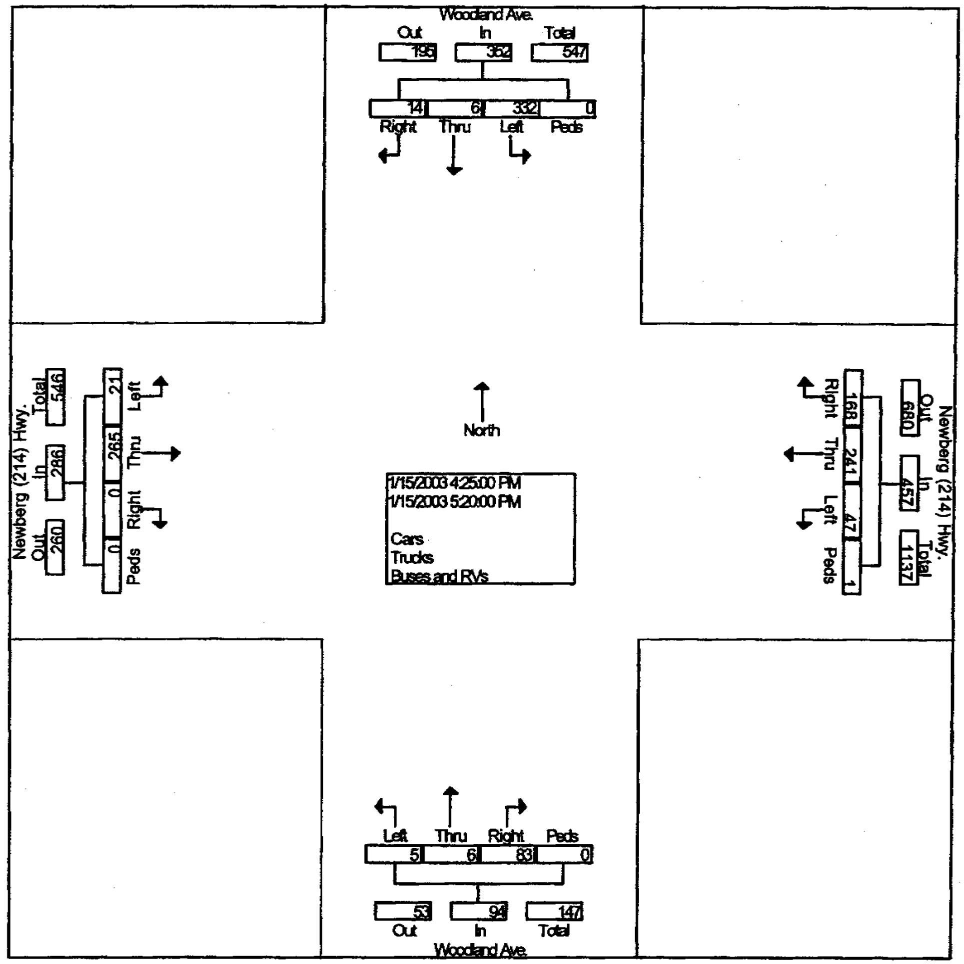

Quality Counts, LLC
16285 SW 85th Avenue, Ste 105
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Ph: (503)620-4242

File Name : 00000401
Site Code : 00000401
Start Date : 01/14/2003
Page No : 1

Groups Printed- Cars - Trucks - Buses and RVs

	Arney Rd. From North				Newberg (214) Hwy. From East				Ford Parking Lot From South				Newberg (214) Hwy. From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	1	0	0	0	30	24	0	0	0	0	0	0	0	51	0	0	106
04:05 PM	5	0	0	0	20	35	0	0	0	0	0	0	0	63	0	0	123
04:10 PM	1	0	0	0	25	42	0	1	0	0	0	0	0	60	0	0	129
04:15 PM	2	0	0	0	31	32	0	0	0	0	0	0	0	64	0	0	129
04:20 PM	9	0	0	0	25	44	0	0	0	0	0	0	0	50	0	0	128
04:25 PM	4	0	0	0	13	37	0	0	0	0	0	0	0	50	0	0	104
04:30 PM	2	0	0	0	22	32	0	0	0	0	0	0	0	46	0	0	102
04:35 PM	2	0	0	0	15	28	0	0	0	0	0	0	0	53	0	0	98
04:40 PM	2	0	0	0	20	28	0	0	0	0	0	0	0	45	0	0	95
04:45 PM	3	0	0	0	16	34	0	0	0	0	0	0	0	47	0	0	100
04:50 PM	2	0	0	0	17	39	0	0	0	0	0	0	0	62	0	0	120
04:55 PM	5	0	0	0	27	34	0	0	0	0	0	0	0	54	0	0	120
Total	38	0	0	0	261	409	0	1	0	0	0	0	0	645	0	0	1354
05:00 PM	2	0	0	0	23	34	0	0	0	0	0	0	0	45	0	0	104
05:05 PM	4	0	0	0	16	31	0	0	0	0	0	0	0	56	0	0	107
05:10 PM	2	0	0	0	17	31	0	0	0	0	0	0	0	49	0	0	99
05:15 PM	1	0	0	0	13	33	0	0	0	0	0	0	0	58	0	0	105
05:20 PM	6	0	0	0	13	42	0	0	0	0	0	0	0	48	0	0	109
05:25 PM	3	0	0	0	29	39	0	0	0	0	0	0	0	67	0	0	138
05:30 PM	2	0	0	0	15	37	0	0	0	0	0	0	0	40	0	0	94
05:35 PM	3	0	0	0	11	31	0	0	0	0	0	0	0	64	0	0	109
05:40 PM	4	0	0	0	16	35	0	0	0	0	0	0	0	42	0	0	97
05:45 PM	3	0	0	0	11	34	0	0	0	0	0	0	0	48	0	0	96
05:50 PM	5	0	0	0	17	24	0	2	0	0	0	0	0	55	0	0	103
05:55 PM	3	0	0	0	23	21	0	0	0	0	0	0	0	42	0	0	89
Total	38	0	0	0	204	392	0	2	0	0	0	0	0	614	0	0	1250
Grand Total	76	0	0	0	465	801	0	3	0	0	0	0	0	1259	0	0	2604
Apprch %	100.0	0.0	0.0	0.0	36.6	63.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	
Total %	2.9	0.0	0.0	0.0	17.9	30.8	0.0	0.1	0.0	0.0	0.0	0.0	0.0	48.3	0.0	0.0	

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Site Code : 00000401
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Page No : 2

	Arney Rd. From North					Newberg (214) Hwy. From East					Ford Parking Lot From South					Newberg (214) Hwy. From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:55 PM - Peak 1 of 1																					
Intersection	04:00 PM																				
Volume	38	0	0	0	38	261	409	0	1	671	0	0	0	0	0	0	645	0	0	645	1354
Percent	100.0	0.0	0.0	0.0		38.9	61.0	0.0	0.1		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
04:15 Volume	2	0	0	0	2	31	32	0	0	63	0	0	0	0	0	0	64	0	0	64	129
Peak Factor																					0.875
High Int.	04:20 PM					04:20 PM					3:55:00 PM					04:15 PM					
Volume	9	0	0	0	9	25	44	0	0	69	0	0	0	0	0	0	64	0	0	64	
Peak Factor					0.352					0.810										0.840	

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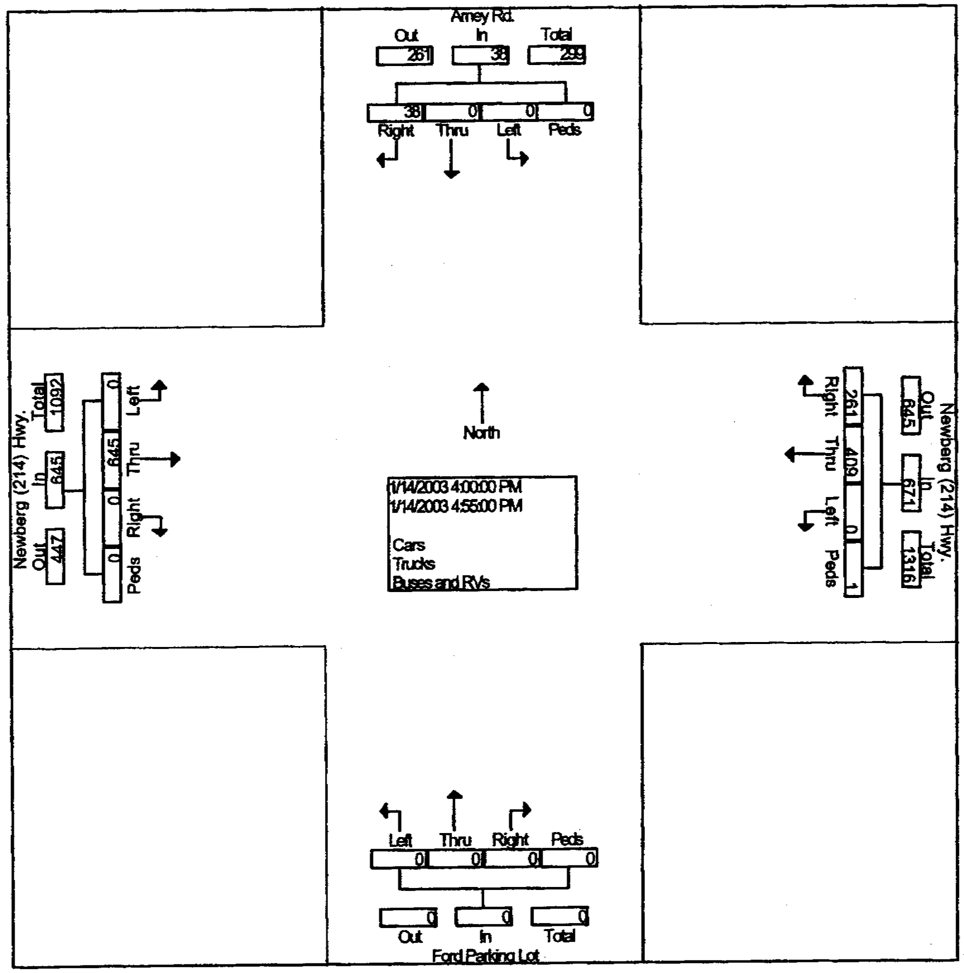
Page No : 3



Quality Counts, LLC
16285 SW 85th Avenue, Ste 105
Tigard, OR 97224
Ph: (503)620-4242

File Name : 00000402
Site Code : 00000402
Start Date : 01/14/2003
Page No : 1

Groups Printed- Cars - Trucks - Buses and RVs

	I-5 Southbound Off Ramp From North				Newberg (214) Hwy. From East				I-5 Southbound On Ramp From South				Newberg (214) Hwy. From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	18	0	25	0	1	35	15	0	0	0	0	0	0	0	0	0	94
04:05 PM	20	0	26	0	0	38	32	1	0	0	0	0	0	0	0	0	117
04:10 PM	22	0	19	0	0	43	30	0	0	0	0	0	0	0	0	0	114
04:15 PM	19	0	26	0	0	45	30	0	0	0	0	0	0	0	0	0	120
04:20 PM	27	2	19	0	0	43	17	0	0	0	0	0	0	0	0	0	108
04:25 PM	14	0	38	0	0	35	28	0	0	0	0	0	0	0	0	0	115
04:30 PM	29	0	24	0	0	25	22	0	0	0	0	0	0	0	0	0	100
04:35 PM	12	0	32	0	0	35	32	0	0	0	0	0	0	0	0	0	111
04:40 PM	12	0	23	0	0	33	27	0	0	0	0	0	0	0	0	0	95
04:45 PM	15	0	33	0	0	38	24	0	0	0	0	0	0	0	0	0	110
04:50 PM	19	0	29	0	0	33	24	0	0	0	0	0	0	0	0	0	105
04:55 PM	21	0	44	0	0	40	23	0	0	0	0	0	0	0	0	0	128
Total	228	2	338	0	1	443	304	1	0	0	0	0	0	0	0	0	1317
05:00 PM	16	0	29	0	0	40	23	0	0	0	0	0	0	0	0	0	108
05:05 PM	23	0	32	0	0	26	40	0	0	0	0	0	0	0	0	0	121
05:10 PM	19	0	29	0	0	28	30	0	0	0	0	0	0	0	0	0	106
05:15 PM	14	0	30	0	0	34	26	0	0	0	0	0	0	0	0	0	104
05:20 PM	17	0	30	0	0	37	29	0	0	0	0	0	0	0	0	0	113
05:25 PM	26	0	22	0	0	41	30	0	0	0	0	0	0	0	0	0	119
05:30 PM	16	0	32	0	0	36	25	0	0	0	0	0	0	0	0	0	109
05:35 PM	11	0	30	0	0	32	28	1	0	0	0	0	0	0	0	0	102
05:40 PM	16	0	18	0	0	38	17	0	0	0	0	0	0	0	0	0	89
05:45 PM	13	0	25	0	0	32	22	0	0	0	0	0	0	0	0	0	92
05:50 PM	16	0	26	0	0	27	21	2	0	0	0	0	0	0	0	0	92
05:55 PM	12	0	29	0	0	34	16	0	0	0	0	0	0	0	0	0	91
Total	199	0	332	0	0	405	307	3	0	0	0	0	0	0	0	0	1246
Grand Total	427	2	670	0	1	848	611	4	0	0	0	0	0	0	0	0	2563
Apprch %	38.9	0.2	61.0	0.0	0.1	57.9	41.7	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total %	16.7	0.1	26.1	0.0	0.0	33.1	23.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Quality Counts, LLC
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	I-5 Southbound Off Ramp From North					Newberg (214) Hwy. From East					I-5 Southbound On Ramp From South					Newberg (214) Hwy. From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:55 PM - Peak 1 of 1																					
Intersection	04:10 PM																				
Volume	229	2	348	0	579	0	436	320	0	756	0	0	0	0	0	0	0	0	0	0	1335
Percent	39.6	0.3	60.1	0.0		0.0	57.7	42.3	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
04:55 Volume	21	0	44	0	65	0	40	23	0	63	0	0	0	0	0	0	0	0	0	0	128
Peak Factor																					0.869
High Int.	04:55 PM					04:15 PM					3:55:00 PM					3:55:00 PM					
Volume	21	0	44	0	65	0	45	30	0	75											
Peak Factor					0.742					0.840											

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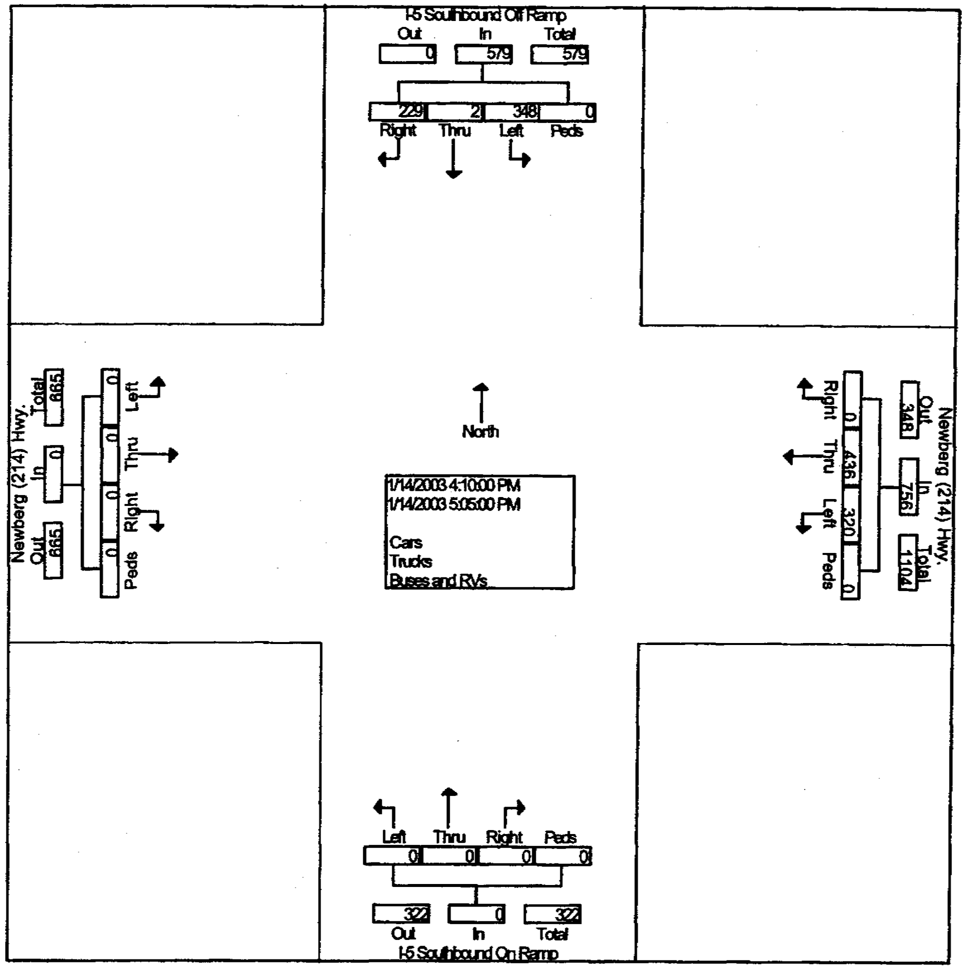
File Name : 00000402
Site Code : 00000402
Start Date : 01/14/2003
Page No : 3



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Ph: (503)620-4242

File Name : 00000403
Site Code : 00000403
Start Date : 01/14/200?
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Groups Printed- Cars - Trucks - Buses and RVs

	I-5 Sounthbound Off Ramp From North				Newberg (214) Hwy. From East				I-5 Southbound On Ramp From South				Newberg (214) Hwy. From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	19	45	0	0	64
04:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	21	26	0	0	47
04:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	19	53	0	0	72
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	22	38	0	0	60
04:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	19	33	0	0	52
04:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	20	23	0	0	43
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	17	42	0	0	59
04:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	18	27	0	0	45
04:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	13	44	0	0	57
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	15	24	0	0	39
04:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	22	46	0	0	68
04:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	16	28	0	0	44
Total	0	0	0	0	0	0	0	0	0	0	0	0	221	429	0	0	650
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	15	41	0	0	56
05:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	16	27	0	0	43
05:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	18	47	0	0	65
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	16	32	0	0	48
05:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	16	40	0	0	56
05:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	21	32	0	0	53
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	11	46	0	0	57
05:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	21	32	0	0	53
05:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	15	38	0	0	53
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	14	22	0	0	36
05:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	16	45	0	0	61
05:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	9	32	0	0	41
Total	0	0	0	0	0	0	0	0	0	0	0	0	188	434	0	0	622
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	409	863	0	0	1272
Apprch %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32.2	67.8	0.0	0.0	
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32.2	67.8	0.0	0.0	

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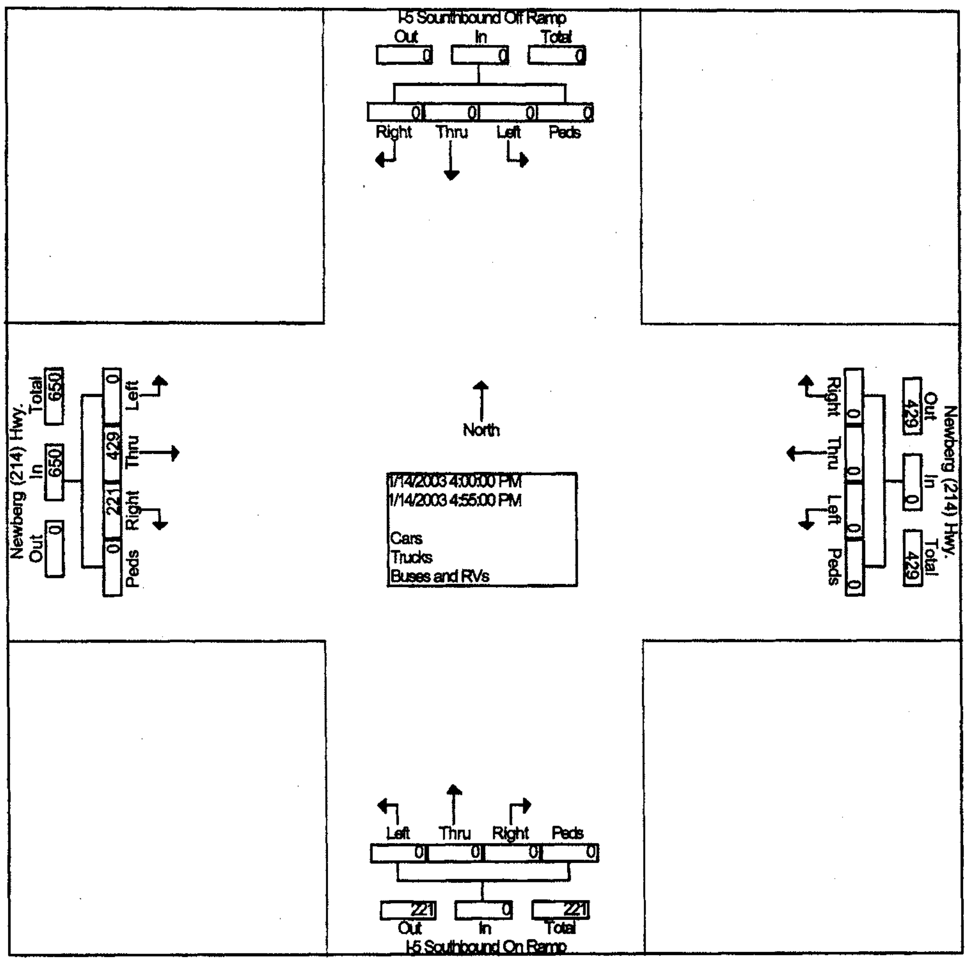
File Name : 00000403
Site Code : 00000403
Start Date : 01/14/2003

	I-5 Sounthbound Off Ramp From North					Newberg (214) Hwy. From East					I-5 Southbound On Ramp From South					Newberg (214) Hwy. From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:55 PM - Peak 1 of 1																					
Intersection	04:00 PM																				
Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	221	429	0	0	650	650
Percent	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		34.0	66.0	0.0	0.0		
04:10 Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	53	0	0	72	72
Peak Factor																					0.752
High Int.	3:55:00 PM					3:55:00 PM					3:55:00 PM					04:10 PM					
Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	53	0	0	72	
Peak Factor																				0.752	



Quality Counts, LLC
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Ph: (503)620-4242

File Name : 00000405
Site Code : 00000405
Start Date : 01/14/2003
Page No : 1

Groups Printed- Cars - Trucks - Buses and RVs

	I-5 Northbound On Ramp From North				Newberg (214) Hwy. From East				I-5 Northbound Off Ramp From South				Newberg (214) Hwy. From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	0	0	0	0	22	51	0	0	25	0	11	0	0	65	13	0	187
04:05 PM	0	0	0	0	30	57	0	0	25	1	7	0	0	35	12	0	167
04:10 PM	0	0	0	0	14	62	0	0	19	0	9	0	0	66	15	0	185
04:15 PM	0	0	0	0	27	49	0	0	31	0	18	0	0	42	14	0	181
04:20 PM	0	0	0	0	23	59	0	0	16	0	10	0	0	48	12	0	168
04:25 PM	0	0	0	0	19	44	0	0	22	0	7	0	0	47	8	0	147
04:30 PM	0	0	0	0	30	41	0	0	19	0	2	0	0	59	12	0	163
04:35 PM	0	0	0	0	21	49	0	0	29	0	9	0	0	41	9	0	158
04:40 PM	0	0	0	0	21	62	0	0	19	0	7	0	0	56	12	0	177
04:45 PM	0	0	0	0	14	50	0	0	35	0	10	0	0	45	9	0	163
04:50 PM	0	0	0	0	12	49	0	0	28	0	14	0	0	67	15	0	185
04:55 PM	0	0	0	0	23	55	0	0	33	0	12	0	0	56	9	0	188
Total	0	0	0	0	256	628	0	0	301	1	116	0	0	627	140	0	2069
05:00 PM	0	0	0	0	16	48	0	0	23	0	16	0	0	60	14	0	177
05:05 PM	0	0	0	0	20	41	0	0	28	0	12	0	0	47	7	0	155
05:10 PM	0	0	0	0	20	50	0	0	26	0	7	0	0	69	14	0	186
05:15 PM	0	0	0	0	17	36	0	0	33	0	10	0	0	49	10	0	155
05:20 PM	0	0	0	0	13	65	0	0	26	0	11	0	0	60	15	0	190
05:25 PM	0	0	0	0	19	61	0	0	38	0	16	0	0	43	5	0	182
05:30 PM	0	0	0	0	15	44	0	0	29	0	10	0	0	70	15	0	183
05:35 PM	0	0	0	0	20	49	0	0	33	1	16	0	0	48	10	0	177
05:40 PM	0	0	0	0	13	51	0	0	31	0	8	0	0	46	16	0	165
05:45 PM	0	0	0	0	22	54	0	0	28	0	7	0	0	38	7	0	156
05:50 PM	0	0	0	0	21	61	0	0	27	0	7	0	0	57	11	0	184
05:55 PM	0	0	0	0	24	54	0	0	19	0	13	0	0	54	7	0	171
Total	0	0	0	0	220	614	0	0	341	1	133	0	0	641	131	0	2081
Grand Total	0	0	0	0	476	1242	0	0	642	2	249	0	0	1268	271	0	4150
Apprch %	0.0	0.0	0.0	0.0	27.7	72.3	0.0	0.0	71.9	0.2	27.9	0.0	0.0	82.4	17.6	0.0	
Total %	0.0	0.0	0.0	0.0	11.5	29.9	0.0	0.0	15.5	0.0	6.0	0.0	0.0	30.6	6.5	0.0	

Quality Counts, LLC
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Tigard, OR 97224
Ph: (503)620-4242

File Name : 00000405
Site Code : 00000405
Start Date : 01/14/2003

	I-5 Northbound On Ramp From North					Newberg (214) Hwy. From East					I-5 Northbound Off Ramp From South					Newberg (214) Hwy. From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:55 PM - Peak 1 of 1																					
Intersection	04:40 PM																				
Volume	0	0	0	0	0	210	610	0	0	820	351	1	141	0	493	0	670	135	0	805	2118
Percent	0.0	0.0	0.0	0.0		25.6	74.4	0.0	0.0		71.2	0.2	28.6	0.0		0.0	83.2	16.8	0.0		
05:20 Volume	0	0	0	0	0	13	65	0	0	78	26	0	11	0	37	0	60	15	0	75	190
Peak Factor																					0.929
High Int.	3:55:00 PM					04:40 PM					05:25 PM					05:30 PM					
Volume	0	0	0	0	0	21	62	0	0	83	38	0	16	0	54	0	70	15	0	85	
Peak Factor										0.823					0.761					0.789	

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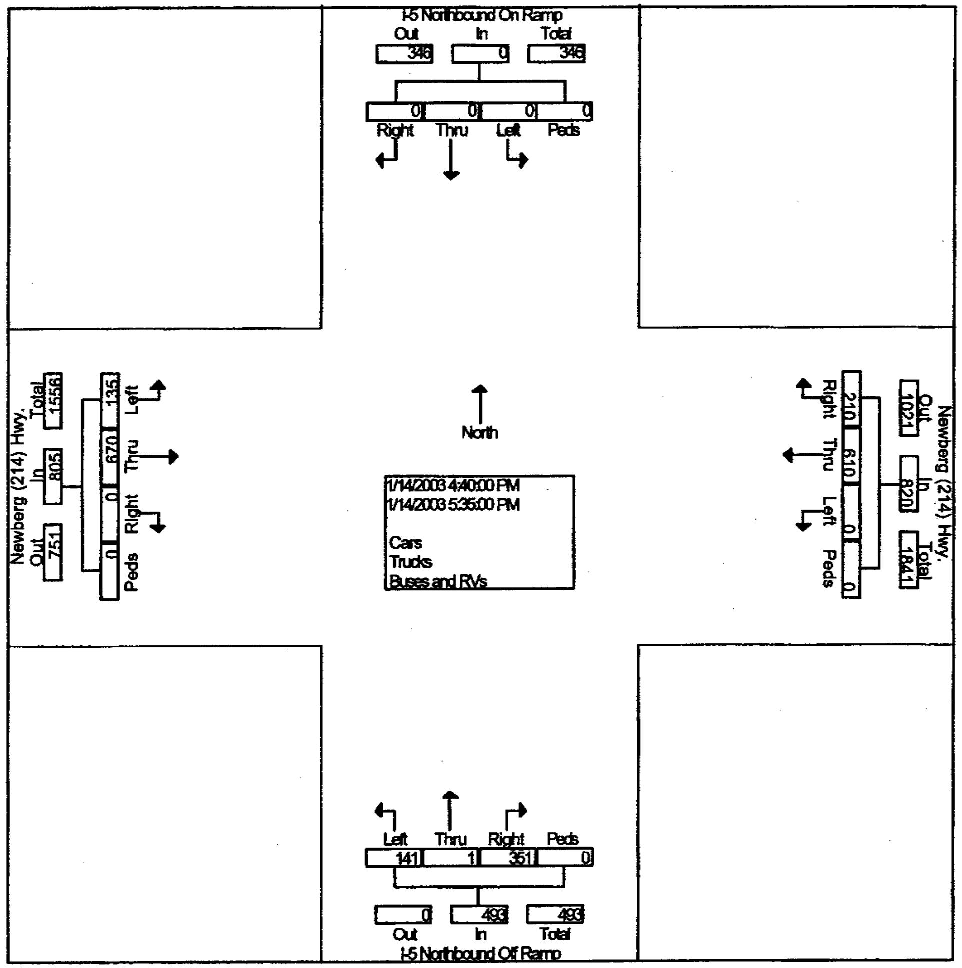

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16285 SW 85th Avenue, Ste 105
Tigard, OR 97224
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File Name : 00000410
Site Code : 00000410
Start Date : 01/15/2003

Groups Printed- Cars - Trucks - Buses and RVs

	Driveway From North				Newberg (214) Hwy. From East				Evergreen Rd. From South				Newberg (214) Hwy. From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	5	5	3	0	1	50	9	0	10	1	18	0	1	41	1	0	145
04:05 PM	6	3	4	0	2	44	8	0	4	0	13	0	2	63	4	1	154
04:10 PM	2	1	1	0	1	50	8	0	9	4	21	3	2	63	2	0	167
04:15 PM	4	0	0	0	1	47	4	0	6	0	12	0	2	60	5	0	141
04:20 PM	1	2	1	0	0	46	11	0	11	3	21	0	2	62	2	0	162
04:25 PM	1	1	1	0	4	43	3	0	4	0	18	0	8	59	0	4	146
04:30 PM	5	3	1	0	0	49	6	0	10	1	19	0	2	54	4	1	155
04:35 PM	1	1	2	0	0	49	5	0	5	3	12	0	5	70	3	0	156
04:40 PM	3	3	2	0	0	46	12	0	15	2	20	0	1	58	2	0	164
04:45 PM	2	1	1	0	1	49	7	0	5	2	19	0	6	77	2	0	172
04:50 PM	5	2	1	1	1	37	15	2	12	0	18	0	6	56	4	0	160
04:55 PM	4	0	2	0	2	65	5	0	6	1	16	1	5	58	4	2	171
Total	39	22	19	1	13	575	93	2	97	17	207	4	42	721	33	8	1893
05:00 PM	6	3	0	0	0	49	1	0	10	3	26	0	4	48	3	0	153
05:05 PM	4	1	2	0	1	65	8	0	8	0	16	0	5	61	4	0	175
05:10 PM	2	0	0	0	1	63	6	1	10	3	21	0	3	66	3	0	179
05:15 PM	4	0	0	0	1	65	5	0	10	1	8	0	2	48	3	2	149
05:20 PM	2	0	3	0	0	44	5	0	6	2	19	0	3	66	1	0	151
05:25 PM	3	3	1	0	1	59	5	0	4	1	10	0	4	62	3	0	156
05:30 PM	5	0	2	0	1	60	10	0	8	0	23	0	5	60	1	3	178
05:35 PM	5	1	2	0	1	50	5	0	9	0	8	0	4	65	3	1	154
05:40 PM	3	0	4	0	0	59	1	0	3	1	24	0	5	59	2	0	161
05:45 PM	1	1	0	0	1	40	8	0	6	0	7	0	4	63	2	0	133
05:50 PM	4	1	0	0	0	24	7	1	3	0	11	0	5	63	0	0	119
05:55 PM	1	1	3	0	0	50	12	2	9	1	5	0	1	66	4	1	156
Total	40	11	17	0	7	628	73	4	86	12	178	0	45	727	29	7	1864
Grand Total	79	33	36	1	20	1203	166	6	183	29	385	4	87	1448	62	15	3757
Apprch %	53.0	22.1	24.2	0.7	1.4	86.2	11.9	0.4	30.4	4.8	64.1	0.7	5.4	89.8	3.8	0.9	
Total %	2.1	0.9	1.0	0.0	0.5	32.0	4.4	0.2	4.9	0.8	10.2	0.1	2.3	38.5	1.7	0.4	

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	Driveway From North					Newberg (214) Hwy. From East					Evergreen Rd. From South					Newberg (214) Hwy. From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:55 PM - Peak 1 of 1																					
Intersection	04:35 PM																				
Volume	41	14	16	1	72	9	651	84	3	747	99	18	208	1	326	49	730	33	7	819	1964
Percent	56.9	19.4	22.2	1.4		1.2	87.1	11.2	0.4		30.4	5.5	63.8	0.3		6.0	89.1	4.0	0.9		
05:10 Volume	2	0	0	0	2	1	63	6	1	71	10	3	21	0	34	3	66	3	0	72	179
Peak Factor																					0.914
High Int.	04:50 PM					05:05 PM					05:00 PM					04:45 PM					
Volume	5	2	1	1	9	1	65	8	0	74	10	3	26	0	39	6	77	2	0	85	
Peak Factor					0.667					0.841					0.697					0.803	

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File Name : 00000410
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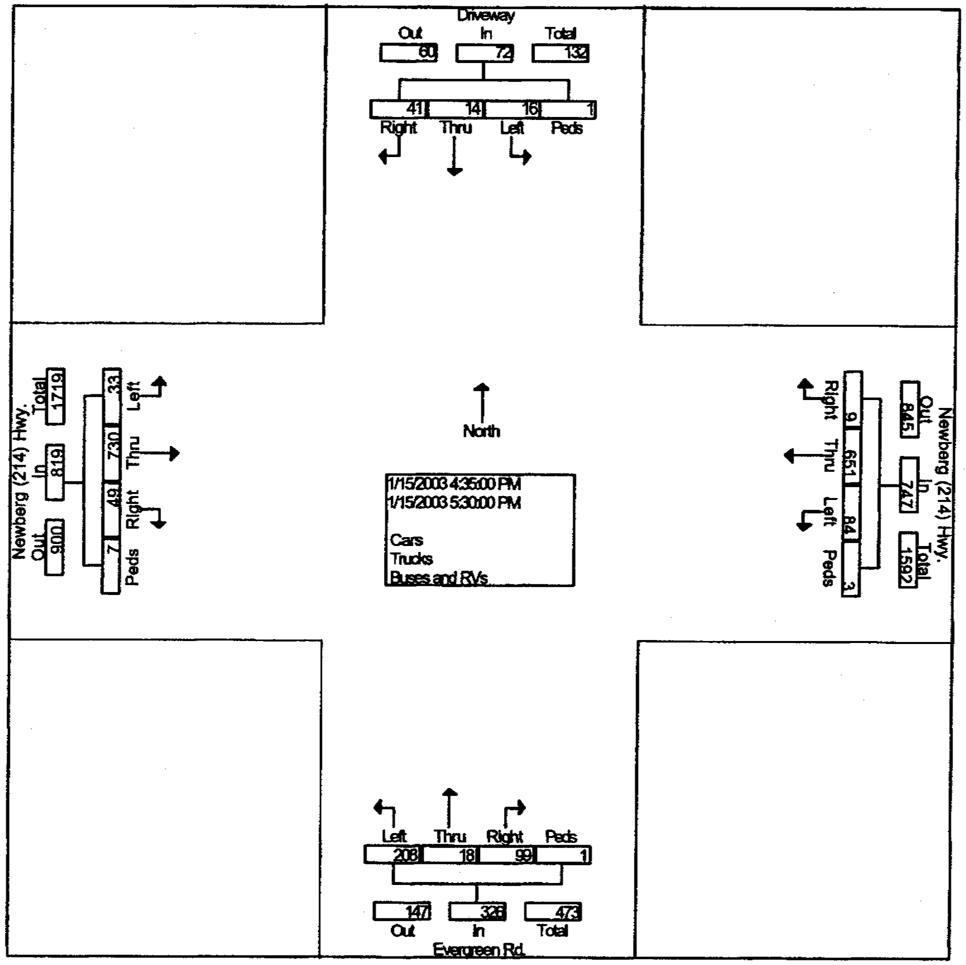

Quality Counts, LLC
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Ph: (503)620-4242

File Name : 00000411
Site Code : 00000411
Start Date : 01/15/2003
Page No : 1

Groups Printed- Cars - Trucks - Buses and RVs

	Oregon Way From North				Newberg (214) Hwy From East				Oregon Way From South				Newberg (214) Hwy. From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	2	4	8	0	6	56	1	0	0	3	2	1	0	54	4	0	141
04:05 PM	6	3	7	0	8	48	0	0	1	2	3	0	1	60	2	0	141
04:10 PM	4	3	8	0	8	47	2	0	2	1	1	0	0	69	6	0	151
04:15 PM	3	2	9	0	6	42	0	0	1	2	3	0	0	54	9	0	131
04:20 PM	5	3	6	0	5	49	0	0	1	2	1	0	2	74	0	0	148
04:25 PM	4	1	4	0	4	43	0	0	1	4	3	0	1	51	5	0	121
04:30 PM	1	2	13	0	12	53	3	0	1	3	3	2	0	62	3	0	158
04:35 PM	1	0	8	0	6	48	2	0	0	4	2	0	0	71	6	0	148
04:40 PM	3	2	5	0	10	65	3	1	0	2	0	2	0	77	3	0	173
04:45 PM	10	5	9	1	7	44	2	0	1	5	1	0	3	65	3	0	156
04:50 PM	9	1	9	0	8	48	2	0	3	3	0	0	0	70	5	0	158
04:55 PM	2	2	15	0	8	54	2	0	2	1	2	0	0	54	11	0	153
Total	50	28	101	1	88	597	17	1	13	32	21	5	7	761	57	0	1779
05:00 PM	2	3	10	0	1	63	1	0	0	1	0	0	0	55	2	0	138
05:05 PM	4	2	9	0	2	58	1	0	1	5	1	0	1	58	6	1	149
05:10 PM	3	2	5	0	1	69	1	0	1	3	0	0	1	78	3	0	167
05:15 PM	4	2	6	0	4	57	1	0	0	1	3	0	0	51	5	0	134
05:20 PM	2	2	1	0	2	60	0	0	0	0	0	0	1	75	7	0	150
05:25 PM	4	2	4	1	2	50	1	0	0	6	1	0	0	57	6	0	134
05:30 PM	4	1	1	1	7	72	0	0	0	0	0	4	0	64	4	0	158
05:35 PM	3	2	9	4	1	39	1	0	0	4	0	0	1	56	8	0	128
05:40 PM	2	0	3	0	5	69	0	0	1	2	0	0	0	73	3	0	158
05:45 PM	1	0	8	2	4	29	0	0	0	2	1	0	1	66	6	0	120
05:50 PM	2	0	5	0	3	39	0	3	0	1	1	0	1	57	6	0	118
05:55 PM	4	2	5	0	4	38	0	0	0	1	0	0	0	69	4	0	127
Total	35	18	66	8	36	643	6	3	3	26	7	4	6	759	60	1	1681
Grand Total	85	46	167	9	124	1240	23	4	16	58	28	9	13	1520	117	1	3460
Apprch %	27.7	15.0	54.4	2.9	8.9	89.1	1.7	0.3	14.4	52.3	25.2	8.1	0.8	92.1	7.1	0.1	
Total %	2.5	1.3	4.8	0.3	3.6	35.8	0.7	0.1	0.5	1.7	0.8	0.3	0.4	43.9	3.4	0.0	

Quality Counts, LLC
16285 SW 85th Avenue, Ste 105
Tigard, OR 97224
Ph: (503)620-4242

File Name : 00000411
Site Code : 00000411
Start Date : 01/15/2003

	Oregon Way From North					Newberg (214) Hwy From East					Oregon Way From South					Newberg (214) Hwy. From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:55 PM - Peak 1 of 1																					
Intersection	04:30 PM																				
Volume	45	25	94	2	166	63	669	19	1	752	9	34	13	4	60	6	773	60	1	840	1818
Percent	27.1	15.1	56.6	1.2		8.4	89.0	2.5	0.1		15.0	56.7	21.7	6.7		0.7	92.0	7.1	0.1		
04:40 Volume	3	2	5	0	10	10	65	3	1	79	0	2	0	2	4	0	77	3	0	80	173
Peak Factor																					0.876
High Int.	04:45 PM					04:40 PM					04:30 PM					05:20 PM					
Volume	10	5	9	1	25	10	65	3	1	79	1	3	3	2	9	1	75	7	0	83	
Peak Factor					0.553					0.793					0.556					0.843	

Quality Counts, LLC
16285 SW 85th Avenue, Ste 105
Tigard, OR 97224
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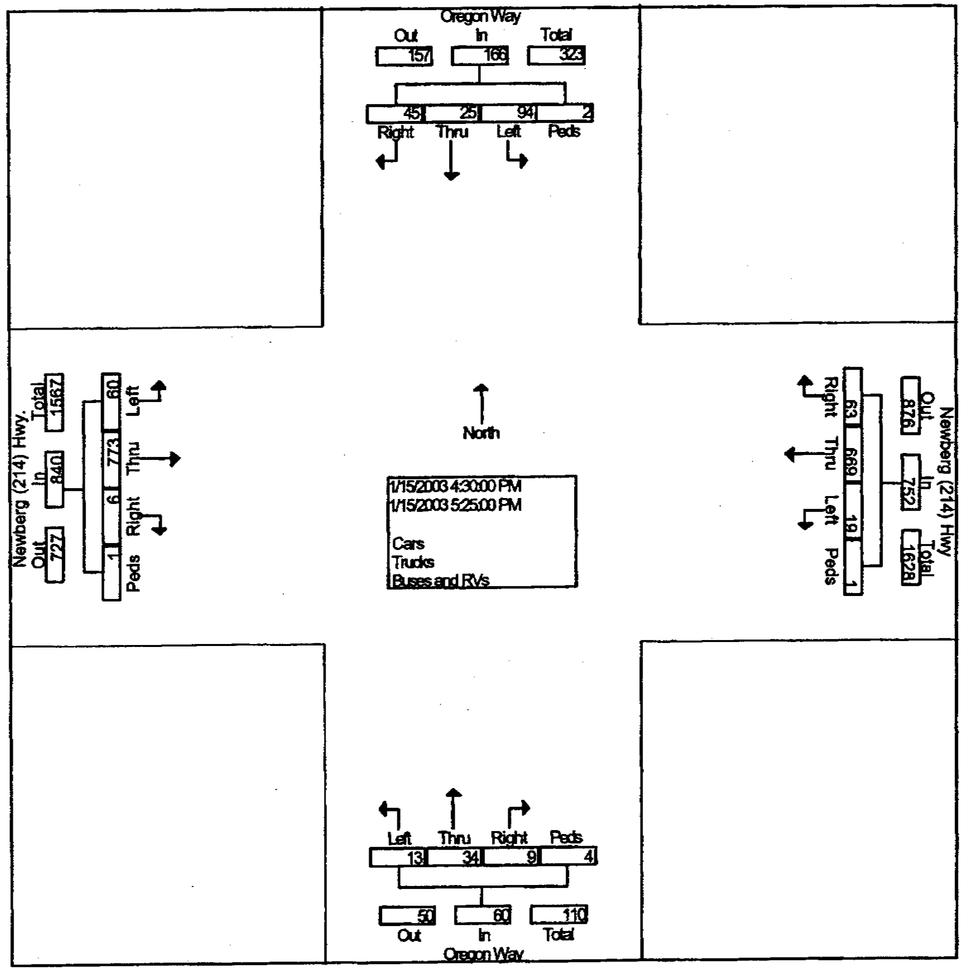
File Name : 00000411
Site Code : 00000411
Start Date : 01/15/2003



Quality Counts, LLC
16285 SW 85th Avenue, Ste 105
Tigard, OR 97224
Ph: (503)620-4242

File Name : 00000407
Site Code : 00000407
Start Date : 01/15/2003
Page No : 1

Groups Printed- Cars - Trucks - Buses and RVs

	none (Houses) From North				Newberg (214) Hwy. From East				Cascade Dr. From South				Newberg (214) Hwy. From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	0	0	0	0	0	55	2	0	3	0	3	0	1	62	0	0	126
04:05 PM	0	0	0	0	0	55	1	0	2	0	2	0	2	69	0	0	131
04:10 PM	0	0	0	0	0	52	4	0	5	0	2	0	2	77	0	0	142
04:15 PM	0	0	0	0	0	54	2	0	1	0	1	0	2	67	0	0	127
04:20 PM	0	0	0	0	0	48	3	0	3	0	0	0	6	70	0	0	130
04:25 PM	0	0	0	0	0	56	0	0	2	0	0	0	3	55	0	0	116
04:30 PM	0	0	0	0	0	56	0	0	1	0	2	0	2	69	0	0	130
04:35 PM	0	0	0	0	0	67	1	0	0	0	0	0	4	82	0	0	154
04:40 PM	0	0	0	0	0	62	1	0	3	0	3	0	1	81	0	1	152
04:45 PM	0	0	0	0	0	59	3	0	2	0	2	0	3	72	0	1	142
04:50 PM	0	0	0	0	0	49	3	0	0	0	0	0	3	70	0	0	125
04:55 PM	0	0	0	0	0	71	2	0	5	0	1	0	1	80	0	0	160
Total	0	0	0	0	0	684	22	0	27	0	16	0	30	854	0	2	1635
05:00 PM	0	0	0	0	0	54	0	0	3	0	5	0	0	73	0	0	135
05:05 PM	0	0	0	0	0	65	1	0	1	0	2	0	1	65	0	0	135
05:10 PM	0	0	0	0	0	69	0	0	1	0	2	0	2	71	0	1	146
05:15 PM	0	0	0	0	0	60	0	0	0	0	0	0	0	74	0	2	136
05:20 PM	0	0	0	0	0	54	2	0	2	0	1	0	3	60	0	0	122
05:25 PM	0	0	0	0	0	62	2	0	1	0	0	0	6	70	0	0	141
05:30 PM	0	0	0	0	0	70	1	0	2	0	1	0	6	53	0	0	133
05:35 PM	0	0	0	0	0	49	1	0	1	0	0	0	6	67	0	0	124
05:40 PM	0	0	0	0	0	69	1	0	0	0	1	0	1	67	0	4	143
05:45 PM	0	0	0	0	0	42	0	0	2	0	0	0	7	70	0	1	122
05:50 PM	0	0	0	0	0	40	1	0	0	0	0	0	1	55	0	4	101
05:55 PM	0	0	0	0	0	44	0	0	0	0	0	0	4	82	0	1	131
Total	0	0	0	0	0	678	9	0	13	0	12	0	37	807	0	13	1569
Grand Total	0	0	0	0	0	1362	31	0	40	0	28	0	67	1661	0	15	3204
Apprch %	0.0	0.0	0.0	0.0	0.0	97.8	2.2	0.0	58.8	0.0	41.2	0.0	3.8	95.3	0.0	0.9	
Total %	0.0	0.0	0.0	0.0	0.0	42.5	1.0	0.0	1.2	0.0	0.9	0.0	2.1	51.8	0.0	0.5	

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	none (Houses) From North					Newberg (214) Hwy. From East					Cascade Dr. From South					Newberg (214) Hwy. From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:55 PM - Peak 1 of 1																					
Intersection	04:35 PM																				
Volume	0	0	0	0	0	0	742	16	0	758	20	0	17	0	37	30	851	0	5	886	1681
Percent	0.0	0.0	0.0	0.0		0.0	97.9	2.1	0.0		54.1	0.0	45.9	0.0		3.4	96.0	0.0	0.6		
04:55 Volume	0	0	0	0	0	0	71	2	0	73	5	0	1	0	6	1	80	0	0	81	160
Peak Factor																					0.876
High Int.	3:55:00 PM					04:55 PM					05:00 PM					04:35 PM					
Volume	0	0	0	0	0	0	71	2	0	73	3	0	5	0	8	4	82	0	0	86	
Peak Factor										0.865					0.385					0.859	

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File Name : 00000407
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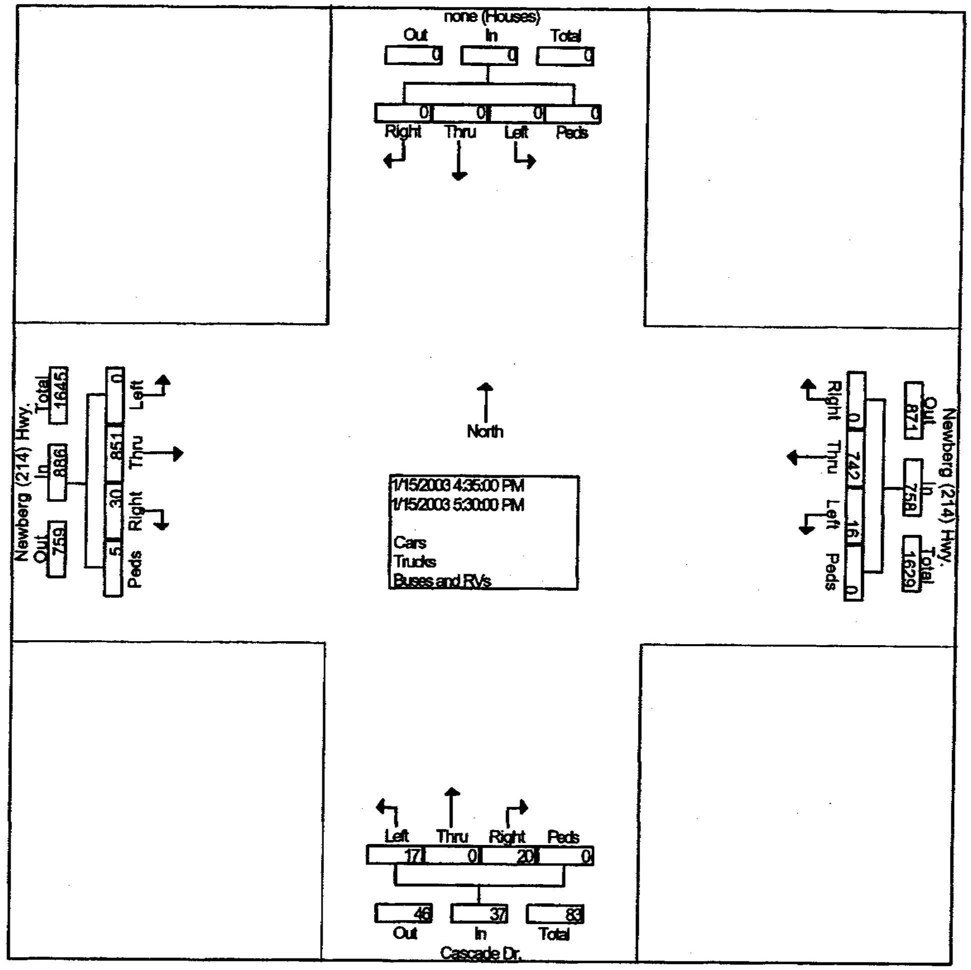
Start Date : 01/15/2003
Page No : 3



Quality Counts, LLC
16285 SW 85th Avenue, Ste 105
Tigard, OR 97224
Ph: (503)620-4242

File Name : 00000409
Site Code : 00000409
Start Date : 01/15/2003
Page No : 1

Groups Printed- Cars - Trucks - Buses and RVs

	Astor Way From North				Newberg (214) Hwy. From East				none (Houses) From South				Newberg (214) Hwy. From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	1	0	1	1	5	49	0	0	0	0	0	1	0	64	2	0	124
04:05 PM	5	0	0	0	0	59	0	0	0	0	0	0	0	67	2	2	135
04:10 PM	0	0	0	0	1	54	0	0	0	0	0	0	0	79	3	0	137
04:15 PM	0	0	1	1	3	48	0	0	0	0	0	0	0	64	1	0	118
04:20 PM	0	0	3	0	3	59	0	0	0	0	0	0	0	76	2	0	143
04:25 PM	0	0	1	0	2	57	0	0	0	0	0	0	0	56	1	0	117
04:30 PM	1	0	2	0	2	67	0	0	0	0	0	0	0	67	5	0	144
04:35 PM	0	0	1	0	3	64	0	0	0	0	0	0	0	73	4	2	147
04:40 PM	0	0	0	1	4	71	0	1	0	0	0	0	0	85	3	0	165
04:45 PM	3	0	1	0	3	47	0	0	0	0	0	0	0	66	2	1	123
04:50 PM	1	0	2	0	3	68	0	1	0	0	0	0	0	70	1	0	146
04:55 PM	1	0	0	0	0	65	0	0	0	0	0	0	0	79	1	0	146
Total	12	0	12	3	29	708	0	2	0	0	0	1	0	846	27	5	1645
05:00 PM	0	0	2	0	4	63	0	0	0	0	0	0	0	82	2	0	153
05:05 PM	1	0	0	0	0	58	0	0	0	0	0	0	0	66	0	0	125
05:10 PM	4	0	0	0	4	73	0	0	0	0	0	0	0	75	1	2	159
05:15 PM	0	0	0	0	1	58	0	0	0	0	0	0	0	63	4	1	127
05:20 PM	2	0	0	0	1	55	0	0	0	0	0	0	0	68	1	0	127
05:25 PM	0	0	1	0	1	65	0	0	0	0	0	0	0	57	4	2	130
05:30 PM	3	0	0	0	4	62	0	0	0	0	0	0	0	60	2	0	131
05:35 PM	3	0	0	0	3	54	0	0	0	0	0	0	0	56	2	0	118
05:40 PM	0	0	1	0	1	68	0	0	0	0	0	0	0	68	7	1	146
05:45 PM	5	0	1	1	0	32	0	0	0	0	0	0	0	68	2	7	116
05:50 PM	1	0	0	0	3	36	0	0	0	0	0	0	0	63	2	0	105
05:55 PM	3	0	1	0	3	45	0	0	0	0	0	0	0	65	3	0	120
Total	22	0	6	1	25	669	0	0	0	0	0	0	0	791	30	13	1557
Grand Total	34	0	18	4	54	1377	0	2	0	0	0	1	0	1637	57	18	3202
Apprch %	60.7	0.0	32.1	7.1	3.8	96.1	0.0	0.1	0.0	0.0	0.0	100.0	0.0	95.6	3.3	1.1	
Total %	1.1	0.0	0.6	0.1	1.7	43.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	51.1	1.8	0.6	

Quality Counts, LLC
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Ph: (503)620-4242

File Name : 00000409
Site Code : 00000409
Start Date : 01/15/2003

	Astor Way From North					Newberg (214) Hwy. From East					none (Houses) From South					Newberg (214) Hwy. From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:55 PM - Peak 1 of 1																					
Intersection	04:20 PM																				
Volume	11	0	12	1	24	29	750	0	2	781	0	0	0	0	0	0	858	26	6	890	1695
Percent	45.8	0.0	50.0	4.2		3.7	96.0	0.0	0.3		0.0	0.0	0.0	0.0		0.0	96.4	2.9	0.7		
04:40 Volume	0	0	0	1	1	4	71	0	1	76	0	0	0	0	0	0	85	3	0	88	165
Peak Factor																					0.856
High Int.	04:45 PM					05:10 PM					3:55:00 PM					04:40 PM					
Volume	3	0	1	0	4	4	73	0	0	77	0	0	0	0	0	0	85	3	0	88	
Peak Factor					0.500					0.845										0.843	

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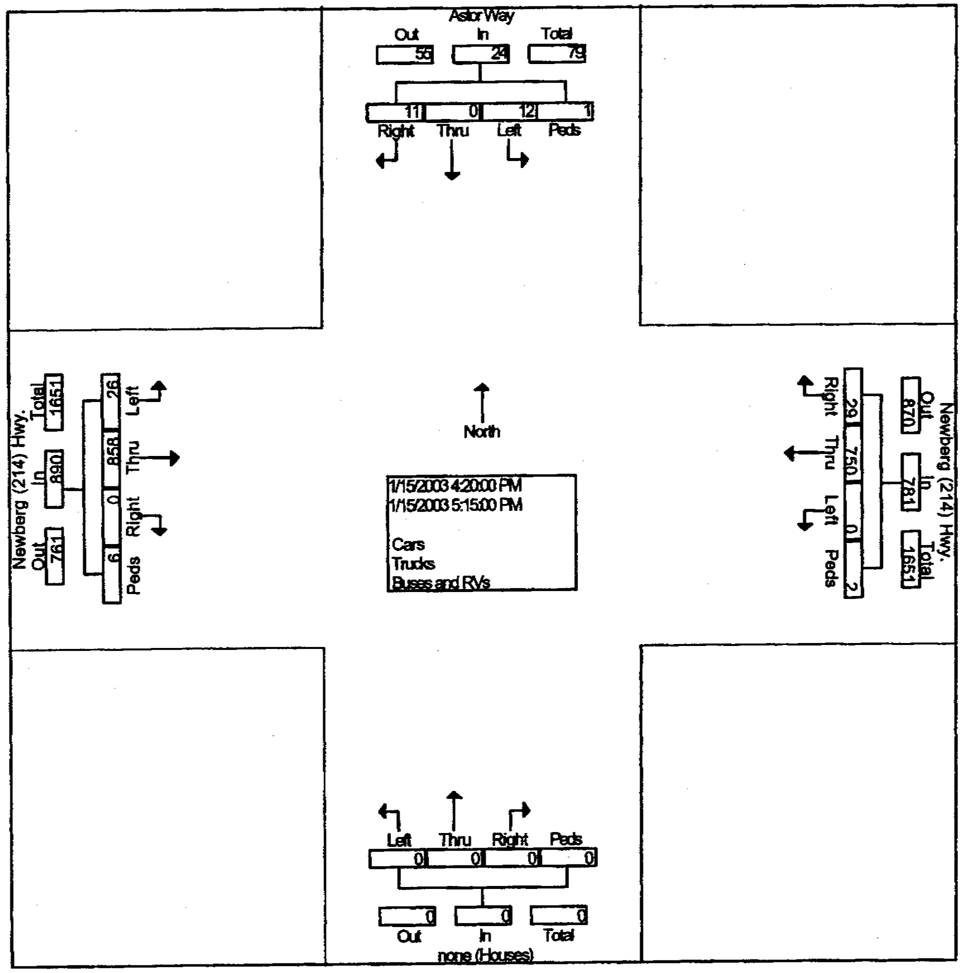
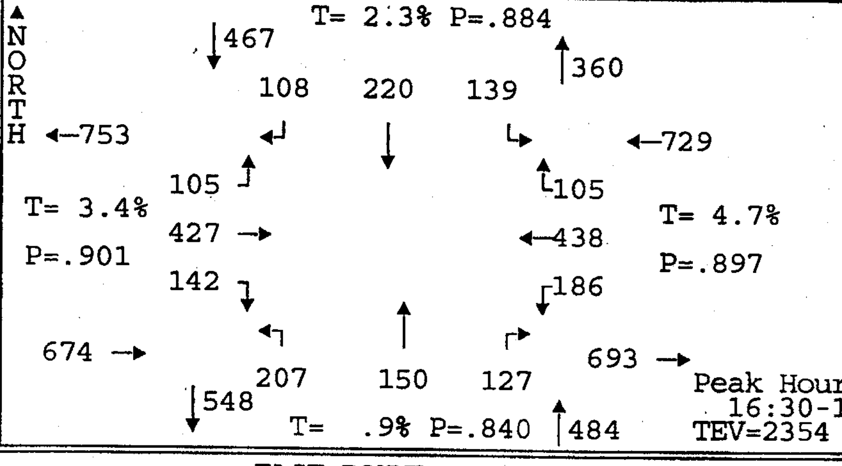
Page No : 3



INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
ORE 214 AT BOONES FERRY ROAD



DATE OF COUNT: 11/05/02
DAY OF WEEK: Tue
TIME STARTED: 16:00
TIME ENDED: 18:00

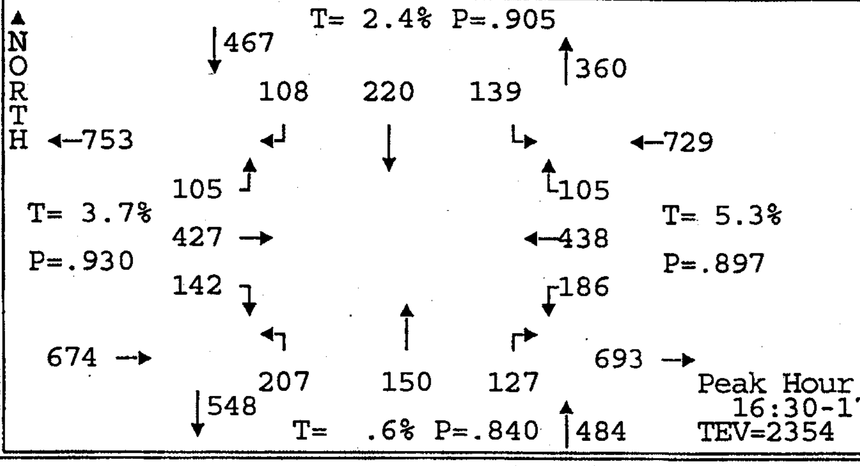
TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

PDAC

Traffic Smithy
(503) 641-6333

TIME PERIOD FROM - TO	EAST BOUND ↓	→	↑	SOUTH BOUND ↲	↓	↳	NORTH BOUND ↰	↑	↱	WEST BOUND ↓	←	↑	ALL
16:00-16:05	17	26	8	8	11	5	21	12	15	13	26	0	162
16:05-16:10	12	32	7	6	11	10	13	8	9	14	42	0	164
16:10-16:15	14	31	6	7	9	8	20	8	11	7	30	4	155
16:15-16:20	0	32	6	9	17	20	15	9	9	9	30	7	163
16:20-16:25	18	37	7	5	13	9	9	12	9	14	41	7	181
16:25-16:30	26	24	6	0	14	5	16	15	14	12	34	8	174
16:30-16:35	17	27	3	5	14	12	18	7	9	9	47	13	181
16:35-16:40	12	31	6	9	7	9	18	12	14	15	30	9	172
16:40-16:45	16	25	6	9	29	13	12	6	17	11	30	7	181
16:45-16:50	16	37	6	12	21	15	13	9	7	10	32	14	192
16:50-16:55	17	29	2	5	14	14	27	22	11	18	40	4	203
16:55-17:00	16	45	11	8	31	9	10	6	7	12	44	8	207
17:00-17:05	14	35	14	9	15	9	24	24	7	15	31	15	212
17:05-17:10	0	38	14	11	15	11	21	19	10	28	41	5	213
17:10-17:15	5	42	9	10	19	9	15	16	8	20	39	9	201
17:15-17:20	10	43	14	16	19	12	11	10	17	20	28	10	210
17:20-17:25	5	33	9	9	18	18	27	14	14	10	32	3	192
17:25-17:30	14	42	11	5	18	8	11	5	6	18	44	8	190
17:30-17:35	16	22	8	9	20	17	10	5	7	5	37	1	157
17:35-17:40	6	32	7	6	8	5	23	11	8	18	35	6	165
17:40-17:45	19	28	7	6	10	6	24	8	7	8	29	4	156
17:45-17:50	25	25	6	3	12	10	15	7	6	10	34	1	154
17:50-17:55	16	31	5	2	13	8	13	9	9	14	38	12	170
17:55-18:00	10	26	5	7	14	3	15	7	8	11	32	7	145
Total Survey	321	773	183	176	372	245	401	261	239	321	846	162	4300
PHF	.72	.87	.67	.73	.83	.83	.85	.64	.79	.68	.94	.88	.931
% Trucks	.6	4.7	3.3	1.7	2.2	2.9	1	.4	1.3	.9	6.5	3.1	3.1
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	1	0	0	24	0	0	0	0	0	1	0	
Hourly Totals													
16:00-17:00	181	376	74	83	191	129	192	126	132	144	426	81	2135
16:15-17:15	157	402	90	92	209	135	198	157	122	173	439	106	2280
16:30-17:30	142	427	105	108	220	139	207	150	127	186	438	105	2354
16:45-17:45	138	426	112	106	208	133	216	149	109	182	432	87	2298
17:00-18:00	140	397	109	93	181	116	209	135	107	177	420	81	2165

INTERSECTION TURN MOVEMENT COUNT PEAK HOUR REPORT
ORE 214 AT BOONES FERRY ROAD



DATE OF COUNT: 11/05/02
DAY OF WEEK: Tue
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

PDAC

Peak Hour
16:30-17:30
TEV=2354

Traffic Smithy
(503)641-6333

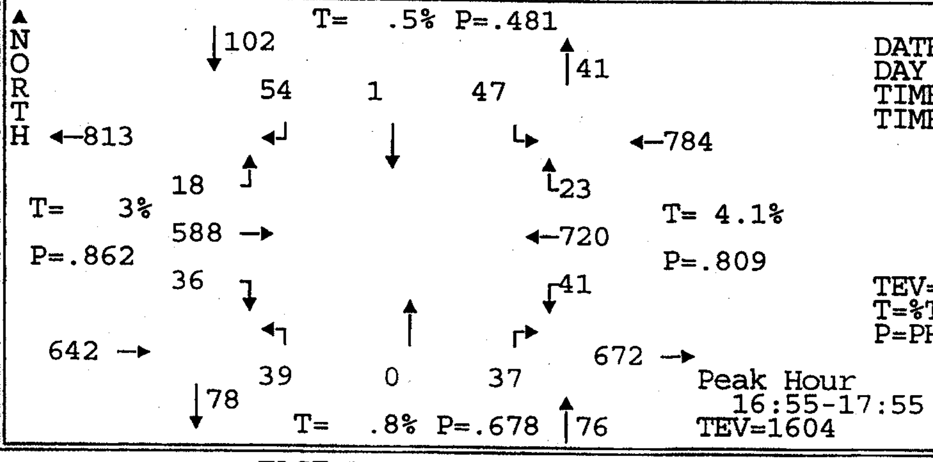
TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			ALL
ALL VEHICLES													
16:30-16:45	45	83	15	23	50	34	48	25	40	35	107	29	534
16:45-17:00	49	111	19	25	66	38	50	37	25	40	116	26	602
17:00-17:15	19	115	37	30	49	29	60	59	25	63	111	29	626
17:15-17:30	29	118	34	30	55	38	49	29	37	48	104	21	592
LIGHT TRUCKS (SINGLE UNIT 2 AXLES)													
16:30-16:45	0	4	0	0	0	1	0	0	0	0	3	0	8
16:45-17:00	0	3	1	0	2	2	0	0	0	1	4	0	13
17:00-17:15	0	4	1	0	1	0	0	0	0	0	2	0	8
17:15-17:30	0	1	0	1	3	0	0	0	1	0	2	3	11
MEDIUM TRUCKS (SINGLE UNIT > 2 AXLES)													
16:30-16:45	0	2	0	0	0	0	0	0	0	1	2	0	5
16:45-17:00	0	0	0	0	0	0	0	0	0	0	1	0	1
17:00-17:15	0	1	0	0	0	0	0	0	0	0	0	0	1
17:15-17:30	0	1	0	0	0	0	0	0	0	0	1	0	2
HEAVY TRUCKS (SEMI-TRACTOR TRAILER)													
16:30-16:45	0	1	0	0	0	0	0	0	0	0	4	0	5
16:45-17:00	0	1	1	0	0	0	0	0	0	0	2	1	5
17:00-17:15	0	2	0	0	0	0	0	0	0	0	5	0	7
17:15-17:30	0	2	0	0	0	1	1	0	1	0	7	0	12
BICYCLES													
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0

PEDESTRIANS (CROSSWALK USEAGE)	SOUTH	WEST	EAST	NORTH	ALL
16:30-16:45	0	3	0	0	3
16:45-17:00	0	0	0	0	0
17:00-17:15	0	9	0	0	9
17:15-17:30	0	6	0	0	6

Peak Hour by Movement													
PHF	.72	.9	.71	.9	.83	.91	.86	.64	.79	.74	.94	.91	.940
% Trucks(all)	0	5.2	2.9	.9	2.7	2.9	.5	0	1.6	1.1	7.5	3.8	3.3
% Trucks(M+H)	0	2.3	1	0	0	.7	.5	0	.8	.5	5	1	1.6
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	

Hourly Totals													
16:00-17:00	181	376	74	83	191	129	192	126	132	144	426	81	2135
16:15-17:15	157	402	90	92	209	135	198	157	122	173	439	106	2280
16:30-17:30	142	427	105	108	220	139	207	150	127	186	438	105	2354
16:45-17:45	138	426	112	106	208	133	216	149	109	182	432	87	2298
17:00-18:00	140	397	109	93	181	116	209	135	107	177	420	81	2165

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
ORE 214 AT MERIDIAN DRIVE/5TH STREET



DATE OF COUNT: 11/05/02
DAY OF WEEK: Tue
TIME STARTED: 16:00
TIME ENDED: 18:00

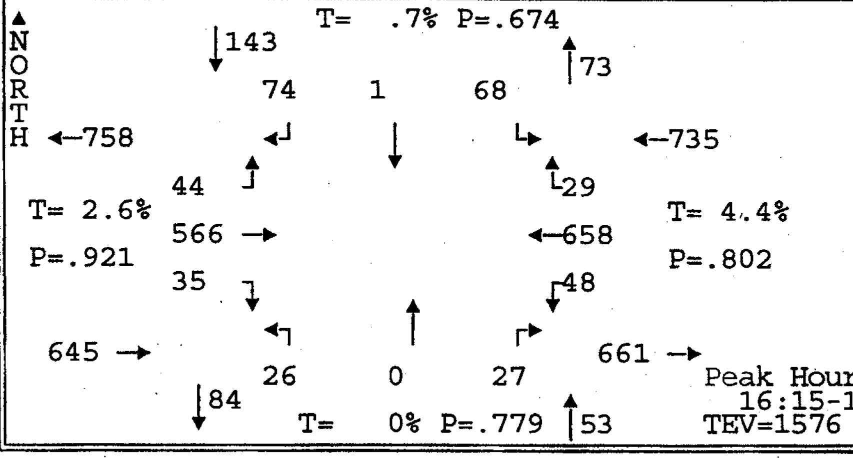
TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

MKHI

Traffic Smithy
(503) 641-6333

TIME PERIOD FROM - TO	EAST BOUND ↴	→	↰	SOUTH BOUND ↲	↓	↳	NORTH BOUND ↰	↑	↱	WEST BOUND ↓	←	↑	ALL
16:00-16:05	5	53	5	4	0	5	3	0	0	3	51	7	136
16:05-16:10	0	38	13	9	0	8	4	0	5	2	49	5	133
16:10-16:15	4	44	6	7	0	1	0	0	2	5	54	0	123
16:15-16:20	4	51	6	10	0	9	2	0	2	3	56	3	146
16:20-16:25	3	50	1	3	0	3	3	0	3	7	70	5	148
16:25-16:30	3	52	5	6	0	7	0	0	4	2	63	3	145
16:30-16:35	3	42	5	4	0	11	2	0	3	2	58	5	135
16:35-16:40	1	50	7	4	0	5	0	0	1	3	58	3	132
16:40-16:45	5	56	5	5	0	1	2	0	2	2	47	0	125
16:45-16:50	2	29	4	2	0	5	3	0	2	5	15	2	69
16:50-16:55	2	35	2	2	0	3	1	0	1	6	16	1	69
16:55-17:00	5	48	4	2	1	7	7	0	3	6	63	2	148
17:00-17:05	1	41	1	17	0	5	4	0	2	2	68	2	143
17:05-17:10	4	60	3	8	0	4	0	0	2	7	90	2	180
17:10-17:15	2	52	1	11	0	8	2	0	2	3	54	1	136
17:15-17:20	8	55	1	1	0	0	3	0	3	2	60	4	137
17:20-17:25	2	63	1	1	0	1	11	0	3	1	53	1	137
17:25-17:30	1	41	1	2	0	2	1	0	3	4	54	2	111
17:30-17:35	1	47	2	2	0	6	3	0	7	3	59	1	131
17:35-17:40	2	46	1	4	0	6	2	0	1	2	66	4	134
17:40-17:45	4	34	3	3	0	5	1	0	8	4	40	1	103
17:45-17:50	3	54	0	0	0	2	4	0	1	4	56	2	126
17:50-17:55	3	47	0	3	0	1	1	0	2	3	57	1	118
17:55-18:00	3	25	4	2	0	1	1	0	4	1	57	1	99
Total Survey	71	1113	81	112	1	106	60	0	66	82	1314	58	3064
PHF	.64	.86	.56	.38	.25	.69	.61	0	.58	.68	.81	.82	.851
% Trucks	1.4	3.2	1.2	0	0	.9	0	0	1.5	1.2	4.4	1.7	3.3
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	0	0	0	0	0	0	0	0	0	2	0	
Hourly Totals													
16:00-17:00	37	548	63	58	1	65	27	0	28	46	600	36	1509
16:15-17:15	35	566	44	74	1	68	26	0	27	48	658	29	1576
16:30-17:30	36	572	35	59	1	52	36	0	27	43	636	25	1522
16:45-17:45	34	551	24	55	1	52	38	0	37	45	638	23	1498
17:00-18:00	34	565	18	54	0	41	33	0	38	36	714	22	1555

INTERSECTION TURN MOVEMENT COUNT PEAK HOUR REPORT
ORE 214 AT MERIDIAN DRIVE/5TH STREET



DATE OF COUNT: 11/05/02
DAY OF WEEK: Tue
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

MKHI

Traffic Smithy
(503)641-6333

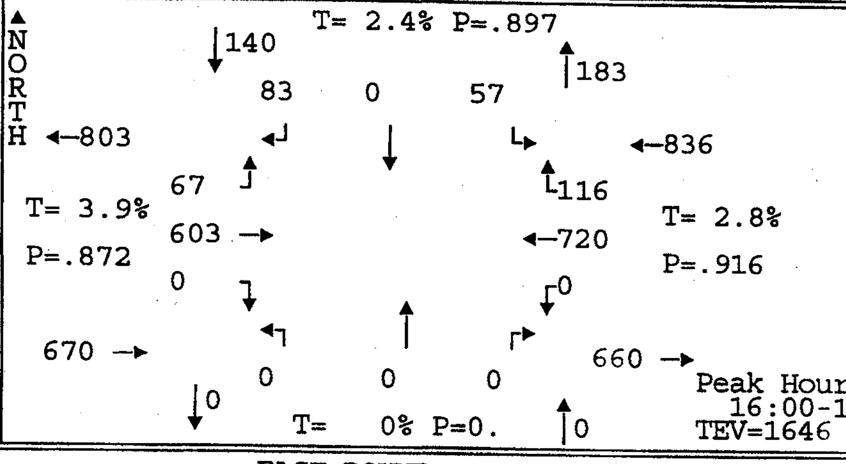
TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			ALL
ALL VEHICLES													
16:15-16:30	10	153	12	19	0	19	5	0	9	12	189	11	439
16:30-16:45	9	148	17	13	0	17	4	0	6	7	163	8	392
16:45-17:00	9	112	10	6	1	15	11	0	6	17	94	5	286
17:00-17:15	7	153	5	36	0	17	6	0	6	12	212	5	459
LIGHT TRUCKS (SINGLE UNIT 2 AXLES)													
16:15-16:30	0	0	0	0	0	0	0	0	0	0	4	0	4
16:30-16:45	0	5	1	0	0	0	0	0	0	0	5	0	11
16:45-17:00	0	0	0	0	0	1	0	0	0	1	4	0	6
17:00-17:15	0	4	0	0	0	0	0	0	0	0	6	0	10
MEDIUM TRUCKS (SINGLE UNIT > 2 AXLES)													
16:15-16:30	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAVY TRUCKS (SEMI-TRACTOR TRAILER)													
16:15-16:30	0	4	0	0	0	0	0	0	0	0	3	0	7
16:30-16:45	0	1	0	0	0	0	0	0	0	0	2	0	3
16:45-17:00	0	1	0	0	0	0	0	0	0	0	1	0	2
17:00-17:15	0	1	0	0	0	0	0	0	0	0	6	0	7
BICYCLES													
16:15-16:30	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0

PEDESTRIANS	SOUTH	WEST	EAST	NORTH	ALL
	-CROSSWALK USEAGE-				
16:15-16:30	0	0	0	0	0
16:30-16:45	0	0	0	0	0
16:45-17:00	0	0	0	0	0
17:00-17:15	0	0	0	0	0

Peak Hour by Movement													
PHF	.88	.92	.65	.51	.25	.89	.59	0	.75	.71	.78	.66	.858
% Trucks (all)	0	2.8	2.3	0	0	1.5	0	0	0	2.1	4.7	0	3.2
% Trucks (M+H)	0	1.2	0	0	0	0	0	0	0	0	1.8	0	1.2
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	

Hourly Totals													
16:00-17:00	37	548	63	58	1	65	27	0	28	46	600	36	1509
16:15-17:15	35	566	44	74	1	68	26	0	27	48	658	29	1576
16:30-17:30	36	572	35	59	1	52	36	0	27	43	636	25	1522
16:45-17:45	34	551	24	55	1	52	38	0	37	45	638	23	1498
17:00-18:00	34	565	18	54	0	41	33	0	38	36	714	22	1555

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
ORE 214 AT FRONT STREET



DATE OF COUNT: 11/14/02
DAY OF WEEK: Thu
TIME STARTED: 16:00
TIME ENDED: 18:00

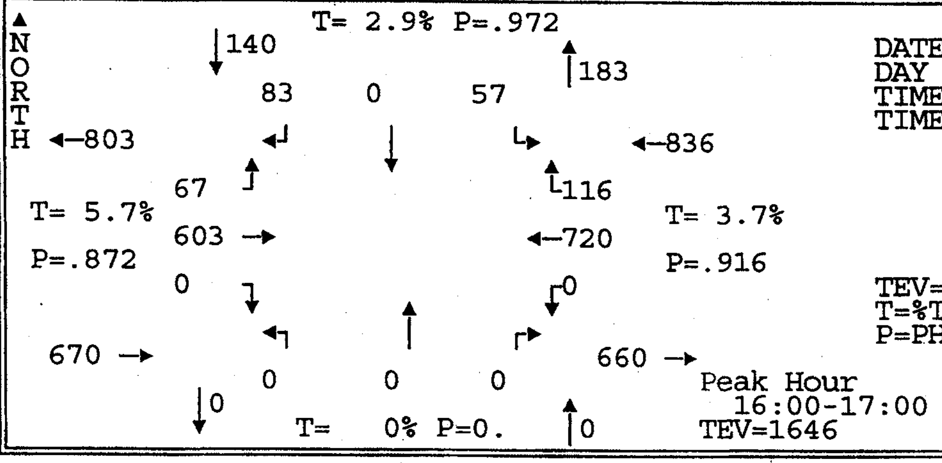
TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

LTGC

Traffic Smithy
(503) 641-6333

TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			ALL
	↓	→	↑	↲	↓	↳	↰	↑	↱	↓	←	↑	
16:00-16:05	0	49	10	6	0	7	0	0	0	0	59	10	141
16:05-16:10	0	62	13	10	0	4	0	0	0	0	76	8	173
16:10-16:15	0	50	8	3	0	6	0	0	0	0	49	6	122
16:15-16:20	0	46	7	10	0	5	0	0	0	0	57	15	140
16:20-16:25	0	60	6	5	0	4	0	0	0	0	64	8	147
16:25-16:30	0	42	6	7	0	4	0	0	0	0	53	13	125
16:30-16:35	0	41	4	10	0	8	0	0	0	0	69	7	139
16:35-16:40	0	58	2	4	0	3	0	0	0	0	75	11	153
16:40-16:45	0	46	3	2	0	6	0	0	0	0	56	10	123
16:45-16:50	0	55	2	13	0	3	0	0	0	0	56	8	137
16:50-16:55	0	38	2	9	0	6	0	0	0	0	50	7	112
16:55-17:00	0	56	4	4	0	1	0	0	0	0	56	13	134
17:00-17:05	0	55	4	7	0	2	0	0	0	0	60	6	134
17:05-17:10	0	56	7	3	0	1	0	0	0	0	56	6	129
17:10-17:15	0	48	7	10	0	3	0	0	0	0	55	8	131
17:15-17:20	0	52	4	3	0	0	0	0	0	0	56	6	121
17:20-17:25	0	41	5	12	0	8	0	0	0	0	46	12	124
17:25-17:30	0	54	4	10	0	3	0	0	0	0	44	7	122
17:30-17:35	0	57	2	1	0	4	0	0	0	0	50	5	119
17:35-17:40	0	35	3	4	0	2	0	0	0	0	43	9	96
17:40-17:45	0	42	3	7	0	4	0	0	0	0	58	6	120
17:45-17:50	0	40	3	9	0	2	0	0	0	0	44	4	102
17:50-17:55	0	56	6	3	0	2	0	0	0	0	46	4	117
17:55-18:00	0	32	3	7	0	4	0	0	0	0	41	9	96
Total Survey	0	1171	118	159	0	92	0	0	0	0	1319	198	3057
PHF	0	.94	.54	.8	0	.84	0	0	0	0	.9	.81	.943
% Trucks	0	3.8	5.1	3.1	0	1.1	0	0	0	0	2.7	3.5	3.2
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	0	0	0	0	0	0	0	0	0	9	0	
Hourly Totals													
16:00-17:00	0	603	67	83	0	57	0	0	0	0	720	116	1646
16:15-17:15	0	601	54	84	0	46	0	0	0	0	707	112	1604
16:30-17:30	0	600	48	87	0	44	0	0	0	0	679	101	1559
16:45-17:45	0	589	47	83	0	37	0	0	0	0	630	93	1479
17:00-18:00	0	568	51	76	0	35	0	0	0	0	599	82	1411

INTERSECTION TURN MOVEMENT COUNT PEAK HOUR REPORT
ORE 214 AT FRONT STREET



DATE OF COUNT: 11/14/02
DAY OF WEEK: Thu
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

LTGC

Traffic Smithy
(503)641-6333

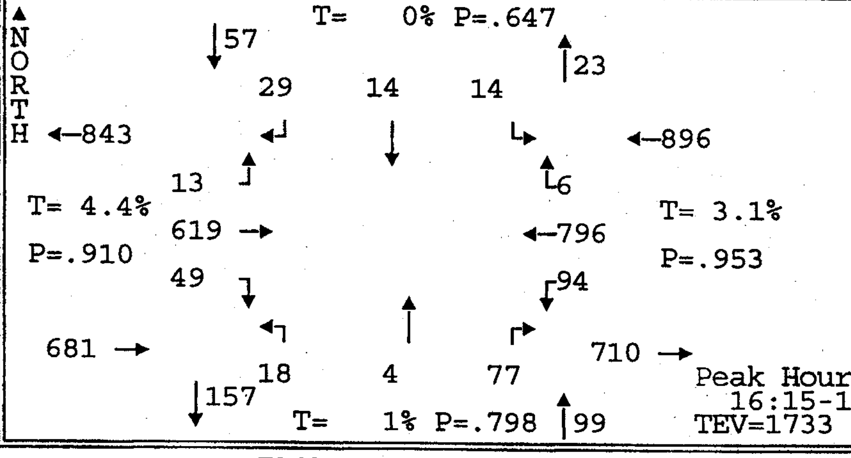
TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			
	↓	→	↑	↲	↓	↳	↰	↑	↱	↓	←	↑	ALL
ALL VEHICLES													
16:00-16:15	0	161	31	19	0	17	0	0	0	0	184	24	436
16:15-16:30	0	148	19	22	0	13	0	0	0	0	174	36	412
16:30-16:45	0	145	9	16	0	17	0	0	0	0	200	28	415
16:45-17:00	0	149	8	26	0	10	0	0	0	0	162	28	383
LIGHT TRUCKS (SINGLE UNIT 2 AXLES)													
16:00-16:15	0	10	0	0	0	0	0	0	0	0	3	1	14
16:15-16:30	0	3	0	0	0	0	0	0	0	0	2	1	6
16:30-16:45	0	6	0	0	0	0	0	0	0	0	3	0	9
16:45-17:00	0	2	0	0	0	0	0	0	0	0	2	2	6
MEDIUM TRUCKS (SINGLE UNIT > 2 AXLES)													
16:00-16:15	0	1	0	0	0	0	0	0	0	0	0	1	2
16:15-16:30	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30-16:45	0	0	0	1	0	0	0	0	0	0	2	0	3
16:45-17:00	0	2	0	0	0	0	0	0	0	0	0	1	3
HEAVY TRUCKS (SEMI-TRACTOR TRAILER)													
16:00-16:15	0	1	3	0	0	0	0	0	0	0	3	0	7
16:15-16:30	0	3	2	0	0	1	0	0	0	0	2	1	9
16:30-16:45	0	3	0	2	0	0	0	0	0	0	4	0	9
16:45-17:00	0	2	0	0	0	0	0	0	0	0	3	0	5
BICYCLES													
16:00-16:15	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15-16:30	0	3	0	0	0	0	0	0	0	0	1	0	4
16:30-16:45	0	0	0	0	0	0	0	0	0	0	1	0	1
16:45-17:00	0	1	0	0	0	0	0	0	0	0	1	0	2

PEDESTRIANS	CROSSWALK USEAGE SOUTH	WEST	EAST	NORTH	ALL
16:00-16:15	0	0	0	4	4
16:15-16:30	0	0	0	0	0
16:30-16:45	0	0	0	5	5
16:45-17:00	0	0	0	0	0

Peak Hour by Movement													
PHF	0	.94	.54	.8	0	.84	0	0	0	0	.9	.81	.943
% Trucks(all)	0	5.5	7.5	3.6	0	1.8	0	0	0	0	3.3	6	4.4
% Trucks(M+H)	0	2	7.5	3.6	0	1.8	0	0	0	0	1.9	2.6	2.3
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	

Hourly Totals													
16:00-17:00	0	603	67	83	0	57	0	0	0	0	720	116	1646
16:15-17:15	0	601	54	84	0	46	0	0	0	0	707	112	1604
16:30-17:30	0	600	48	87	0	44	0	0	0	0	679	101	1559
16:45-17:45	0	589	47	83	0	37	0	0	0	0	630	93	1479
17:00-18:00	0	568	51	76	0	35	0	0	0	0	599	82	1411

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
ORE 214 AT PARK AVENUE



DATE OF COUNT: 11/19/02
DAY OF WEEK: Tue
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

PDAI

Peak Hour
16:15-17:15
TEV=1733

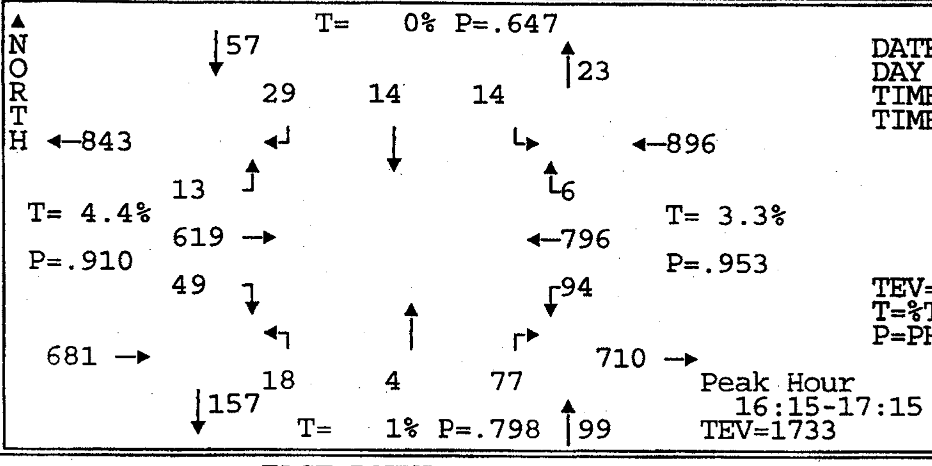
Traffic Smithy
(503) 641-6333

TIME PERIOD FROM - TO	EAST BOUND ↓	→	↑	SOUTH BOUND ↲	↓	↳	NORTH BOUND ↰	↑	↱	WEST BOUND ↓	←	↑	ALL
16:00-16:05	6	53	1	1	0	2	2	1	7	10	50	2	135
16:05-16:10	3	48	3	2	0	1	1	0	9	7	63	3	140
16:10-16:15	2	59	0	2	1	0	0	0	6	7	56	1	134
16:15-16:20	2	52	0	3	0	0	2	0	6	9	69	1	144
16:20-16:25	4	43	2	0	2	0	1	1	6	9	62	0	130
16:25-16:30	2	55	0	1	0	1	4	0	3	7	66	0	139
16:30-16:35	3	62	0	3	0	2	1	1	1	13	66	0	152
16:35-16:40	3	56	4	1	2	1	2	0	6	4	68	2	149
16:40-16:45	5	53	1	5	1	0	0	1	9	9	73	0	157
16:45-16:50	1	59	1	3	1	2	0	1	5	8	60	0	141
16:50-16:55	6	53	1	2	1	1	0	0	8	8	71	3	154
16:55-17:00	5	40	1	2	1	0	1	0	9	7	66	0	132
17:00-17:05	4	49	1	4	2	4	4	0	7	5	62	0	142
17:05-17:10	9	43	1	3	1	2	2	0	7	10	61	0	139
17:10-17:15	5	54	1	2	3	1	1	0	10	5	72	0	154
17:15-17:20	4	52	0	2	1	3	2	0	8	6	49	0	127
17:20-17:25	6	51	1	0	0	1	4	0	9	1	59	1	133
17:25-17:30	2	40	4	3	0	3	2	0	5	10	52	2	123
17:30-17:35	4	50	1	1	1	1	1	0	4	6	55	1	125
17:35-17:40	3	40	1	1	0	1	3	0	4	12	50	0	115
17:40-17:45	6	39	0	2	1	1	3	1	2	5	50	1	111
17:45-17:50	3	45	1	3	0	0	1	1	4	5	44	2	109
17:50-17:55	2	43	0	0	0	0	4	0	8	2	48	0	107
17:55-18:00	7	42	0	0	0	0	2	0	5	2	46	0	104

Total Survey	97	1181	25	46	18	27	43	7	148	167	1418	19	3196
PHF	.68	.89	.54	.73	.58	.5	.64	.5	.8	.81	.96	.5	.945
% Trucks	3.1	4.6	0	0	0	0	2.3	0	.7	.6	3.5	0	3.4
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	1	0	0	0	0	0	0	0	0	2	0	

Hourly Totals													
16:00-17:00	42	633	14	25	9	10	14	5	75	98	770	12	1707
16:15-17:15	49	619	13	29	14	14	18	4	77	94	796	6	1733
16:30-17:30	53	612	16	30	13	20	19	3	84	86	759	8	1703
16:45-17:45	55	570	13	25	12	20	23	2	78	83	707	8	1596
17:00-18:00	55	548	11	21	9	17	29	2	73	69	648	7	1489

INTERSECTION TURN MOVEMENT COUNT PEAK HOUR REPORT
ORE 214 AT PARK AVENUE



DATE OF COUNT: 11/19/02
DAY OF WEEK: Tue
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

PDAI

Traffic Smithy
(503)641-6333

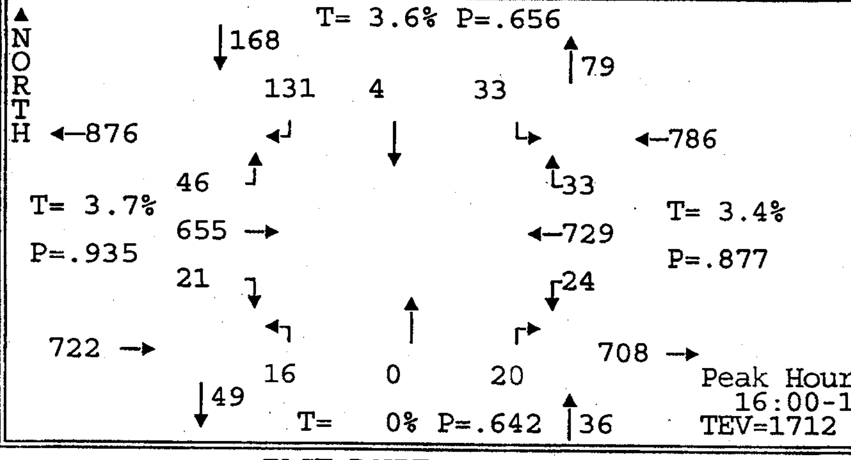
TIME PERIOD FROM - TO	EAST BOUND ↓	→	↑	SOUTH BOUND ↲	↓	↳	NORTH BOUND ↰	↑	↱	WEST BOUND ↓	←	↑	ALL
ALL VEHICLES													
16:15-16:30	8	150	2	4	2	1	7	1	15	25	197	1	413
16:30-16:45	11	171	5	9	3	3	3	2	16	26	207	2	458
16:45-17:00	12	152	3	7	3	3	1	1	22	23	197	3	427
17:00-17:15	18	146	3	9	6	7	7	0	24	20	195	0	435
LIGHT TRUCKS (SINGLE UNIT 2 AXLES)													
16:15-16:30	1	1	0	0	0	0	0	0	0	0	6	0	8
16:30-16:45	1	3	0	0	0	0	0	0	0	0	2	0	6
16:45-17:00	0	2	0	0	0	0	0	0	0	1	3	0	6
17:00-17:15	0	7	0	0	0	0	1	0	0	0	7	0	15
MEDIUM TRUCKS (SINGLE UNIT > 2 AXLES)													
16:15-16:30	0	1	0	0	0	0	0	0	0	0	1	0	2
16:30-16:45	0	0	0	0	0	0	0	0	0	0	1	0	1
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAVY TRUCKS (SEMI-TRACTOR TRAILER)													
16:15-16:30	0	6	0	0	0	0	0	0	0	0	2	0	8
16:30-16:45	0	4	0	0	0	0	0	0	0	0	2	0	6
16:45-17:00	0	2	0	0	0	0	0	0	0	0	4	0	6
17:00-17:15	0	2	0	0	0	0	0	0	0	0	1	0	3
BICYCLES													
16:15-16:30	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0

PEDESTRIANS	CROSSWALK USEAGE: SOUTH	WEST	EAST	NORTH	ALL
16:15-16:30	0	0	0	0	0
16:30-16:45	1	0	0	0	1
16:45-17:00	0	0	0	1	1
17:00-17:15	0	0	0	0	0

Peak Hour by Movement													
PHF	.68	.9	.65	.81	.58	.5	.64	.5	.8	.9	.96	.5	.945
% Trucks(all)	4.1	4.5	0	0	0	0	5.6	0	0	1.1	3.6	0	3.5
% Trucks(M+H)	0	2.4	0	0	0	0	0	0	0	0	1.4	0	1.5
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	

Hourly Totals													
16:00-17:00	42	633	14	25	9	10	14	5	75	98	770	12	1707
16:15-17:15	49	619	13	29	14	14	18	4	77	94	796	6	1733
16:30-17:30	53	612	16	30	13	20	19	3	84	86	759	8	1703
16:45-17:45	55	570	13	25	12	20	23	2	78	83	707	8	1596
17:00-18:00	55	548	11	21	9	17	29	2	73	69	648	7	1489

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
ORE 214 AT PROGRESS WAY



DATE OF COUNT: 11/19/02
DAY OF WEEK: Tue
TIME STARTED: 16:00
TIME ENDED: 18:00

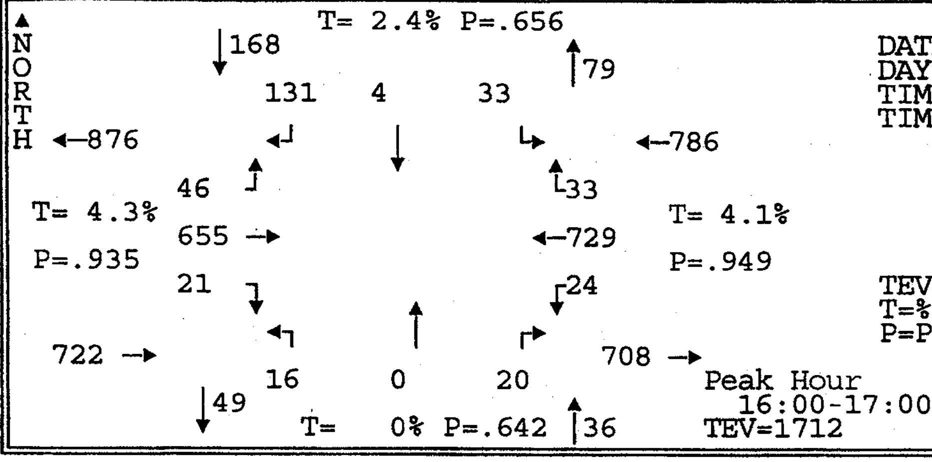
TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

DGTZ

Traffic Smithy
(503) 641-6333

TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			
	↓	→	↑	←	↓	→	←	↑	→	↓	←	↑	ALL
16:00-16:05	3	61	4	19	0	7	1	0	2	0	49	3	149
16:05-16:10	3	55	5	18	0	2	0	0	0	5	57	6	151
16:10-16:15	1	56	5	16	0	2	0	0	1	1	45	5	132
16:15-16:20	5	45	3	8	0	1	1	0	4	1	63	6	137
16:20-16:25	0	49	3	9	1	1	0	0	2	3	63	1	132
16:25-16:30	1	55	4	12	0	2	0	0	0	2	60	2	138
16:30-16:35	2	61	4	10	0	3	3	0	1	2	65	2	153
16:35-16:40	2	55	2	9	0	3	1	0	4	2	58	0	136
16:40-16:45	2	58	3	8	0	2	3	0	2	2	72	4	156
16:45-16:50	1	54	8	6	1	3	1	0	2	2	60	0	138
16:50-16:55	0	61	1	7	2	2	1	0	0	1	80	3	158
16:55-17:00	1	45	4	9	0	5	5	0	2	3	57	1	132
17:00-17:05	1	56	3	5	0	2	2	0	4	3	61	2	139
17:05-17:10	4	46	1	14	0	0	2	0	3	2	51	0	123
17:10-17:15	3	68	0	6	0	0	2	0	1	2	77	0	159
17:15-17:20	0	60	1	3	0	0	2	0	2	2	50	0	120
17:20-17:25	1	59	2	7	0	2	1	0	2	2	54	3	133
17:25-17:30	2	49	1	0	0	3	4	0	4	0	53	0	116
17:30-17:35	2	50	0	3	0	0	0	0	0	0	60	0	115
17:35-17:40	1	47	0	0	0	0	0	0	1	1	60	0	110
17:40-17:45	3	35	0	1	0	2	4	0	2	2	61	0	110
17:45-17:50	3	48	1	1	0	2	1	0	2	1	50	0	109
17:50-17:55	2	49	1	0	0	0	1	0	1	2	48	0	104
17:55-18:00	1	44	0	3	0	0	2	0	1	1	46	0	98
Total Survey	44	1266	56	174	4	44	37	0	43	42	1400	38	3148
PHF	.58	.94	.82	.62	.33	.75	.57	0	.63	.86	.86	.49	.946
% Trucks	2.3	3.7	5.4	4.6	0	0	0	0	0	2.4	2.9	21.1	3.5
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	11	0	0	4	0	0	0	0	0	1	0	
Hourly Totals													
16:00-17:00	21	655	46	131	4	33	16	0	20	24	729	33	1712
16:15-17:15	22	653	36	103	4	24	21	0	25	25	767	21	1701
16:30-17:30	19	672	30	84	3	25	27	0	27	23	738	15	1663
16:45-17:45	19	630	21	61	3	19	24	0	23	20	724	9	1553
17:00-18:00	23	611	10	43	0	11	21	0	23	18	671	5	1436

INTERSECTION TURN MOVEMENT COUNT PEAK HOUR REPORT
ORE 214 AT PROGRESS WAY



DATE OF COUNT: 11/19/02
DAY OF WEEK: Tue
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

DGTZ

Traffic Smithy
(503)641-6333

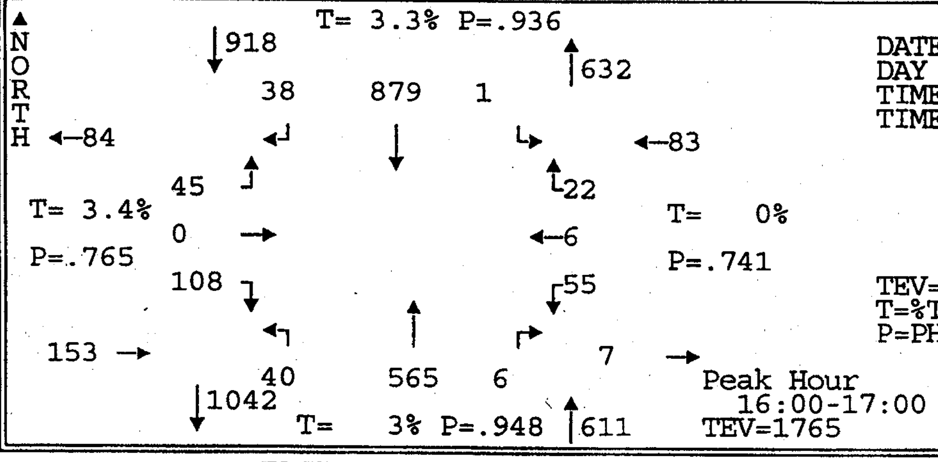
TIME PERIOD FROM - TO	EAST BOUND ↓	→	↑	SOUTH BOUND ↲	↓	↳	NORTH BOUND ↰	↑	↱	WEST BOUND ↓	←	↑	ALL
ALL VEHICLES													
16:00-16:15	7	172	14	53	0	11	1	0	3	6	151	14	432
16:15-16:30	6	149	10	29	1	4	1	0	6	6	186	9	407
16:30-16:45	6	174	9	27	0	8	7	0	7	6	195	6	445
16:45-17:00	2	160	13	22	3	10	7	0	4	6	197	4	428
LIGHT TRUCKS (SINGLE UNIT 2 AXLES)													
16:00-16:15	0	6	2	0	0	0	0	0	0	0	2	4	14
16:15-16:30	0	1	0	1	0	0	0	0	0	1	6	3	12
16:30-16:45	0	2	1	0	0	0	0	0	0	0	4	0	7
16:45-17:00	0	2	0	0	0	0	0	0	0	0	2	0	4
MEDIUM TRUCKS (SINGLE UNIT > 2 AXLES)													
16:00-16:15	0	0	0	0	0	0	0	0	0	0	1	0	1
16:15-16:30	0	2	0	0	0	0	0	0	0	0	0	0	2
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	1	0	0	0	0	0	0	0	0	0	0	1
HEAVY TRUCKS (SEMI-TRACTOR TRAILER)													
16:00-16:15	0	4	0	1	0	0	0	0	0	0	2	0	7
16:15-16:30	0	5	0	0	0	0	0	0	0	0	2	0	7
16:30-16:45	0	4	0	1	0	0	0	0	0	0	1	1	7
16:45-17:00	0	1	0	1	0	0	0	0	0	0	3	0	5
BICYCLES													
16:00-16:15	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15-16:30	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	1	0	0	0	0	0	0	0	0	0	0	1

PEDESTRIANS	CROSSWALK USEAGE SOUTH	WEST	EAST	NORTH	ALL
16:00-16:15	1	0	0	0	1
16:15-16:30	6	0	0	0	6
16:30-16:45	1	0	0	0	1
16:45-17:00	2	3	0	1	6

Peak Hour by Movement													
PHF	.75	.94	.82	.62	.33	.75	.57	0	.71	1	.93	.59	.961
% Trucks(all)	0	4.3	6.5	3.1	0	0	0	0	0	4.2	3.2	24.2	3.9
% Trucks(M+H)	0	2.6	0	2.3	0	0	0	0	0	0	1.2	3	1.8
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	

Hourly Totals													
16:00-17:00	21	655	46	131	4	33	16	0	20	24	729	33	1712
16:15-17:15	22	653	36	103	4	24	21	0	25	25	767	21	1701
16:30-17:30	19	672	30	84	3	25	27	0	27	23	738	15	1663
16:45-17:45	19	630	21	61	3	19	24	0	23	20	724	9	1553
17:00-18:00	23	611	10	43	0	11	21	0	23	18	671	5	1436

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
ORE 99E AT INDUSTRIAL AVENUE/MACLAREN



DATE OF COUNT: 11/12/02
DAY OF WEEK: Tue
TIME STARTED: 16:00
TIME ENDED: 18:00

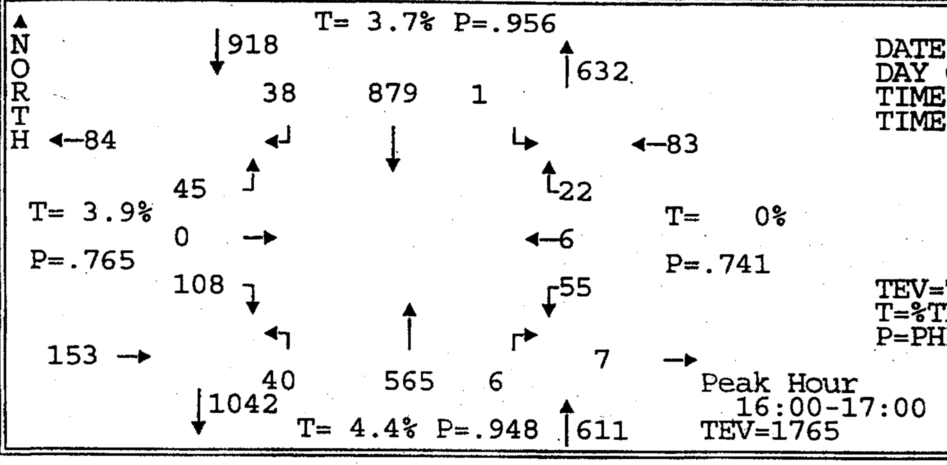
TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

DLKN

Traffic Smithy
(503) 641-6333

TIME PERIOD FROM - TO	EAST BOUND ↓	→	↑	SOUTH BOUND ↲	↓	↳	NORTH BOUND ↰	↑	↱	WEST BOUND ↓	←	↑	ALL
16:00-16:05	13	0	2	2	90	0	1	65	0	7	0	2	182
16:05-16:10	12	0	5	5	65	0	6	51	0	7	1	5	157
16:10-16:15	12	0	6	6	57	0	2	36	0	5	0	1	125
16:15-16:20	7	0	2	2	59	0	3	35	0	6	0	1	115
16:20-16:25	5	0	3	5	82	0	6	62	0	2	2	1	168
16:25-16:30	6	0	3	2	68	0	5	41	0	2	0	1	128
16:30-16:35	13	0	5	2	82	0	2	43	0	5	1	0	153
16:35-16:40	7	0	7	3	88	0	2	40	0	2	0	3	152
16:40-16:45	6	0	4	2	63	0	4	57	1	4	1	1	143
16:45-16:50	9	0	3	3	65	0	5	49	2	1	0	0	137
16:50-16:55	8	0	4	3	75	0	1	38	0	5	1	2	137
16:55-17:00	10	0	1	3	85	1	3	48	3	9	0	5	168
17:00-17:05	13	0	5	2	74	1	2	57	0	3	1	0	158
17:05-17:10	8	0	6	1	70	0	1	54	0	3	2	0	145
17:10-17:15	6	0	7	2	67	0	0	56	0	3	1	2	144
17:15-17:20	3	0	2	0	72	0	1	49	0	0	0	1	128
17:20-17:25	6	0	1	2	67	0	0	44	0	1	0	1	122
17:25-17:30	5	0	3	0	73	0	0	51	0	3	1	1	137
17:30-17:35	3	0	0	1	74	0	1	49	0	1	1	0	130
17:35-17:40	1	0	1	1	80	1	1	36	0	1	0	0	122
17:40-17:45	2	0	2	0	41	0	0	52	0	1	0	0	98
17:45-17:50	2	0	1	1	62	0	1	33	0	1	0	0	101
17:50-17:55	1	0	4	2	51	0	0	49	0	0	0	0	107
17:55-18:00	2	0	1	1	47	0	0	42	0	0	0	0	93
Total Survey	160	0	78	51	1657	3	47	1137	6	72	12	27	3250
PHF	.73	0	.7	.73	.92	.25	.71	.93	.3	.72	.5	.69	.950
% Trucks	3.1	0	3.8	11.8	3.1	0	0	3.2	0	0	0	0	3.1
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	0	0	0	0	0	0	0	0	0	0	0	
Hourly Totals													
16:00-17:00	108	0	45	38	879	1	40	565	6	55	6	22	1765
16:15-17:15	98	0	50	30	878	2	34	580	6	45	9	16	1748
16:30-17:30	94	0	48	23	881	2	21	586	6	39	8	16	1724
16:45-17:45	74	0	35	18	843	3	15	583	5	31	7	12	1626
17:00-18:00	52	0	33	13	778	2	7	572	0	17	6	5	1485

INTERSECTION TURN MOVEMENT COUNT PEAK HOUR REPORT
ORE 99E AT INDUSTRIAL AVENUE/MACLAREN



DATE OF COUNT: 11/12/02
DAY OF WEEK: Tue
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

DLKN

Traffic Smithy
(503) 641-6333

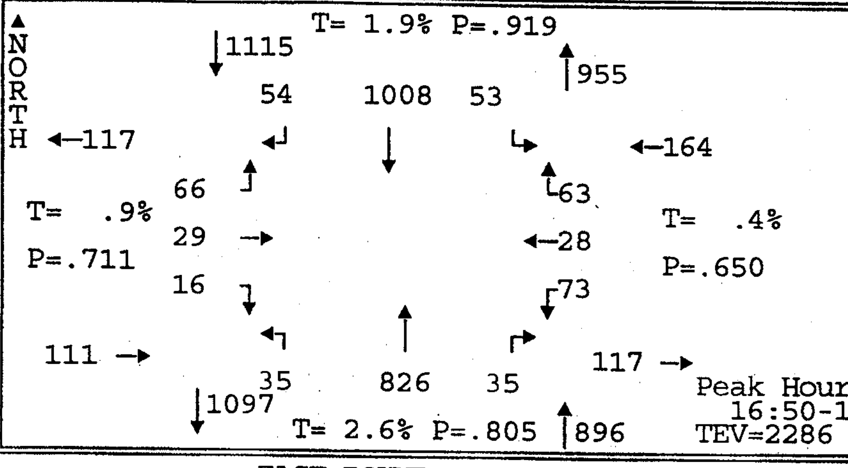
TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			ALL
	↓	→	↑	↲	↓	↳	↰	↑	↱	↓	←	↑	ALL
ALL VEHICLES													
16:00-16:15	37	0	13	13	212	0	9	152	0	19	1	8	464
16:15-16:30	18	0	8	9	209	0	14	138	0	10	2	3	411
16:30-16:45	26	0	16	7	233	0	8	140	1	11	2	4	448
16:45-17:00	27	0	8	9	225	1	9	135	5	15	1	7	442
LIGHT TRUCKS (SINGLE UNIT 2 AXLES)													
16:00-16:15	1	0	2	2	4	0	0	7	0	0	0	0	16
16:15-16:30	1	0	0	1	2	0	0	3	0	0	0	0	7
16:30-16:45	0	0	0	1	3	0	0	1	0	0	0	0	5
16:45-17:00	0	0	0	0	4	0	0	7	0	0	0	0	11
MEDIUM TRUCKS (SINGLE UNIT > 2 AXLES)													
16:00-16:15	1	0	0	0	0	0	0	0	0	0	0	0	1
16:15-16:30	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30-16:45	0	0	0	0	1	0	0	0	0	0	0	0	1
16:45-17:00	0	0	0	0	1	0	0	1	0	0	0	0	2
HEAVY TRUCKS (SEMI-TRACTOR TRAILER)													
16:00-16:15	1	0	0	0	3	0	0	2	0	0	0	0	6
16:15-16:30	0	0	0	0	6	0	0	4	0	0	0	0	10
16:30-16:45	0	0	0	0	3	0	0	1	0	0	0	0	4
16:45-17:00	0	0	0	0	3	0	0	1	0	0	0	0	4
BICYCLES													
16:00-16:15	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15-16:30	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0

PEDESTRIANS	CROSSWALK USEAGE				ALL
	SOUTH	WEST	EAST	NORTH	
16:00-16:15	0	0	0	0	0
16:15-16:30	0	0	0	0	0
16:30-16:45	0	0	0	0	0
16:45-17:00	0	0	0	0	0

Peak Hour by Movement													
PHF	.73	0	.7	.73	.94	.25	.71	.93	.3	.72	.75	.69	.950
% Trucks (all)	3.7	0	4.4	10.5	3.4	0	0	4.8	0	0	0	0	3.8
% Trucks (M+H)	1.9	0	0	0	1.9	0	0	1.6	0	0	0	0	1.6
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	

Hourly Totals													
16:00-17:00	108	0	45	38	879	1	40	565	6	55	6	22	1765
16:15-17:15	98	0	50	30	878	2	34	580	6	45	9	16	1748
16:30-17:30	94	0	48	23	881	2	21	586	6	39	8	16	1724
16:45-17:45	74	0	35	18	843	3	15	583	5	31	7	12	1626
17:00-18:00	52	0	33	13	778	2	7	572	0	17	6	5	1485

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
ORE 99E AT HARDCASTLE STREET



Peak Hour
16:50-17:50
TEV=2286

DATE OF COUNT: 11/13/02
DAY OF WEEK: Wed
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

MKHN

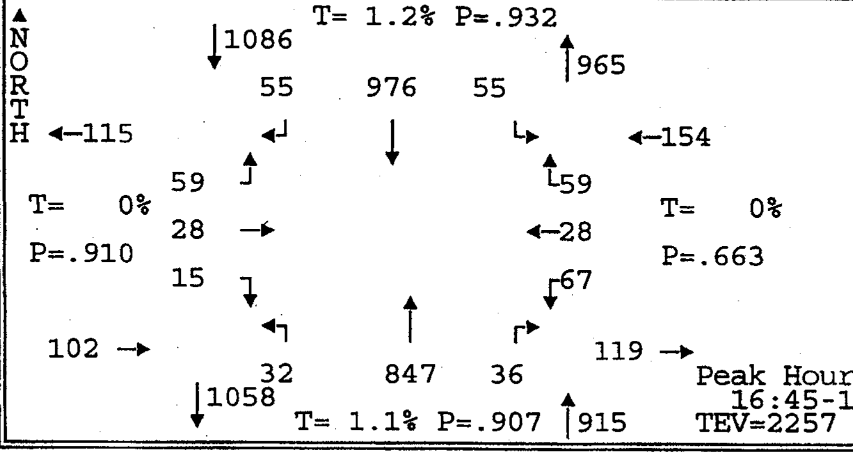
Traffic Smithy
(503) 641-6333

TIME PERIOD FROM - TO	EAST BOUND ↴	→	↰	SOUTH BOUND ↲	↓	↳	NORTH BOUND ↰	↑	↱	WEST BOUND ↓	←	↑	ALL
16:00-16:05	2	1	5	9	104	2	4	49	2	8	2	3	191
16:05-16:10	3	5	7	3	104	4	0	58	4	11	2	4	205
16:10-16:15	2	2	5	3	80	5	8	70	4	4	2	3	188
16:15-16:20	1	1	9	3	105	3	1	63	6	4	2	5	203
16:20-16:25	3	3	11	2	91	2	1	59	1	6	1	4	184
16:25-16:30	1	0	6	1	114	3	3	66	5	2	6	1	208
16:30-16:35	5	1	6	5	100	6	2	53	3	5	1	4	191
16:35-16:40	0	1	8	2	95	7	5	67	7	7	3	6	208
16:40-16:45	0	0	6	1	71	2	1	49	0	4	0	2	136
16:45-16:50	0	0	1	4	52	3	2	69	3	0	1	0	135
16:50-16:55	1	6	6	4	85	8	5	51	4	4	2	5	181
16:55-17:00	0	6	8	11	84	5	2	47	2	4	3	3	175
17:00-17:05	1	3	8	1	82	1	6	59	4	1	7	7	180
17:05-17:10	4	2	3	7	77	10	1	91	5	3	2	4	209
17:10-17:15	1	0	5	3	90	2	2	61	2	8	1	8	183
17:15-17:20	1	3	5	6	95	5	0	66	2	7	2	5	197
17:20-17:25	0	2	8	2	69	4	5	108	5	20	4	8	235
17:25-17:30	1	2	2	6	101	3	0	65	1	5	2	5	193
17:30-17:35	1	1	8	4	97	3	4	88	2	6	2	1	217
17:35-17:40	3	0	2	7	75	7	1	76	4	4	0	5	184
17:40-17:45	2	3	3	0	69	4	4	66	2	5	2	8	168
17:45-17:50	1	1	8	3	84	1	5	48	2	6	1	4	164
17:50-17:55	4	1	3	2	90	3	4	55	2	5	1	1	171
17:55-18:00	1	1	3	2	60	4	5	42	3	3	0	2	126

Total Survey	38	45	136	91	2074	97	71	1526	75	132	49	98	4432
PHF	.67	.48	.75	.71	.92	.78	.67	.79	.8	.52	.58	.75	.886
% Trucks	5.3	0	0	1.1	1.8	4.1	0	2.8	1.3	.8	0	0	2
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	2	0	0	2	0	0	3	0	0	0	0	

Hourly Totals													
16:00-17:00	18	26	78	48	1085	50	34	701	41	59	25	40	2205
16:15-17:15	17	23	77	44	1046	52	31	735	42	48	29	49	2193
16:30-17:30	14	26	66	52	1001	56	31	786	38	68	28	57	2223
16:45-17:45	15	28	59	55	976	55	32	847	36	67	28	59	2257
17:00-18:00	20	19	58	43	989	47	37	825	34	73	24	58	2227

INTERSECTION TURN MOVEMENT COUNT PEAK HOUR REPORT
ORE 99E AT HARDCASTLE STREET



DATE OF COUNT: 11/13/02
DAY OF WEEK: Wed
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

MKHN

Traffic Smithy
(503)641-6333

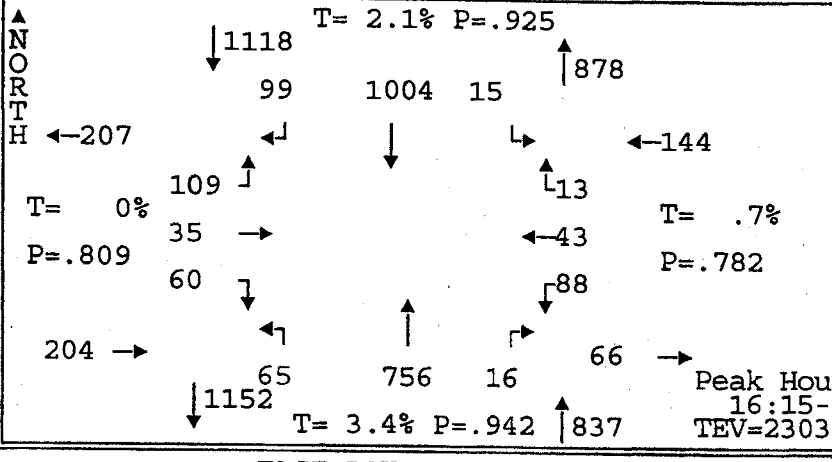
TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			
	↓	→	↑	↵	↓	↳	↰	↑	↱	↓	←	↑	ALL
ALL VEHICLES													
16:45-17:00	1	12	15	19	221	16	9	167	9	8	6	8	491
17:00-17:15	6	5	16	11	249	13	9	211	11	12	10	19	572
17:15-17:30	2	7	15	14	265	12	5	239	8	32	8	18	625
17:30-17:45	6	4	13	11	241	14	9	230	8	15	4	14	569
LIGHT TRUCKS (SINGLE UNIT 2 AXLES)													
16:45-17:00	0	0	0	0	3	0	0	1	0	0	0	0	4
17:00-17:15	0	0	0	0	1	0	0	0	0	0	0	0	1
17:15-17:30	0	0	0	0	3	0	0	3	0	0	0	0	6
17:30-17:45	0	0	0	0	0	0	0	4	0	0	0	0	4
MEDIUM TRUCKS (SINGLE UNIT > 2 AXLES)													
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30-17:45	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAVY TRUCKS (SEMI-TRACTOR TRAILER)													
16:45-17:00	0	0	0	0	1	0	0	0	0	0	0	0	1
17:00-17:15	0	0	0	1	1	0	0	2	0	0	0	0	4
17:15-17:30	0	0	0	0	1	0	0	0	0	0	0	0	1
17:30-17:45	0	0	0	0	2	0	0	0	0	0	0	0	2
BICYCLES													
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	1	1
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30-17:45	0	0	0	0	0	0	0	0	0	0	0	0	0

PEDESTRIANS	CROSSWALK USEAGE				
	SOUTH	WEST	EAST	NORTH	ALL
16:45-17:00	0	0	0	0	0
17:00-17:15	0	0	1	0	1
17:15-17:30	0	0	0	0	0
17:30-17:45	0	1	0	0	1

Peak Hour by Movement													
PHF	.63	.58	.92	.72	.92	.86	.89	.89	.82	.52	.7	.78	.902
% Trucks(all)	0	0	0	1.8	1.2	0	0	1.2	0	0	0	0	1
% Trucks(M+H)	0	0	0	1.8	.5	0	0	.2	0	0	0	0	.4
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	

Hourly Totals													
16:00-17:00	18	26	78	48	1085	50	34	701	41	59	25	40	2205
16:15-17:15	17	23	77	44	1046	52	31	735	42	48	29	49	2193
16:30-17:30	14	26	66	52	1001	56	31	786	38	68	28	57	2223
16:45-17:45	15	28	59	55	976	55	32	847	36	67	28	59	2257
17:00-18:00	20	19	58	43	989	47	37	825	34	73	24	58	2227

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
OR 99E AT E LINCOLN STREET



DATE OF COUNT: 11/13/02
DAY OF WEEK: Wed
TIME STARTED: 16:00
TIME ENDED: 18:00

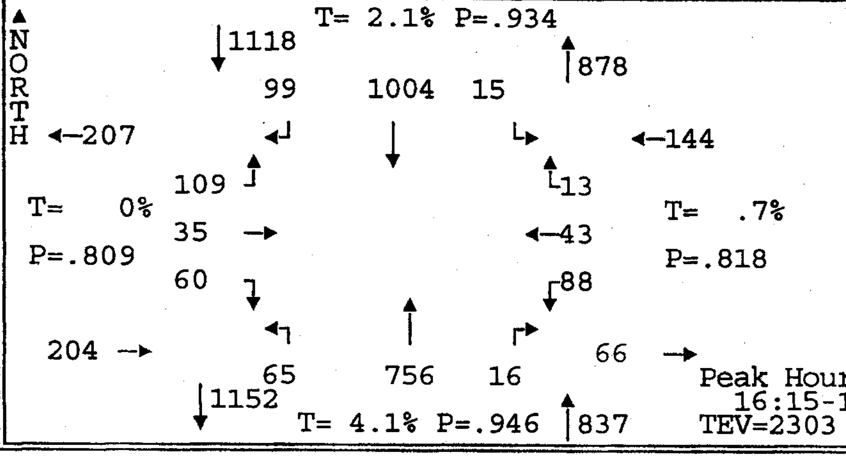
TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

LTGB

Traffic Smithy
(503) 641-6333

TIME PERIOD FROM - TO	EAST BOUND ↓	→	↑	SOUTH BOUND ←	↓	→	NORTH BOUND ←	↑	→	WEST BOUND ↓	←	↑	ALL
16:00-16:05	6	2	6	7	77	2	2	50	0	3	3	3	161
16:05-16:10	2	3	9	5	99	1	3	51	2	6	1	1	183
16:10-16:15	7	3	9	8	77	2	7	42	1	8	4	2	170
16:15-16:20	5	1	12	8	90	2	7	70	0	9	4	0	208
16:20-16:25	3	5	14	4	78	1	3	61	1	5	4	0	179
16:25-16:30	2	2	7	8	81	2	7	61	2	11	8	3	194
16:30-16:35	6	5	7	12	84	0	8	53	0	11	2	2	190
16:35-16:40	4	5	5	8	91	0	4	50	1	4	3	1	176
16:40-16:45	2	2	3	7	72	2	7	73	1	8	3	2	182
16:45-16:50	3	2	15	9	83	0	9	64	0	7	2	0	194
16:50-16:55	4	1	11	10	71	1	3	65	0	8	1	0	175
16:55-17:00	3	2	10	10	85	0	4	74	2	4	4	1	199
17:00-17:05	12	6	4	8	91	3	7	58	1	9	8	0	207
17:05-17:10	8	2	14	9	94	2	4	53	5	7	1	1	200
17:10-17:15	8	2	7	6	84	2	2	74	3	5	3	3	199
17:15-17:20	5	5	10	6	76	1	3	57	0	7	4	1	175
17:20-17:25	5	6	6	6	96	0	4	64	6	6	1	2	202
17:25-17:30	2	5	7	12	72	2	6	63	2	6	4	0	181
17:30-17:35	4	1	4	7	94	0	4	70	2	9	3	0	198
17:35-17:40	6	3	5	8	74	0	2	49	3	12	2	0	164
17:40-17:45	4	3	5	2	70	2	4	69	7	9	1	2	178
17:45-17:50	2	5	8	5	55	2	4	71	0	5	3	1	161
17:50-17:55	6	6	4	5	75	6	7	48	3	6	6	2	174
17:55-18:00	3	5	4	6	77	2	3	52	2	6	1	2	163
Total Survey	112	82	186	176	1946	35	114	1442	44	171	76	29	4413
PHF	.54	.73	.76	.85	.93	.54	.81	.93	.44	.81	.67	.54	.950
% Trucks	0	0	0	2.3	2.1	2.9	0	3.7	0	.6	0	3.4	2.3
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	15	0	0	16	0	0	10	0	0	13	0	
Hourly Totals													
16:00-17:00	47	33	108	96	988	13	64	714	10	84	39	15	2211
16:15-17:15	60	35	109	99	1004	15	65	756	16	88	43	13	2303
16:30-17:30	62	43	99	103	999	13	61	748	21	82	36	13	2280
16:45-17:45	64	38	98	93	990	13	52	760	31	89	34	10	2272
17:00-18:00	65	49	78	80	958	22	50	728	34	87	37	14	2202

INTERSECTION TURN MOVEMENT COUNT PEAK HOUR REPORT
OR 99E AT E LINCOLN STREET



Peak Hour
16:15-17:15
TEV=2303

DATE OF COUNT: 11/13/02
DAY OF WEEK: Wed
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

LTGB

Traffic Smithy
(503)641-6333

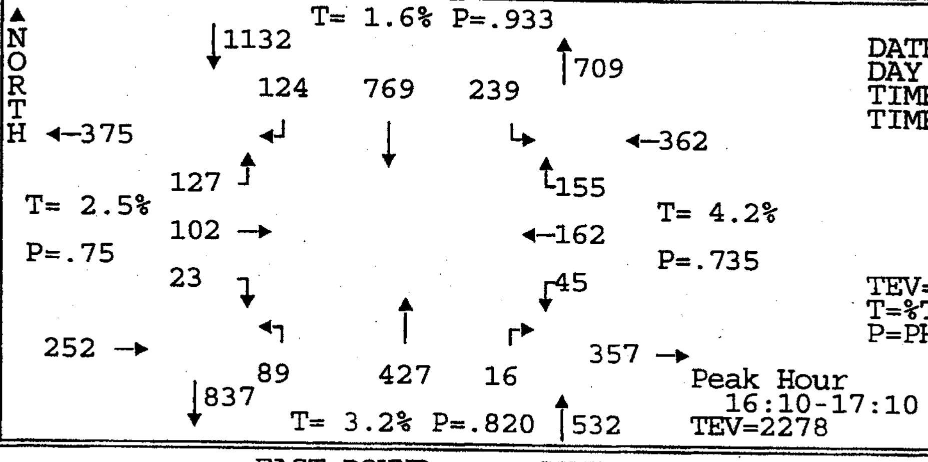
TIME PERIOD FROM - TO	EAST BOUND ↓	EAST BOUND →	EAST BOUND ↑	SOUTH BOUND ↲	SOUTH BOUND ↓	SOUTH BOUND ↳	NORTH BOUND ↰	NORTH BOUND ↑	NORTH BOUND ↱	WEST BOUND ↓	WEST BOUND ←	WEST BOUND ↑	ALL
ALL VEHICLES													
16:15-16:30	10	8	33	20	249	5	17	192	3	25	16	3	581
16:30-16:45	12	12	15	27	247	2	19	176	2	23	8	5	548
16:45-17:00	10	5	36	29	239	1	16	203	2	19	7	1	568
17:00-17:15	28	10	25	23	269	7	13	185	9	21	12	4	606
LIGHT TRUCKS (SINGLE UNIT 2 AXLES)													
16:15-16:30	0	0	0	1	2	0	0	10	0	1	0	0	14
16:30-16:45	0	0	0	1	5	0	0	9	0	0	0	0	15
16:45-17:00	0	0	0	1	3	0	0	3	0	0	0	0	7
17:00-17:15	0	0	0	0	1	0	0	1	0	0	0	0	2
MEDIUM TRUCKS (SINGLE UNIT > 2 AXLES)													
16:15-16:30	0	0	0	0	1	0	0	0	0	0	0	0	1
16:30-16:45	0	0	0	0	1	0	0	1	0	0	0	0	2
16:45-17:00	0	0	0	0	1	0	0	0	0	0	0	0	1
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAVY TRUCKS (SEMI-TRACTOR TRAILER)													
16:15-16:30	0	0	0	0	3	0	0	4	0	0	0	0	7
16:30-16:45	0	0	0	0	1	0	0	1	0	0	0	0	2
16:45-17:00	0	0	0	0	2	0	0	5	0	0	0	0	7
17:00-17:15	0	0	0	0	1	0	0	0	0	0	0	0	1
BICYCLES													
16:15-16:30	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	1	0	0	0	0	0	0	0	1
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0

PEDESTRIANS	CROSSWALK USEAGE: SOUTH	WEST	EAST	NORTH	ALL
16:15-16:30	0	2	1	2	5
16:30-16:45	5	1	2	0	8
16:45-17:00	2	3	1	1	7
17:00-17:15	0	1	0	1	2

Peak Hour by Movement													
PHF	.54	.73	.76	.85	.93	.54	.86	.93	.44	.88	.67	.65	.950
% Trucks (all)	0	0	0	3	2.1	0	0	4.5	0	1.1	0	0	2.6
% Trucks (M+H)	0	0	0	0	1	0	0	1.5	0	0	0	0	.9
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	

Hourly Totals													
16:00-17:00	47	33	108	96	988	13	64	714	10	84	39	15	2211
16:15-17:15	60	35	109	99	1004	15	65	756	16	88	43	13	2303
16:30-17:30	62	43	99	103	999	13	61	748	21	82	36	13	2280
16:45-17:45	64	38	98	93	990	13	52	760	31	89	34	10	2272
17:00-18:00	65	49	78	80	958	22	50	728	34	87	37	14	2202

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
ORE 99E AT YOUNG STREET



DATE OF COUNT: 11/21/02
DAY OF WEEK: Thu
TIME STARTED: 16:00
TIME ENDED: 18:00

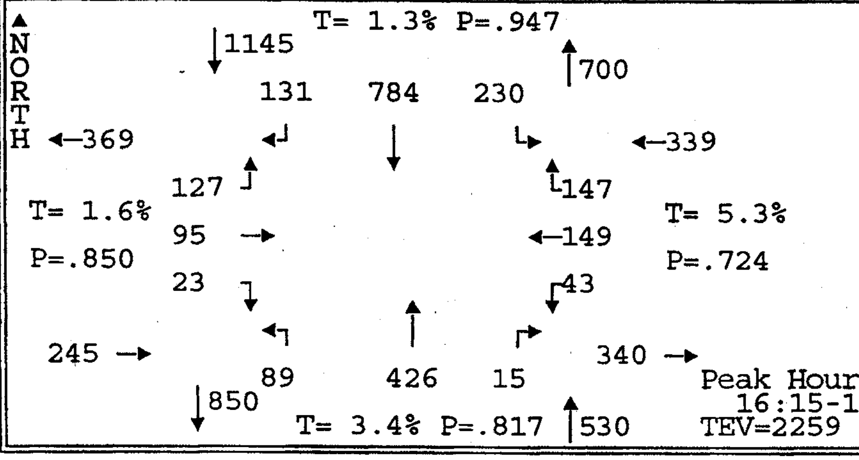
TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

MAWF

Traffic Smithy
(503) 641-6333

TIME PERIOD FROM - TO	EAST BOUND ↓	→	↑	SOUTH BOUND ←	↓	→	NORTH BOUND ←	↑	→	WEST BOUND ↓	←	↑	ALL
16:00-16:05	2	11	17	11	40	15	2	48	3	0	9	7	165
16:05-16:10	4	10	6	4	80	10	2	43	1	2	8	14	184
16:10-16:15	2	13	10	7	59	20	5	28	2	5	20	15	186
16:15-16:20	1	6	4	8	54	29	3	70	3	4	8	12	202
16:20-16:25	5	5	10	11	65	22	7	28	0	5	14	13	185
16:25-16:30	1	13	10	5	86	20	3	47	1	0	5	8	199
16:30-16:35	1	13	8	10	51	29	10	24	6	3	7	15	177
16:35-16:40	1	5	9	6	78	18	6	39	0	7	20	24	213
16:40-16:45	2	5	5	8	68	9	7	30	1	7	19	15	176
16:45-16:50	0	11	11	13	68	19	8	25	1	1	18	12	187
16:50-16:55	0	8	9	12	59	18	21	26	0	5	15	16	189
16:55-17:00	6	6	18	8	52	17	5	28	1	2	14	10	167
17:00-17:05	3	9	20	17	69	11	10	43	0	1	16	8	207
17:05-17:10	1	8	13	19	60	27	4	39	1	5	6	7	190
17:10-17:15	2	6	10	14	74	11	5	27	1	3	7	7	167
17:15-17:20	1	15	12	10	80	19	15	25	0	1	14	13	205
17:20-17:25	4	14	7	6	62	19	9	39	4	1	7	7	179
17:25-17:30	4	11	6	9	56	18	4	26	4	2	9	7	156
17:30-17:35	1	12	8	9	53	14	3	34	2	1	6	12	155
17:35-17:40	0	14	9	9	67	20	2	34	0	5	3	15	178
17:40-17:45	1	9	18	6	56	25	3	26	0	5	5	5	159
17:45-17:50	0	6	12	6	41	15	4	34	3	1	13	10	145
17:50-17:55	4	3	6	7	41	15	3	30	2	2	10	6	129
17:55-18:00	5	14	14	14	57	11	6	19	3	0	6	4	153
Total Survey	51	227	252	229	1476	431	147	812	39	68	259	262	4253
PHF	.57	.82	.62	.7	.89	.84	.62	.74	.57	.66	.71	.72	.966
% Trucks	5.9	2.2	2	.4	1.6	2.3	2.7	3.3	2.6	4.4	1.5	6.9	2.5
Stopped Buses	0	0	0	0	1	0	0	0	0	0	0	0	
Peds	0	9	0	0	8	0	0	0	0	0	8	0	
Hourly Totals													
16:00-17:00	25	106	117	103	760	226	79	436	19	41	157	161	2230
16:15-17:15	23	95	127	131	784	230	89	426	15	43	149	147	2259
16:30-17:30	25	111	128	132	777	215	104	371	19	38	152	141	2213
16:45-17:45	23	123	141	132	756	218	89	372	14	32	120	119	2139
17:00-18:00	26	121	135	126	716	205	68	376	20	27	102	101	2023

INTERSECTION TURN MOVEMENT COUNT PEAK HOUR REPORT
ORE 99E AT YOUNG STREET



DATE OF COUNT: 11/21/02
DAY OF WEEK: Thu
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

MAWF

Traffic Smithy
(503)641-6333

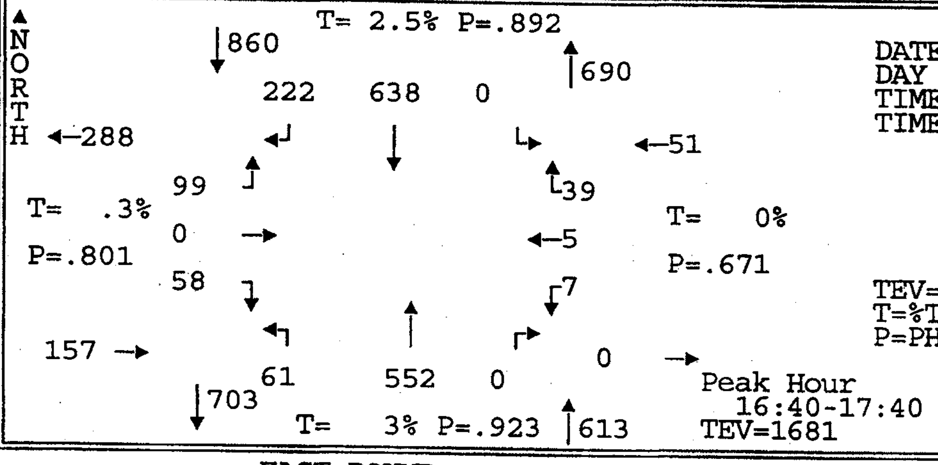
TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			ALL
	↓	→	↑	←	↓	→	←	↑	→	↓	←	↑	
ALL VEHICLES													
16:15-16:30	7	24	24	24	205	71	13	145	4	9	27	33	586
16:30-16:45	4	23	22	24	197	56	23	93	7	17	46	54	566
16:45-17:00	6	25	38	33	179	54	34	79	2	8	47	38	543
17:00-17:15	6	23	43	50	203	49	19	109	2	9	29	22	564
LIGHT TRUCKS (SINGLE UNIT 2 AXLES)													
16:15-16:30	0	1	1	0	1	0	0	2	0	1	0	3	9
16:30-16:45	0	0	0	0	3	0	0	1	0	0	1	1	6
16:45-17:00	1	0	0	0	1	0	1	4	0	0	1	3	11
17:00-17:15	0	0	0	0	3	0	0	3	0	0	0	1	7
MEDIUM TRUCKS (SINGLE UNIT > 2 AXLES)													
16:15-16:30	0	0	0	0	0	0	0	1	0	0	0	0	1
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAVY TRUCKS (SEMI-TRACTOR TRAILER)													
16:15-16:30	1	0	0	0	1	0	0	4	0	1	1	2	10
16:30-16:45	0	0	0	0	0	1	0	0	0	0	0	1	2
16:45-17:00	0	0	0	0	1	1	1	1	0	1	0	0	5
17:00-17:15	0	0	0	0	3	0	0	0	0	0	0	1	4
BICYCLES													
16:15-16:30	0	0	0	0	1	0	0	0	0	0	0	0	1
16:30-16:45	0	0	1	0	0	0	0	0	0	0	0	0	1
16:45-17:00	0	0	0	0	0	0	0	0	0	0	1	0	1
17:00-17:15	0	0	0	0	1	0	0	0	0	0	0	0	1

PEDESTRIANS	SOUTH	WEST	EAST	NORTH	ALL
	CROSSWALK USEAGE				
16:15-16:30	0	1	0	0	1
16:30-16:45	0	0	0	1	1
16:45-17:00	0	0	0	3	3
17:00-17:15	5	1	0	0	6

Peak Hour by Movement													
PHF	.82	.95	.74	.65	.96	.81	.65	.73	.54	.63	.79	.68	.963
% Trucks(all)	8.7	1.1	.8	0	1.7	.9	2.2	3.8	0	7	2	8.2	2.4
% Trucks(M+H)	4.3	0	0	0	.6	.9	1.1	1.4	0	4.7	.7	2.7	1
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	

Hourly Totals													
16:00-17:00	25	106	117	103	760	226	79	436	19	41	157	161	2230
16:15-17:15	23	95	127	131	784	230	89	426	15	43	149	147	2259
16:30-17:30	25	111	128	132	777	215	104	371	19	38	152	141	2213
16:45-17:45	23	123	141	132	756	218	89	372	14	32	120	119	2139
17:00-18:00	26	121	135	126	716	205	68	376	20	27	102	101	2023

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
ORE 99E AT CLEVELAND STREET



DATE OF COUNT: 11/12/02
DAY OF WEEK: Tue
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

PDAF

Traffic Smithy
(503) 641-6333

TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			
	↴	→	↱	↲	↓	↳	↰	↑	↱	↓	←	↑	ALL
16:00-16:05	5	0	6	13	34	0	4	36	1	0	0	2	101
16:05-16:10	5	0	7	18	71	0	2	53	0	1	1	3	161
16:10-16:15	7	0	11	24	65	0	7	30	0	0	0	5	149
16:15-16:20	5	0	9	12	44	0	3	41	0	1	0	0	115
16:20-16:25	7	0	4	22	56	0	4	41	0	0	0	4	138
16:25-16:30	3	0	7	15	43	1	3	39	0	2	0	2	115
16:30-16:35	8	0	9	15	42	0	4	40	0	3	0	4	125
16:35-16:40	5	0	12	15	55	0	3	30	1	0	1	5	127
16:40-16:45	3	0	2	17	65	0	7	49	0	0	1	5	149
16:45-16:50	5	0	3	16	40	0	4	60	0	2	3	2	135
16:50-16:55	4	0	10	19	62	0	6	40	0	2	0	4	147
16:55-17:00	0	0	9	25	62	0	4	51	0	1	0	2	154
17:00-17:05	6	0	7	16	57	0	9	45	0	0	0	7	147
17:05-17:10	4	0	16	24	42	0	5	48	0	1	0	4	144
17:10-17:15	8	0	6	24	41	0	6	51	0	1	0	6	143
17:15-17:20	5	0	10	19	67	0	2	32	0	0	0	2	137
17:20-17:25	4	0	10	19	42	0	3	34	0	0	1	2	115
17:25-17:30	7	0	5	15	55	0	8	46	0	0	0	1	137
17:30-17:35	8	0	14	13	50	0	4	46	0	0	0	3	138
17:35-17:40	4	0	7	15	55	0	3	50	0	0	0	1	135
17:40-17:45	0	0	7	28	48	0	6	32	0	0	0	2	123
17:45-17:50	6	0	6	15	35	0	3	28	0	1	0	3	97
17:50-17:55	2	0	12	12	30	0	3	39	0	1	0	1	100
17:55-18:00	6	0	3	21	42	0	3	23	0	0	0	1	99
Total Survey	117	0	192	432	1203	1	106	984	2	16	7	71	3131
PHF	.76	0	.77	.83	.88	0	.76	.91	0	.35	.31	.57	.938
% Trucks	.9	0	0	.7	3.2	0	.9	3.3	0	0	0	0	2.4
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	2	0	0	0	0	0	1	0	0	0	0	
Hourly Totals													
16:00-17:00	57	0	89	211	639	1	51	510	2	12	6	38	1616
16:15-17:15	58	0	94	220	609	1	58	535	1	13	5	45	1639
16:30-17:30	59	0	99	224	630	0	61	526	1	10	6	44	1660
16:45-17:45	55	0	104	233	621	0	60	535	0	7	4	36	1655
17:00-18:00	60	0	103	221	564	0	55	474	0	4	1	33	1515

INTERSECTION TURN MOVEMENT COUNT PEAK HOUR REPORT
ORE 99E AT CLEVELAND STREET

NORTH

T= 1.8% P=.953

854 ↓ ↑ 669

224 630 0

←291 ←60

99 44

T= 0% T= 0%

0 → ←6

P=.840 P=.789

59 10

158 → 1 →

61 526 1

699 ↓ ↑ 588

T= 2.2% P=.890

Peak Hour 16:30-17:30 TEV=1660

DATE OF COUNT: 11/12/02
DAY OF WEEK: Tue
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

PDAF

Traffic Smithy
(503)641-6333

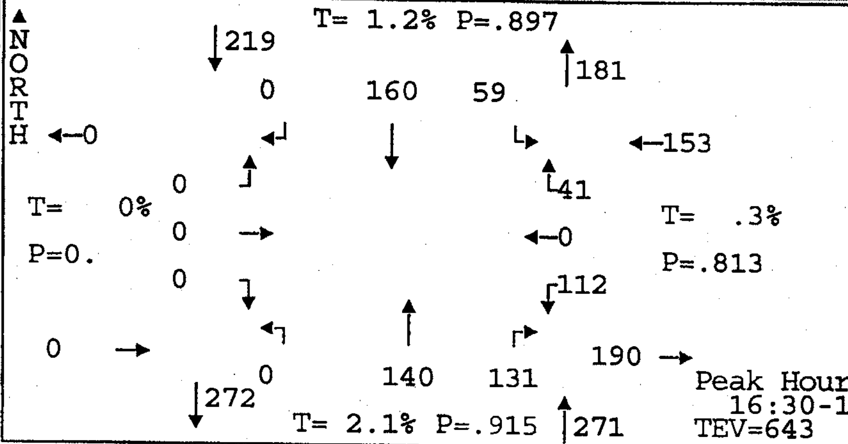
TIME PERIOD FROM - TO	EAST BOUND ↓	→	↑	SOUTH BOUND ↙	↓	↘	NORTH BOUND ↖	↑	↗	WEST BOUND ↓	←	↑	ALL
ALL VEHICLES													
16:30-16:45	16	0	23	47	162	0	14	119	1	3	2	14	401
16:45-17:00	9	0	22	60	164	0	14	151	0	5	3	8	436
17:00-17:15	18	0	29	64	140	0	20	144	0	2	0	17	434
17:15-17:30	16	0	25	53	164	0	13	112	0	0	1	5	389
LIGHT TRUCKS (SINGLE UNIT 2 AXLES)													
16:30-16:45	0	0	0	0	1	0	0	3	0	0	0	0	4
16:45-17:00	0	0	0	1	4	0	0	3	0	0	0	0	8
17:00-17:15	0	0	0	0	1	0	0	2	0	0	0	0	3
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0
MEDIUM TRUCKS (SINGLE UNIT > 2 AXLES)													
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	1	0	0	0	0	0	0	0	1
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAVY TRUCKS (SEMI-TRACTOR TRAILER)													
16:30-16:45	0	0	0	0	2	0	0	0	0	0	0	0	2
16:45-17:00	0	0	0	0	1	0	0	2	0	0	0	0	3
17:00-17:15	0	0	0	0	2	0	0	1	0	0	0	0	3
17:15-17:30	0	0	0	0	2	0	0	2	0	0	0	0	4
BICYCLES													
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0

PEDESTRIANS (CROSSWALK USEAGE)	SOUTH	WEST	EAST	NORTH	ALL
16:30-16:45	0	0	0	0	0
16:45-17:00	0	0	1	0	1
17:00-17:15	0	0	0	0	0
17:15-17:30	0	0	0	0	0

Peak Hour by Movement													
PHF	.82	0	.85	.88	.96	0	.76	.87	.25	.5	.5	.65	.951
% Trucks(all)	0	0	0	.4	2.2	0	0	2.5	0	0	0	0	1.7
% Trucks(M+H)	0	0	0	0	1.3	0	0	1	0	0	0	0	.8
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	

Hourly Totals													
16:00-17:00	57	0	89	211	639	1	51	510	2	12	6	38	1616
16:15-17:15	58	0	94	220	609	1	58	535	1	13	5	45	1639
16:30-17:30	59	0	99	224	630	0	61	526	1	10	6	44	1660
16:45-17:45	55	0	104	233	621	0	60	535	0	7	4	36	1655
17:00-18:00	60	0	103	221	564	0	55	474	0	4	1	33	1515

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
FRONT STREET AT E HARDCASTLE STREET



DATE OF COUNT: 11/14/02
DAY OF WEEK: Thu
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

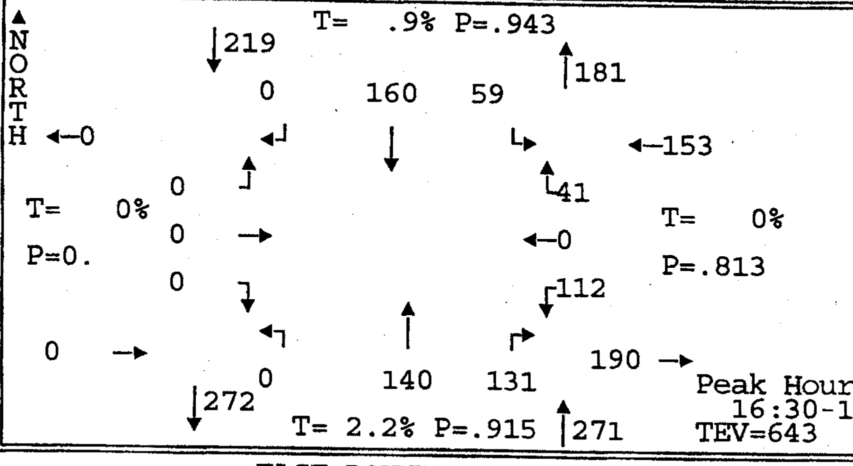
DLKR

Peak Hour
16:30-17:30
TEV=643

Traffic Smithy
(503) 641-6333

TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			
	↓	→	↑	↲	↓	↳	↰	↑	↱	↓	←	↑	ALL
16:00-16:05	0	0	0	0	14	5	0	4	11	15	0	3	52
16:05-16:10	0	0	0	0	12	1	0	14	8	4	0	3	42
16:10-16:15	0	0	0	0	14	6	0	10	7	9	0	2	48
16:15-16:20	0	0	0	0	6	4	0	7	9	8	0	4	38
16:20-16:25	0	0	0	0	14	4	0	14	10	12	0	4	58
16:25-16:30	0	0	0	0	10	2	0	10	7	12	0	3	44
16:30-16:35	0	0	0	0	18	3	0	13	14	13	0	1	62
16:35-16:40	0	0	0	0	15	8	0	12	6	9	0	0	50
16:40-16:45	0	0	0	0	10	4	0	8	9	18	0	4	53
16:45-16:50	0	0	0	0	15	8	0	13	9	9	0	4	58
16:50-16:55	0	0	0	0	13	4	0	15	16	7	0	4	59
16:55-17:00	0	0	0	0	7	3	0	6	3	8	0	1	28
17:00-17:05	0	0	0	0	13	7	0	9	12	15	0	10	66
17:05-17:10	0	0	0	0	13	2	0	12	11	11	0	2	51
17:10-17:15	0	0	0	0	12	7	0	12	17	6	0	3	57
17:15-17:20	0	0	0	0	14	4	0	14	8	6	0	3	49
17:20-17:25	0	0	0	0	19	5	0	15	7	6	0	5	57
17:25-17:30	0	0	0	0	11	4	0	11	19	4	0	4	53
17:30-17:35	0	0	0	0	18	3	0	10	5	9	0	3	48
17:35-17:40	0	0	0	0	10	5	0	12	5	13	0	3	48
17:40-17:45	0	0	0	0	20	3	0	5	10	7	0	0	45
17:45-17:50	0	0	0	0	9	4	0	9	3	6	0	3	34
17:50-17:55	0	0	0	0	10	4	0	7	9	7	0	3	40
17:55-18:00	0	0	0	0	9	4	0	3	8	5	0	2	31
Total Survey	0	0	0	0	306	104	0	245	223	219	0	74	1171
PHF	0	0	0	0	.89	.74	0	.85	.82	.7	0	.68	.923
% Trucks	0	0	0	0	1	1.9	0	4.1	0	0	0	1.4	1.4
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	0	0	0	0	0	0	0	0	0	9	0	
Hourly Totals													
16:00-17:00	0	0	0	0	148	52	0	126	109	124	0	33	592
16:15-17:15	0	0	0	0	146	56	0	131	123	128	0	40	624
16:30-17:30	0	0	0	0	160	59	0	140	131	112	0	41	643
16:45-17:45	0	0	0	0	165	55	0	134	122	101	0	42	619
17:00-18:00	0	0	0	0	158	52	0	119	114	95	0	41	579

INTERSECTION TURN MOVEMENT COUNT PEAK HOUR REPORT
FRONT STREET AT E HARDCASTLE STREET



DATE OF COUNT: 11/14/02
DAY OF WEEK: Thu
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

DLKR

Traffic Smithy
(503)641-6333

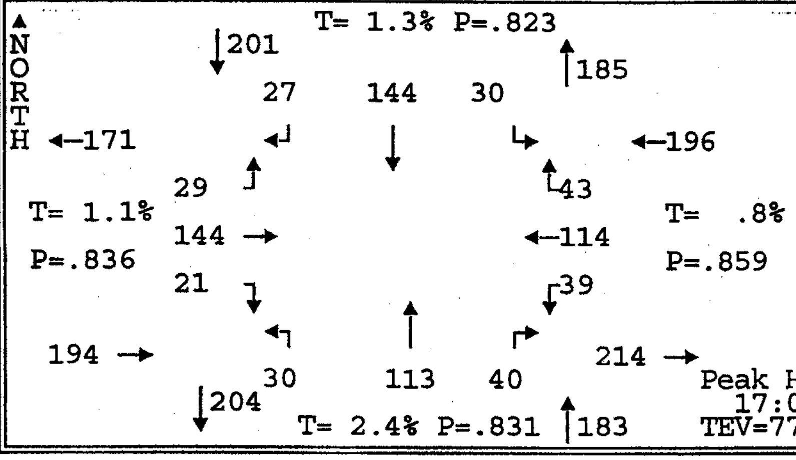
TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			ALL
	↓	→	↑	↵	↓	↳	↰	↑	↱	↓	←	↑	
ALL VEHICLES													
16:30-16:45	0	0	0	0	43	15	0	33	29	40	0	5	165
16:45-17:00	0	0	0	0	35	15	0	34	28	24	0	9	145
17:00-17:15	0	0	0	0	38	16	0	33	40	32	0	15	174
17:15-17:30	0	0	0	0	44	13	0	40	34	16	0	12	159
LIGHT TRUCKS (SINGLE UNIT 2 AXLES)													
16:30-16:45	0	0	0	0	1	0	0	2	0	0	0	0	3
16:45-17:00	0	0	0	0	1	0	0	0	0	0	0	0	1
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	2	0	0	0	0	2
MEDIUM TRUCKS (SINGLE UNIT > 2 AXLES)													
16:30-16:45	0	0	0	0	0	0	0	1	0	0	0	0	1
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAVY TRUCKS (SEMI-TRACTOR TRAILER)													
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	1	0	0	0	0	1
BICYCLES													
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	1	0	0	0	0	0	0	0	1
17:00-17:15	0	0	0	0	1	0	0	0	0	0	0	0	1
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0

PEDESTRIANS	---CROSSWALK USEAGE--- SOUTH	WEST	EAST	NORTH	ALL
16:30-16:45	0	0	0	2	2
16:45-17:00	0	0	0	1	1
17:00-17:15	0	0	0	1	1
17:15-17:30	0	0	0	3	3

Peak Hour by Movement													
PHF	0	0	0	0	.91	.92	0	.88	.82	.7	0	.68	.923
% Trucks(all)	0	0	0	0	1.3	0	0	4.3	0	0	0	0	1.2
% Trucks(M+H)	0	0	0	0	0	0	0	1.4	0	0	0	0	.3
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	

Hourly Totals													
16:00-17:00	0	0	0	0	148	52	0	126	109	124	0	33	592
16:15-17:15	0	0	0	0	146	56	0	131	123	128	0	40	624
16:30-17:30	0	0	0	0	160	59	0	140	131	112	0	41	643
16:45-17:45	0	0	0	0	165	55	0	134	122	101	0	42	619
17:00-18:00	0	0	0	0	158	52	0	119	114	95	0	41	579

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
FRONT STREET AT E LINCOLN STREET



Peak Hour
17:00-18:00
TEV=774

DATE OF COUNT: 11/14/02
DAY OF WEEK: Thu
TIME STARTED: 16:00
TIME ENDED: 18:00

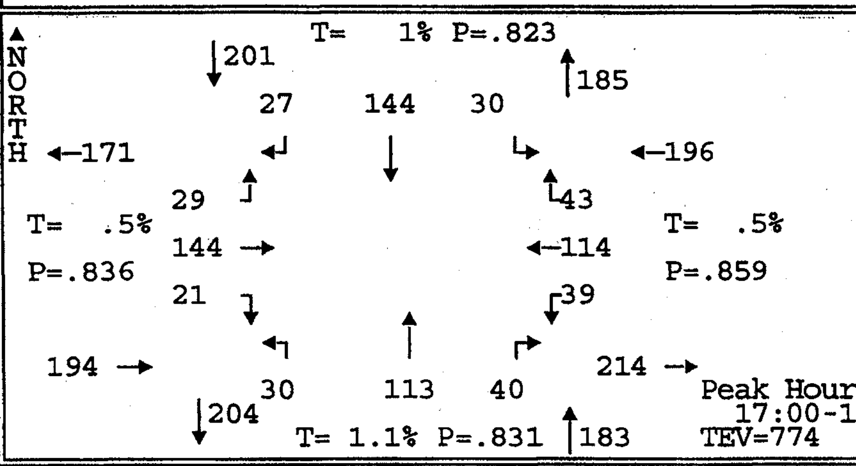
TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

MKHO

Traffic Smithy
(503) 641-6333

TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			
	↴	→	↑	↲	↓	↳	↰	↑	↱	↓	←	↑	ALL
16:00-16:05	3	17	0	0	16	6	2	12	4	5	6	1	72
16:05-16:10	5	17	2	2	4	3	0	9	5	2	7	6	62
16:10-16:15	1	7	2	3	15	2	2	7	3	4	9	5	60
16:15-16:20	0	9	2	1	9	1	3	8	1	5	15	3	57
16:20-16:25	3	11	2	0	16	5	2	14	4	5	16	2	80
16:25-16:30	0	10	3	1	18	1	1	11	0	1	12	2	60
16:30-16:35	3	7	2	4	11	7	0	9	3	3	8	5	62
16:35-16:40	3	14	1	1	14	7	5	10	8	4	7	0	74
16:40-16:45	0	5	1	1	6	2	2	14	3	2	10	5	51
16:45-16:50	0	15	5	1	10	3	5	13	2	4	10	2	70
16:50-16:55	0	8	1	0	7	2	0	10	7	3	10	1	49
16:55-17:00	2	4	3	2	6	1	2	6	5	2	10	0	43
17:00-17:05	0	13	1	2	11	5	2	6	1	4	12	4	61
17:05-17:10	2	16	3	1	20	1	2	9	3	5	17	2	81
17:10-17:15	3	18	2	1	9	2	1	12	4	2	7	4	65
17:15-17:20	0	11	2	0	10	0	5	10	2	3	6	2	51
17:20-17:25	4	12	0	1	12	4	0	12	3	1	12	5	66
17:25-17:30	3	10	6	2	10	2	2	11	4	3	8	2	63
17:30-17:35	2	11	3	6	18	3	2	9	2	3	11	3	73
17:35-17:40	2	11	1	3	12	3	2	14	4	5	8	7	72
17:40-17:45	3	9	0	2	11	3	6	11	5	3	12	2	67
17:45-17:50	1	9	3	5	13	3	3	4	4	3	3	7	58
17:50-17:55	0	15	5	1	10	4	3	6	6	6	9	1	66
17:55-18:00	1	9	3	3	8	0	2	9	2	1	9	4	51
Total Survey	41	268	53	43	276	70	54	236	85	79	234	75	1514
PHF	.58	.77	.66	.61	.88	.75	.63	.83	.67	.81	.79	.67	.912
% Trucks	0	1.5	0	0	1.1	2.9	1.9	3.4	0	0	.4	2.7	1.4
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	3	0	0	25	0	0	4	0	0	18	0	
Hourly Totals													
16:00-17:00	20	124	24	16	132	40	24	123	45	40	120	32	740
16:15-17:15	16	130	26	15	137	37	25	122	41	40	134	30	753
16:30-17:30	20	133	27	16	126	36	26	122	45	36	117	32	736
16:45-17:45	21	138	27	21	136	29	29	123	42	38	123	34	761
17:00-18:00	21	144	29	27	144	30	30	113	40	39	114	43	774

INTERSECTION TURN MOVEMENT COUNT PEAK HOUR REPORT
FRONT STREET AT E LINCOLN STREET



DATE OF COUNT: 11/14/02
DAY OF WEEK: Thu
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

MKHO

Traffic Smithy
(503)641-6333

TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			ALL
	↓	→	↑	↲	↓	↳	↰	↑	↱	↓	←	↑	
ALL VEHICLES													
17:00-17:15	5	47	6	4	40	8	5	27	8	11	36	10	207
17:15-17:30	7	33	8	3	32	6	7	33	9	7	26	9	180
17:30-17:45	7	31	4	11	41	9	10	34	11	11	31	12	212
17:45-18:00	2	33	11	9	31	7	8	19	12	10	21	12	175
LIGHT TRUCKS (SINGLE UNIT 2 AXLES)													
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	1	0	2	0	0	0	0	3
17:30-17:45	0	0	0	0	0	1	0	0	0	0	0	0	1
17:45-18:00	0	1	0	0	0	0	0	0	0	0	0	0	1
MEDIUM TRUCKS (SINGLE UNIT > 2 AXLES)													
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30-17:45	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45-18:00	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAVY TRUCKS (SEMI-TRACTOR TRAILER)													
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	1	1
17:30-17:45	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45-18:00	0	0	0	0	0	0	0	0	0	0	0	0	0
BICYCLES													
17:00-17:15	0	0	0	0	2	0	0	2	0	0	1	0	5
17:15-17:30	0	0	0	0	1	0	0	0	0	0	2	0	3
17:30-17:45	0	1	0	0	0	0	0	0	0	0	0	0	1
17:45-18:00	0	0	0	0	1	0	0	0	0	0	0	0	1

PEDESTRIANS	CROSSWALK USEAGE: SOUTH	WEST	EAST	NORTH	ALL
17:00-17:15	0	3	0	0	3
17:15-17:30	0	4	2	0	6
17:30-17:45	0	1	1	0	2
17:45-18:00	0	3	0	2	5

Peak Hour by Movement													
PHF	.75	.77	.66	.61	.88	.83	.75	.83	.83	.89	.79	.9	.912
% Trucks(all)	0	.7	0	0	0	6.7	0	1.8	0	0	0	2.3	.8
% Trucks(M+H)	0	0	0	0	0	0	0	0	0	0	0	2.3	.1
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	

Hourly Totals													
16:00-17:00	20	124	24	16	132	40	24	123	45	40	120	32	740
16:15-17:15	16	130	26	15	137	37	25	122	41	40	134	30	753
16:30-17:30	20	133	27	16	126	36	26	122	45	36	117	32	736
16:45-17:45	21	138	27	21	136	29	29	123	42	38	123	34	761
17:00-18:00	21	144	29	27	144	30	30	113	40	39	114	43	774

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
FRONT STREET AT GARFIELD/YOUNG STREET

NORTH

T= .8% P=.852

191 ↓ · 185 ↑

28 · 113 · 50

←211 · ←283

23 · 68

T= 1.7% · T= 1.5%

199 → · ←175

P=.913 · P=.862

30 · 40

252 → · 286 →

8 · 94 · 37

183 ↓ · 139 ↑

T= .7% P=.808

Peak Hour 16:20-17:20

TEV=865

DATE OF COUNT: 11/14/02
DAY OF WEEK: Thu
TIME STARTED: 16:00
TIME ENDED: 18:00

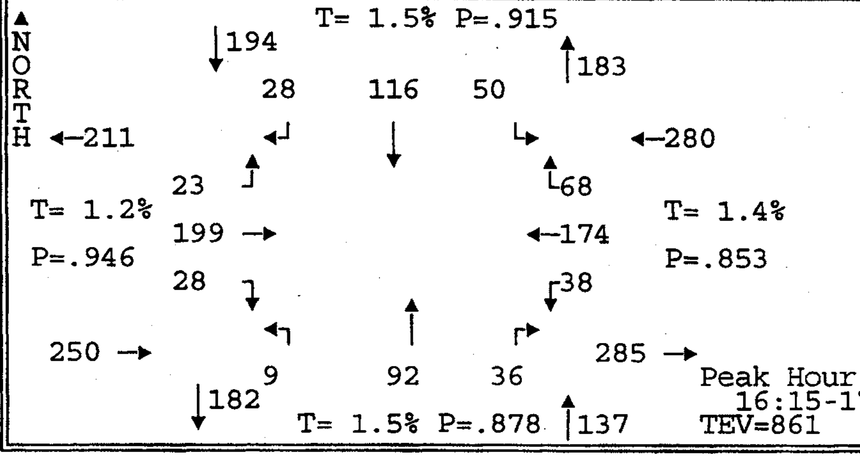
TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

PDAH

Traffic Smithy
(503) 641-6333

TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			ALL
	↓	→	↑	↙	↓	↘	↖	↑	↗	↓	←	↑	
16:00-16:05	3	17	2	1	17	5	1	8	1	6	17	3	81
16:05-16:10	2	10	3	0	8	6	0	12	1	2	20	5	69
16:10-16:15	1	17	1	1	9	8	1	12	3	3	9	1	66
16:15-16:20	0	14	1	2	11	1	1	7	2	3	15	3	60
16:20-16:25	3	15	1	3	14	1	1	15	4	3	7	6	73
16:25-16:30	2	20	3	4	8	4	1	6	2	4	12	5	71
16:30-16:35	2	19	3	1	11	7	0	5	6	3	18	3	78
16:35-16:40	3	17	0	2	14	5	1	7	2	4	15	8	78
16:40-16:45	5	12	1	3	7	3	1	10	5	2	15	3	67
16:45-16:50	2	12	5	0	10	3	1	13	3	3	14	8	74
16:50-16:55	4	18	3	1	9	7	2	3	2	4	15	8	76
16:55-17:00	4	14	1	1	6	5	0	4	2	2	13	2	54
17:00-17:05	0	20	0	2	5	6	0	5	4	3	19	5	69
17:05-17:10	2	20	3	8	10	2	0	8	3	5	22	8	91
17:10-17:15	1	18	2	1	11	6	1	9	1	2	9	9	70
17:15-17:20	2	14	1	2	8	1	0	9	3	5	16	3	64
17:20-17:25	2	15	1	2	10	5	1	7	1	3	17	2	66
17:25-17:30	4	11	4	1	8	5	2	9	6	2	17	3	72
17:30-17:35	0	14	4	2	11	5	0	5	3	2	11	6	63
17:35-17:40	1	10	1	2	7	6	2	7	3	1	21	5	66
17:40-17:45	3	15	4	2	12	6	2	7	3	3	10	3	70
17:45-17:50	1	10	0	1	14	6	2	5	3	7	10	5	64
17:50-17:55	1	17	4	0	8	4	0	4	0	4	11	1	54
17:55-18:00	1	14	1	0	9	5	0	7	2	5	14	5	63
Total Survey	49	363	49	42	237	112	20	184	65	81	347	110	1659
PHF	.68	.86	.64	.64	.86	.69	.5	.78	.71	.83	.81	.77	.940
% Trucks	2	1.7	2	0	.4	1.8	0	.5	1.5	1.2	1.2	2.7	1.3
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	15	0	0	32	0	0	0	0	0	19	0	
Hourly Totals													
16:00-17:00	31	185	24	19	124	55	10	102	33	39	170	55	847
16:15-17:15	28	199	23	28	116	50	9	92	36	38	174	68	861
16:30-17:30	31	190	24	24	109	55	9	89	38	38	190	62	859
16:45-17:45	25	181	29	24	107	57	11	86	34	35	184	62	835
17:00-18:00	18	178	25	23	113	57	10	82	32	42	177	55	812

INTERSECTION TURN MOVEMENT COUNT PEAK HOUR REPORT
FRONT STREET AT GARFIELD/YOUNG STREET



Peak Hour
16:15-17:15
TEV=861

DATE OF COUNT: 11/14/02
DAY OF WEEK: Thu
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

PDAH

Traffic Smithy
(503)641-6333

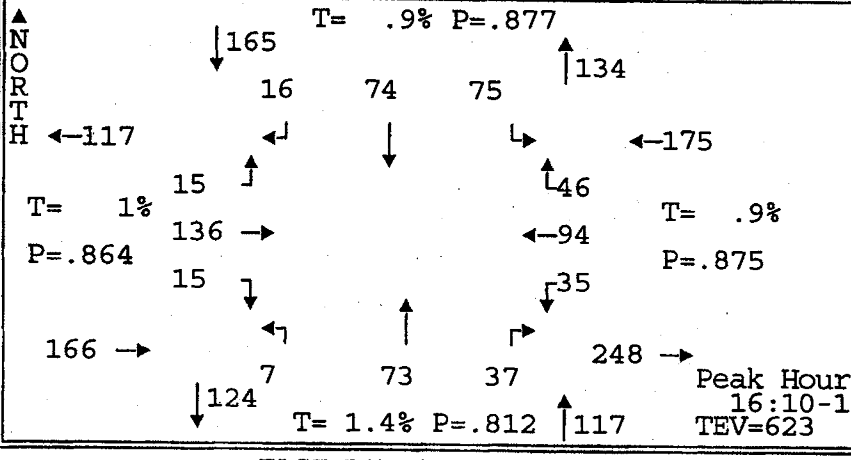
TIME PERIOD FROM - TO	EAST BOUND ↓	EAST BOUND →	EAST BOUND ↑	SOUTH BOUND ←	SOUTH BOUND ↓	SOUTH BOUND →	NORTH BOUND ←	NORTH BOUND ↑	NORTH BOUND →	WEST BOUND ↓	WEST BOUND ←	WEST BOUND ↑	ALL
ALL VEHICLES													
16:15-16:30	5	49	5	9	33	6	3	28	8	10	34	14	204
16:30-16:45	10	48	4	6	32	15	2	22	13	9	48	14	223
16:45-17:00	10	44	9	2	25	15	3	20	7	9	42	18	204
17:00-17:15	3	58	5	11	26	14	1	22	8	10	50	22	230
LIGHT TRUCKS (SINGLE UNIT 2 AXLES)													
16:15-16:30	0	0	1	0	0	0	0	0	0	0	0	1	2
16:30-16:45	0	2	0	0	1	1	0	1	1	0	0	0	6
16:45-17:00	0	0	0	0	0	1	0	0	0	0	0	0	1
17:00-17:15	0	0	0	0	0	0	0	0	0	1	1	1	3
MEDIUM TRUCKS (SINGLE UNIT > 2 AXLES)													
16:15-16:30	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAVY TRUCKS (SEMI-TRACTOR TRAILER)													
16:15-16:30	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
BICYCLES													
16:15-16:30	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0

PEDESTRIANS — CROSSWALK USEAGE	SOUTH	WEST	EAST	NORTH	ALL
16:15-16:30	5	12	0	2	19
16:30-16:45	4	2	0	9	15
16:45-17:00	3	1	0	1	5
17:00-17:15	1	9	0	2	12

Peak Hour by Movement	EB ↓	EB →	EB ↑	SB ←	SB ↓	SB →	NB ←	NB ↑	NB →	WB ↓	WB ←	WB ↑	ALL
PHF	.7	.86	.64	.64	.88	.83	.75	.82	.69	.95	.87	.77	.935
% Trucks(all)	0	1	4.3	0	.9	4	0	1.1	2.8	2.6	.6	2.9	1.4
% Trucks(M+H)	0	0	0	0	0	0	0	0	0	0	0	0	0
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	

Hourly Totals	EB ↓	EB →	EB ↑	SB ←	SB ↓	SB →	NB ←	NB ↑	NB →	WB ↓	WB ←	WB ↑	ALL
16:00-17:00	31	185	24	19	124	55	10	102	33	39	170	55	847
16:15-17:15	28	199	23	28	116	50	9	92	36	38	174	68	861
16:30-17:30	31	190	24	24	109	55	9	89	38	38	190	62	859
16:45-17:45	25	181	29	24	107	57	11	86	34	35	184	62	835
17:00-18:00	18	178	25	23	113	57	10	82	32	42	177	55	812

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
FRONT STREET AT CLEVELAND STREET



DATE OF COUNT: 11/14/02
DAY OF WEEK: Thu
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

Peak Hour
16:10-17:10
TEV=623

DGTY

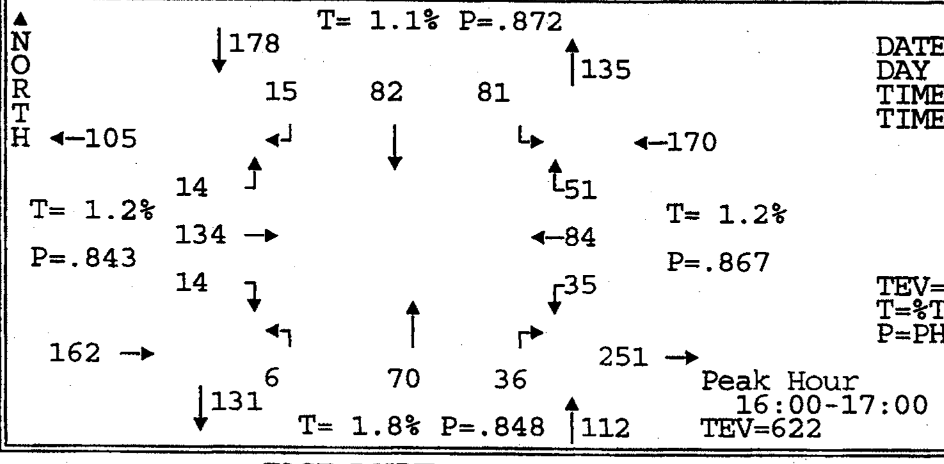
Traffic Smithy
(503) 641-6333

TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			ALL
	↴	→	↑	↲	↓	↳	↰	↑	↱	↓	←	↑	
16:00-16:05	2	13	2	1	15	10	0	2	4	2	7	7	65
16:05-16:10	0	10	0	1	3	8	1	6	2	3	6	4	44
16:10-16:15	1	8	1	0	8	5	0	6	4	2	11	7	53
16:15-16:20	0	16	1	2	6	6	0	6	1	3	8	2	51
16:20-16:25	2	12	2	4	5	11	0	12	2	3	7	7	67
16:25-16:30	0	14	1	0	6	7	1	2	3	5	6	6	51
16:30-16:35	3	11	3	3	3	6	0	6	1	3	4	2	45
16:35-16:40	2	12	0	1	9	6	0	7	6	1	7	4	55
16:40-16:45	1	9	1	1	7	4	0	4	3	4	13	5	52
16:45-16:50	0	10	1	2	5	8	2	9	5	3	5	5	55
16:50-16:55	0	12	0	0	9	5	1	5	2	5	6	1	46
16:55-17:00	3	7	2	0	6	5	1	5	3	1	4	1	38
17:00-17:05	2	13	1	1	4	6	1	3	4	3	12	6	56
17:05-17:10	1	12	2	2	6	6	1	8	3	2	11	0	54
17:10-17:15	0	13	2	1	5	4	0	5	1	2	7	6	46
17:15-17:20	0	7	0	0	8	7	0	9	0	4	3	6	44
17:20-17:25	1	11	2	0	9	5	1	3	0	3	11	2	48
17:25-17:30	1	6	1	0	5	6	0	9	4	2	7	5	46
17:30-17:35	2	8	0	2	7	5	2	4	5	4	6	1	46
17:35-17:40	0	15	2	2	3	6	0	8	2	2	7	5	52
17:40-17:45	0	7	1	0	7	4	1	3	1	2	5	5	36
17:45-17:50	0	20	1	0	9	8	0	7	2	2	4	5	58
17:50-17:55	0	9	0	1	11	4	0	0	4	4	10	1	44
17:55-18:00	0	11	2	1	9	3	1	6	3	1	12	2	51

Total Survey	21	266	28	25	165	145	13	135	65	66	179	95	1203
PHF	.63	.81	.63	.57	.88	.78	.44	.76	.66	.73	.87	.72	.910
% Trucks	0	1.1	0	4	1.2	0	0	1.5	1.5	0	1.7	0	1
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	29	0	0	40	0	0	1	0	0	8	0	

Hourly Totals													
16:00-17:00	14	134	14	15	82	81	6	70	36	35	84	51	622
16:15-17:15	14	141	16	17	71	74	7	72	34	35	90	45	616
16:30-17:30	14	123	15	11	76	68	7	73	32	33	90	43	585
16:45-17:45	10	121	14	10	74	67	10	71	30	33	84	43	567
17:00-18:00	7	132	14	10	83	64	7	65	29	31	95	44	581

INTERSECTION TURN MOVEMENT COUNT PEAK HOUR REPORT
FRONT STREET AT CLEVELAND STREET



DATE OF COUNT: 11/14/02
DAY OF WEEK: Thu
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

DGTY

Traffic Smithy
(503)641-6333

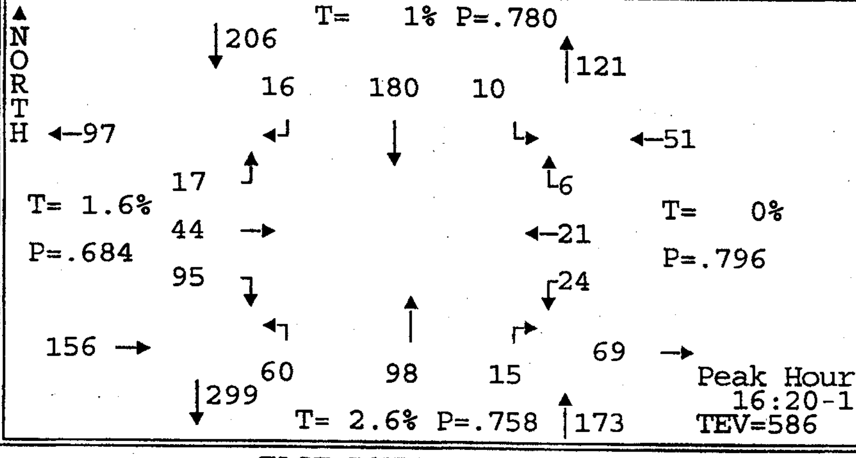
TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			ALL
ALL VEHICLES													
16:00-16:15	3	31	3	2	26	23	1	14	10	7	24	18	162
16:15-16:30	2	42	4	6	17	24	1	20	6	11	21	15	169
16:30-16:45	6	32	4	5	19	16	0	17	10	8	24	11	152
16:45-17:00	3	29	3	2	20	18	4	19	10	9	15	7	139
LIGHT TRUCKS (SINGLE UNIT 2 AXLES)													
16:00-16:15	0	1	0	0	1	0	0	0	0	0	1	0	3
16:15-16:30	0	0	0	0	0	0	0	0	0	0	1	0	1
16:30-16:45	0	0	0	1	0	0	0	1	0	0	0	0	2
16:45-17:00	0	1	0	0	0	0	0	1	0	0	0	0	2
MEDIUM TRUCKS (SINGLE UNIT > 2 AXLES)													
16:00-16:15	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15-16:30	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAVY TRUCKS (SEMI-TRACTOR TRAILER)													
16:00-16:15	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15-16:30	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
BICYCLES													
16:00-16:15	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15-16:30	0	0	0	0	0	0	0	0	0	1	0	0	1
16:30-16:45	0	0	0	0	0	0	0	2	0	0	0	0	2
16:45-17:00	0	0	0	0	0	0	0	0	2	0	0	0	2

PEDESTRIANS	CROSSWALK USEAGE SOUTH	WEST	EAST	NORTH	ALL
16:00-16:15	7	9	0	3	19
16:15-16:30	3	4	0	4	11
16:30-16:45	4	6	0	0	10
16:45-17:00	4	1	0	0	5

Peak Hour by Movement													
PHF	.58	.8	.88	.63	.79	.84	.38	.88	.9	.8	.88	.71	.920
% Trucks(all)	0	1.5	0	6.7	1.2	0	0	2.9	0	0	2.4	0	1.3
% Trucks(M+H)	0	0	0	0	0	0	0	0	0	0	0	0	0
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	

Hourly Totals													
16:00-17:00	14	134	14	15	82	81	6	70	36	35	84	51	622
16:15-17:15	14	141	16	17	71	74	7	72	34	35	90	45	616
16:30-17:30	14	123	15	11	76	68	7	73	32	33	90	43	585
16:45-17:45	10	121	14	10	74	67	10	71	30	33	84	43	567
17:00-18:00	7	132	14	10	83	64	7	65	29	31	95	44	581

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
BOONES FERRY ROAD AT CROSBY ROAD



DATE OF COUNT: 11/07/02
DAY OF WEEK: Thu
TIME STARTED: 16:00
TIME ENDED: 18:00

Peak Hour
16:20-17:20
TEV=586

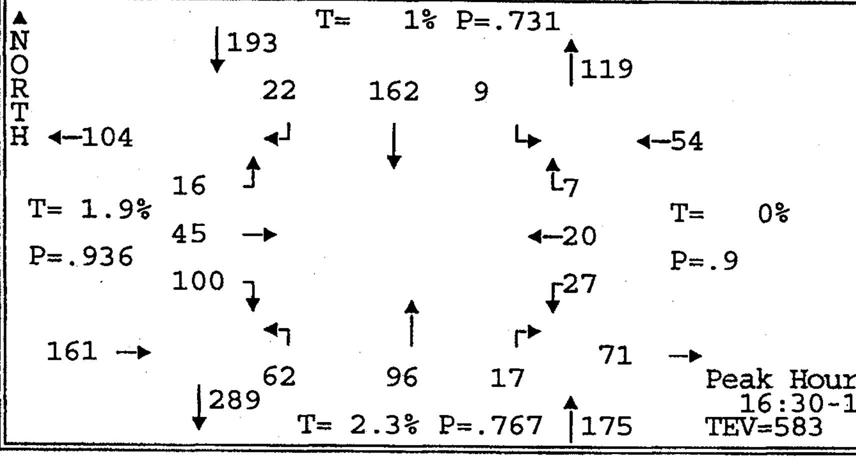
TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

DJXM

Traffic Smithy
(503) 641-6333

TIME PERIOD FROM - TO	EAST BOUND ↓	EAST BOUND →	EAST BOUND ↑	SOUTH BOUND ↵	SOUTH BOUND ↓	SOUTH BOUND ↳	NORTH BOUND ↰	NORTH BOUND ↑	NORTH BOUND ↱	WEST BOUND ↓	WEST BOUND ←	WEST BOUND ↑	ALL
16:00-16:05	1	2	1	2	14	1	3	8	2	2	3	0	39
16:05-16:10	7	5	1	2	8	1	4	12	2	2	2	0	46
16:10-16:15	5	2	2	2	21	3	5	8	1	3	10	1	63
16:15-16:20	8	1	1	5	9	1	5	7	1	1	4	0	43
16:20-16:25	2	3	0	0	18	0	6	15	1	2	4	0	51
16:25-16:30	8	1	1	0	20	1	2	9	1	2	1	0	46
16:30-16:35	9	3	2	2	8	0	5	10	1	1	1	0	42
16:35-16:40	3	4	3	2	10	0	4	6	0	2	3	1	38
16:40-16:45	7	3	2	2	14	0	5	8	4	3	0	0	48
16:45-16:50	9	7	1	1	18	1	3	6	1	2	2	1	52
16:50-16:55	9	3	1	1	17	2	2	4	2	0	2	1	44
16:55-17:00	7	4	2	1	23	2	4	2	0	2	4	0	51
17:00-17:05	3	2	0	2	12	1	9	11	2	3	3	1	49
17:05-17:10	8	5	3	2	15	2	9	12	0	1	0	0	57
17:10-17:15	13	6	0	3	10	1	5	8	1	4	1	1	53
17:15-17:20	17	3	2	0	15	0	6	7	2	2	0	1	55
17:20-17:25	6	2	0	4	12	0	4	12	3	3	3	0	49
17:25-17:30	9	3	0	2	8	0	6	10	1	4	1	1	45
17:30-17:35	8	2	1	1	12	0	5	11	1	1	1	0	43
17:35-17:40	3	1	2	1	16	0	3	5	2	1	1	0	35
17:40-17:45	3	5	0	1	15	2	4	6	3	0	1	0	40
17:45-17:50	1	3	0	1	11	0	4	9	0	2	3	0	34
17:50-17:55	5	0	1	1	12	0	5	8	0	1	4	0	37
17:55-18:00	5	1	1	1	13	0	2	6	0	2	1	0	32
Total Survey	156	71	27	39	331	18	110	200	31	46	55	8	1092
PHF	.63	.79	.61	.57	.78	.5	.65	.72	.54	.75	.58	.75	.887
% Trucks	.6	4.2	0	0	.9	5.6	5.5	1.5	0	0	0	0	1.6
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	0	0	0	0	0	0	0	0	0	0	0	
Hourly Totals													
16:00-17:00	75	38	17	20	180	12	48	95	16	22	36	4	563
16:15-17:15	86	42	16	21	174	11	59	98	14	23	25	5	574
16:30-17:30	100	45	16	22	162	9	62	96	17	27	20	7	583
16:45-17:45	95	43	12	19	173	11	60	94	18	23	19	6	573
17:00-18:00	81	33	10	19	151	6	62	105	15	24	19	4	529

INTERSECTION TURN MOVEMENT COUNT PEAK HOUR REPORT
BOONES FERRY ROAD AT CROSBY ROAD



DATE OF COUNT: 11/07/02
DAY OF WEEK: Thu
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

DJXM

Traffic Smithy
(503)641-6333

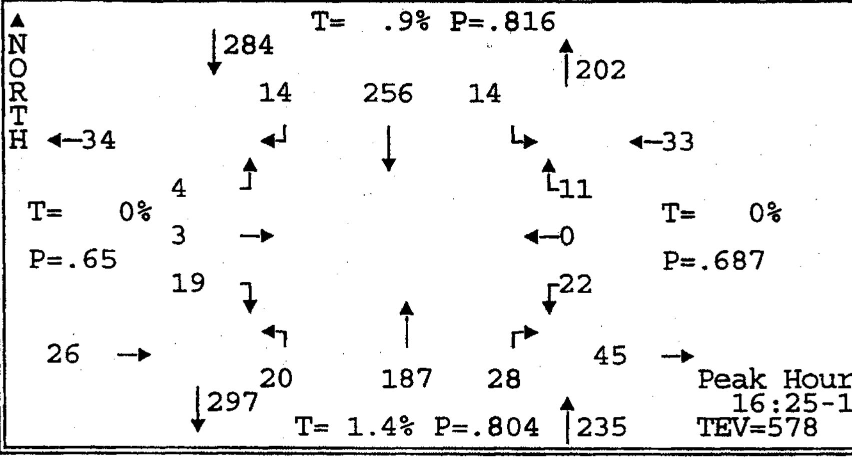
TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			ALL
	↓	→	↑	↲	↓	↳	↰	↑	↱	↓	←	↑	
ALL VEHICLES													
16:30-16:45	19	10	7	6	32	0	14	24	5	6	4	1	128
16:45-17:00	25	14	4	3	58	5	9	12	3	4	8	2	147
17:00-17:15	24	13	3	7	37	4	23	31	3	8	4	2	159
17:15-17:30	32	8	2	6	35	0	16	29	6	9	4	2	149
LIGHT TRUCKS (SINGLE UNIT 2 AXLES)													
16:30-16:45	0	0	0	0	0	0	1	0	0	0	0	0	1
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	1	2	0	0	0	0	1	1	0	0	0	0	5
17:15-17:30	0	0	0	0	1	0	1	0	0	0	0	0	2
MEDIUM TRUCKS (SINGLE UNIT > 2 AXLES)													
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	1	0	0	0	0	0	0	1
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAVY TRUCKS (SEMI-TRACTOR TRAILER)													
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0
BICYCLES													
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0

PEDESTRIANS	CROSSWALK USEAGE				ALL
	SOUTH	WEST	EAST	NORTH	
16:30-16:45	0	0	0	0	0
16:45-17:00	0	0	0	0	0
17:00-17:15	0	0	0	0	0
17:15-17:30	0	0	0	0	0

Peak Hour by Movement													
PHF	.78	.8	.57	.79	.7	.45	.67	.77	.71	.75	.63	.88	.916
% Trucks (all)	1	4.4	0	0	.6	11.1	4.8	1	0	0	0	0	1.5
% Trucks (M+H)	0	0	0	0	0	11.1	0	0	0	0	0	0	.2
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	

Hourly Totals													
16:00-17:00	75	38	17	20	180	12	48	95	16	22	36	4	563
16:15-17:15	86	42	16	21	174	11	59	98	14	23	25	5	574
16:30-17:30	100	45	16	22	162	9	62	96	17	27	20	7	583
16:45-17:45	95	43	12	19	173	11	60	94	18	23	19	6	573
17:00-18:00	81	33	10	19	151	6	62	105	15	24	19	4	529

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
BOONES FERRY ROAD AT TUKWILA/CONSTITUTION DRIVE



DATE OF COUNT: 11/19/02
DAY OF WEEK: Tue
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

MKHP

Peak Hour
16:25-17:25
TEV=578

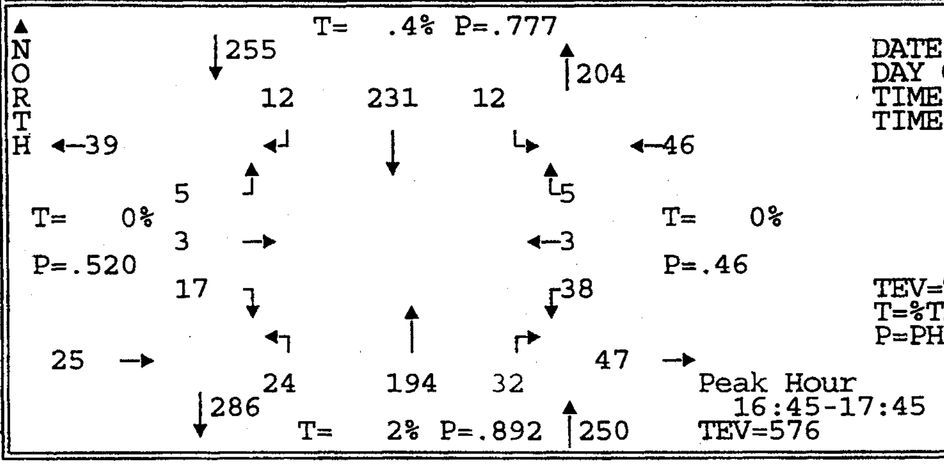
Traffic Smithy
(503) 641-6333

TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			ALL
	Right	Thru	Left	Right	Thru	Left	Left	Thru	Right	Right	Thru	Left	
16:00-16:05	3	0	0	0	18	0	2	18	4	2	0	3	50
16:05-16:10	0	0	0	2	15	0	1	19	1	4	0	1	43
16:10-16:15	3	0	0	0	21	1	0	21	5	0	0	0	51
16:15-16:20	1	0	1	0	15	1	0	17	2	2	0	1	40
16:20-16:25	0	0	0	2	17	0	0	6	4	1	0	1	31
16:25-16:30	1	0	2	2	22	2	1	17	0	1	0	2	50
16:30-16:35	2	1	0	1	22	1	2	14	4	0	0	1	48
16:35-16:40	2	0	0	1	16	0	0	9	2	5	0	2	37
16:40-16:45	0	0	0	0	24	0	1	6	2	0	0	3	36
16:45-16:50	1	0	0	2	26	1	0	21	0	0	0	0	51
16:50-16:55	1	0	0	0	34	0	1	18	2	0	0	1	57
16:55-17:00	1	0	0	0	19	0	3	23	1	2	0	0	49
17:00-17:05	2	0	0	0	14	2	4	14	5	2	0	0	43
17:05-17:10	2	1	0	0	15	2	2	19	2	2	0	0	45
17:10-17:15	0	1	0	3	24	1	3	16	5	3	0	0	56
17:15-17:20	5	0	0	3	22	2	1	14	2	2	0	1	52
17:20-17:25	2	0	2	2	18	3	2	16	3	5	0	1	54
17:25-17:30	0	0	3	0	18	0	1	11	3	2	0	0	38
17:30-17:35	2	0	0	1	12	1	3	19	5	6	2	0	51
17:35-17:40	1	1	0	1	19	0	1	10	2	11	0	0	46
17:40-17:45	0	0	0	0	10	0	3	13	2	3	1	2	34
17:45-17:50	0	0	1	0	14	0	1	14	8	3	1	2	44
17:50-17:55	0	1	0	1	9	0	1	4	0	0	0	1	17
17:55-18:00	3	0	1	1	4	0	3	2	1	1	0	0	16

Total Survey	32	5	10	22	428	17	36	341	65	57	4	22	1039
PHF	.68	.38	.5	.44	.76	.58	.56	.75	.58	.55	0	.46	.891
% Trucks	0	0	0	0	.9	0	0	1.8	0	0	0	0	1
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	0	0	0	2	0	0	0	0	0	0	0	

Hourly Totals													
16:00-17:00	15	1	3	10	249	6	11	189	27	17	0	15	543
16:15-17:15	13	3	3	11	248	10	17	180	29	18	0	11	543
16:30-17:30	18	3	5	12	252	12	20	181	31	23	0	9	566
16:45-17:45	17	3	5	12	231	12	24	194	32	38	3	5	576
17:00-18:00	17	4	7	12	179	11	25	152	38	40	4	7	496

INTERSECTION TURN MOVEMENT COUNT PEAK HOUR REPORT
BOONES FERRY ROAD AT TUKWILA/CONSTITUTION DRIVE



DATE OF COUNT: 11/19/02
DAY OF WEEK: Tue
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

MKHP

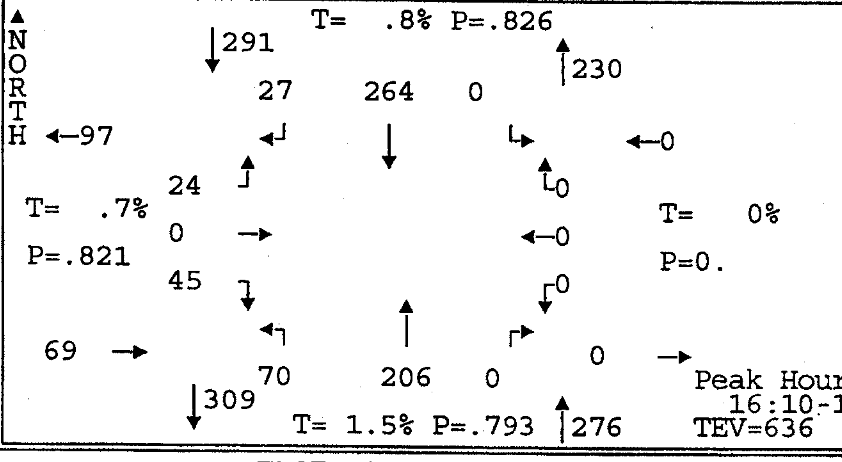
Traffic Smithy
(503)641-6333

TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			ALL
	↓	→	↑	←	↓	→	←	↑	→	↓	←	↑	
ALL VEHICLES													
16:45-17:00	3	0	0	2	79	1	4	62	3	2	0	1	157
17:00-17:15	4	2	0	3	53	5	9	49	12	7	0	0	144
17:15-17:30	7	0	5	5	58	5	4	41	8	9	0	2	144
17:30-17:45	3	1	0	2	41	1	7	42	9	20	3	2	131
LIGHT TRUCKS (SINGLE UNIT 2 AXLES)													
16:45-17:00	0	0	0	0	1	0	0	3	0	0	0	0	4
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	1	0	0	0	0	1
17:30-17:45	0	0	0	0	0	0	0	1	0	0	0	0	1
MEDIUM TRUCKS (SINGLE UNIT > 2 AXLES)													
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30-17:45	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAVY TRUCKS (SEMI-TRACTOR TRAILER)													
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30-17:45	0	0	0	0	0	0	0	0	0	0	0	0	0
BICYCLES													
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30-17:45	0	0	0	0	0	0	0	0	0	0	0	0	0

PEDESTRIANS	CROSSWALK USEAGE				ALL
	SOUTH	WEST	EAST	NORTH	
16:45-17:00	0	0	0	0	0
17:00-17:15	0	0	0	0	0
17:15-17:30	0	1	0	0	1
17:30-17:45	0	0	0	0	0

Peak Hour by Movement	EB ↓	EB →	EB ↑	SB ←	SB ↓	SB →	NB ←	NB ↑	NB →	WB ↓	WB ←	WB ↑	ALL
PHF	.61	.38	.25	.6	.73	.6	.67	.78	.67	.47	.25	.63	.917
% Trucks (all)	0	0	0	0	.4	0	0	2.6	0	0	0	0	1
% Trucks (M+H)	0	0	0	0	0	0	0	0	0	0	0	0	0
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Hourly Totals													
16:00-17:00	15	1	3	10	249	6	11	189	27	17	0	15	543
16:15-17:15	13	3	3	11	248	10	17	180	29	18	0	11	543
16:30-17:30	18	3	5	12	252	12	20	181	31	23	0	9	566
16:45-17:45	17	3	5	12	231	12	24	194	32	38	3	5	576
17:00-18:00	17	4	7	12	179	11	25	152	38	40	4	7	496

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
N BOONES FERRY ROAD AT COUNTRY CLUB ROAD



DATE OF COUNT: 11/19/02
DAY OF WEEK: Tue
TIME STARTED: 16:00
TIME ENDED: 18:00

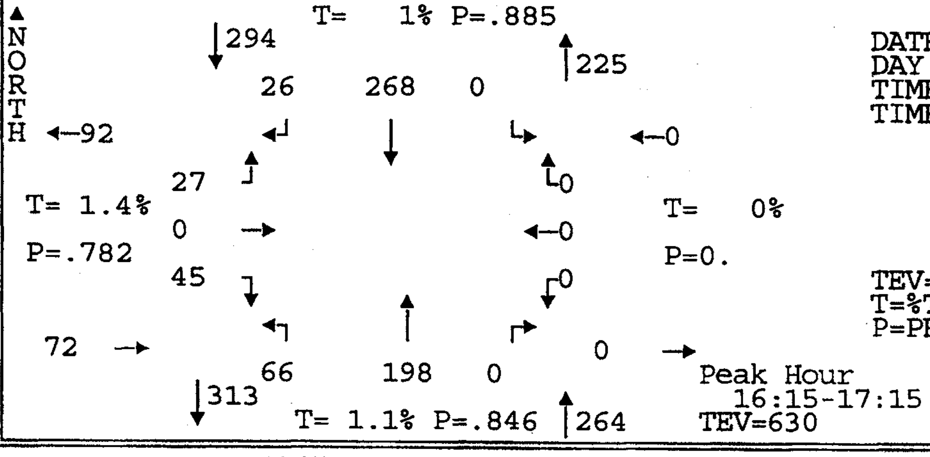
TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

LTGE

Traffic Smithy
(503) 641-6333

TIME PERIOD FROM - TO	EAST BOUND ↴	→	↰	SOUTH BOUND ↲	↓	↳	NORTH BOUND ↰	↑	↱	WEST BOUND ↓	←	↑	ALL
16:00-16:05	5	0	3	3	14	0	8	18	0	0	0	0	51
16:05-16:10	2	0	0	5	18	0	6	15	0	0	0	0	46
16:10-16:15	4	0	1	3	15	0	7	25	0	0	0	0	55
16:15-16:20	6	0	0	5	22	0	3	21	0	0	0	0	57
16:20-16:25	5	0	1	1	21	0	7	15	0	0	0	0	50
16:25-16:30	3	0	3	2	30	0	6	14	0	0	0	0	58
16:30-16:35	2	0	1	2	20	0	6	15	0	0	0	0	46
16:35-16:40	5	0	4	1	21	0	5	12	0	0	0	0	48
16:40-16:45	2	0	1	3	28	0	3	9	0	0	0	0	46
16:45-16:50	3	0	2	2	24	0	3	17	0	0	0	0	51
16:50-16:55	2	0	3	5	26	0	8	13	0	0	0	0	57
16:55-17:00	3	0	3	2	24	0	6	23	0	0	0	0	61
17:00-17:05	3	0	4	0	17	0	5	18	0	0	0	0	47
17:05-17:10	7	0	1	1	16	0	11	24	0	0	0	0	60
17:10-17:15	4	0	4	2	19	0	3	17	0	0	0	0	49
17:15-17:20	1	0	3	2	20	0	6	20	0	0	0	0	52
17:20-17:25	6	0	0	3	25	0	4	19	0	0	0	0	57
17:25-17:30	3	0	1	1	19	0	3	16	0	0	0	0	43
17:30-17:35	1	0	2	3	14	0	2	23	0	0	0	0	45
17:35-17:40	2	0	2	1	16	0	1	14	0	0	0	0	36
17:40-17:45	2	0	2	3	19	0	5	13	0	0	0	0	44
17:45-17:50	5	0	8	3	11	0	9	16	0	0	0	0	52
17:50-17:55	4	0	3	4	17	0	3	16	0	0	0	0	47
17:55-18:00	1	0	3	1	7	0	5	10	0	0	0	0	27
Total Survey	81	0	55	58	463	0	125	403	0	0	0	0	1185
PHF	.75	0	.6	.68	.85	0	.8	.79	0	0	0	0	.940
% Trucks	1.2	0	0	0	.9	0	.8	1.7	0	0	0	0	1.1
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	0	0	0	1	0	0	0	0	0	0	0	
Hourly Totals													
16:00-17:00	42	0	22	34	263	0	68	197	0	0	0	0	626
16:15-17:15	45	0	27	26	268	0	66	198	0	0	0	0	630
16:30-17:30	41	0	27	24	259	0	63	203	0	0	0	0	617
16:45-17:45	37	0	27	25	239	0	57	217	0	0	0	0	602
17:00-18:00	39	0	33	24	200	0	57	206	0	0	0	0	559

INTERSECTION TURN MOVEMENT COUNT PEAK HOUR REPORT
N BOONES FERRY ROAD AT COUNTRY CLUB ROAD



DATE OF COUNT: 11/19/02
DAY OF WEEK: Tue
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

LTGE

Traffic Smithy
(503)641-6333

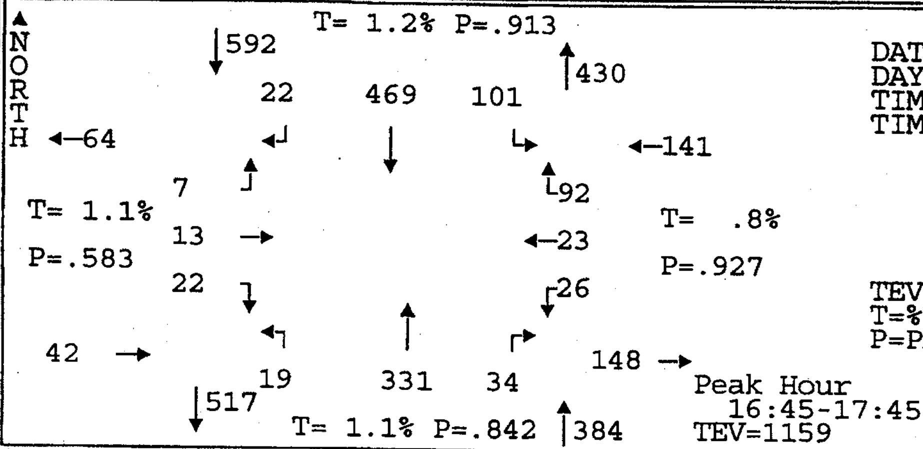
TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			
	↓	→	↑	↵	↓	↳	↰	↑	↱	↓	←	↑	ALL
ALL VEHICLES													
16:15-16:30	14	0	4	8	73	0	16	50	0	0	0	0	165
16:30-16:45	9	0	6	6	69	0	14	36	0	0	0	0	140
16:45-17:00	8	0	8	9	74	0	17	53	0	0	0	0	169
17:00-17:15	14	0	9	3	52	0	19	59	0	0	0	0	156
LIGHT TRUCKS (SINGLE UNIT 2 AXLES)													
16:15-16:30	1	0	0	0	0	0	0	0	0	0	0	0	1
16:30-16:45	0	0	0	0	2	0	0	1	0	0	0	0	3
16:45-17:00	0	0	0	0	1	0	0	1	0	0	0	0	2
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
MEDIUM TRUCKS (SINGLE UNIT > 2 AXLES)													
16:15-16:30	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0	1	0	0	0	0	1
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAVY TRUCKS (SEMI-TRACTOR TRAILER)													
16:15-16:30	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
BICYCLES													
16:15-16:30	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30-16:45	0	1	0	0	1	0	0	0	0	0	0	0	2
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0

PEDESTRIANS	CROSSWALK USEAGE SOUTH	WEST	EAST	NORTH	ALL
16:15-16:30	0	0	0	0	0
16:30-16:45	0	1	0	0	1
16:45-17:00	0	0	0	0	0
17:00-17:15	0	0	0	0	0

Peak Hour by Movement													
PHF	.8	0	.75	.72	.91	0	.87	.84	0	0	0	0	.931
% Trucks(all)	2.2	0	0	0	1.1	0	0	1.5	0	0	0	0	1.1
% Trucks(M+H)	0	0	0	0	0	0	0	.5	0	0	0	0	.2
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	

Hourly Totals													
16:00-17:00	42	0	22	34	263	0	68	197	0	0	0	0	626
16:15-17:15	45	0	27	26	268	0	66	198	0	0	0	0	630
16:30-17:30	41	0	27	24	259	0	63	203	0	0	0	0	617
16:45-17:45	37	0	27	25	239	0	57	217	0	0	0	0	602
17:00-18:00	39	0	33	24	200	0	57	206	0	0	0	0	559

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
BOONES FERRY ROAD/SETTLEMEIR AT LINCOLN STREET



DATE OF COUNT: 11/13/02
DAY OF WEEK: Wed
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

DGTX

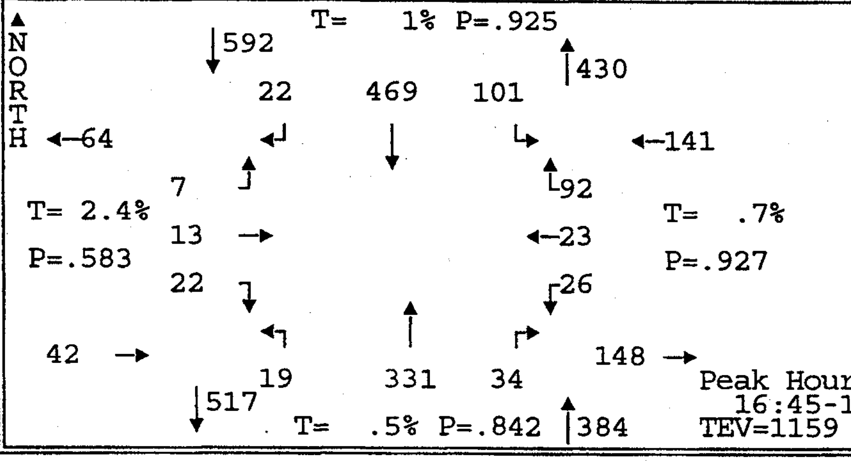
Traffic Smithy
(503) 641-6333

TIME PERIOD FROM - TO	EAST BOUND ↓	→	↑	SOUTH BOUND ↵	↓	↳	NORTH BOUND ↰	↑	↱	WEST BOUND ↓	←	↑	ALL
16:00-16:05	2	1	2	1	43	9	3	28	4	0	4	12	109
16:05-16:10	0	3	0	0	33	7	2	28	5	2	1	6	87
16:10-16:15	2	1	1	1	37	15	3	34	4	1	1	11	111
16:15-16:20	2	1	3	1	32	10	1	23	3	2	0	9	87
16:20-16:25	1	0	0	1	21	8	1	16	3	3	1	8	63
16:25-16:30	1	0	0	4	39	8	1	25	4	2	3	7	94
16:30-16:35	0	2	3	3	42	7	0	26	3	2	2	8	98
16:35-16:40	1	1	1	4	33	11	2	23	1	3	0	3	83
16:40-16:45	4	0	0	2	31	10	0	25	1	1	2	9	85
16:45-16:50	1	1	0	2	33	9	2	29	2	2	1	9	91
16:50-16:55	2	0	0	3	36	11	1	28	3	2	1	11	98
16:55-17:00	0	2	1	3	43	10	1	20	4	0	1	7	92
17:00-17:05	0	5	1	2	31	4	1	34	5	0	5	4	92
17:05-17:10	6	2	1	2	42	9	0	26	1	4	2	13	108
17:10-17:15	1	1	1	1	37	11	1	28	3	3	1	4	92
17:15-17:20	0	0	0	1	50	9	3	47	4	1	2	8	125
17:20-17:25	2	0	0	1	37	14	0	20	3	2	0	6	85
17:25-17:30	1	0	0	2	41	5	3	31	3	3	2	9	100
17:30-17:35	1	0	0	1	48	4	1	22	3	0	3	8	91
17:35-17:40	4	0	1	1	29	8	2	26	2	6	4	2	85
17:40-17:45	4	2	2	3	42	7	4	20	1	3	1	11	100
17:45-17:50	3	1	1	2	25	10	0	11	0	2	1	4	60
17:50-17:55	0	2	2	0	29	11	4	35	3	1	1	4	92
17:55-18:00	3	1	1	1	30	7	0	14	3	3	3	2	68

Total Survey	41	26	21	42	864	214	36	619	68	48	42	175	2196
PHF	.61	.36	.58	.69	.91	.74	.68	.82	.71	.72	.64	.85	.891
% Trucks	0	0	4.8	4.8	.9	1.4	0	1.1	1.5	0	2.4	.6	1.1
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	7	0	0	13	0	0	6	0	0	0	0	

Hourly Totals													
16:00-17:00	16	12	11	25	423	115	17	305	37	20	17	100	1098
16:15-17:15	19	15	11	28	420	108	11	303	33	24	19	92	1083
16:30-17:30	18	14	8	26	456	110	14	337	33	23	19	91	1149
16:45-17:45	22	13	7	22	469	101	19	331	34	26	23	92	1159
17:00-18:00	25	14	10	17	441	99	19	314	31	28	25	75	1098

INTERSECTION TURN MOVEMENT COUNT PEAK HOUR REPORT
BOONES FERRY ROAD/SETTLEMEIR AT LINCOLN STREET



DATE OF COUNT: 11/13/02
DAY OF WEEK: Wed
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

DGTX

Peak Hour
16:45-17:45
TEV=1159

Traffic Smithy
(503)641-6333

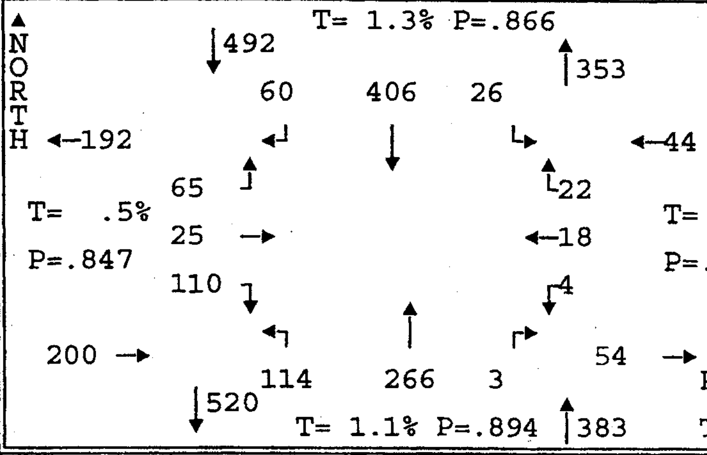
TIME PERIOD FROM - TO	EAST BOUND ↴	→	⬏	SOUTH BOUND ↲	↓	↳	NORTH BOUND ↰	↑	↱	WEST BOUND ↓	←	↑	ALL
ALL VEHICLES													
16:45-17:00	3	3	1	8	112	30	4	77	9	4	3	27	281
17:00-17:15	7	8	3	5	110	24	2	88	9	7	8	21	292
17:15-17:30	3	0	0	4	128	28	6	98	10	6	4	23	310
17:30-17:45	9	2	3	5	119	19	7	68	6	9	8	21	276
LIGHT TRUCKS (SINGLE UNIT 2 AXLES)													
16:45-17:00	0	0	0	0	1	1	0	0	0	0	0	0	2
17:00-17:15	0	0	0	0	0	0	0	1	1	0	0	0	2
17:15-17:30	0	0	0	0	3	1	0	0	0	0	0	1	5
17:30-17:45	0	0	1	0	0	0	0	0	0	0	0	0	1
MEDIUM TRUCKS (SINGLE UNIT > 2 AXLES)													
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30-17:45	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAVY TRUCKS (SEMI-TRACTOR TRAILER)													
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30-17:45	0	0	0	0	0	0	0	0	0	0	0	0	0
BICYCLES													
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	2	0	0	0	0	0	0	0	0	0	0	2
17:30-17:45	0	0	0	0	0	0	0	0	0	0	0	0	0

PEDESTRIANS	-----CROSSWALK USEAGE----- SOUTH	WEST	EAST	NORTH	ALL
16:45-17:00	1	0	0	0	1
17:00-17:15	2	1	0	0	3
17:15-17:30	2	4	1	0	7
17:30-17:45	0	6	1	0	7

Peak Hour by Movement													
PHF	.61	.41	.58	.69	.92	.84	.68	.84	.85	.72	.72	.85	.934
% Trucks(all)	0	0	14.3	0	.9	2	0	.3	2.9	0	0	1.1	.9
% Trucks(M+H)	0	0	0	0	0	0	0	0	0	0	0	0	0
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	

Hourly Totals													
16:00-17:00	16	12	11	25	423	115	17	305	37	20	17	100	1098
16:15-17:15	19	15	11	28	420	108	11	303	33	24	19	92	1083
16:30-17:30	18	14	8	26	456	110	14	337	33	23	19	91	1149
16:45-17:45	22	13	7	22	469	101	19	331	34	26	23	92	1159
17:00-18:00	25	14	10	17	441	99	19	314	31	28	25	75	1098

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
SETTLEMEIR AVENUE/BOONES FERRY ROAD AT HAYES STREET



Peak Hour
16:45-17:45
TEV=1119

DATE OF COUNT: 11/07/02
DAY OF WEEK: Thu
TIME STARTED: 16:00
TIME ENDED: 18:00

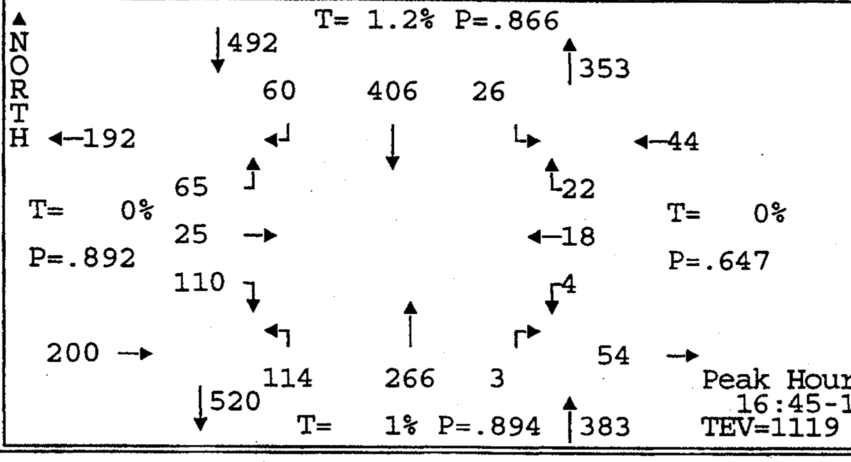
TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

LTFX

Traffic Smithy
(503) 641-6333

TIME PERIOD FROM - TO	EAST BOUND ↓	→	↑	SOUTH BOUND ↵	↓	↳	NORTH BOUND ↰	↑	↱	WEST BOUND ↓	←	↑	ALL
16:00-16:05	5	5	6	8	31	1	7	29	1	0	5	5	103
16:05-16:10	3	1	4	2	32	0	11	34	0	0	2	2	91
16:10-16:15	9	1	7	6	29	3	12	21	2	0	2	1	93
16:15-16:20	5	0	6	3	35	3	15	24	1	0	1	3	96
16:20-16:25	11	0	5	6	29	0	7	22	2	0	1	0	83
16:25-16:30	4	1	10	7	33	4	9	23	0	0	3	2	96
16:30-16:35	7	3	5	8	29	2	8	26	0	0	1	2	91
16:35-16:40	11	2	11	4	26	7	9	24	0	0	0	2	96
16:40-16:45	0	2	2	5	34	2	11	18	0	0	2	5	81
16:45-16:50	9	3	4	3	23	1	5	15	0	0	1	2	66
16:50-16:55	4	0	9	3	34	3	15	17	0	0	1	2	88
16:55-17:00	8	3	7	8	36	2	13	15	0	0	4	2	98
17:00-17:05	9	2	4	8	41	3	9	28	0	1	2	5	112
17:05-17:10	14	3	5	1	30	3	7	24	0	1	3	2	93
17:10-17:15	12	2	5	5	31	1	11	27	1	1	2	0	98
17:15-17:20	6	4	2	7	29	3	11	22	1	0	2	1	88
17:20-17:25	7	3	5	6	43	3	5	24	1	0	0	1	98
17:25-17:30	8	1	12	4	44	3	6	20	0	0	2	2	102
17:30-17:35	15	0	3	4	23	1	11	26	0	0	0	1	84
17:35-17:40	11	4	5	8	37	2	13	26	0	0	1	3	110
17:40-17:45	7	0	4	3	35	1	8	22	0	1	0	1	82
17:45-17:50	6	2	2	6	13	1	7	17	1	0	1	3	59
17:50-17:55	7	0	5	9	27	1	13	28	1	0	1	2	94
17:55-18:00	8	3	8	5	24	0	9	20	0	0	1	1	79
Total Survey	186	45	136	129	748	50	232	552	11	4	38	50	2181
PHF	.79	.69	.81	.79	.88	.72	.77	.84	.25	.33	.5	.61	.923
% Trucks	1.1	0	0	.8	1.2	4	.4	1.4	0	0	0	0	1.1
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	9	0	0	5	0	0	1	0	0	1	0	
Hourly Totals													
16:00-17:00	76	21	76	63	371	28	122	268	6	0	23	28	1082
16:15-17:15	94	21	73	61	381	31	119	263	4	3	21	27	1098
16:30-17:30	95	28	71	62	400	33	110	260	3	3	20	26	1111
16:45-17:45	110	25	65	60	406	26	114	266	3	4	18	22	1119
17:00-18:00	110	24	60	66	377	22	110	284	5	4	15	22	1099

INTERSECTION TURN MOVEMENT COUNT PEAK HOUR REPORT
SETTLEMEIR AVENUE/BOONES FERRY ROAD AT HAYES STREET



DATE OF COUNT: 11/07/02
DAY OF WEEK: Thu
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

LTFX

Peak Hour
16:45-17:45
TEV=1119

Traffic Smithy
(503)641-6333

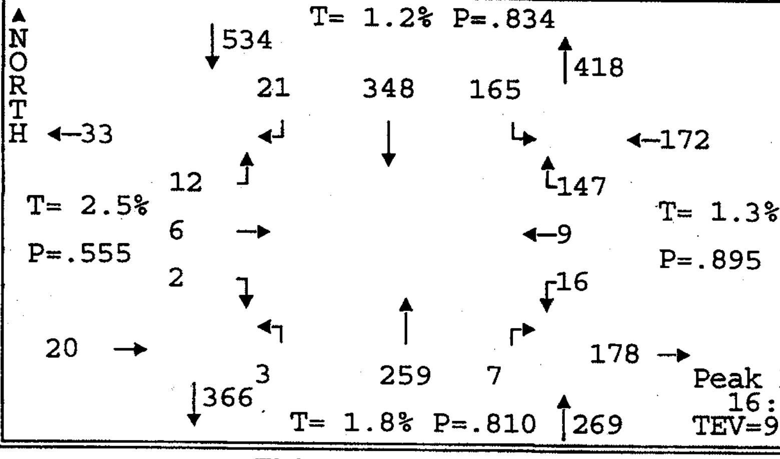
TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			
	↓	→	↑	←	↓	→	←	↑	→	↓	←	↑	ALL
ALL VEHICLES													
16:45-17:00	21	6	20	14	93	6	33	47	0	0	6	6	252
17:00-17:15	35	7	14	14	102	7	27	79	1	3	7	7	303
17:15-17:30	21	8	19	17	116	9	22	66	2	0	4	4	288
17:30-17:45	33	4	12	15	95	4	32	74	0	1	1	5	276
LIGHT TRUCKS (SINGLE UNIT 2 AXLES)													
16:45-17:00	0	0	0	0	1	0	0	1	0	0	0	0	2
17:00-17:15	0	0	0	0	0	0	0	2	0	0	0	0	2
17:15-17:30	0	0	0	0	4	0	0	0	0	0	0	0	4
17:30-17:45	0	0	0	0	1	0	1	0	0	0	0	0	2
MEDIUM TRUCKS (SINGLE UNIT > 2 AXLES)													
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30-17:45	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAVY TRUCKS (SEMI-TRACTOR TRAILER)													
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30-17:45	0	0	0	0	0	0	0	0	0	0	0	0	0
BICYCLES													
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30-17:45	0	0	0	0	0	0	0	0	0	0	0	0	0

PEDESTRIANS	CROSSWALK USEAGE				ALL
	SOUTH	WEST	EAST	NORTH	
16:45-17:00	3	1	0	0	4
17:00-17:15	0	0	0	1	1
17:15-17:30	1	0	0	0	1
17:30-17:45	0	0	0	0	0

Peak Hour by Movement													
PHF	.79	.78	.81	.88	.88	.72	.86	.84	.38	.33	.64	.79	.923
% Trucks(all)	0	0	0	0	1.5	0	.9	1.1	0	0	0	0	.9
% Trucks(M+H)	0	0	0	0	0	0	0	0	0	0	0	0	0
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	

Hourly Totals													
16:00-17:00	76	21	76	63	371	28	122	268	6	0	23	28	1082
16:15-17:15	94	21	73	61	381	31	119	263	4	3	21	27	1098
16:30-17:30	95	28	71	62	400	33	110	260	3	3	20	26	1111
16:45-17:45	110	25	65	60	406	26	114	266	3	4	18	22	1119
17:00-18:00	110	24	60	66	377	22	110	284	5	4	15	22	1099

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
BOONES FERRY ROAD/SETTLEMIER STREET AT GARFIELD STREET



DATE OF COUNT: 11/13/02
DAY OF WEEK: Wed
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

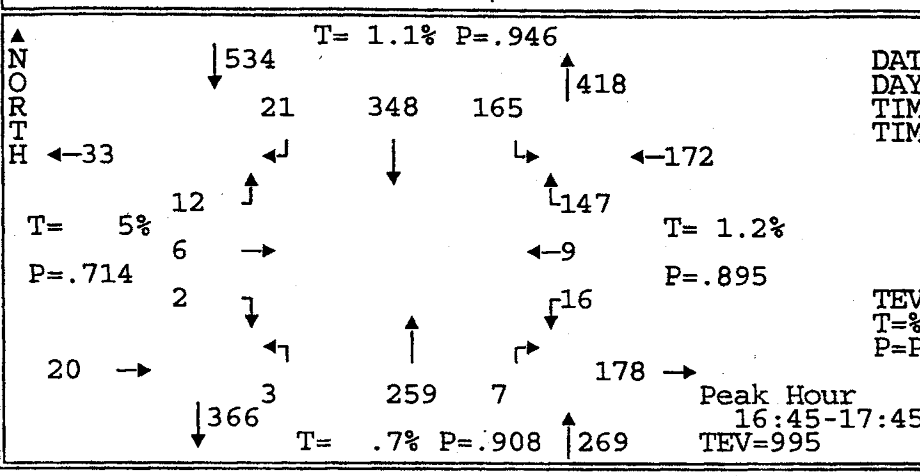
PDAG

Peak Hour
16:45-17:45
TEV=995

Traffic Smithy
(503) 641-6333

TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			
	↓	→	↑	↲	↓	↳	↰	↑	↱	↓	←	↑	ALL
16:00-16:05	0	0	2	1	32	21	0	23	0	2	0	12	93
16:05-16:10	0	0	2	1	27	12	1	22	1	1	1	12	80
16:10-16:15	1	0	0	1	28	14	1	21	0	2	0	11	79
16:15-16:20	0	0	3	1	19	12	1	14	1	1	1	8	61
16:20-16:25	1	1	0	1	12	10	0	17	2	1	1	11	57
16:25-16:30	0	1	0	3	21	14	1	23	0	0	0	9	72
16:30-16:35	0	2	2	3	33	13	0	21	0	3	0	5	82
16:35-16:40	0	0	1	3	21	6	1	23	0	0	0	10	65
16:40-16:45	0	0	1	0	29	13	0	12	1	0	2	9	67
16:45-16:50	0	0	0	2	24	17	0	27	1	0	2	15	88
16:50-16:55	0	0	2	3	24	10	1	21	0	1	0	12	74
16:55-17:00	0	1	2	4	32	9	0	19	1	5	1	12	86
17:00-17:05	0	0	1	0	18	13	1	20	1	2	0	15	71
17:05-17:10	1	0	2	2	34	14	0	14	1	0	1	12	81
17:10-17:15	0	0	0	2	31	22	0	37	0	2	0	9	103
17:15-17:20	0	0	1	2	37	16	0	31	0	1	1	12	101
17:20-17:25	0	1	0	0	30	13	0	15	0	1	0	11	71
17:25-17:30	1	1	0	1	32	10	0	18	1	2	1	17	84
17:30-17:35	0	0	1	1	25	23	0	18	0	1	0	8	77
17:35-17:40	0	3	3	3	22	8	1	22	2	1	2	14	81
17:40-17:45	0	0	0	1	39	10	0	17	0	0	1	10	78
17:45-17:50	1	0	1	0	19	9	1	21	0	0	1	11	64
17:50-17:55	0	0	0	1	21	7	0	20	1	1	2	11	64
17:55-18:00	1	0	0	2	18	13	0	13	0	0	1	7	55
Total Survey	6	10	24	38	628	309	9	489	13	27	18	263	1834
PHF	.5	.38	.6	.58	.85	.79	.38	.78	.58	.5	.75	.92	.872
% Trucks	0	10	0	0	1.1	1.6	0	1.8	0	0	0	1.5	1.4
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	5	0	0	6	0	0	1	0	0	2	0	
Hourly Totals													
16:00-17:00	2	5	15	23	302	151	6	243	7	16	8	126	904
16:15-17:15	2	5	14	24	298	153	5	248	8	15	8	127	907
16:30-17:30	2	5	12	22	345	156	3	258	6	17	8	139	973
16:45-17:45	2	6	12	21	348	165	3	259	7	16	9	147	995
17:00-18:00	4	5	9	15	326	158	3	246	6	11	10	137	930

INTERSECTION TURN MOVEMENT COUNT PEAK HOUR REPORT
BOONES FERRY ROAD/SETTLEMIER STREET AT GARFIELD STREET



Peak Hour
16:45-17:45
TEV=995

DATE OF COUNT: 11/13/02
DAY OF WEEK: Wed
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

PDAG

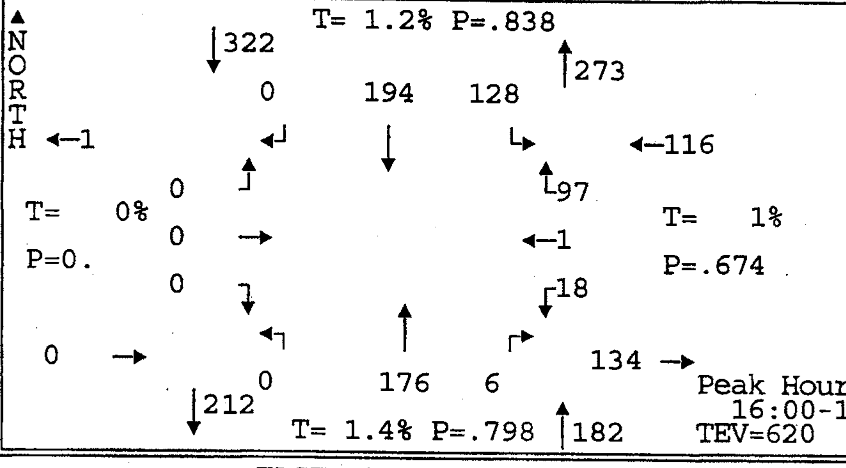
Traffic Smithy
(503)641-6333

TIME PERIOD FROM - TO	EAST BOUND ↓	EAST BOUND →	EAST BOUND ↑	SOUTH BOUND ↲	SOUTH BOUND ↓	SOUTH BOUND ↳	NORTH BOUND ↰	NORTH BOUND ↑	NORTH BOUND ↱	WEST BOUND ↓	WEST BOUND ←	WEST BOUND ↑	ALL
ALL VEHICLES													
16:45-17:00	0	1	4	9	80	36	1	67	2	6	3	39	248
17:00-17:15	1	0	3	4	83	49	1	71	2	4	1	36	255
17:15-17:30	1	2	1	3	99	39	0	64	1	4	2	40	256
17:30-17:45	0	3	4	5	86	41	1	57	2	2	3	32	236
LIGHT TRUCKS (SINGLE UNIT 2 AXLES)													
16:45-17:00	0	0	0	0	0	1	0	0	0	0	0	0	1
17:00-17:15	0	0	0	0	1	0	0	1	0	0	0	1	3
17:15-17:30	0	1	0	0	2	1	0	0	0	0	0	0	4
17:30-17:45	0	0	0	0	0	1	0	1	0	0	0	1	3
MEDIUM TRUCKS (SINGLE UNIT > 2 AXLES)													
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30-17:45	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAVY TRUCKS (SEMI-TRACTOR TRAILER)													
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30-17:45	0	0	0	0	0	0	0	0	0	0	0	0	0
BICYCLES													
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30-17:45	0	0	0	0	0	0	0	0	0	0	0	0	0

PEDESTRIANS	CROSSWALK USEAGE SOUTH	WEST	EAST	NORTH	ALL
16:45-17:00	2	2	0	0	4
17:00-17:15	0	0	0	0	0
17:15-17:30	0	0	0	0	0
17:30-17:45	0	0	0	0	0

Peak Hour by Movement	EB ↓	EB →	EB ↑	SB ↲	SB ↓	SB ↳	NB ↰	NB ↑	NB ↱	WB ↓	WB ←	WB ↑	ALL
PHF	.5	.5	.75	.58	.88	.84	.75	.91	.88	.67	.75	.92	.971
% Trucks(all)	0	16.7	0	0	.9	1.8	0	.8	0	0	0	1.4	1.1
% Trucks(M+H)	0	0	0	0	0	0	0	0	0	0	0	0	0
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Hourly Totals													
16:00-17:00	2	5	15	23	302	151	6	243	7	16	8	126	904
16:15-17:15	2	5	14	24	298	153	5	248	8	15	8	127	907
16:30-17:30	2	5	12	22	345	156	3	258	6	17	8	139	973
16:45-17:45	2	6	12	21	348	165	3	259	7	16	9	147	995
17:00-18:00	4	5	9	15	326	158	3	246	6	11	10	137	930

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
BOONES FERRY ROAD AT CLEVELAND STREET



DATE OF COUNT: 11/06/02
DAY OF WEEK: Wed
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

PDAD

Peak Hour
16:00-17:00
TEV=620

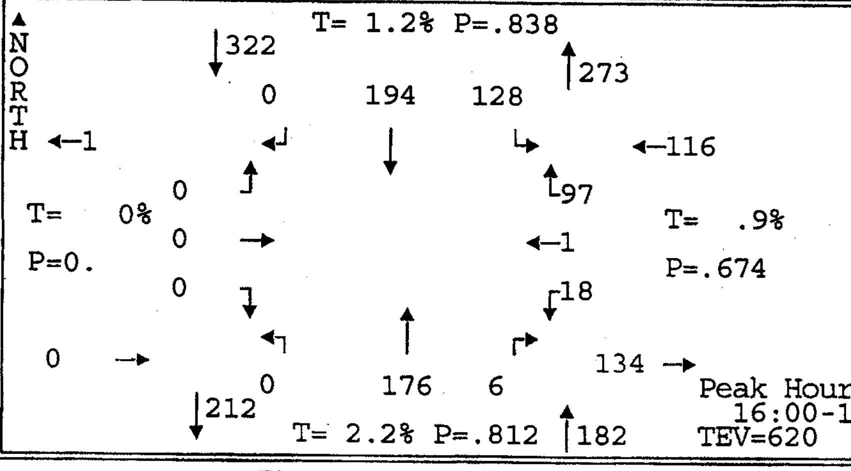
Traffic Smithy
(503) 641-6333

TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			ALL
	↴	→	↑	↲	↓	↳	↰	↑	↱	↓	←	↑	
16:00-16:05	0	0	0	0	19	20	0	19	2	2	1	6	69
16:05-16:10	0	0	0	0	17	7	0	12	1	2	0	6	45
16:10-16:15	0	0	0	0	21	12	0	21	1	2	0	8	65
16:15-16:20	0	0	0	0	12	10	0	17	0	0	0	5	44
16:20-16:25	0	0	0	0	17	8	0	17	1	0	0	5	48
16:25-16:30	0	0	0	0	12	20	0	19	0	1	0	8	60
16:30-16:35	0	0	0	0	13	7	0	11	0	2	0	8	41
16:35-16:40	0	0	0	0	20	17	0	9	0	2	0	8	56
16:40-16:45	0	0	0	0	23	11	0	9	1	2	0	5	51
16:45-16:50	0	0	0	0	9	7	0	17	0	3	0	11	47
16:50-16:55	0	0	0	0	12	2	0	13	0	0	0	13	40
16:55-17:00	0	0	0	0	19	7	0	12	0	2	0	14	54
17:00-17:05	0	0	0	0	22	7	0	13	1	2	0	12	57
17:05-17:10	0	0	0	0	19	11	0	14	2	2	0	8	56
17:10-17:15	0	0	0	0	20	13	0	8	0	1	0	6	48
17:15-17:20	0	0	0	0	24	9	0	14	0	0	0	3	50
17:20-17:25	0	0	0	0	21	6	0	22	0	3	0	4	56
17:25-17:30	0	0	0	0	22	10	0	6	0	2	0	6	46
17:30-17:35	0	0	0	0	19	10	0	16	3	2	0	9	59
17:35-17:40	0	0	0	0	20	10	0	14	0	2	0	3	49
17:40-17:45	0	0	0	0	20	7	0	10	2	1	0	6	46
17:45-17:50	0	0	0	0	13	8	0	14	0	2	0	3	40
17:50-17:55	0	0	0	0	15	12	0	15	0	0	0	3	45
17:55-18:00	0	0	0	0	14	10	0	9	1	1	0	6	41

Total Survey	0	0	0	0	423	241	0	331	15	36	1	166	1213
PHF	0	0	0	0	.85	.73	0	.8	.38	.64	.25	.64	.865
% Trucks	0	0	0	0	.7	2.1	0	1.5	0	2.8	0	.6	1.2
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	0	0	0	0	0	0	6	0	0	0	0	

Hourly Totals													
16:00-17:00	0	0	0	0	194	128	0	176	6	18	1	97	620
16:15-17:15	0	0	0	0	198	120	0	159	5	17	0	103	602
16:30-17:30	0	0	0	0	224	107	0	148	4	21	0	98	602
16:45-17:45	0	0	0	0	227	99	0	159	8	20	0	95	608
17:00-18:00	0	0	0	0	229	113	0	155	9	18	0	69	593

INTERSECTION TURN MOVEMENT COUNT PEAK HOUR REPORT
BOONES FERRY ROAD AT CLEVELAND STREET



DATE OF COUNT: 11/06/02
DAY OF WEEK: Wed
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

PDAD

Peak Hour
16:00-17:00
TEV=620

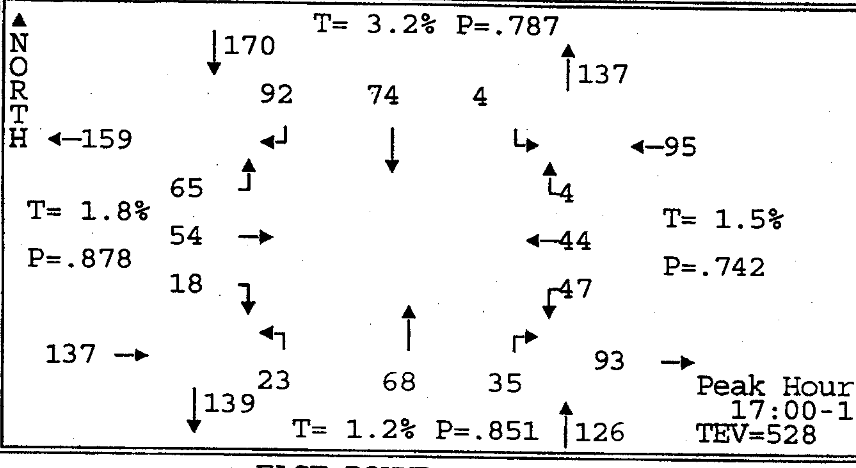
Traffic Smithy
(503)641-6333

TIME PERIOD FROM - TO	EAST BOUND ↓	→	↑	SOUTH BOUND ↲	↓	↳	NORTH BOUND ↰	↑	↱	WEST BOUND ↓	←	↑	ALL
ALL VEHICLES													
16:00-16:15	0	0	0	0	57	39	0	52	4	6	1	20	179
16:15-16:30	0	0	0	0	41	38	0	53	1	1	0	18	152
16:30-16:45	0	0	0	0	56	35	0	29	1	6	0	21	148
16:45-17:00	0	0	0	0	40	16	0	42	0	5	0	38	141
LIGHT TRUCKS (SINGLE UNIT 2 AXLES)													
16:00-16:15	0	0	0	0	1	0	0	2	0	0	0	1	4
16:15-16:30	0	0	0	0	0	0	0	1	0	0	0	0	1
16:30-16:45	0	0	0	0	0	2	0	0	0	0	0	0	2
16:45-17:00	0	0	0	0	0	0	0	1	0	0	0	0	1
MEDIUM TRUCKS (SINGLE UNIT > 2 AXLES)													
16:00-16:15	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15-16:30	0	0	0	0	0	1	0	0	0	0	0	0	1
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAVY TRUCKS (SEMI-TRACTOR TRAILER)													
16:00-16:15	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15-16:30	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
BICYCLES													
16:00-16:15	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15-16:30	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0

PEDESTRIANS	CROSSWALK USEAGE SOUTH	WEST	EAST	NORTH	ALL
16:00-16:15	0	0	3	0	3
16:15-16:30	0	0	0	0	0
16:30-16:45	0	0	0	0	0
16:45-17:00	0	0	1	0	1

Peak Hour by Movement	EB ↓	→	↑	SB ↲	↓	↳	NB ↰	↑	↱	WB ↓	←	↑	ALL
PHF	0	0	0	0	.85	.82	0	.83	.38	.75	.25	.64	.865
% Trucks(all)	0	0	0	0	.5	2.3	0	2.3	0	0	0	1	1.5
% Trucks(M+H)	0	0	0	0	0	.8	0	0	0	0	0	0	.2
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Hourly Totals													
16:00-17:00	0	0	0	0	194	128	0	176	6	18	1	97	620
16:15-17:15	0	0	0	0	198	120	0	159	5	17	0	103	602
16:30-17:30	0	0	0	0	224	107	0	148	4	21	0	98	602
16:45-17:45	0	0	0	0	227	99	0	159	8	20	0	95	608
17:00-18:00	0	0	0	0	229	113	0	155	9	18	0	69	593

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
BOONES FERRY ROAD AT PARR ROAD



DATE OF COUNT: 11/07/02
DAY OF WEEK: Thu
TIME STARTED: 16:00
TIME ENDED: 18:00

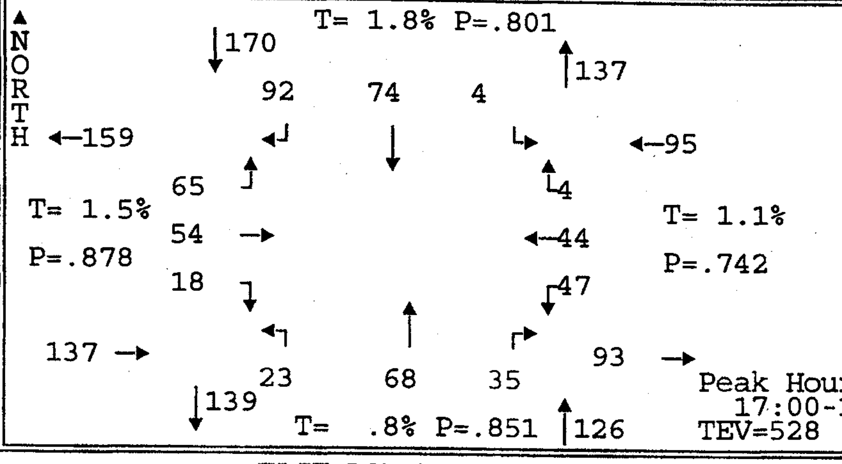
TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

DLKM

Traffic Smithy
(503) 641-6333

TIME PERIOD FROM - TO	EAST BOUND ↓	→	↑	SOUTH BOUND ↲	↓	↳	NORTH BOUND ↰	↑	↱	WEST BOUND ↓	←	↑	ALL
16:00-16:05	5	9	8	7	7	0	2	4	1	7	7	2	59
16:05-16:10	2	10	11	5	7	0	4	7	1	5	5	1	58
16:10-16:15	1	3	6	6	3	1	1	9	4	5	5	1	45
16:15-16:20	1	3	8	5	7	1	2	8	3	3	3	0	44
16:20-16:25	3	6	5	4	2	0	3	10	2	3	3	0	41
16:25-16:30	5	6	4	7	6	0	5	7	3	3	6	0	52
16:30-16:35	5	3	3	3	9	0	3	6	5	3	3	0	43
16:35-16:40	2	3	6	4	10	1	3	4	1	6	6	0	46
16:40-16:45	2	2	4	4	5	0	0	6	1	4	1	0	29
16:45-16:50	2	0	4	3	6	0	3	2	2	7	5	0	34
16:50-16:55	1	2	2	8	7	0	0	5	3	4	5	0	37
16:55-17:00	3	2	5	3	10	1	1	4	3	3	4	0	39
17:00-17:05	2	5	6	1	10	2	2	6	3	4	1	0	42
17:05-17:10	0	1	4	6	3	1	2	6	6	4	3	0	36
17:10-17:15	1	4	4	9	9	0	1	5	2	6	3	1	45
17:15-17:20	2	4	6	5	4	0	1	7	5	5	2	1	42
17:20-17:25	4	7	3	7	4	0	2	6	0	4	1	0	38
17:25-17:30	0	0	7	10	7	0	3	6	7	4	2	0	46
17:30-17:35	1	3	4	6	5	0	2	6	2	4	4	0	37
17:35-17:40	2	7	7	14	9	0	1	3	1	2	4	1	51
17:40-17:45	3	6	5	10	9	0	3	6	6	2	5	0	55
17:45-17:50	0	4	5	9	2	1	1	6	1	4	5	1	39
17:50-17:55	1	7	6	7	6	0	2	4	2	4	9	0	48
17:55-18:00	2	6	8	8	6	0	3	7	0	4	5	0	49
Total Survey	50	103	131	151	153	8	50	140	64	100	97	8	1055
PHF	.64	.79	.86	.7	.8	.33	.82	.89	.67	.78	.58	.5	.910
% Trucks	2	1	2.3	4	2.6	0	2	1.4	0	2	0	12.5	2
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	6	0	0	1	0	0	0	0	0	3	0	
Hourly Totals													
16:00-17:00	32	49	66	59	79	4	27	72	29	53	53	4	527
16:15-17:15	27	37	55	57	84	6	25	69	34	50	43	1	488
16:30-17:30	~~24~~	~~33~~	~~54~~	~~63~~	~~84~~	~~5~~	~~21~~	~~63~~	~~38~~	~~54~~	~~36~~	~~2~~	~~477~~
16:45-17:45	21	41	57	82	83	4	21	62	40	49	39	3	502
17:00-18:00	18	54	65	92	74	4	23	68	35	47	44	4	528

INTERSECTION TURN MOVEMENT COUNT PEAK HOUR REPORT
BOONES FERRY ROAD AT PARR ROAD



DATE OF COUNT: 11/07/02
DAY OF WEEK: Thu
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

DLKM

Peak Hour
17:00-18:00
TEV=528

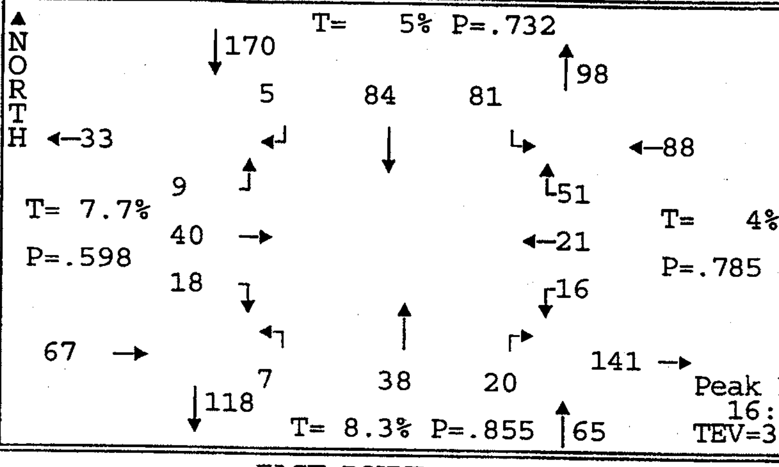
Traffic Smithy
(503)641-6333

TIME PERIOD FROM - TO	EAST BOUND ↓	→	↑	SOUTH BOUND ↲	↓	↳	NORTH BOUND ↰	↑	↱	WEST BOUND ↓	←	↑	ALL
ALL VEHICLES													
17:00-17:15	3	10	14	16	22	3	5	17	11	14	7	1	123
17:15-17:30	6	11	16	22	15	0	6	19	12	13	5	1	126
17:30-17:45	6	16	16	30	23	0	6	15	9	8	13	1	143
17:45-18:00	3	17	19	24	14	1	6	17	3	12	19	1	136
LIGHT TRUCKS (SINGLE UNIT 2 AXLES)													
17:00-17:15	0	0	0	0	0	0	0	1	0	1	0	0	2
17:15-17:30	0	0	0	1	0	0	0	0	0	0	0	0	1
17:30-17:45	0	0	1	1	1	0	0	0	0	0	0	0	3
17:45-18:00	0	0	1	0	0	0	0	0	0	0	0	0	1
MEDIUM TRUCKS (SINGLE UNIT > 2 AXLES)													
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30-17:45	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45-18:00	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAVY TRUCKS (SEMI-TRACTOR TRAILER)													
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30-17:45	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45-18:00	0	0	0	0	0	0	0	0	0	0	0	0	0
BICYCLES													
17:00-17:15	0	0	0	0	0	0	0	0	0	0	1	0	1
17:15-17:30	0	0	0	0	0	0	0	1	0	0	0	0	1
17:30-17:45	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45-18:00	0	0	0	0	0	0	0	0	0	0	0	0	0

PEDESTRIANS	----CROSSWALK USEAGE---- SOUTH	WEST	EAST	NORTH	ALL
17:00-17:15	0	1	0	1	2
17:15-17:30	0	0	0	0	0
17:30-17:45	3	0	0	2	5
17:45-18:00	0	0	0	0	0

Peak Hour by Movement	EB ↓	EB →	EB ↑	SB ↲	SB ↓	SB ↳	NB ↰	NB ↑	NB ↱	WB ↓	WB ←	WB ↑	ALL
PHF	.75	.79	.86	.77	.8	.33	.96	.89	.73	.84	.58	1	.923
% Trucks(all)	0	0	3.1	2.2	1.4	0	0	1.5	0	2.1	0	0	1.3
% Trucks(M+H)	0	0	0	0	0	0	0	0	0	0	0	0	0
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Hourly Totals													
16:00-17:00	32	49	66	59	79	4	27	72	29	53	53	4	527
16:15-17:15	27	37	55	57	84	6	25	69	34	50	43	1	488
16:30-17:30	24	33	54	63	84	5	21	63	38	54	36	2	477
16:45-17:45	21	41	57	82	83	4	21	62	40	49	39	3	502
17:00-18:00	18	54	65	92	74	4	23	68	35	47	44	4	528

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
CROSBY ROAD NE AT BUTTEVILLE ROAD NE



DATE OF COUNT: 11/20/02
DAY OF WEEK: Wed
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

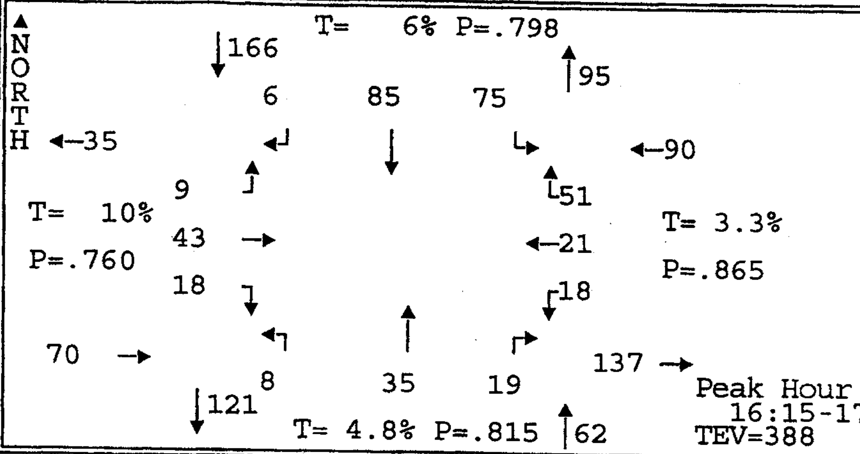
DLKU

Peak Hour
16:20-17:20
TEV=390

Traffic Smithy
(503) 641-6333

TIME PERIOD FROM - TO	EAST BOUND ↓	→	↑	SOUTH BOUND ←	↓	→	NORTH BOUND ←	↑	→	WEST BOUND ↓	←	↑	ALL
16:00-16:05	2	6	1	0	6	4	1	5	1	1	1	1	29
16:05-16:10	2	0	0	1	5	4	0	2	2	0	3	1	20
16:10-16:15	0	5	0	0	3	1	0	5	1	1	8	2	26
16:15-16:20	0	5	0	1	6	2	1	1	0	3	2	2	23
16:20-16:25	3	3	1	0	3	4	1	5	2	2	3	6	33
16:25-16:30	1	4	3	2	5	4	0	3	2	3	2	3	32
16:30-16:35	1	3	0	0	5	7	1	2	2	0	1	8	30
16:35-16:40	3	10	3	1	6	7	1	3	3	1	4	3	45
16:40-16:45	1	1	1	0	11	9	1	1	1	0	2	4	32
16:45-16:50	2	3	0	0	11	10	0	4	2	3	0	0	35
16:50-16:55	1	4	0	0	10	7	0	3	2	0	3	7	37
16:55-17:00	3	2	0	1	9	4	0	2	0	1	2	4	28
17:00-17:05	0	1	1	1	4	7	0	3	4	1	0	5	27
17:05-17:10	3	4	0	0	6	7	2	4	0	2	1	2	31
17:10-17:15	0	3	0	0	9	7	1	4	1	2	1	7	35
17:15-17:20	0	2	0	0	5	8	0	4	1	1	2	2	25
17:20-17:25	3	4	1	0	2	5	1	6	0	1	2	2	27
17:25-17:30	1	2	0	1	7	2	0	5	1	0	3	2	24
17:30-17:35	0	2	0	1	13	8	1	2	1	0	0	2	30
17:35-17:40	1	0	0	2	1	3	1	5	0	2	3	2	20
17:40-17:45	2	5	1	0	3	5	1	3	0	0	0	2	22
17:45-17:50	1	3	1	1	6	6	1	4	3	5	0	3	34
17:50-17:55	1	1	0	1	4	2	2	4	1	0	2	2	20
17:55-18:00	0	0	0	0	4	1	2	3	2	1	1	1	15
Total Survey	31	73	13	13	144	124	18	83	32	30	46	73	680
PHF	.75	.59	.38	.42	.66	.78	.58	.79	.71	.8	.75	.75	.870
% Trucks	3.2	5.5	30.8	46.2	3.5	2.4	11.1	8.4	6.3	3.3	8.7	1.4	5.9
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	0	0	0	0	0	0	0	0	0	0	0	
Hourly Totals													
16:00-17:00	19	46	9	6	80	63	6	36	18	15	31	41	370
16:15-17:15	18	43	9	6	85	75	8	35	19	18	21	51	388
16:30-17:30	18	39	6	4	85	80	7	41	17	12	21	46	376
16:45-17:45	16	32	3	6	80	73	7	45	12	13	17	37	341
17:00-18:00	12	27	4	7	64	61	12	47	14	15	15	32	310

INTERSECTION TURN MOVEMENT COUNT PEAK HOUR REPORT
CROSBY ROAD NE AT BUTTEVILLE ROAD NE



Peak Hour
16:15-17:15
TEV=388

DATE OF COUNT: 11/20/02
DAY OF WEEK: Wed
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

DLKU

Traffic Smithy
(503)641-6333

TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			ALL
ALL VEHICLES													
16:15-16:30	4	12	4	3	14	10	2	9	4	8	7	11	88
16:30-16:45	5	14	4	1	22	23	3	6	6	1	7	15	107
16:45-17:00	6	9	0	1	30	21	0	9	4	4	5	11	100
17:00-17:15	3	8	1	1	19	21	3	11	5	5	2	14	93
LIGHT TRUCKS (SINGLE UNIT 2 AXLES)													
16:15-16:30	0	0	0	1	0	0	0	1	0	0	2	0	4
16:30-16:45	0	2	1	1	0	1	0	0	0	0	0	0	5
16:45-17:00	0	1	0	0	1	1	0	0	0	0	0	0	3
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	1	1
MEDIUM TRUCKS (SINGLE UNIT > 2 AXLES)													
16:15-16:30	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30-16:45	0	0	0	0	0	1	0	0	0	0	0	0	1
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAVY TRUCKS (SEMI-TRACTOR TRAILER)													
16:15-16:30	1	0	1	1	0	0	0	0	0	0	0	0	3
16:30-16:45	0	0	1	0	1	0	1	0	0	0	0	0	3
16:45-17:00	0	0	0	0	0	0	0	0	1	0	0	0	1
17:00-17:15	0	0	0	1	1	0	0	0	0	0	0	0	2
BICYCLES													
16:15-16:30	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0

PEDESTRIANS	CROSSWALK USEAGE: SOUTH	WEST	EAST	NORTH	ALL
16:15-16:30	0	0	0	0	0
16:30-16:45	0	0	0	0	0
16:45-17:00	0	0	0	0	0
17:00-17:15	0	0	0	0	0

Peak Hour by Movement													
PHF	.75	.77	.56	.5	.71	.82	.67	.8	.79	.56	.75	.85	.906
% Trucks(all)	5.6	7	33.3	66.7	3.5	4	12.5	2.9	5.3	0	9.5	2	5.9
% Trucks(M+H)	5.6	0	22.2	33.3	2.4	1.3	12.5	0	5.3	0	0	0	2.6
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	

Hourly Totals													
16:00-17:00	19	46	9	6	80	63	6	36	18	15	31	41	370
16:15-17:15	18	43	9	6	85	75	8	35	19	18	21	51	388
16:30-17:30	18	39	6	4	85	80	7	41	17	12	21	46	376
16:45-17:45	16	32	3	6	80	73	7	45	12	13	17	37	341
17:00-18:00	12	27	4	7	64	61	12	47	14	15	15	32	310

Appendix B

Existing Conditions
Level-of-Service
Worksheets

2002 Existing Intersection Operations
Weekday PM Peak Hour

Intersection	Control	V/C	LOS
Highway 214/Butteville Road	2-way stop	0.16	B
Highway 214/Woodland Avenue	Signal	0.45	C
Highway 214/Arney Road	2-way stop	0.08	B
Highway 214/I-5 Southbound Ramp	Signal	0.78	C
Highway 214/I-5 Northbound Ramp	Signal	0.78	C
Highway 214/Evergreen Road	Signal	0.90	C
Highway 214/Oregon Way/Country Club Road	Signal	0.72	B
Highway 214/Cascade Drive	2-way stop	0.31	F
Highway 214/Astor Way	2-way stop	0.31	F
Highway 214/Boones Ferry Road	Signal	0.86	D
Highway 214/Meridian Drive/5th	2-way stop	>1.00	F
Highway 214/Front Street	2-way stop	0.73	F
Highway 214/Park Avenue	2-way stop	0.51	E
Highway 214/Progress	2-way stop	0.31	F
Highway 214/Highway 99E	Signal	0.82	D
Highway 99E/Industrial/MacLaren	2-way stop	0.50	F
Highway 99E/Hardcastle Street	Signal	0.46	B
Highway 99E/Lincoln Street	Signal	0.59	B
Highway 99E/Young Street	Signal	0.58	C
Highway 99E/Cleveland Street	2-way stop	0.67	F
Front Street/Hardcastle Street	2-way stop	0.35	B
Front Street/Lincoln Street	4-way stop	0.30	A
Front Street/Garfield/Young Street	4-way stop	0.42	B
Front Street/Cleveland Street	4-way stop	0.24	A
Boones Ferry Road/Crosby	4-way stop	0.27	A
Boones Ferry Road/Tukwila	2-way stop	0.07	B
Boones Ferry Road/Country Club Road	2-way stop	0.14	B
Boones Ferry Road/Lincoln Street	2-way stop	0.21	D
Boones Ferry Road/Hayes Street	2-way stop	0.74	E
Boones Ferry Road/Garfield Street	2-way stop	0.11	D
Boones Ferry Road/Cleveland	2-way stop	0.15	B
Boones Ferry Road/Front/Parr Road	4-way stop	0.20	A
Crosby/Butteville	2-way stop	0.12	B

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Woodburn Transportation System Plan Update
2002 Existing Conditions Weekday PM Peak Hour

Scenario Report

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

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Woodburn Transportation System Plan Update
2002 Existing Conditions 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 Hwy 214/Boones Ferry Rd	D	46.3	0.858	D	46.3	0.858	+ 0.000 D/V
# 2 Hwy 214/Meridian Dr	F	178.7	0.000	F	178.7	0.000	+ 0.000 V/C
# 3 Hwy 214/Front St	F	61.2	0.000	F	61.2	0.000	+ 0.000 V/C
# 4 Hwy 214/Park Ave	F	64.8	0.000	F	64.8	0.000	+ 0.000 V/C
# 5 Hwy 214/Progress Wy	E	37.4	0.000	E	37.4	0.000	+ 0.000 V/C
# 6 Hwy 99/Industrial	F	53.9	0.000	F	53.9	0.000	+ 0.000 V/C
# 7 Hwy 99/Hardcastle St	B	10.5	0.463	B	10.5	0.463	+ 0.000 D/V
# 8 Hwy 99/Lincoln St	B	15.2	0.585	B	15.2	0.585	+ 0.000 D/V
# 9 Hwy 99/Young St	C	21.4	0.583	C	21.4	0.583	+ 0.000 D/V
# 10 Hwy 99/Cleveland St	E	48.7	0.000	E	48.7	0.000	+ 0.000 V/C
# 11 Front St/Hardcastle St	B	14.9	0.000	B	14.9	0.000	+ 0.000 V/C
# 12 Front St/Lincoln St	A	9.8	0.304	A	9.8	0.304	+ 0.000 V/C
# 13 Front St/Garfield	B	10.9	0.420	B	10.9	0.420	+ 0.000 V/C
# 14 Front St/Cleveland St	A	9.0	0.235	A	9.0	0.235	+ 0.000 V/C
# 15 Boones Ferry Rd/Crosby Rd	A	8.8	0.268	A	8.8	0.268	+ 0.000 V/C
# 16 Boones Ferry Rd/Tukwila Dr	B	12.9	0.000	B	12.9	0.000	+ 0.000 V/C
# 17 Boones Ferry Rd/Country Club R	B	12.5	0.000	B	12.5	0.000	+ 0.000 V/C
# 18 Boones Ferry Rd/Lincoln St	D	25.6	0.000	D	25.6	0.000	+ 0.000 V/C
# 19 Boones Ferry Rd/Hayes St	E	48.8	0.000	E	48.8	0.000	+ 0.000 V/C
# 20 Boones Ferry Rd/Garfield St	D	26.2	0.000	D	26.2	0.000	+ 0.000 V/C
# 21 Boones Ferry Rd/Cleveland St	B	10.5	0.000	B	10.5	0.000	+ 0.000 V/C
# 22 Boones Ferry Rd/Front St	A	8.7	0.200	A	8.7	0.200	+ 0.000 V/C
# 23 Crosby Rd/Butteville	B	11.6	0.000	B	11.6	0.000	+ 0.000 V/C

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Woodburn Transportation System Plan Update
2002 Existing Conditions Weekday PM Peak Hour

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 24 Hwy 214/Astor Way	F	58.9	0.000	F	58.9	0.000	+ 0.000 V/C
# 25 Hwy 214/Cascade Drive	E	48.3	0.000	E	48.3	0.000	+ 0.000 V/C
# 26 Hwy 214/Oregon Way	B	16.8	0.716	B	16.8	0.716	+ 0.000 D/V
# 27 Hwy 214/Evergreen Road	C	20.3	0.901	C	20.3	0.901	+ 0.000 D/V
# 28 Hwy 214/I-5 NB ramp	C	25.0	0.779	C	25.0	0.779	+ 0.000 D/V
# 29 Hwy 214/I-5 SB ramp	C	28.3	0.777	C	28.3	0.777	+ 0.000 D/V
# 30 Hwy 214/Arney Road	B	11.6	0.000	B	11.6	0.000	+ 0.000 V/C
# 31 Hwy 214/Woodland Avenue	C	25.1	0.450	C	25.1	0.450	+ 0.000 D/V
# 32 Hwy 214/Butteville Road	B	11.8	0.000	B	11.8	0.000	+ 0.000 V/C
# 33 Hwy 214/Hwy 99E	D	48.2	0.823	D	48.2	0.823	+ 0.000 D/V

Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2002 Existing Conditions Weekday PM Peak Hour

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

Intersection #1 Hwy 214/Boones Ferry Rd

Cycle (sec): 120 Critical Vol./Cap. (X): 0.858
Loss Time (sec): 16 (Y+R = 4 sec) Average Delay (sec/veh): 46.3
Optimal Cycle: 111 Level Of Service: D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Prot+Permit			Prot+Permit		
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			0 1 0 0 1			1 0 1 1 0			1 0 1 1 0		
Volume Module: 16:15 - 17: 15												
Base Vol:	275	165	130	145	220	135	145	650	250	185	510	110
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:	275	165	130	145	220	135	145	650	250	185	510	110
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:	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 Volume:	275	165	130	145	220	135	145	650	250	185	510	110
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	275	165	130	145	220	135	145	650	250	185	510	110
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.:	275	165	130	145	220	135	145	650	250	185	510	110
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.94	0.92	0.92	0.96	0.96	0.83	0.42	0.88	0.88	0.34	0.88	0.88
Lanes:	1.00	0.56	0.44	0.40	0.60	1.00	1.00	1.44	0.56	1.00	1.65	0.35
Final Sat.:	1787	983	774	726	1101	1583	795	2425	933	644	2751	593
Capacity Analysis Module:												
Vol/Sat:	0.15	0.17	0.17	0.20	0.20	0.09	0.18	0.27	0.27	0.29	0.19	0.19
Crit Moves:		****			****			****		****		
Green/Cycle:	0.20	0.20	0.20	0.23	0.23	0.23	0.47	0.31	0.31	0.43	0.30	0.30
Volume/Cap:	0.79	0.86	0.86	0.86	0.86	0.37	0.39	0.86	0.86	0.67	0.61	0.61
Delay/Veh:	57.1	65.5	65.5	59.9	59.9	39.2	20.7	45.9	45.9	32.0	36.9	36.9
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:	57.1	65.5	65.5	59.9	59.9	39.2	20.7	45.9	45.9	32.0	36.9	36.9
DesignQueue:	15	9	7	8	12	7	9	32	12	11	25	5

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---------------------------------------------------------------------------
             Kittelson & Associates, Inc.  -- Project # 5367.0
               Woodburn Transportation System Plan Update
              2002 Existing Conditions Weekday PM Peak Hour
---------------------------------------------------------------------------
                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
***************************************************************************
Intersection #2 Hwy 214/Meridian Dr
***************************************************************************
Average Delay (sec/veh):    178.7       Worst Case Level Of Service:     F
***************************************************************************
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      Uncontrolled     Uncontrolled
Rights:         Include         Include         Include          Include
Lanes:       0  0  1! 0  0   1  0  0  1  0   1  0  0  1  0   1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      30    1    30    70    1    80    65  790    45    50  710    30
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:   30    1    30    70    1    80    65  790    45    50  710    30
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:     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 Volume:    30    1    30    70    1    80    65  790    45    50  710    30
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    30    1    30    70    1    80    65  790    45    50  710    30
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1808 1783   813  1783 1790   725   740 xxxx xxxxx   835 xxxx xxxxx
Potent Cap.:   61   82   380    64   81   427   862 xxxx xxxxx   803 xxxx xxxxx
Move Cap.:     44   71   380    52   71   427   862 xxxx xxxxx   803 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx 366.8 xxxx xxxxx   9.5 xxxx xxxxx   9.8 xxxx xxxxx
LOS by Move:    *    *     *     F    *     *     A    *     *     A    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx   79 xxxxx  xxxx xxxx   402  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx  134 xxxxx xxxxx xxxx  16.2 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    F     *     *    *     C     *    *     *     *    *     *
ApproachDel:      134.3           178.7          xxxxxx           xxxxxx
ApproachLOS:        F               F               *                *
```

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---------------------------------------------------------------------------
             Kittelson & Associates, Inc.  -- Project # 5367.0
               Woodburn Transportation System Plan Update
              2002 Existing Conditions Weekday PM Peak Hour
---------------------------------------------------------------------------
                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
***************************************************************************
Intersection #3 Hwy 214/Front St
***************************************************************************
Average Delay (sec/veh):     61.2       Worst Case Level Of Service:     F
***************************************************************************
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      Uncontrolled     Uncontrolled
Rights:         Include         Include         Include          Include
Lanes:       0  0  0  0  0   0  0  1! 0  0   1  0  1  0  0   0  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    50    0    90    65  775     0     0  750   120
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    0     0    50    0    90    65  775     0     0  750   120
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:     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 Volume:     0    0     0    50    0    90    65  775     0     0  750   120
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     0    0     0    50    0    90    65  775     0     0  750   120
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4 xxxx   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5 xxxx   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1664 xxxx   750   870 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   107 xxxx   411   766 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx    99 xxxx   411   766 xxxx xxxxx  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.1 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  193 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx 61.2 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    F     *     *    *     *     *    *     *
ApproachDel:     xxxxxx            61.2          xxxxxx           xxxxxx
ApproachLOS:        *               F               *                *
```

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             Kittelson & Associates, Inc.  -- Project # 5367.0
               Woodburn Transportation System Plan Update
             2002 Existing Conditions Weekday PM Peak Hour
---------------------------------------------------------------------------
                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
***************************************************************************
Intersection #4 Hwy 214/Park Ave
***************************************************************************
Average Delay (sec/veh):     64.8        Worst Case Level Of Service:      F
***************************************************************************
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       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  1! 0  0    0  0  1! 0  0    0  1  0  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      20    5    80    15   15    30    15  740    60   100  845     5
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:   20    5    80    15   15    30    15  740    60   100  845     5
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:     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 Volume:    20    5    80    15   15    30    15  740    60   100  845     5
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    20    5    80    15   15    30    15  740    60   100  845     5
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.5  6.5   6.9   7.5  6.5   6.9   4.2 xxxx xxxxx   4.2 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1431 1850   402  1452 1878   426   850 xxxx xxxxx   800 xxxx xxxxx
Potent Cap.:   96   74   601    93   72   582   771 xxxx xxxxx   812 xxxx xxxxx
Move Cap.:     66   64   600    68   62   582   771 xxxx xxxxx   812 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   9.7 xxxx xxxxx  10.1 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     B    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  204 xxxxx  xxxx  117 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx 39.9 xxxxx xxxxx 64.8 xxxxx   9.8 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    E     *     *    F     *     A    *     *     *    *     *
ApproachDel:        39.9             64.8            xxxxxx           xxxxxx
ApproachLOS:          E                F                *                *

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---------------------------------------------------------------------------
             Kittelson & Associates, Inc.  -- Project # 5367.0
               Woodburn Transportation System Plan Update
             2002 Existing Conditions Weekday PM Peak Hour
---------------------------------------------------------------------------
                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
***************************************************************************
Intersection #5 Hwy 214/Progress Wy
***************************************************************************
Average Delay (sec/veh):     37.4        Worst Case Level Of Service:      E
***************************************************************************
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       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  1! 0  0    0  1  0  0  1    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      20    1    25    25    5   110    40  760    25    25  815    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:   20    1    25    25    5   110    40  760    25    25  815    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:     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 Volume:    20    1    25    25    5   110    40  760    25    25  815    20
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    20    1    25    25    5   110    40  760    25    25  815    20
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.5  6.5   6.9   7.5  6.5   6.9   4.2 xxxx xxxxx   4.2 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1323 1742   394  1341 1744   433   839 xxxx xxxxx   785 xxxx xxxxx
Potent Cap.:  116   88   611   113   87   577   779 xxxx xxxxx   823 xxxx xxxxx
Move Cap.:     83   80   611   100   80   570   776 xxxx xxxxx   823 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx  12.8   9.9 xxxx xxxxx   9.5 xxxx xxxxx
LOS by Move:    *    *     *     *    *     B     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  156 xxxxx    96 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx 37.4 xxxxx  58.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    E     *     F    *     *     *    *     *     *    *     *
ApproachDel:        37.4             22.6            xxxxxx           xxxxxx
ApproachLOS:          E                C                *                *

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------------------------------------------------------------------------------
              Kittelson & Associates, Inc.  -- Project # 5367.0
                 Woodburn Transportation System Plan Update
               2002 Existing Conditions Weekday PM Peak Hour
------------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
******************************************************************************
Intersection #6 Hwy 99/Industrial
******************************************************************************
Average Delay (sec/veh):     53.9           Worst Case Level Of Service:     F
******************************************************************************
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  1  0    1  0  1  1  0    0  0  1! 0  0    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      35  580    5     2  940   30    50    0  105    50   10   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:   35  580    5     2  940   30    50    0  105    50   10   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:     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 Volume:    35  580    5     2  940   30    50    0  105    50   10   15
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Final Vol.:    35  580    5     2  940   30    50    0  105    50   10   15
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.2 xxxx xxxxx   4.2 xxxx xxxxx   7.6 xxxx  7.0   7.5  6.5  6.9
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5 xxxx  3.3   3.5  4.0  3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  970 xxxx xxxxx   585 xxxx xxxxx  1324 xxxx  485  1127 1627  293
Potent Cap.:  700 xxxx xxxxx   979 xxxx xxxxx   113 xxxx  525   162  103  710
Move Cap.:    700 xxxx xxxxx   979 xxxx xxxxx    98 xxxx  525   124   98  710
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del: 10.4 xxxx xxxxx   8.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx 10.2
LOS by Move:    B    *    *     A    *    *     *    *    *     *    *    B
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  218 xxxxx   119 xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 53.9 xxxxx  62.6 xxxx xxxxx
Shared LOS:     *    *    *     *    *    *     *    F    *     F    *    *
ApproachDel:     xxxxxx           xxxxxx            53.9             52.1
ApproachLOS:        *                *                F                F
```



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------------------------------------------------------------------------------
              Kittelson & Associates, Inc.  -- Project # 5367.0
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               2002 Existing Conditions Weekday PM Peak Hour
------------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #7 Hwy 99/Hardcastle St
******************************************************************************
Cycle (sec):          90              Critical Vol./Cap. (X):         0.463
Loss Time (sec):      12 (Y+R =  4 sec) Average Delay (sec/veh):       10.5
Optimal Cycle:        38              Level Of Service:                   B
******************************************************************************
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      Prot+Permit       Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        1  0  1  1  0    1  0  1  1  0    0  1  0  0  1    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      30  735   40    50 1045   45    75   25   15    50   30   50
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:   30  735   40    50 1045   45    75   25   15    50   30   50
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:     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 Volume:    30  735   40    50 1045   45    75   25   15    50   30   50
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   30  735   40    50 1045   45    75   25   15    50   30   50
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.:    30  735   40    50 1045   45    75   25   15    50   30   50
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment:  0.25 0.92 0.91  0.36 0.93 0.93  0.71 0.71 0.83  0.76 0.76 0.85
Lanes:       1.00 1.90 0.10  1.00 1.92 0.08  0.75 0.25 1.00  0.63 0.37 1.00
Final Sat.:   474 3298  179   678 3371  145  1014  338 1576   906  544 1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.22 0.22  0.07 0.31 0.31  0.07 0.07 0.01  0.06 0.06 0.03
Crit Moves:  ****                                 ****
Green/Cycle: 0.66 0.63 0.63  0.75 0.67 0.67  0.16 0.16 0.16  0.16 0.16 0.16
Volume/Cap:  0.10 0.36 0.36  0.10 0.46 0.46  0.46 0.46 0.06  0.35 0.35 0.19
Delay/Veh:    5.9  8.1  8.1   3.5  7.3  7.3  35.9 35.9 32.2  34.5 34.5 33.2
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:   5.9  8.1  8.1   3.5  7.3  7.3  35.9 35.9 32.2  34.5 34.5 33.2
DesignQueue:    1   14    1     2   19    1     3    1    1     2    1    2
******************************************************************************
```

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

Intersection #8 Hwy 99/Lincoln St

Cycle (sec):	90	Critical Vol./Cap. (X):	0.585
Loss Time (sec):	12 (Y+R = 4 sec)	Average Delay (sec/veh):	15.2
Optimal Cycle:	46	Level Of Service:	B

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			Prot+Permit			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 1 1 0			1 0 1 1 0			0 0 1! 0 0			0 1 0 0 1		
Volume Module:												
Base Vol:	65	755	15	15	1005	100	110	35	60	90	45	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:	65	755	15	15	1005	100	110	35	60	90	45	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:	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 Volume:	65	755	15	15	1005	100	110	35	60	90	45	15
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	65	755	15	15	1005	100	110	35	60	90	45	15
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.:	65	755	15	15	1005	100	110	35	60	90	45	15
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.23	0.92	0.92	0.32	0.92	0.92	0.70	0.71	0.70	0.67	0.68	0.83
Lanes:	1.00	1.96	0.04	1.00	1.82	0.18	0.54	0.17	0.29	0.67	0.33	1.00
Final Sat.:	440	3427	68	612	3175	316	718	228	392	855	427	1575
Capacity Analysis Module:												
Vol/Sat:	0.15	0.22	0.22	0.02	0.32	0.32	0.15	0.15	0.15	0.11	0.11	0.01
Crit Moves:	****				****			****				
Green/Cycle:	0.65	0.58	0.58	0.56	0.54	0.54	0.26	0.26	0.26	0.26	0.26	0.26
Volume/Cap:	0.23	0.38	0.38	0.04	0.58	0.58	0.58	0.58	0.58	0.40	0.40	0.04
Delay/Veh:	8.7	10.2	10.2	9.0	14.3	14.3	31.5	31.5	31.5	28.2	28.2	24.8
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:	8.7	10.2	10.2	9.0	14.3	14.3	31.5	31.5	31.5	28.2	28.2	24.8
DesignQueue:	3	17	0	1	25	2	4	1	2	3	2	1

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

Intersection #9 Hwy 99/Young St

Cycle (sec):	90	Critical Vol./Cap. (X):	0.583
Loss Time (sec):	12 (Y+R = 4 sec)	Average Delay (sec/veh):	21.4
Optimal Cycle:	46	Level Of Service:	C

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			Prot+Permit			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 1 1 0			1 0 1 1 0			0 1 0 0 1			0 1 0 0 1		
Volume Module:												
Base Vol:	90	425	15	230	785	130	125	95	25	45	150	145
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:	90	425	15	230	785	130	125	95	25	45	150	145
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:	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 Volume:	90	425	15	230	785	130	125	95	25	45	150	145
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	90	425	15	230	785	130	125	95	25	45	150	145
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.:	90	425	15	230	785	130	125	95	25	45	150	145
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.35	0.92	0.92	0.60	0.91	0.91	0.61	0.61	0.81	0.86	0.86	0.82
Lanes:	1.00	1.93	0.07	1.00	1.72	0.28	0.57	0.43	1.00	0.23	0.77	1.00
Final Sat.:	666	3369	119	1148	2971	492	658	500	1541	379	1263	1557
Capacity Analysis Module:												
Vol/Sat:	0.14	0.13	0.13	0.20	0.26	0.26	0.19	0.19	0.02	0.12	0.12	0.09
Crit Moves:	****				****			****				
Green/Cycle:	0.35	0.27	0.27	0.59	0.45	0.45	0.33	0.33	0.33	0.33	0.33	0.33
Volume/Cap:	0.38	0.47	0.47	0.34	0.58	0.58	0.58	0.58	0.05	0.36	0.36	0.29
Delay/Veh:	22.0	28.1	28.1	9.9	18.9	18.9	27.6	27.6	20.8	23.7	23.7	22.9
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:	22.0	28.1	28.1	9.9	18.9	18.9	27.6	27.6	20.8	23.7	23.7	22.9
DesignQueue:	4	16	1	9	23	4	4	3	1	2	5	5

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-------------------------------------------------------------------------------
          Kittelson & Associates, Inc.  -- Project # 5367.0
            Woodburn Transportation System Plan Update
           2002 Existing Conditions Weekday PM Peak Hour
-------------------------------------------------------------------------------
                 Level Of Service Computation Report
         2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #10 Hwy 99/Cleveland St
*******************************************************************************
Average Delay (sec/veh):      48.7          Worst Case Level Of Service:      E
*******************************************************************************
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  1  0    0  1  0  1  0    1  0  0  1  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       60  535    1     1  610  220     95    0   60     15    5   45
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:    60  535    1     1  610  220     95    0   60     15    5   45
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:      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 Volume:     60  535    1     1  610  220     95    0   60     15    5   45
Reduct Vol:      0    0    0     0    0    0      0    0    0      0    0    0
Final Vol.:     60  535    1     1  610  220     95    0   60     15    5   45
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:   4.2 xxxx xxxxx   4.1 xxxx xxxxx   7.5 xxxx  6.9   7.5  6.5  6.9
FollowUpTim:   2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5 xxxx  3.3   3.5  4.0  3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:   832 xxxx xxxxx   536 xxxx xxxxx  1114 xxxx  418   964 1490  268
Potent Cap.:   790 xxxx xxxxx  1028 xxxx xxxxx   165 xxxx  589   213  125  736
Move Cap.:     789 xxxx xxxxx  1028 xxxx xxxxx   141 xxxx  588   179  115  736
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:   9.6 xxxx xxxxx   8.5 xxxx xxxxx  71.9 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  588  xxxx  345 xxxxx
Shrd StpDel:   9.9 xxxx xxxxx   8.5 xxxx xxxxx xxxxx xxxx 11.8 xxxxx 17.8 xxxxx
Shared LOS:      A    *    *      A    *    *      *    *    B     *    C    *
ApproachDel:      xxxxxx           xxxxxx            48.7             17.8
ApproachLOS:         *                *                E                C
```



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-------------------------------------------------------------------------------
          Kittelson & Associates, Inc.  -- Project # 5367.0
            Woodburn Transportation System Plan Update
           2002 Existing Conditions Weekday PM Peak Hour
-------------------------------------------------------------------------------
                 Level Of Service Computation Report
         2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #11 Front St/Hardcastle St
*******************************************************************************
Average Delay (sec/veh):      14.9          Worst Case Level Of Service:      B
*******************************************************************************
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       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:         0  0  0  1  0    0  1  0  0  0    0  0  0  0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0  130  125    55  145    0      0    0    0    130    0   40
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  130  125    55  145    0      0    0    0    130    0   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:      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 Volume:      0  130  125    55  145    0      0    0    0    130    0   40
Reduct Vol:      0    0    0     0    0    0      0    0    0      0    0    0
Final Vol.:      0  130  125    55  145    0      0    0    0    130    0   40
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx  6.5  6.2   7.1  6.5 xxxxx xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx  4.0  3.3   3.5  4.0 xxxxx xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx  300    9   354  280 xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx
Potent Cap.: xxxx  612 1073   603  630 xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx
Move Cap.:   xxxx  612 1065   442  630 xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
LOS by Move:     *    *    *     *    *    *      *    *    *     *    *    *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx  773   564 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx 11.9  14.9 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *    B     B    *    *      *    *    *     *    *    *
ApproachDel:        11.9             14.9           xxxxxx           xxxxxx
ApproachLOS:         B                B                *                *
```

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

Intersection #12 Front St/Lincoln St

Cycle (sec): 100 Critical Vol./Cap. (X): 0.304
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 9.8
Optimal Cycle: 0 Level Of Service: A

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:												
Base Vol:	25	120	40	35	135	15	25	130	15	40	135	30
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	120	40	35	135	15	25	130	15	40	135	30
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:	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 Volume:	25	120	40	35	135	15	25	130	15	40	135	30
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	25	120	40	35	135	15	25	130	15	40	135	30
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.:	25	120	40	35	135	15	25	130	15	40	135	30
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:	0.13	0.65	0.22	0.19	0.73	0.08	0.15	0.76	0.09	0.19	0.66	0.15
Final Sat.:	91	436	145	125	483	54	97	505	58	132	444	99
Capacity Analysis Module:												
Vol/Sat:	0.28	0.28	0.28	0.28	0.28	0.28	0.26	0.26	0.26	0.30	0.30	0.30
Crit Moves:		****			****			****		****		
Delay/Veh:	9.8	9.8	9.8	9.9	9.9	9.9	9.7	9.7	9.7	10.0	10.0	10.0
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:	9.8	9.8	9.8	9.9	9.9	9.9	9.7	9.7	9.7	10.0	10.0	10.0
LOS by Move:	A	A	A	A	A	A	A	A	A	B	B	B
ApproachDel:		9.8			9.9			9.7			10.0	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		9.8			9.9			9.7			10.0	
LOS by Appr:		A			A			A			B	

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

Intersection #13 Front St/Garfield

Cycle (sec): 100 Critical Vol./Cap. (X): 0.420
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 10.9
Optimal Cycle: 0 Level Of Service: B

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:												
Base Vol:	10	90	35	50	115	30	25	200	30	40	175	70
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:	10	90	35	50	115	30	25	200	30	40	175	70
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:	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 Volume:	10	90	35	50	115	30	25	200	30	40	175	70
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	10	90	35	50	115	30	25	200	30	40	175	70
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.:	10	90	35	50	115	30	25	200	30	40	175	70
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:	0.07	0.67	0.26	0.26	0.59	0.15	0.10	0.78	0.12	0.14	0.61	0.25
Final Sat.:	44	400	156	157	362	94	65	518	78	95	417	167
Capacity Analysis Module:												
Vol/Sat:	0.22	0.22	0.22	0.32	0.32	0.32	0.39	0.39	0.39	0.42	0.42	0.42
Crit Moves:	****			****				****		****		
Delay/Veh:	9.8	9.8	9.8	10.6	10.6	10.6	11.1	11.1	11.1	11.3	11.3	11.3
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:	9.8	9.8	9.8	10.6	10.6	10.6	11.1	11.1	11.1	11.3	11.3	11.3
LOS by Move:	A	A	A	B	B	B	B	B	B	B	B	B
ApproachDel:		9.8			10.6			11.1			11.3	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		9.8			10.6			11.1			11.3	
LOS by Appr:		A			B			B			B	

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

Intersection #14 Front St/Cleveland St

Cycle (sec): 100 Critical Vol./Cap. (X): 0.235
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 9.0
Optimal Cycle: 0 Level Of Service: A

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:												
Base Vol:	5	70	35	75	70	15	15	140	15	35	90	45
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:	5	70	35	75	70	15	15	140	15	35	90	45
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:	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 Volume:	5	70	35	75	70	15	15	140	15	35	90	45
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	5	70	35	75	70	15	15	140	15	35	90	45
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.:	5	70	35	75	70	15	15	140	15	35	90	45
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:	0.04	0.64	0.32	0.47	0.44	0.09	0.09	0.82	0.09	0.21	0.53	0.26
Final Sat.:	32	452	226	327	305	65	64	596	64	151	389	194
Capacity Analysis Module:												
Vol/Sat:	0.15	0.15	0.15	0.23	0.23	0.23	0.24	0.24	0.24	0.23	0.23	0.23
Crit Moves:		****			****			****		****		
Delay/Veh:	8.5	8.5	8.5	9.2	9.2	9.2	9.1	9.1	9.1	9.0	9.0	9.0
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:	8.5	8.5	8.5	9.2	9.2	9.2	9.1	9.1	9.1	9.0	9.0	9.0
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:		8.5			9.2			9.1			9.0	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		8.5			9.2			9.1			9.0	
LOS by Appr:		A			A			A			A	

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

Intersection #15 Boones Ferry Rd/Crosby Rd

Cycle (sec): 100 Critical Vol./Cap. (X): 0.268
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 8.8
Optimal Cycle: 0 Level Of Service: A

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:												
Base Vol:	60	100	15	10	175	20	15	40	85	25	25	5
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:	60	100	15	10	175	20	15	40	85	25	25	5
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:	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 Volume:	60	100	15	10	175	20	15	40	85	25	25	5
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	60	100	15	10	175	20	15	40	85	25	25	5
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.:	60	100	15	10	175	20	15	40	85	25	25	5
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:	0.34	0.57	0.09	0.05	0.85	0.10	0.11	0.28	0.61	0.46	0.45	0.09
Final Sat.:	255	425	64	37	654	75	80	213	452	305	305	61
Capacity Analysis Module:												
Vol/Sat:	0.24	0.24	0.24	0.27	0.27	0.27	0.19	0.19	0.19	0.08	0.08	0.08
Crit Moves:		****			****		****				****	
Delay/Veh:	9.0	9.0	9.0	9.1	9.1	9.1	8.5	8.5	8.5	8.4	8.4	8.4
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:	9.0	9.0	9.0	9.1	9.1	9.1	8.5	8.5	8.5	8.4	8.4	8.4
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:		9.0			9.1			8.5			8.4	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		9.0			9.1			8.5			8.4	
LOS by Appr:		A			A			A			A	

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-------------------------------------------------------------------------------
                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #16 Boones Ferry Rd/Tukwila Dr
*******************************************************************************
Average Delay (sec/veh):        12.9         Worst Case Level Of Service:     B
*******************************************************************************
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:
Base Vol:      15  190   35    10  295   10     3    3   15    25    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:   15  190   35    10  295   10     3    3   15    25    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:     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 Volume:    15  190   35    10  295   10     3    3   15    25    0   10
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Final Vol.:    15  190   35    10  295   10     3    3   15    25    0   10
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5  6.2   7.1 xxxx  6.2
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0  3.3   3.5 xxxx  3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  305 xxxx xxxxx   225 xxxx xxxxx   563  575  300   567 xxxx  208
Potent Cap.: 1262 xxxx xxxxx  1350 xxxx xxxxx   440  431  744   438 xxxx  838
Move Cap.:   1262 xxxx xxxxx  1350 xxxx xxxxx   429  423  744   420 xxxx  838
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:  7.9 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  613 xxxxx  xxxx  490 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 11.1 xxxxx xxxxx 12.9 xxxxx
Shared LOS:     *    *    *      *    *    *      *    B    *      *    B    *
ApproachDel:      xxxxxx           xxxxxx            11.1             12.9
ApproachLOS:         *                *                B                B
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               Kittelson & Associates, Inc.  -- Project # 5367.0
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                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #17 Boones Ferry Rd/Country Club Rd
*******************************************************************************
Average Delay (sec/veh):        12.5         Worst Case Level Of Service:     B
*******************************************************************************
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:
Base Vol:      75  225    0     0  325   25    25    0   55     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:   75  225    0     0  325   25    25    0   55     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:     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 Volume:    75  225    0     0  325   25    25    0   55     0    0    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Final Vol.:    75  225    0     0  325   25    25    0   55     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:  350 xxxx xxxxx  xxxx xxxx xxxxx   714 xxxx  338  xxxx xxxx xxxxx
Potent Cap.: 1209 xxxx xxxxx  xxxx xxxx xxxxx   400 xxxx  707  xxxx xxxx xxxxx
Move Cap.:   1209 xxxx xxxxx  xxxx xxxx xxxxx   380 xxxx  707  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
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  557 xxxxx  xxxx xxxx xxxxx
Shrd StpDel:  8.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 12.5 xxxxx xxxxx xxxx xxxxx
Shared LOS:     A    *    *      *    *    *      *    B    *      *    *    *
ApproachDel:      xxxxxx           xxxxxx            12.5            xxxxxx
ApproachLOS:         *                *                B                *
```

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Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2002 Existing Conditions Weekday PM Peak Hour
--------------------------------------------------------------------------------
Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #18 Boones Ferry Rd/Lincoln St
********************************************************************************
Average Delay (sec/veh):     25.6        Worst Case Level Of Service:          D
********************************************************************************
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:
Base Vol:       10  375   35    115  440   30     10   15   20     25   20  115
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:    10  375   35    115  440   30     10   15   20     25   20  115
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:      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 Volume:     10  375   35    115  440   30     10   15   20     25   20  115
Reduct Vol:      0    0    0      0    0    0      0    0    0      0    0    0
Final Vol.:     10  375   35    115  440   30     10   15   20     25   20  115
------------|----------------||----------------||----------------||----------------|
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:   477 xxxx xxxxx   416 xxxx xxxxx  1185 1128  462   1121 1126  412
Potent Cap.:  1090 xxxx xxxxx  1148 xxxx xxxxx   167  205  602    184  206  643
Move Cap.:    1084 xxxx xxxxx  1143 xxxx xxxxx   113  181  598    152  181  632
------------|----------------||----------------||----------------||----------------|
Level Of Service Module:
Stopped Del:   8.4 xxxx xxxxx   8.5 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  219 xxxxx  xxxx  351 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 25.6 xxxxx xxxxx 23.6 xxxxx
Shared LOS:      *    *    *      *    *    *      *    D    *      *    C    *
ApproachDel:      xxxxxx           xxxxxx            25.6             23.6
ApproachLOS:         *                *                D                C
```



```
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--------------------------------------------------------------------------------
Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #19 Boones Ferry Rd/Hayes St
********************************************************************************
Average Delay (sec/veh):     48.8        Worst Case Level Of Service:          E
********************************************************************************
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:
Base Vol:      120  290    4     30  380   60     80   20   95      3   20   30
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:   120  290    4     30  380   60     80   20   95      3   20   30
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:      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 Volume:    120  290    4     30  380   60     80   20   95      3   20   30
Reduct Vol:      0    0    0      0    0    0      0    0    0      0    0    0
Final Vol.:    120  290    4     30  380   60     80   20   95      3   20   30
------------|----------------||----------------||----------------||----------------|
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:   449 xxxx xxxxx   295 xxxx xxxxx  1041 1014  420   1062 1042  298
Potent Cap.:  1117 xxxx xxxxx  1272 xxxx xxxxx   209  239  635    203  232  746
Move Cap.:    1108 xxxx xxxxx  1271 xxxx xxxxx   164  205  630    143  198  742
------------|----------------||----------------||----------------||----------------|
Level Of Service Module:
Stopped Del:   8.2 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  265 xxxxx  xxxx  326 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 48.8 xxxxx xxxxx 18.2 xxxxx
Shared LOS:      *    *    *      *    *    *      *    E    *      *    C    *
ApproachDel:      xxxxxx           xxxxxx            48.8             18.2
ApproachLOS:         *                *                E                C
```

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

Intersection #20 Boones Ferry Rd/Garfield St

Average Delay (sec/veh): 26.2 Worst Case Level Of Service: D

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:												
Base Vol:	5	255	10	155	300	25	15	5	2	15	10	130
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:	5	255	10	155	300	25	15	5	2	15	10	130
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:	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 Volume:	5	255	10	155	300	25	15	5	2	15	10	130
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	5	255	10	155	300	25	15	5	2	15	10	130
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:	330	xxxx	xxxxx	266	xxxx	xxxxx	974	904	320	899	911	267
Potent Cap.:	1229	xxxx	xxxxx	1304	xxxx	xxxxx	230	276	719	261	275	774
Move Cap.:	1224	xxxx	xxxxx	1303	xxxx	xxxxx	165	238	715	229	237	770
Level Of Service Module:												
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	192	xxxxx	xxxx	561	xxxxx
Shrd StpDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	26.2	xxxxx	xxxxx	13.9	xxxxx
Shared LOS:	*	*	*	*	*	*	*	D	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			26.2			13.9		
ApproachLOS:	*			*			D			B		

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

Intersection #21 Boones Ferry Rd/Cleveland St

Average Delay (sec/veh): 10.5 Worst Case Level Of Service: B

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 1	0	0 0	0 0	0	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	0	160	5	120	200	0	0	0	0	15	0	105
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	160	5	120	200	0	0	0	0	15	0	105
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:	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 Volume:	0	160	5	120	200	0	0	0	0	15	0	105
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	160	5	120	200	0	0	0	0	15	0	105
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	165	xxxx	xxxxx	xxxx	xxxx	xxxxx	609	xxxx	163
Potent Cap.:	xxxx	xxxx	xxxxx	1419	xxxx	xxxxx	xxxx	xxxx	xxxxx	460	xxxx	885
Move Cap.:	xxxx	xxxx	xxxxx	1419	xxxx	xxxxx	xxxx	xxxx	xxxxx	426	xxxx	885
Level Of Service Module:												
Stopped Del:	xxxxx	xxxx	xxxxx	7.5	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	xxxx	xxxxx	xxxx	780	xxxxx
Shrd StpDel:	xxxxx	xxxx	xxxxx	7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	10.5	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			10.5		
ApproachLOS:	*			*			*			B		

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

Intersection #22 Boones Ferry Rd/Front St

Cycle (sec): 100 Critical Vol./Cap. (X): 0.200
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 8.7
Optimal Cycle: 0 Level Of Service: A

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	1 0	0 1	0	1 0	0 1	0
Volume Module:												
Base Vol:	25	70	35	5	85	55	55	35	25	50	45	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:	25	70	35	5	85	55	55	35	25	50	45	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:	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 Volume:	25	70	35	5	85	55	55	35	25	50	45	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	25	70	35	5	85	55	55	35	25	50	45	1
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.:	25	70	35	5	85	55	55	35	25	50	45	1
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	0.67	0.33	1.00	0.61	0.39	1.00	0.58	0.42	1.00	0.98	0.02
Final Sat.:	610	465	233	608	426	276	595	398	285	592	632	14
Capacity Analysis Module:												
Vol/Sat:	0.04	0.15	0.15	0.01	0.20	0.20	0.09	0.09	0.09	0.08	0.07	0.07
Crit Moves:			****			****	****			****		
Delay/Veh:	8.6	8.5	8.5	8.5	8.8	8.8	9.1	8.2	8.2	9.0	8.4	8.4
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:	8.6	8.5	8.5	8.5	8.8	8.8	9.1	8.2	8.2	9.0	8.4	8.4
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:	8.5			8.8			8.6			8.7		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	8.5			8.8			8.6			8.7		
LOS by Appr:	A			A			A			A		

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

Intersection #23 Crosby Rd/Butteville

Average Delay (sec/veh): 11.6 Worst Case Level Of Service: B

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:												
Base Vol:	10	35	20	75	85	5	10	45	20	20	20	50
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:	10	35	20	75	85	5	10	45	20	20	20	50
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:	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 Volume:	10	35	20	75	85	5	10	45	20	20	20	50
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	10	35	20	75	85	5	10	45	20	20	20	50
Critical Gap Module:												
Critical Gp:	4.2	xxxx	xxxxx	4.1	xxxx	xxxxx	7.2	6.6	6.3	7.1	6.5	6.2
FollowUpTim:	2.3	xxxx	xxxxx	2.2	xxxx	xxxxx	3.6	4.1	3.4	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	90	xxxx	xxxxx	55	xxxx	xxxxx	338	313	88	335	305	45
Potent Cap.:	1468	xxxx	xxxxx	1531	xxxx	xxxxx	605	593	955	615	605	1019
Move Cap.:	1468	xxxx	xxxxx	1531	xxxx	xxxxx	535	559	955	540	570	1019
Level Of Service Module:												
Stopped Del:	7.5	xxxx	xxxxx	7.4	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	624	xxxxx	xxxx	743	xxxxx
Shrd StpDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	11.6	xxxxx	xxxxx	10.5	xxxxx
Shared LOS:	*	*	*	*	*	*	*	B	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			11.6			10.5		
ApproachLOS:	*			*			B			B		

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              Kittelson & Associates, Inc.  -- Project # 5367.0
                Woodburn Transportation System Plan Update
               2002 Existing Conditions Weekday PM Peak Hour
------------------------------------------------------------------------------
                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Base Volume Alternative)
******************************************************************************
Intersection #24 Hwy 214/Astor Way
******************************************************************************
Average Delay (sec/veh):      58.9          Worst Case Level Of Service:     F
******************************************************************************
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       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  1! 0  0   0  0  1! 0  0   1  0  1  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0    0    15    0   15    30 1055    0     0  910   40
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    0    0    15    0   15    30 1055    0     0  910   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:     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 Volume:     0    0    0    15    0   15    30 1055    0     0  910   40
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Final Vol.:     0    0    0    15    0   15    30 1055    0     0  910   40
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.5 xxxx  6.3   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.6 xxxx  3.4   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  2048 xxxx  939   951 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx    59 xxxx  311   722 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx    57 xxxx  308   722 xxxx xxxxx  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.2 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    0 xxxxx  xxxx   96 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx 58.9 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *    *     *    F    *     *    *    *     *    *    *
ApproachDel:      xxxxxx            58.9            xxxxxx           xxxxxx
ApproachLOS:         *                F                *                *
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                Woodburn Transportation System Plan Update
               2002 Existing Conditions Weekday PM Peak Hour
------------------------------------------------------------------------------
                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Base Volume Alternative)
******************************************************************************
Intersection #25 Hwy 214/Cascade Drive
******************************************************************************
Average Delay (sec/veh):      48.3          Worst Case Level Of Service:     E
******************************************************************************
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       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       1  0  0  0  1   0  0  0  0  0   0  0  0  1  0   1  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      20    0   25     0    0    0     0 1055   35    20  870    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:   20    0   25     0    0    0     0 1055   35    20  870    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:     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 Volume:    20    0   25     0    0    0     0 1055   35    20  870    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Final Vol.:    20    0   25     0    0    0     0 1055   35    20  870    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4 xxxx  6.2 xxxxx xxxx xxxxx xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5 xxxx  3.3 xxxxx xxxx xxxxx xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1988 xxxx 1073  xxxx xxxx xxxxx  xxxx xxxx xxxxx  1090 xxxx xxxxx
Potent Cap.:   67 xxxx  267  xxxx xxxx xxxxx  xxxx xxxx xxxxx   633 xxxx xxxxx
Move Cap.:     65 xxxx  267  xxxx xxxx xxxxx  xxxx xxxx xxxxx   633 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del: 83.8 xxxx 19.9 xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.9 xxxx xxxxx
LOS by Move:    F    *    C     *    *    *     *    *    *     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
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *    *     *    *    *     *    *    *     *    *    *
ApproachDel:       48.3           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         E                *                *                *
```

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--------------------------------------------------------------------------------
                Kittelson & Associates, Inc.  -- Project # 5367.0
                  Woodburn Transportation System Plan Update
                 2002 Existing Conditions Weekday PM Peak Hour
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #26 Hwy 214/Oregon Way
********************************************************************************
Cycle (sec):          90              Critical Vol./Cap. (X):         0.716
Loss Time (sec):      12 (Y+R =  4 sec) Average Delay (sec/veh):       16.8
Optimal Cycle:        60              Level Of Service:                  B
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected        Protected
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    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 45
Base Vol:     20   45    15   125   30    60    70  950    10    20  780    85
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:  20   45    15   125   30    60    70  950    10    20  780    85
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:    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 Volume:   20   45    15   125   30    60    70  950    10    20  780    85
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  20   45    15   125   30    60    70  950    10    20  780    85
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.:   20   45    15   125   30    60    70  950    10    20  780    85
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment: 0.69 0.96  0.96  0.71 0.90  0.90  0.93 0.98  0.98  0.91 0.95  0.95
Lanes:      1.00 0.75  0.25  1.00 0.33  0.67  1.00 0.99  0.01  1.00 0.90  0.10
Final Sat.: 1303 1371   457  1348  568  1136  1769 1841    19  1736 1623   177
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.02 0.03  0.03  0.09 0.05  0.05  0.04 0.52  0.52  0.01 0.48  0.48
Crit Moves:                  ****                  ****        ****
Green/Cycle: 0.13 0.13 0.13  0.13 0.13  0.13  0.06 0.72  0.72  0.02 0.68  0.68
Volume/Cap: 0.12 0.25  0.25  0.72 0.41  0.41  0.71 0.72  0.72  0.72 0.71  0.71
Delay/Veh:  34.9 35.8  35.8  50.8 37.2  37.2  62.3  9.1   9.1 105.6 10.7  10.7
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: 34.9 35.8  35.8  50.8 37.2  37.2  62.3  9.1   9.1 105.6 10.7  10.7
DesignQueue:   1    2     1     6    1     3     3   15     0     1   14     2
********************************************************************************
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--------------------------------------------------------------------------------
                Kittelson & Associates, Inc.  -- Project # 5367.0
                  Woodburn Transportation System Plan Update
                 2002 Existing Conditions Weekday PM Peak Hour
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #27 Hwy 214/Evergreen Road
********************************************************************************
Cycle (sec):          60              Critical Vol./Cap. (X):         0.901
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):       20.3
Optimal Cycle:        78              Level Of Service:                  C
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted       Prot+Permit      Prot+Permit
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    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:    270   20   125    15   20    45    45  895    60   100  750    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: 270   20   125    15   20    45    45  895    60   100  750    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:    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 Volume:  270   20   125    15   20    45    45  895    60   100  750    15
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol: 270   20   125    15   20    45    45  895    60   100  750    15
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.:  270   20   125    15   20    45    45  895    60   100  750    15
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment: 0.71 0.86  0.86  0.53 0.86  0.86  0.24 0.96  0.96  0.18 0.96  0.96
Lanes:      1.00 0.14  0.86  1.00 0.31  0.69  1.00 0.94  0.06  1.00 0.98  0.02
Final Sat.: 1344  226  1410  1016  503  1133   461 1713   115   344 1787    36
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.20 0.09  0.09  0.01 0.04  0.04  0.10 0.52  0.52  0.29 0.42  0.42
Crit Moves: ****                                   ****        ****
Green/Cycle: 0.22 0.22 0.22  0.22 0.22  0.22  0.62 0.58  0.58  0.68 0.61  0.61
Volume/Cap: 0.90 0.40  0.40  0.07 0.18  0.18  0.16 0.90  0.90  0.43 0.69  0.69
Delay/Veh:  50.8 20.6  20.6  18.5 19.1  19.1   6.9 21.6  21.6  12.2  9.9   9.9
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: 50.8 20.6  20.6  18.5 19.1  19.1   6.9 21.6  21.6  12.2  9.9   9.9
DesignQueue:   7    1     3     0    1     1     1   14     1     3   11     0
********************************************************************************
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Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2002 Existing Conditions Weekday PM Peak Hour

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

Intersection #28 Hwy 214/I-5 NB ramp

Cycle (sec): 90 Critical Vol./Cap. (X): 0.779
Loss Time (sec): 12 (Y+R = 4 sec) Average Delay (sec/veh): 25.0
Optimal Cycle: 70 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
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			0 0 0 0 0			1 0 1 0 0			0 0 2 0 1		
Volume Module:												
Base Vol:	160	0	380	0	0	0	165	790	0	0	755	305
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:	160	0	380	0	0	0	165	790	0	0	755	305
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:	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 Volume:	160	0	380	0	0	0	165	790	0	0	755	305
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	160	0	380	0	0	0	165	790	0	0	755	305
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.:	160	0	380	0	0	0	165	790	0	0	755	305
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.86	1.00	0.77	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.90	0.81
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	2.00	1.00
Final Sat.:	1637	0	1465	0	0	0	1805	1900	0	0	3432	1535
Capacity Analysis Module:												
Vol/Sat:	0.10	0.00	0.26	0.00	0.00	0.00	0.09	0.42	0.00	0.00	0.22	0.20
Crit Moves:			****					****		****		
Green/Cycle:	0.33	0.00	0.33	0.00	0.00	0.00	0.16	0.53	0.00	0.00	0.38	0.38
Volume/Cap:	0.29	0.00	0.78	0.00	0.00	0.00	0.58	0.78	0.00	0.00	0.58	0.53
Delay/Veh:	22.5	0.0	34.9	0.0	0.0	0.0	38.3	20.7	0.0	0.0	23.1	22.7
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:	22.5	0.0	34.9	0.0	0.0	0.0	38.3	20.7	0.0	0.0	23.1	22.7
DesignQueue:	5	0	13	0	0	0	7	21	0	0	25	10

Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2002 Existing Conditions Weekday PM Peak Hour

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

Intersection #29 Hwy 214/I-5 SB ramp

Cycle (sec): 90 Critical Vol./Cap. (X): 0.777
Loss Time (sec): 12 (Y+R = 4 sec) Average Delay (sec/veh): 28.3
Optimal Cycle: 74 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Prot+Permit		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 0 0 0			0 1 0 0 1			0 0 2 0 1			1 0 1 0 0		
Volume Module:												
Base Vol:	0	0	0	440	2	280	0	515	260	395	520	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:	0	0	0	440	2	280	0	515	260	395	520	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:	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 Volume:	0	0	0	440	2	280	0	515	260	395	520	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	440	2	280	0	515	260	395	520	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	0	0	440	2	280	0	515	260	395	520	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.79	0.79	0.79	1.00	0.88	0.78	0.61	0.97	1.00
Lanes:	0.00	0.00	0.00	0.99	0.01	1.00	0.00	2.00	1.00	1.00	1.00	0.00
Final Sat.:	0	0	0	1500	7	1507	0	3334	1491	1153	1845	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.29	0.29	0.19	0.00	0.15	0.17	0.34	0.28	0.00
Crit Moves:					****				****	****		
Green/Cycle:	0.00	0.00	0.00	0.37	0.37	0.37	0.00	0.22	0.22	0.50	0.50	0.00
Volume/Cap:	0.00	0.00	0.00	0.80	0.80	0.51	0.00	0.71	0.80	0.69	0.56	0.00
Delay/Veh:	0.0	0.0	0.0	33.6	33.6	22.9	0.0	35.8	46.4	19.9	16.5	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	0.0	0.0	33.6	33.6	22.9	0.0	35.8	46.4	19.9	16.5	0.0
DesignQueue:	0	0	0	15	0	9	0	21	11	15	14	0

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              Kittelson & Associates, Inc.  -- Project # 5367.0
                 Woodburn Transportation System Plan Update
                2002 Existing Conditions Weekday PM Peak Hour
----------------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
**********************************************************************************
Intersection #30 Hwy 214/Arney Road
**********************************************************************************
Average Delay (sec/veh):       11.6          Worst Case Level Of Service:        B
**********************************************************************************
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        Uncontrolled      Uncontrolled
Rights:            Include           Include           Include           Include
Lanes:         0  0  0  0  0     0  0  0  0  1     0  0  2  0  0     0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0     0     0     0     0    50     0   775     0     0   500   300
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     0     0     0     0    50     0   775     0     0   500   300
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:      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 Volume:      0     0     0     0     0    50     0   775     0     0   500   300
Reduct Vol:      0     0     0     0     0     0     0     0     0     0     0     0
Final Vol.:      0     0     0     0     0    50     0   775     0     0   500   300
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx    7.0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx    3.3 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx    401  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx    596  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx    595  xxxx xxxx xxxxx  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx   11.6 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 xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:        xxxxxx             11.6            xxxxxx            xxxxxx
ApproachLOS:           *                 B                 *                 *
```



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                     Level Of Service Computation Report
           2000 HCM Operations Method (Base Volume Alternative)
**********************************************************************************
Intersection #31 Hwy 214/Woodland Avenue
**********************************************************************************
Cycle (sec):          90               Critical Vol./Cap. (X):          0.450
Loss Time (sec):      12 (Y+R =  4 sec) Average Delay (sec/veh):         25.1
Optimal Cycle:        37               Level Of Service:                    C
**********************************************************************************
Approach:       North Bound       South Bound        East Bound        West Bound
Movement:      L  -  T  -  R     L  -  T  -  R     L  -  T  -  R     L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Split Phase       Split Phase        Protected         Protected
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     1  0  1! 0  0     1  0  0  1  0     1  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        5    10    85   400     5    15    25   290     5    65   280   205
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:     5    10    85   400     5    15    25   290     5    65   280   205
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:      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 Volume:      5    10    85   400     5    15    25   290     5    65   280   205
Reduct Vol:      0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:     5    10    85   400     5    15    25   290     5    65   280   205
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.:      5    10    85   400     5    15    25   290     5    65   280   205
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:   0.76  0.76  0.76  0.94  0.94  0.94  0.92  0.97  0.97  0.91  0.96  0.82
Lanes:        0.05  0.10  0.85  1.91  0.02  0.07  1.00  0.98  0.02  1.00  1.00  1.00
Final Sat.:     72   145  1230  3412    41   122  1753  1808    31  1736  1828  1554
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.07  0.07  0.07  0.12  0.12  0.12  0.01  0.16  0.16  0.04  0.15  0.13
Crit Moves:   ****                    ****                    ****        ****
Green/Cycle:  0.15  0.15  0.15  0.27  0.27  0.27  0.04  0.36  0.36  0.08  0.40  0.40
Volume/Cap:   0.45  0.45  0.45  0.43  0.45  0.45  0.38  0.45  0.45  0.45  0.38  0.33
Delay/Veh:    36.1  36.1  36.1  27.2  27.4  27.4  46.0  22.7  22.7  41.5  19.3  18.8
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:   36.1  36.1  36.1  27.2  27.4  27.4  46.0  22.7  22.7  41.5  19.3  18.8
DesignQueue:     0     0     4    15     0     1     1    10     0     3     9     6
**********************************************************************************
```

```
Kittelson & Associates, Inc.  -- Project # 5367.0
Woodburn Transportation System Plan Update
2002 Existing Conditions Weekday PM Peak Hour
--------------------------------------------------------------------------------
Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #32 Hwy 214/Butteville Road
********************************************************************************
Average Delay (sec/veh):    11.8        Worst Case Level Of Service:          B
********************************************************************************
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      Uncontrolled    Uncontrolled
Rights:         Include         Include         Include         Include
Lanes:       0  0  1! 0  0   0  0  0  0  0   0  0  0  1  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      30    0    70    0    0     0    0  200    60  115  175     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:   30    0    70    0    0     0    0  200    60  115  175     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:     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 Volume:    30    0    70    0    0     0    0  200    60  115  175     0
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Final Vol.:    30    0    70    0    0     0    0  200    60  115  175     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4 xxxx   6.2 xxxxx xxxx xxxxx xxxxx xxxx xxxxx  4.1 xxxx xxxxx
FollowUpTim:  3.5 xxxx   3.3 xxxxx xxxx xxxxx xxxxx xxxx xxxxx  2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  635 xxxx   230  xxxx xxxx xxxxx  xxxx xxxx xxxxx  260 xxxx xxxxx
Potent Cap.:  444 xxxx   812  xxxx xxxx xxxxx  xxxx xxxx xxxxx 1299 xxxx xxxxx
Move Cap.:    412 xxxx   812  xxxx xxxx xxxxx  xxxx xxxx xxxxx 1299 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx  7.8 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *    A    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  629 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx xxxx xxxx xxxxx
Shrd StpDel:xxxxx 11.8 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx  8.0 xxxx xxxxx
Shared LOS:     *    B     *     *    *     *     *    *     *    A    *     *
ApproachDel:        11.8           xxxxxx          xxxxxx          xxxxxx
ApproachLOS:          B               *               *               *
```



```
Kittelson & Associates, Inc.  -- Project # 5367.0
Woodburn Transportation System Plan Update
2002 Existing Conditions Weekday PM Peak Hour
--------------------------------------------------------------------------------
Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #33 Hwy 214/Hwy 99E
********************************************************************************
Cycle (sec):         120               Critical Vol./Cap. (X):         0.823
Loss Time (sec):      16 (Y+R =  4 sec) Average Delay (sec/veh):        48.2
Optimal Cycle:        99               Level Of Service:                  D
********************************************************************************
Approach:     North Bound     South Bound      East Bound      West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Protected       Protected       Protected       Protected
Rights:         Include         Include         Include         Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:       2  0  2  0  1   1  0  1  1  0   1  0  1  0  1   1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     210  440   155  160  730   255  195  315   250  330  345    40
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:  210  440   155  160  730   255  195  315   250  330  345    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:     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 Volume:   210  440   155  160  730   255  195  315   250  330  345    40
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  210  440   155  160  730   255  195  315   250  330  345    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
Final Vol.:   210  440   155  160  730   255  195  315   250  330  345    40
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  0.89 0.91  0.82 0.93 0.89  0.89 0.92 0.97  0.83 0.91 0.95  0.95
Lanes:       2.00 2.00  1.00 1.00 1.48  0.52 1.00 1.00  1.00 1.00 0.90  0.10
Final Sat.:  3369 3473  1554 1769 2520   880 1753 1845  1568 1736 1612   187
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.13  0.10 0.09 0.29  0.29 0.11 0.17  0.16 0.19 0.21  0.21
Crit Moves:  ****                 ****              ****        ****
Green/Cycle: 0.08 0.25  0.25 0.18 0.35  0.35 0.15 0.21  0.21 0.23 0.29  0.29
Volume/Cap:  0.82 0.51  0.40 0.51 0.82  0.82 0.74 0.82  0.77 0.82 0.74  0.74
Delay/Veh:   73.6 39.2  38.2 45.9 40.2  40.2 59.5 58.8  55.4 56.6 44.3  44.3
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:  73.6 39.2  38.2 45.9 40.2  40.2 59.5 58.8  55.4 56.6 44.3  44.3
DesignQueue:   13   23     8    9   34    12   11   17    14   18   17     2
********************************************************************************
```

Appendix C

Crash Data Analysis

Intersection Crash Rates

Intersection	Crashes/Year	Crash Rate	>1.0
Highway 214/Butteville Road	0.4	0.20	No
Highway 214/Woodland Avenue	0.8	0.19	No
Highway 214/Arney Road	1.0	0.21	No
Highway 214/I-5 Southbound Ramp	4.8	0.67	No
Highway 214/I-5 Northbound Ramp	4.6	0.61	No
Highway 214/Evergreen Road	3.4	0.48	No
Highway 214/Oregon Way/Country Club Road	4.2	0.64	No
Highway 214/Cascade Drive	0.4	0.07	No
Highway 214/Astor Way	0.2	0.03	No
Highway 214/Boones Ferry Road	4.6	0.51	No
Highway 214/Meridian Drive/5th	0.6	0.10	No
Highway 214/Front Street	2.0	0.32	No
Highway 214/Park Avenue	1.4	0.21	No
Highway 214/Progress	2.0	0.31	No
Highway 214/Highway 99E	12.8	1.12	Yes
Highway 99E/Industrial/MacLaren	0.8	0.13	No
Highway 99E/Hardcastle Street	4.6	0.58	No
Highway 99E/Lincoln Street	1.6	0.19	No
Highway 99E/Young Street	5.0	0.61	No
Highway 99E/Cleveland Street	1.8	0.30	No
Front Street/Hardcastle Street	1.0	0.44	No
Front Street/Lincoln Street	1.0	0.37	No
Front Street/Garfield/Young Street	0.4	0.13	No
Front Street/Cleveland Street	0.6	0.27	No
Boones Ferry Road/Crosby	1.4	0.67	No
Boones Ferry Road/Tukwila	0.0	0.00	No
Boones Ferry Road/Country Club Road	0.8	0.35	No
Boones Ferry Road/Lincoln Street	0.6	0.15	No
Boones Ferry Road/Hayes Street	2.0	0.50	No
Boones Ferry Road/Garfield Street	1.4	0.42	No
Boones Ferry Road/Cleveland	0.2	0.09	No
Boones Ferry Road/Front/Parr Road	0.0	0.00	No
Crosby/Butteville	1.4	0.97	No

ACCIDENT ANALYSIS

Project Name: Woodburn TSP Update
Project Number: 5367
Analyst: JCW
Date: 01/05/2004
Filename: H:\projfile\5367\analysis\[Accident.xls]Analysis

KITTELSON & ASSOCIATES, INC.
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

INTERSECTION ANALYSIS

Intersection: **Highway 214/Butteville Rd** Mile Post 35.77

Vehicles Entering Intersection = 5,350
Number of Accidents = 2
Time Period = 5

Accident Rate = $\frac{2 \times 1{,}000{,}000}{5{,}350 \times 365 \times 5}$ = **0.20** *Accidents / mev*

Intersection: **Highway 214/Woodland Ave** Mile Post 36.52

Vehicles Entering Intersection = 11,600
Number of Accidents = 4
Time Period = 5

Accident Rate = $\frac{4 \times 1{,}000{,}000}{11{,}600 \times 365 \times 5}$ = **0.19** *Accidents / mev*

Intersection: **Highway 214/Arney Rd** Mile Post 36.63

Vehicles Entering Intersection = 13,050
Number of Accidents = 5
Time Period = 5

Accident Rate = $\frac{5 \times 1{,}000{,}000}{13{,}050 \times 365 \times 5}$ = **0.21** *Accidents / mev*

Intersection: **Highway 214/Evergreen Rd** Mile Post 37.02

Vehicles Entering Intersection = 19,300
Number of Accidents = 17
Time Period = 5

Accident Rate = $\frac{17 \times 1{,}000{,}000}{19{,}300 \times 365 \times 5}$ = **0.48** *Accidents / mev*

Intersection: **Highway 214/Oregon Way** Mile Post 37.12

Vehicles Entering Intersection = 17,850
Number of Accidents = 21
Time Period = 5

Accident Rate = $\frac{21 \times 1{,}000{,}000}{17{,}850 \times 365 \times 5}$ = **0.64** *Accidents / mev*

Intersection: **Highway 214/Cascade Dr** Mile Post 37.27

Vehicles Entering Intersection = 16,500
Number of Accidents = 2
Time Period = 5

Accident Rate = $\frac{2 \times 1{,}000{,}000}{16{,}500 \times 365 \times 5}$ = **0.07** *Accidents / mev*

Intersection: **Highway 214/Astor Way** Mile Post 37.63

Vehicles Entering Intersection = 16,800
Number of Accidents = 1
Time Period = 5

Accident Rate = $\frac{1 \times 1{,}000{,}000}{16{,}800 \times 365 \times 5}$ = **0.03** *Accidents / mev*

Intersection: **Highway 214/Boones Ferry Rd** Mile Post 37.87

Vehicles Entering Intersection = 24,900
Number of Accidents = 23
Time Period = 5

Accident Rate =		23	1,000,000	**0.51** *Accidents / mev*
	24,900	365	5	

Intersection: **Highway 214/Meridian Dr/5th** Mile Post 38.14

Vehicles Entering Intersection = 17,060
Number of Accidents = 3
Time Period = 5

Accident Rate =		3	1,000,000	**0.10** *Accidents / mev*
	17,060	365	5	

Intersection: **Highway 214/Front St** Mile Post 38.56

Vehicles Entering Intersection = 17,050
Number of Accidents = 10
Time Period = 5

Accident Rate =		10	1,000,000	**0.32** *Accidents / mev*
	17,050	365	5	

Intersection: **Highway 214/Park Ave** Mile Post 38.82

Vehicles Entering Intersection = 17,850
Number of Accidents = 7
Time Period = 5

Accident Rate =		7	1,000,000	**0.21** *Accidents / mev*
	17,850	365	5	

Intersection: **Highway 214/Progress** Mile Post 38.91

Vehicles Entering Intersection = 17,460
Number of Accidents = 10
Time Period = 5

Accident Rate =		10	1,000,000	**0.31** *Accidents / mev*
	17,460	365	5	

Intersection: **Highway 99E/Industrial/MacLaren** Mile Post 31.35

Vehicles Entering Intersection = 17,520
Number of Accidents = 4
Time Period = 5

Accident Rate =		4	1,000,000	**0.13** *Accidents / mev*
	17,520	365	5	

Intersection: **Highway 99E/Hardcastle St** Mile Post 32.19

Vehicles Entering Intersection = 21,900
Number of Accidents = 23
Time Period = 5

Accident Rate =		23	1,000,000	**0.58** *Accidents / mev*
	21,900	365	5	

Intersection: **Highway 99E/Lincoln St** Mile Post 32.41

Vehicles Entering Intersection = 23,100
Number of Accidents = 8
Time Period = 5

Accident Rate =		8	1,000,000	**0.19** *Accidents / mev*
	23,100	365	5	

Intersection: **Highway 99E/Young St** Mile Post 32.87

Vehicles Entering Intersection = 22,600
Number of Accidents = 25
Time Period = 5

Accident Rate =		25	1,000,000	**0.61** *Accidents / mev*
	22,600	365	5	

Intersection: **Highway 99E/Cleveland St** Mile Post 32.97

Vehicles Entering Intersection = 16,460
Number of Accidents = 9
Time Period = 5

Accident Rate = 9 / (16,460 × 365) × 1,000,000 / 5 = **0.30** *Accidents / mev*

Intersection: **Front St/Hardcastle St** Mile Post

Vehicles Entering Intersection = 6,250
Number of Accidents = 5
Time Period = 5

Accident Rate = 5 / (6,250 × 365) × 1,000,000 / 5 = **0.44** *Accidents / mev*

Intersection: **Front St/Lincoln St** Mile Post

Vehicles Entering Intersection = 7,450
Number of Accidents = 5
Time Period = 5

Accident Rate = 5 / (7,450 × 365) × 1,000,000 / 5 = **0.37** *Accidents / mev*

Intersection: **Front St/Garfield/Young St** Mile Post

Vehicles Entering Intersection = 8,700
Number of Accidents = 2
Time Period = 5

Accident Rate = 2 / (8,700 × 365) × 1,000,000 / 5 = **0.13** *Accidents / mev*

Intersection: **Front St/Cleveland St** Mile Post

Vehicles Entering Intersection = 6,100
Number of Accidents = 3
Time Period = 5

Accident Rate = 3 / (6,100 × 365) × 1,000,000 / 5 = **0.27** *Accidents / mev*

Intersection: **Boones Ferry Rd/Crosby** Mile Post

Vehicles Entering Intersection = 5,750
Number of Accidents = 7
Time Period = 5

Accident Rate = 7 / (5,750 × 365) × 1,000,000 / 5 = **0.67** *Accidents / mev*

Intersection: **Boones Ferry Rd/Tukwila** Mile Post

Vehicles Entering Intersection = 5,460
Number of Accidents = 0
Time Period = 5

Accident Rate = 0 / (5,460 × 365) × 1,000,000 / 5 = **0.00** *Accidents / mev*

Intersection: **Boones Ferry Rd/Country Club Rd** Mile Post

Vehicles Entering Intersection = 6,300
Number of Accidents = 4
Time Period = 5

Accident Rate = 4 / (6,300 × 365) × 1,000,000 / 5 = **0.35** *Accidents / mev*

Intersection: **Boones Ferry Rd/Lincoln St** Mile Post

Vehicles Entering Intersection = 10,900
Number of Accidents = 3
Time Period = 5

Accident Rate = 3 / (10,900 × 365) × 1,000,000 / 5 = **0.15** *Accidents / mev*

Intersection: **Boones Ferry Rd/Hayes St** Mile Post

Vehicles Entering Intersection = 10,970
Number of Accidents = 10
Time Period = 5

Accident Rate =				
		10	1,000,000	**0.50** *Accidents / mev*
	10,970	365	5	

Intersection: **Boones Ferry Rd/Garfield St** Mile Post

Vehicles Entering Intersection = 9,170
Number of Accidents = 7
Time Period = 5

Accident Rate =				
		7	1,000,000	**0.42** *Accidents / mev*
	9,170	365	5	

Intersection: **Boones Ferry Rd/Cleveland** Mile Post

Vehicles Entering Intersection = 6,050
Number of Accidents = 1
Time Period = 5

Accident Rate =				
		1	1,000,000	**0.09** *Accidents / mev*
	6,050	365	5	

Intersection: **Boones Ferry Rd/Front/Parr Rd** Mile Post

Vehicles Entering Intersection = 4,860
Number of Accidents = 0
Time Period = 5

Accident Rate =				
		0	1,000,000	**0.00** *Accidents / mev*
	4,860	365	5	

Intersection: **Crosby/Butteville** Mile Post

Vehicles Entering Intersection = 3,950
Number of Accidents = 7
Time Period = 5

Accident Rate =				
		7	1,000,000	**0.97** *Accidents / mev*
	3,950	365	5	

Intersection: **Highway 214/I-5 SB ramp** Mile Post

Vehicles Entering Intersection = 19,570
Number of Accidents = 24
Time Period = 5

Accident Rate =				
		24	1,000,000	**0.67** *Accidents / mev*
	19,570	365	5	

Intersection: **Highway 214/I-5 NB ramp** Mile Post

Vehicles Entering Intersection = 20,750
Number of Accidents = 23
Time Period = 5

Accident Rate =				
		23	1,000,000	**0.61** *Accidents / mev*
	20,750	365	5	

Intersection: **Highway 211/214/99E** Mile Post

Vehicles Entering Intersection = 31,200
Number of Accidents = 64
Time Period = 5

Accident Rate =				
		64	1,000,000	**1.12** *Accidents / mev*
	31,200	365	5	

Appendix D

Travel Forecasts

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING/TRAFFIC ENGINEERING
610 SW ALDER, SUITE 700 • PORTLAND, OR 97205 • (503) 228-5230 • FAX (503) 273-8169

MEMORANDUM

Date: April 16, 2003 **Project #:** 5367

To: Woodburn TSP Technical Advisory Committee

From: Julia Kuhn, KAI & Steve Perone, CH2M HILL

Project: Woodburn TSP

Subject: No Build Model Analysis

This memorandum provides a brief summary of our recommendation for 2020 analysis for the Woodburn Transportation System Plan (TSP). ODOT's Transportation Planning and Analysis Unit (TPAU) provided us with year 2020 travel forecasts for three land use scenarios. We recommend that all future analysis for the TSP be conducted using Scenario 3. The primary reasons for this recommendation are outlined in the sections below.

Background

For more than two years, the City of Woodburn, Marion County, ODOT and DLCD have been discussing a variety of year 2020 land use scenarios for buildout within the Urban Growth Boundary (UGB). Three land use scenarios have been developed for analysis as part of the TSP. Each of the scenarios is based on the medium range 2020 population forecast of 34,919. A brief description of each scenario is provided in Table 1.

Table 1 2020 Land Use Scenarios

	Residential	Commercial	Industrial
Scenario #1 Medium Employment	Intensification	Redevelopment and Infill	Based on Employment Needs
Scenario #2 Medium Employment	Current Trends	Redevelopment and Infill	Employment Needs plus one Alternative Site
Scenario #3 High Employment	Current Trends	Redevelopment and Infill plus Two New Neighborhood Nodes	Employment Needs plus two Alternative Sites

Each scenario's land use allocation varies based on individual underlying assumptions. In terms of household allocation, Scenario 1 assumes an increase in density over existing levels whereas Scenarios 2 and 3 assume a continuation of current household density trends.

Scenarios 1 and 2 assume the same medium employment growth forecast with significant redevelopment and infill accommodating commercial (retail and service) demand. Scenario 3 assumes development of two new mixed-use centers (nodes) serving commercial development needs. Considerable growth in industrial employment is anticipated in all scenarios although Scenario 3 is the most aggressive.

A summary of the number of households and employment included in each of the scenarios is provided in Table 2.

Table 2 Comparison of Land Uses

Scenario	House-holds	Employees							
		Agric.	Indus	Retail	Service	Educ	Gover	Other	Total
Year 2000	7,387	268	987	2,779	1,240	577	589	1,211	7,634
Year 2020									
Scenario 1	13,077	268	4,565	4,561	2,136	1,201	841	1,211	14,783
Scenario 2	13,053	268	4,565	4,561	2,136	1,201	841	1,211	14,784
Scenario 3	13,098	268	5,203	4,895	2,306	1,201	841	1,211	15,921

Note: Agric = Agriculture; Indus = Industrial; Educ = Education; Gover = Government

As shown in Table 2, during the next twenty years, the number of households within the Woodburn UGB is anticipated by more than 5,700 units, which equates to an approximately 77 percent increase. There is less than one percent difference between the 2020 scenarios investigated. This difference translates to an insignificant difference in travel demand forecast on the system.

The number of employees in Woodburn is anticipated to increase by more than 7,000, depending on the scenario; this equates to a 94 – 108 percent increase in employees within the UGB. Nearly half of the employment growth is anticipated in the industrial sector. Amongst the 2020 scenarios, there is an eight percent difference in the number of employees anticipated within the UGB; this difference primarily occurs in the industrial sector and to a lesser extent in the retail and service sectors. From a locational perspective, Scenario 3 includes higher employment in the Parr Road and Crosby Road corridors.

Based on these land use forecasts, TPAU generated travel forecasts for each scenario. A brief summary of the differences between the scenarios is discussed below.

Comparison of Year 2020 Scenarios 1 and 3

A comparison of travel forecasts was first performed between Scenarios 1 and 3 because they represent the highest and lowest growth forecasts. A comparison between the travel forecasts for Scenario 1 (EMME/2 Scenario 20201) and Scenario 3 (EMME/2 Scenario 20203) is provided in the figures attached to this memorandum. As shown in the figures, the differences are primarily less than 50 vehicles per hour per direction on any particular roadway and, in many occasions, less than 20 vehicles per hour. This typically results in a difference of fewer than five percent in the volumes being forecast on any particular link, which is far below the margin of error built into the model. In addition, this level of significance (or lack thereof) will not affect the overall capacity needs of the transportation system.

The differences are primarily occurring on Butteville Road, Parr Road, and Crosby Road. Although there is no difference in the number of vehicles anticipated to use the Oregon 214/I-5 ramps, a higher number of vehicles are anticipated to access the interchange from the west under Scenario 3. West of the Oregon Way/Country Club intersection, the differences on Oregon 214 are primarily in the range of 5 – 10 vehicles per hour per direction. There are also slightly lower volumes along Boones Ferry Road, Oregon 99E, and other facilities to the east of I-5 in Scenario 3. These differences are primarily due to the higher number of vehicles using Parr Road, Crosby Road and Butteville Road to access the interchange from the west of I-5 and to the higher concentrations of employment located in these corridors.

Comparison of Year 2020 Scenarios 1 and 2

The differences in forecast volumes between Scenarios 1 and 2 are shown in the attached figures. As expected, the differences are much less pronounced than those between Scenarios 1 and 3. Primarily the volume differences are occurring on Boones Ferry Road, to the south of Parr Road. There is very little difference in volumes anticipated in the vicinity of the Oregon 214/I-5 interchange. None of the differences identified will result in a change in the future capacity needs for the transportation system.

Comparison of Year 2020 Scenarios 2 and 3

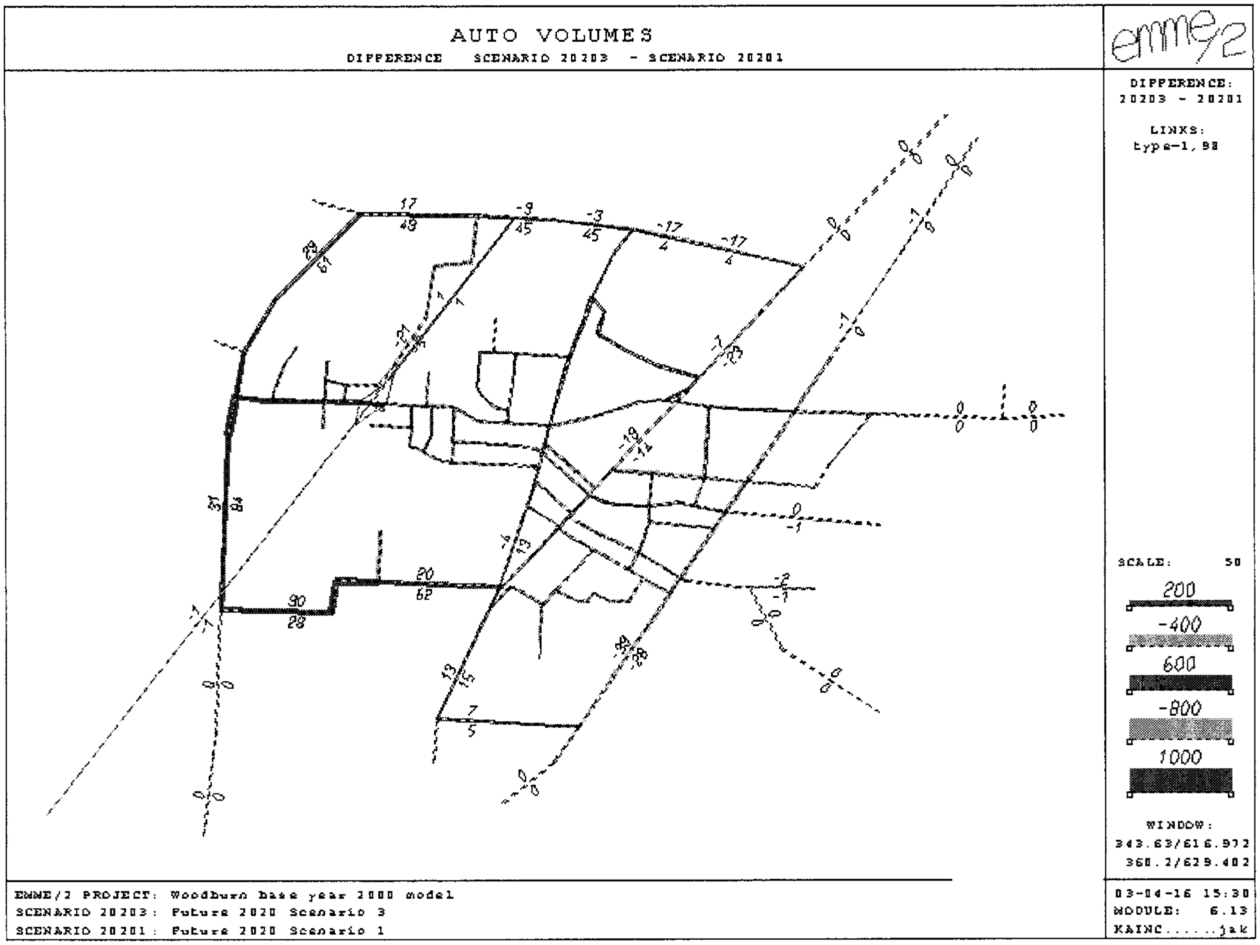
The differences in forecast volumes between Scenarios 2 and 3 are shown in the attached figures. The results are very similar to those described in the comparison of Scenarios 1 and 3. In Scenario 3, several vehicles are anticipated to use Butteville Road to access the Oregon 214/I-5 interchange. This results in slightly lower volumes along Oregon 214, Boones Ferry Road, and other facilities east of the interchange. In Scenario 3, both the Tukwila and Lincoln corridors are projected to carry slightly higher volumes than Scenario 2. Like the other scenario comparisons, the volume differences between these two scenarios are anticipated to be quite low and well within the normal range of error contained within the model and are not anticipated to a difference in capacity needs of the system.

Recommendation

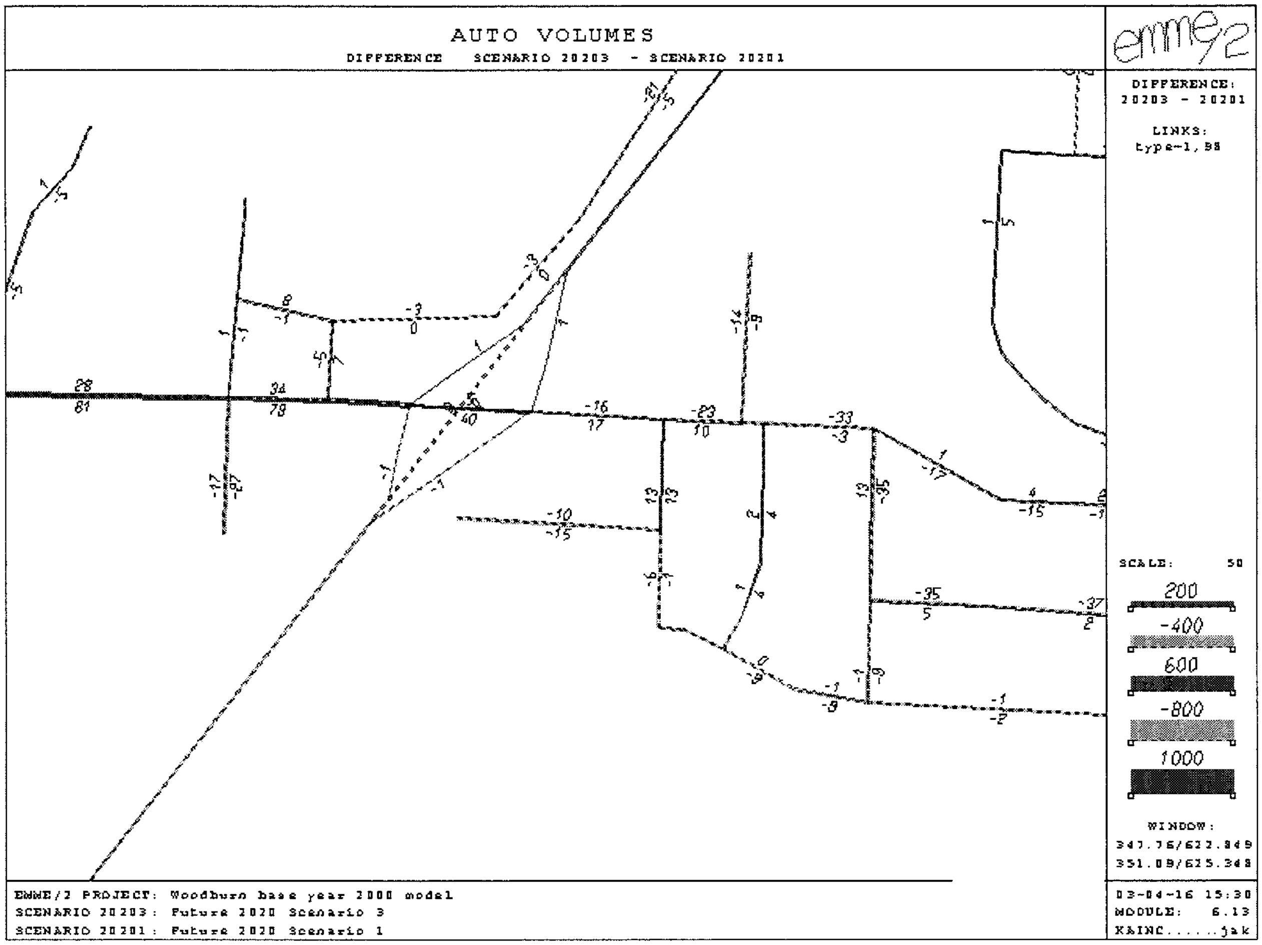
Given the relatively small differences in traffic volumes between the scenarios, we recommend the use of Scenario 3 to quantify future roadway deficiencies and recommend solutions. This scenario provides for slightly higher volumes in the vicinity of the I-5 interchange (which is one of the most critical intersections in the system) than the other scenarios. In addition, the minor differences in the volumes forecast on other facilities in the city will not affect the ultimate capacity needs that could be identified as part of the TSP.

Please let us know if you would like additional information regarding the comparison between scenarios. We look forward to proceeding with the 2020 analysis.

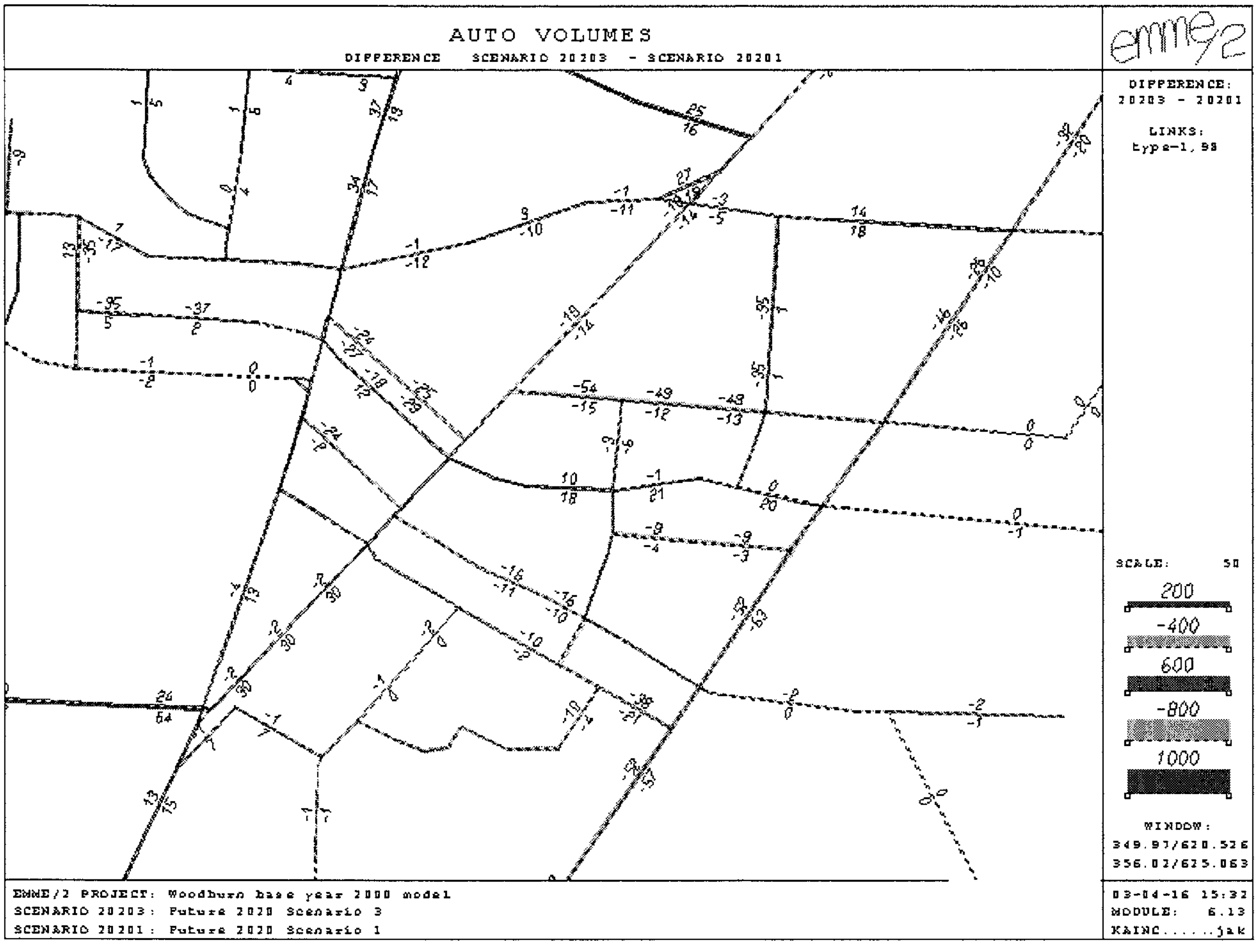
Scenario 3 - Scenario 1: City-wide



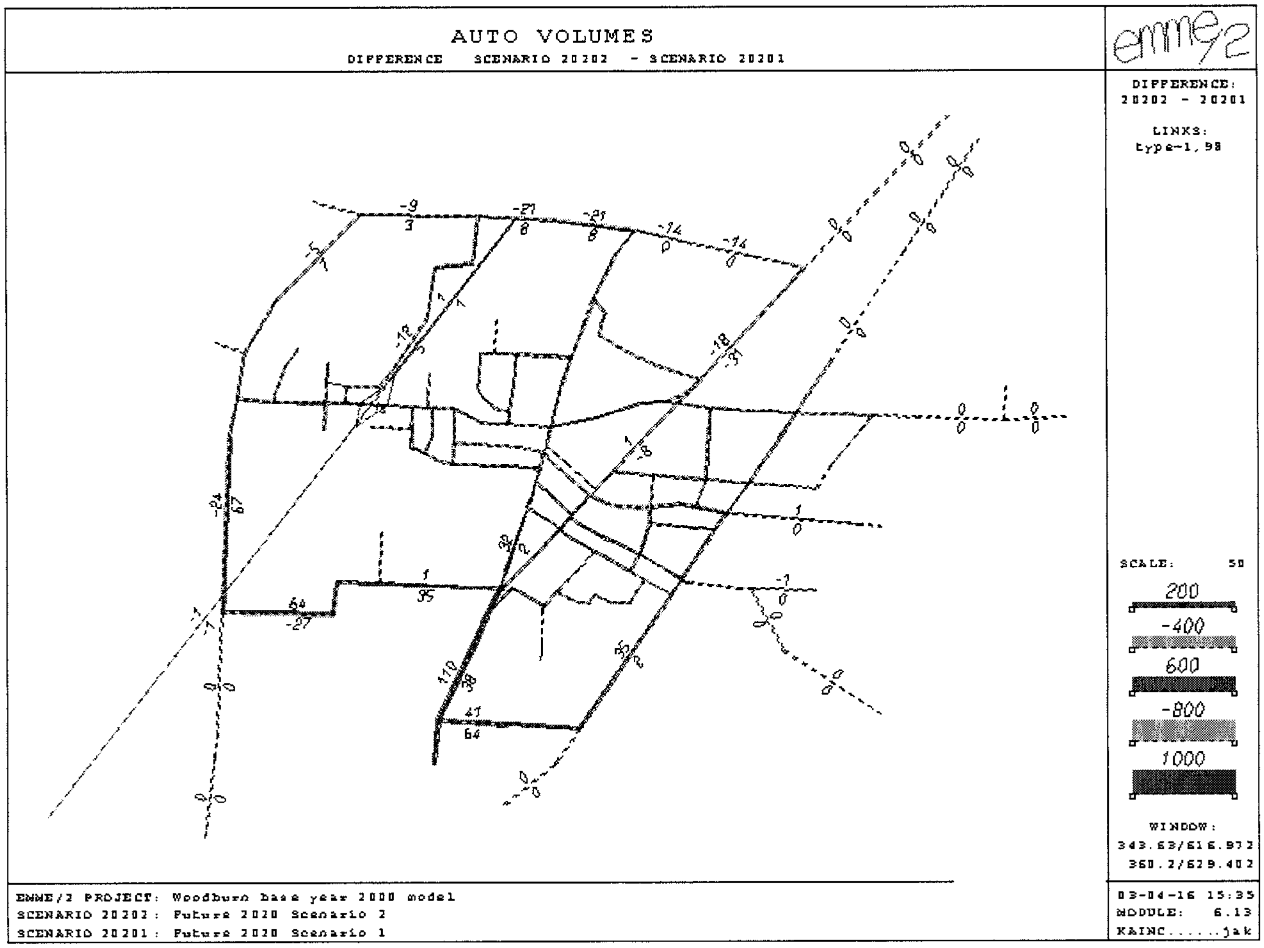
Scenario 3 – Scenario 1: Vicinity of Oregon 214/I-5 Interchange



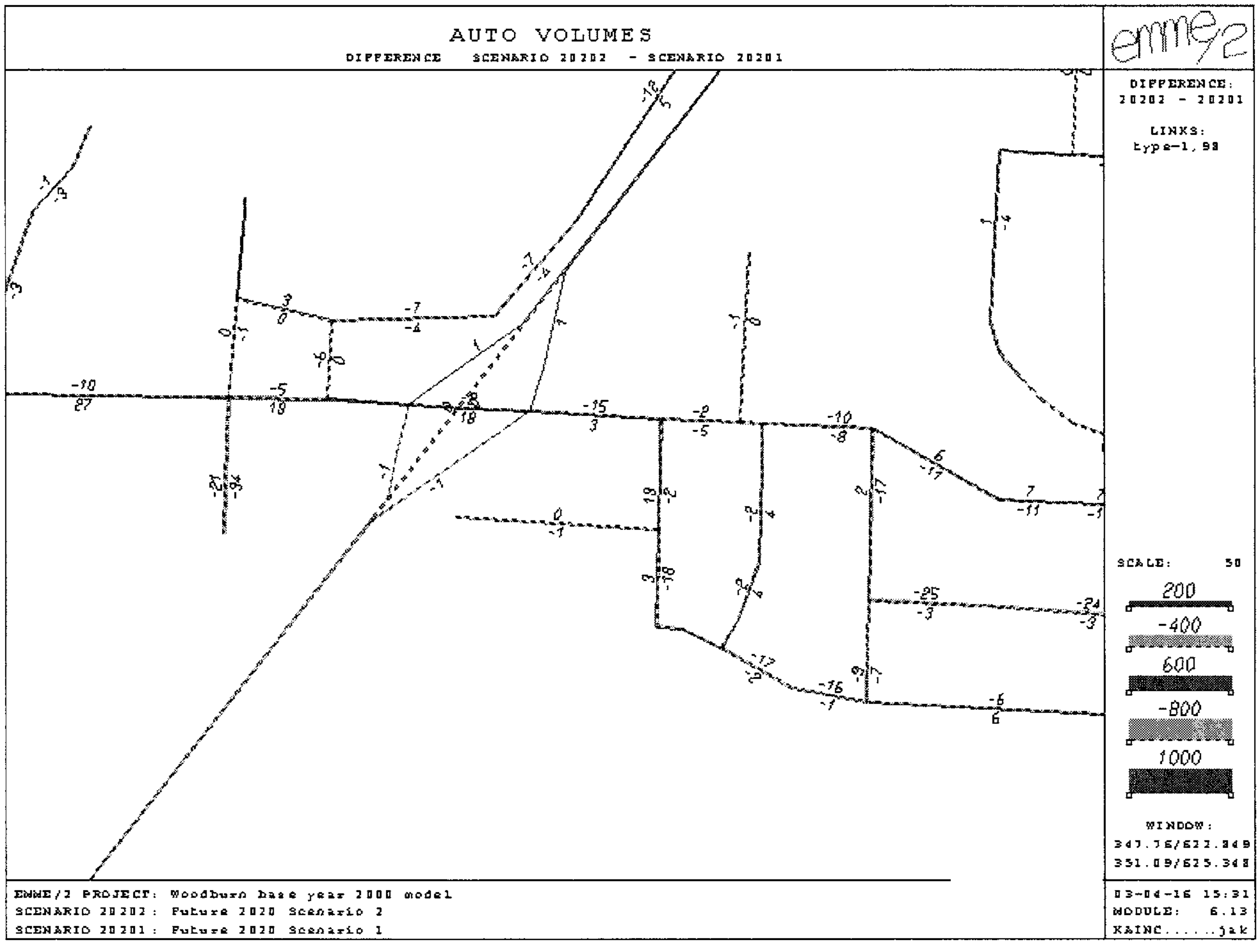
Scenario 3 – Scenario 1: Vicinity of Boones Ferry and Oregon 99E



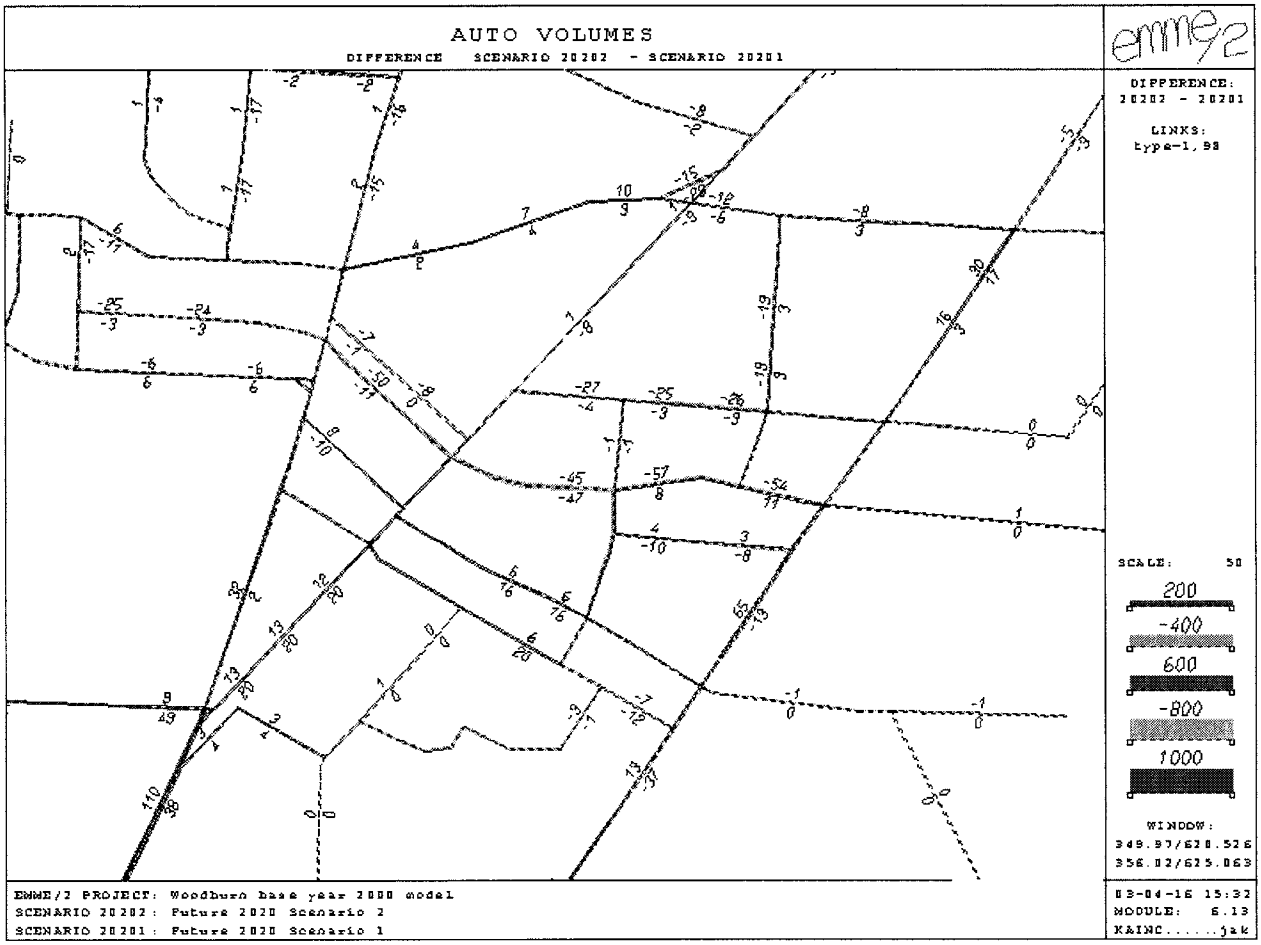
Scenario 2 - Scenario 1: City-wide



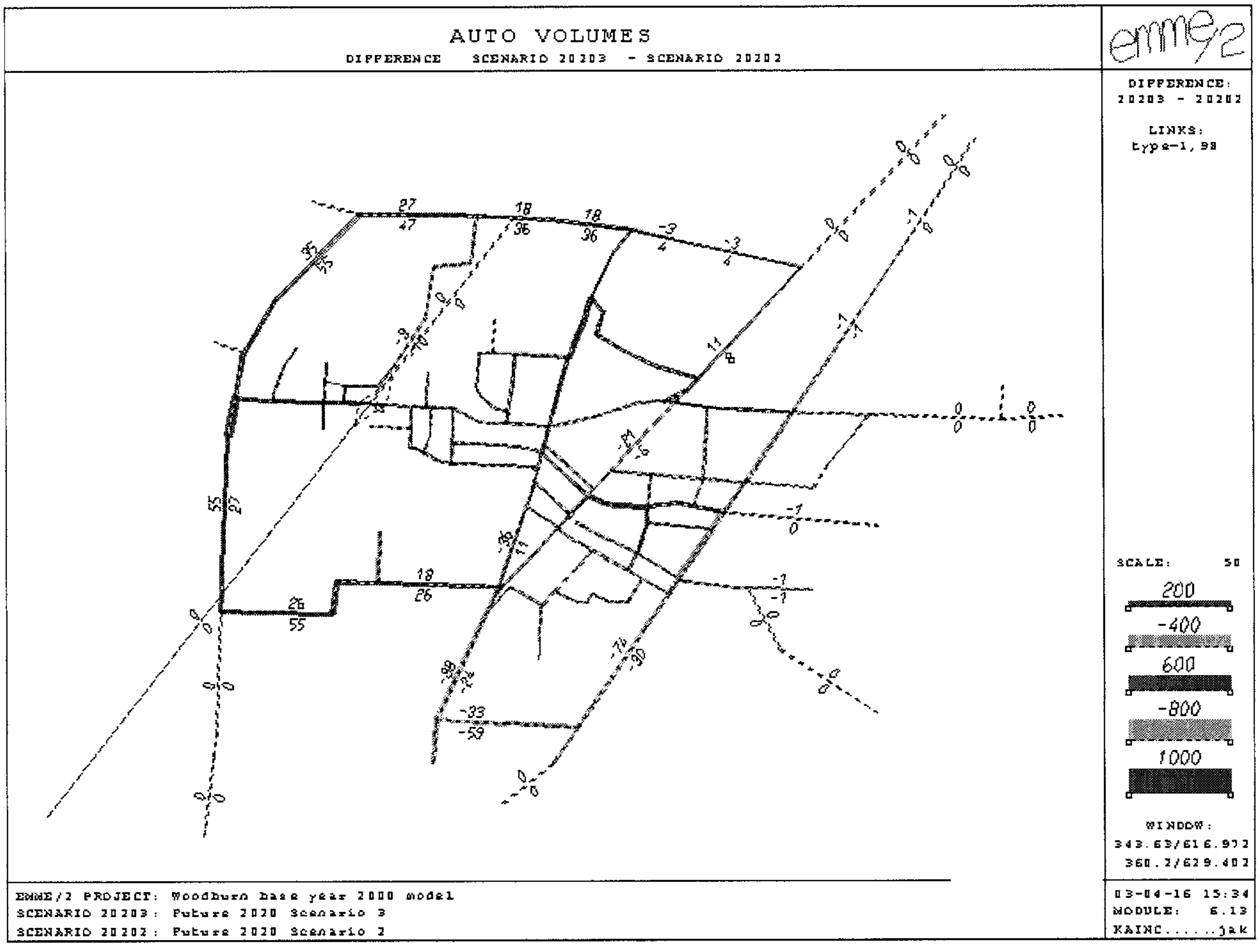
Scenario 2 - Scenario 1: Vicinity of Oregon 214/I-5 Interchange



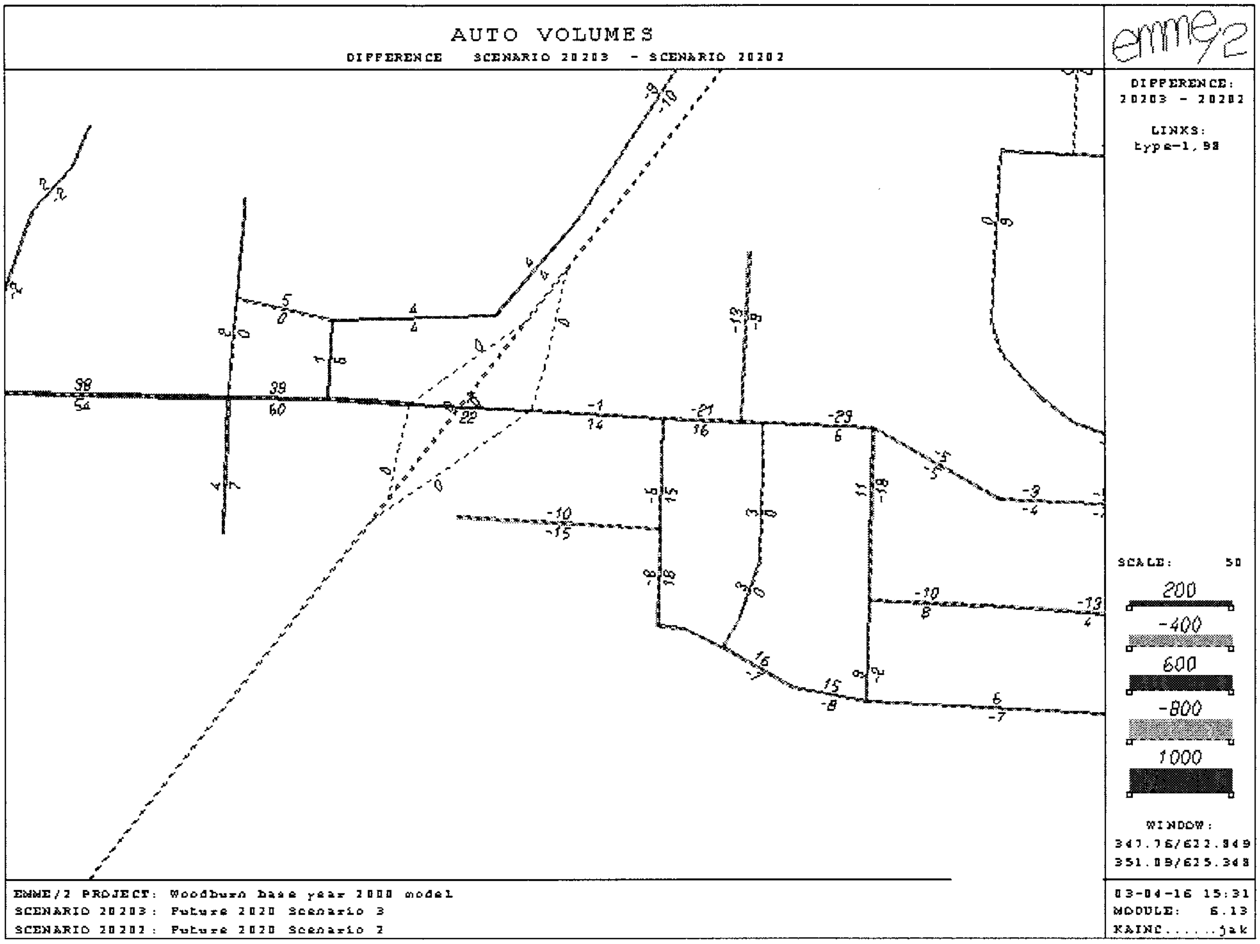
Scenario 2 – Scenario 1: Vicinity of Boones Ferry and Oregon 99E



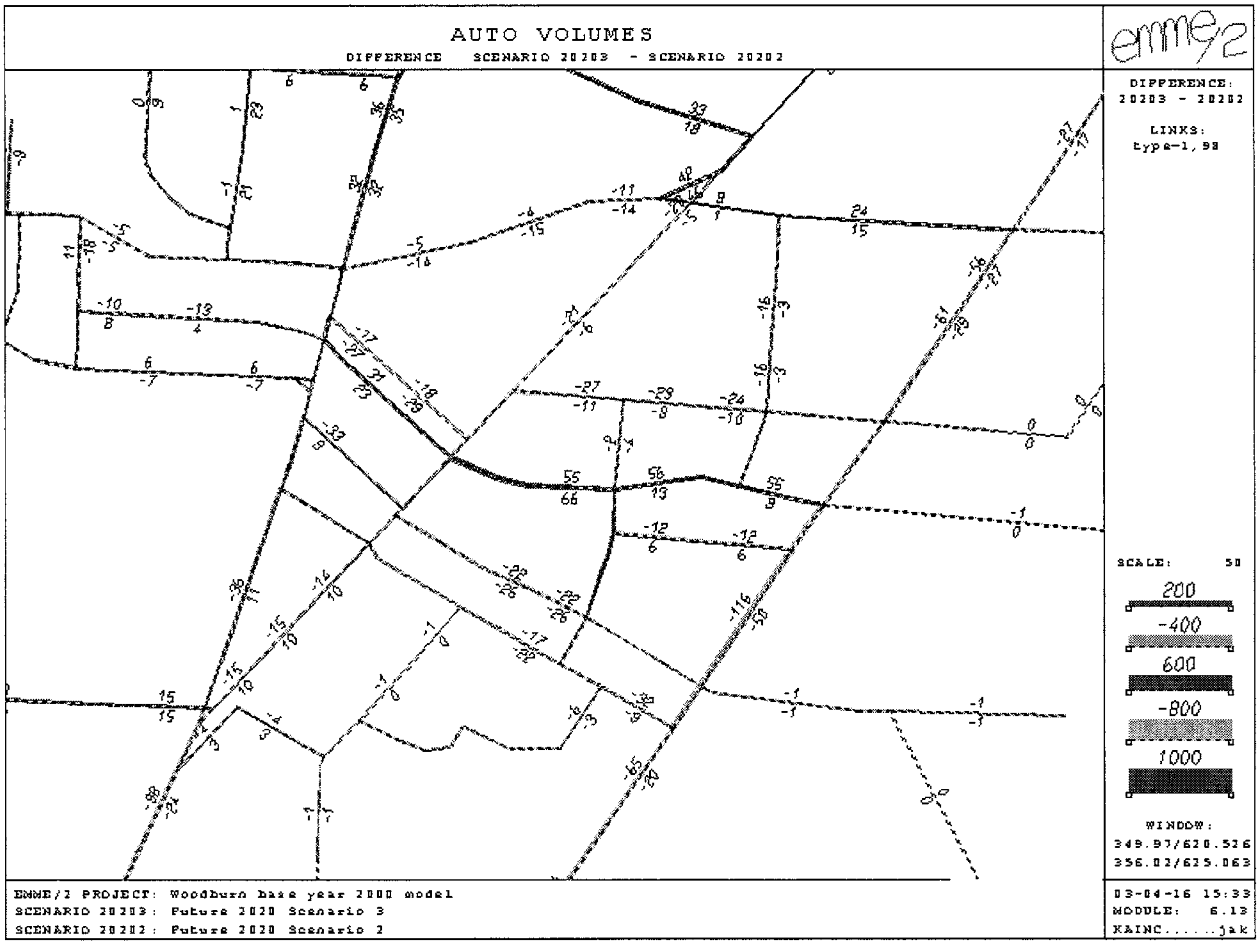
Scenario 3 – Scenario 2: City-wide



Scenario 3 – Scenario 2: Vicinity of Oregon 214/I-5 Interchange



Scenario 3 - Scenario 2: Vicinity of Boones Ferry and Oregon 99E



TAZ Employment and Household Comparison

	Year 2000		Year 2020		Growth	
TAZ	TOT_HH	TOT_EMP	TOT_HH	TOT_EMP	Households	Employment
100	42	20	136	120	94	100
101	20	0	144	0	124	0
102	551	0	557	0	6	0
103	2	514	203	554	201	40
104	24	29	24	29	0	0
105	334	0	338	0	4	0
106	4	0	455	200	451	200
107	4	8	89	8	85	0
108	174	3	178	3	4	0
109	254	0	254	0	0	0
110	129	31	129	31	0	0
111	74	252	74	383	0	131
112	219	2	220	18	1	16
113	242	1	243	1	1	0
114	0	266	0	306	0	40
115	161	0	186	0	25	0
116	2	0	36	0	34	0
117	33	2	68	2	35	0
118	2	145	2	145	0	0
119	33	115	87	135	54	20
120	75	17	214	17	139	0
121	11	0	255	150	244	150
122	19	102	19	514	0	412
123	2	1394	2	2,078	0	684
124	23	22	23	22	0	0
125	127	1	127	1	0	0
126	21	0	21	0	0	0
127	81	340	81	340	0	0
128	0	0	0	0	0	0
129	3	88	3	140	0	52
130	11	0	11	344	0	344
131	207	10	207	10	0	0
132	96	0	96	0	0	0
133	73	0	73	0	0	0
134	157	33	175	33	18	0
135	22	246	22	281	0	35
136	0	0	5	79	5	79
137	169	5	255	5	86	0
138	60	27	60	27	0	0
139	68	14	118	14	50	0
140	1	231	1	238	0	7
141	0	107	0	343	0	236
142	105	101	118	126	13	25
143	66	93	136	96	70	3
144	132	25	204	35	72	10
145	50	4	61	4	11	0
146	12	0	12	70	0	70
147	60	41	72	41	12	0
148	141	66	150	69	9	3
149	108	23	124	33	16	10
150	57	14	58	20	1	6
151	2	52	8	62	6	10
152	66	18	67	18	1	0

TAZ Employment and Household Comparison

Woodburn TSP
Project #: 5367

	Year 2000		Year 2020		Growth	
TAZ	TOT_HH	TOT_EMP	TOT_HH	TOT_EMP	Households	Employment
153	236	149	262	185	26	36
154	154	0	158	0	4	0
155	55	6	63	6	8	0
156	192	37	192	68	0	31
157	70	501	70	616	0	115
158	0	735	0	1,050	0	315
159	0	1	0	1,216	0	1,215
160	16	0	16	475	0	475
161	0	0	1,004	1,164	1,004	1,164
162	172	4	172	4	0	0
163	55	54	58	54	3	0
164	105	64	118	64	13	0
165	68	230	70	283	2	53
166	136	160	138	237	2	77
167	58	24	66	90	8	66
168	14	63	15	74	1	11
169	49	2	53	2	4	0
170	83	20	117	20	34	0
171	78	58	83	58	5	0
172	26	1	31	1	5	0
173	133	86	134	89	1	3
174	7	199	7	208	0	9
175	50	88	50	151	0	63
176	134	271	154	271	20	0
177	7	76	7	76	0	0
178	3	6	3	6	0	0
179	7	1	7	1	0	0
180	12	0	12	0	0	0
181	6	132	6	517	0	385
182	116	25	119	56	3	31
183	160	1	180	1	20	0
184	62	11	103	11	41	0
185	101	32	112	59	11	27
186	225	4	1,050	28	825	24
187	16	4	636	1,123	620	1,119
188	66	125	192	125	126	0
189	0	0	0	0	0	0
190	68	0	115	0	47	0
191	55	0	75	0	20	0
192	85	0	86	15	1	15
193	63	0	301	0	238	0
194	33	0	114	0	81	0
195	12	0	450	0	438	0
196	15	0	15	0	0	0
197	9	0	9	136	0	136
198	3	2	3	2	0	0
199	17	0	17	34	0	34
200	6	0	6	0	0	0
201	2	0	230	200	228	200
202	8	0	8	0	0	0
203	9	0	9	0	0	0
204	1	0	1	0	0	0
					5,711	8,287

TAZ	TOT_HH	AGRI	INDUS	RETAIL	SERVICE	EDUC	GOV	OTHER	TOT_EMP
100	42	0	10	10	0	0	0	0	20
101	20	0	0	0	0	0	0	0	0
102	551	0	0	0	0	0	0	0	0
103	2	0	0	432	48	0	0	34	514
104	24	23	2	0	0	0	0	4	29
105	334	0	0	0	0	0	0	0	0
106	4	0	0	0	0	0	0	0	0
107	4	4	0	0	4	0	0	0	8
108	174	3	0	0	0	0	0	0	3
109	254	0	0	0	0	0	0	0	0
110	129	0	0	6	25	0	0	0	31
111	74	0	4	162	65	0	0	21	252
112	219	0	0	0	2	0	0	0	2
113	242	0	0	0	1	0	0	0	1
114	0	0	0	0	20	202	0	44	266
115	161	0	0	0	0	0	0	0	0
116	2	0	0	0	0	0	0	0	0
117	33	0	0	0	1	0	0	1	2
118	2	0	0	0	114	0	0	31	145
119	33	0	0	0	1	102	0	12	115
120	75	0	0	0	17	0	0	0	17
121	11	0	0	0	0	0	0	0	0
122	19	0	28	0	0	0	0	74	102
123	2	7	825	310	150	0	0	102	1394
124	23	0	0	0	0	0	0	22	22
125	127	0	0	0	0	0	0	1	1
126	21	0	0	0	0	0	0	0	0
127	81	0	0	0	0	0	340	0	340
128	0	0	0	0	0	0	0	0	0
129	3	0	52	10	26	0	0	0	88
130	11	0	0	0	0	0	0	0	0
131	207	0	0	0	10	0	0	0	10
132	96	0	0	0	0	0	0	0	0
133	73	0	0	0	0	0	0	0	0
134	157	0	0	0	32	0	0	1	33
135	22	0	0	141	40	0	0	65	246
136	0	0	0	0	0	0	0	0	0
137	169	0	0	0	2	0	0	3	5
138	60	24	0	0	0	0	0	3	27
139	68	0	0	0	14	0	0	0	14
140	1	0	0	224	7	0	0	0	231
141	0	40	0	58	9	0	0	0	107
142	105	29	0	68	1	0	0	3	101
143	66	0	0	82	7	0	0	6	93
144	132	0	0	0	1	24	0	0	25
145	50	0	0	0	4	0	0	0	4
146	12	0	0	0	0	0	0	0	0
147	60	0	0	0	7	0	0	34	41
148	141	0	0	4	8	0	0	54	66
149	108	0	0	0	0	23	0	0	23
150	57	0	0	11	3	0	0	0	14
151	2	0	0	0	0	52	0	0	52
152	66	0	0	0	17	0	0	1	18
153	236	0	0	0	93	0	56	0	149
154	154	0	0	0	0	0	0	0	0
155	55	0	0	0	6	0	0	0	6
156	192	0	0	15	22	0	0	0	37
157	70	0	0	387	114	0	0	0	501
158	0	0	0	614	7	0	0	114	735

TAZ	TOT_HH	AGRI	INDUS	RETAIL	SERVICE	EDUC	GOV	OTHER	TOT_EMP
159	0	0	0	0	1	0	0	0	1
160	16	0	0	0	0	0	0	0	0
161	0	0	0	0	0	0	0	0	0
162	172	0	0	0	1	0	0	3	4
163	55	0	0	0	1	52	0	1	54
164	105	0	0	0	64	0	0	0	64
165	68	0	6	0	30	1	193	0	230
166	136	0	20	28	46	0	0	66	160
167	58	0	2	19	3	0	0	0	24
168	14	0	28	0	17	0	0	18	63
169	49	0	0	0	2	0	0	0	2
170	83	12	0	0	8	0	0	0	20
171	78	0	0	37	11	0	0	10	58
172	26	0	0	0	0	0	0	1	1
173	133	10	0	10	27	3	0	36	86
174	7	0	0	70	82	0	0	47	199
175	50	19	0	19	19	0	0	31	88
176	134	0	0	55	16	0	0	200	271
177	7	70	0	0	0	0	0	6	76
178	3	0	6	0	0	0	0	0	6
179	7	0	0	0	0	0	0	1	1
180	12	0	0	0	0	0	0	0	0
181	6	0	0	0	0	0	0	132	132
182	116	0	0	7	18	0	0	0	25
183	160	0	0	0	1	0	0	0	1
184	62	0	0	0	1	0	0	10	11
185	101	27	0	0	4	0	0	1	32
186	225	0	0	0	1	0	0	3	4
187	16	0	4	0	0	0	0	0	4
188	66	0	0	0	7	118	0	0	125
189	0	0	0	0	0	0	0	0	0
190	68	0	0	0	0	0	0	0	0
191	55	0	0	0	0	0	0	0	0
192	85	0	0	0	0	0	0	15	0
193	63	0	0	0	0	0	0	0	0
194	33	0	0	0	0	0	0	0	0
195	12	0	0	0	0	0	0	0	0
196	15	0	0	0	0	0	0	0	0
197	9	0	0	0	0	0	0	0	0
198	3	0	0	0	2	0	0	0	2
199	17	0	0	0	0	0	0	0	0
200	6	0	0	0	0	0	0	0	0
201	2	0	0	0	0	0	0	0	0
202	8	0	0	0	0	0	0	0	0
203	9	0	0	0	0	0	0	0	0
204	1	0	0	0	0	0	0	0	0

Future 2020 Employment and Household by TAZ

TAZ	TOT_HH	AGRI	INDUS	RETAIL	SERVICE	EDUC	GOV	OTHER	TOT_EMP
100	136	0	10	10	0	100	0	0	120
101	144	0	0	0	0	0	0	0	0
102	557	0	0	0	0	0	0	0	0
103	203	0	0	459	61	0	0	34	554
104	24	23	2	0	0	0	0	4	29
105	338	0	0	0	0	0	0	0	0
106	455	0	0	133	67	0	0	0	200
107	89	4	0	0	4	0	0	0	8
108	178	3	0	0	0	0	0	0	3
109	254	0	0	0	0	0	0	0	0
110	129	0	0	6	25	0	0	0	31
111	74	0	4	253	105	0	0	21	383
112	220	0	0	11	7	0	0	0	18
113	243	0	0	0	1	0	0	0	1
114	0	0	0	0	20	242	0	44	306
115	186	0	0	0	0	0	0	0	0
116	36	0	0	0	0	0	0	0	0
117	68	0	0	0	1	0	0	1	2
118	2	0	0	0	114	0	0	31	145
119	87	0	0	0	1	122	0	12	135
120	214	0	0	0	17	0	0	0	17
121	255	0	0	0	0	150	0	0	150
122	19	0	440	0	0	0	0	74	514
123	2	7	1289	383	187	110	0	102	2,078
124	23	0	0	0	0	0	0	22	22
125	127	0	0	0	0	0	0	1	1
126	21	0	0	0	0	0	0	0	0
127	81	0	0	0	0	0	340	0	340
128	0	0	0	0	0	0	0	0	0
129	3	0	52	49	39	0	0	0	140
130	11	0	0	229	115	0	0	0	344
131	207	0	0	0	10	0	0	0	10
132	96	0	0	0	0	0	0	0	0
133	73	0	0	0	0	0	0	0	0
134	175	0	0	0	32	0	0	1	33
135	22	0	0	163	53	0	0	65	281
136	5	0	0	50	29	0	0	0	79
137	255	0	0	0	2	0	0	3	5
138	60	24	0	0	0	0	0	3	27
139	118	0	0	0	14	0	0	0	14
140	1	0	0	229	9	0	0	0	238
141	0	40	0	149	54	0	100	0	343
142	118	29	0	85	9	0	0	3	126
143	136	0	0	83	7	0	0	6	96
144	204	0	0	0	1	34	0	0	35
145	61	0	0	0	4	0	0	0	4
146	12	0	70	0	0	0	0	0	70
147	72	0	0	0	7	0	0	34	41
148	150	0	0	6	9	0	0	54	69
149	124	0	0	0	0	33	0	0	33
150	58	0	0	15	5	0	0	0	20
151	8	0	0	0	0	62	0	0	62
152	67	0	0	0	17	0	0	1	18
153	262	0	0	24	105	0	56	0	185
154	158	0	0	0	0	0	0	0	0
155	63	0	0	0	6	0	0	0	6
156	192	0	0	34	34	0	0	0	68
157	70	0	0	461	155	0	0	0	616

TAZ	TOT_HH	AGRI	INDUS	RETAIL	SERVICE	EDUC	GOV	OTHER	TOT_EMP
158	0	0	315	614	7	0	0	114	1,050
159	0	0	1215	0	1	0	0	0	1,216
160	16	0	475	0	0	0	0	0	475
161	1,004	0	0	710	355	0	100	0	1,164
162	172	0	0	0	1	0	0	3	4
163	58	0	0	0	1	52	0	1	54
164	118	0	0	0	64	0	0	0	64
165	70	0	6	1	30	1	245	0	283
166	138	0	20	76	75	0	0	66	237
167	66	0	2	60	28	0	0	0	90
168	15	0	39	0	17	0	0	18	74
169	53	0	0	0	2	0	0	0	2
170	117	12	0	0	8	0	0	0	20
171	83	0	0	37	11	0	0	10	58
172	31	0	0	0	0	0	0	1	1
173	134	10	0	12	28	3	0	36	89
174	7	0	0	76	85	0	0	47	208
175	50	19	0	61	40	0	0	31	151
176	154	0	0	55	16	0	0	200	271
177	7	70	0	0	0	0	0	6	76
178	3	0	6	0	0	0	0	0	6
179	7	0	0	0	0	0	0	1	1
180	12	0	0	0	0	0	0	0	0
181	6	0	385	0	0	0	0	132	517
182	119	0	0	26	30	0	0	0	56
183	180	0	0	0	1	0	0	0	1
184	103	0	0	0	1	0	0	10	11
185	112	27	0	24	7	0	0	1	59
186	1,050	0	0	0	1	24	0	3	28
187	636	0	873	67	33	150	0	0	1,123
188	192	0	0	0	7	118	0	0	125
189	0	0	0	0	0	0	0	0	0
190	115	0	0	0	0	0	0	0	0
191	75	0	0	0	0	0	0	0	0
192	86	0	0	0	0	0	0	15	15
193	301	0	0	0	0	0	0	0	0
194	114	0	0	0	0	0	0	0	0
195	450	0	0	0	0	0	0	0	0
196	15	0	0	0	0	0	0	0	0
197	9	0	0	91	45	0	0	0	136
198	3	0	0	0	2	0	0	0	2
199	17	0	0	23	11	0	0	0	34
200	6	0	0	0	0	0	0	0	0
201	230	0	0	133	67	0	0	0	200
202	8	0	0	0	0	0	0	0	0
203	9	0	0	0	0	0	0	0	0
204	1	0	0	0	0	0	0	0	0

Appendix E

Year 2020 Volumes
and Level-of-Service
Worksheets

Woodburn TSP Traffic Volumes

INTERSECTION: Butteville/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed		30	70	200	60					115		175
EX Model		15	85	180	25					70		155
Future Model		355	485	255	280					350		215
Future Delta	0	370	470	275	315	0	0	0	0	395	0	235
Future %	#DIV/0!	710	399	283	672	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	575	#DIV/0!	243
Future Obs	**#DIV/0!**	**540**	**435**	**279**	**494**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**485**	**#DIV/0!**	**239**
Analysis Volume		**370**	**405**	**260**	**315**					**420**		**205**

INTERSECTION: Woodland/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	5	10	85	400	5	15	25	290	5	65	280	205
EX Model	30	10	45	250	2	1	15	220	30	115	190	1
Future Model	55	10	195	130	2	1	45	620	35	155	485	1
Future Delta	30	10	235	280	5	15	55	690	10	105	575	205
Future %	9	10	368	208	5	15	75	817	6	88	715	205
Future Obs	**20**	**10**	**302**	**244**	**5**	**15**	**65**	**754**	**8**	**96**	**645**	**205**
Analysis Volume	**20**	**10**	**270**	**300**	**5**	**15**	**65**	**590**	**10**	**95**	**590**	**205**

*EB left-turn from Arney

INTERSECTION: Arney/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed						50		775			500	300
EX Model						20		590			285	350
Future Model						35		900			605	280
Future Delta	0	0	0	0	0	65	0	1,085	0	0	820	230
Future %	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	88	#DIV/0!	1,182	#DIV/0!	#DIV/0!	1,061	240
Future Obs	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**76**	**#DIV/0!**	**1,134**	**#DIV/0!**	**#DIV/0!**	**941**	**235**
Analysis Volume						**75**		**1160**			**815**	**235**

*EB left-turn to Woodland

INTERSECTION: I-5 SB/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed				440	5	280		515	260	395	520	
EX Model				360	1	95		435	150	415	540	
Future Model				395	1	290		595	305	545	595	
Future Delta	0	0	0	475	5	475	0	675	415	525	575	0
Future %	#DIV/0!	#DIV/0!	#DIV/0!	483	5	855	#DIV/0!	704	529	519	573	#DIV/0!
Future Obs	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**479**	**5**	**665**	**#DIV/0!**	**690**	**472**	**522**	**574**	**#DIV/0!**
Analysis Volume				**480**	**5**	**475**		**690**	**470**	**520**	**575**	

INTERSECTION: I-5 NB/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	160	5	380				165	790			755	305
EX Model	145	1	405				90	705			810	345
Future Model	290	1	530				260	730			850	395
Future Delta	305	5	505	0	0	0	335	815	0	0	795	355
Future %	320	5	497	#DIV/0!	#DIV/0!	#DIV/0!	477	818	#DIV/0!	#DIV/0!	792	349
Future Obs	**313**	**5**	**501**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**406**	**817**	**#DIV/0!**	**#DIV/0!**	**794**	**352**
Analysis Volume	**315**	**5**	**500**				**350**	**820**			**780**	**350**

INTERSECTION: Evergreen/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	270	20	125	15	20	45	45	895	60	100	750	15
EX Model	385	1	140	1	1	1	1	765	340	85	770	1
Future Model	415	1	130	1	1	1	1	895	365	60	830	1
Future Delta	300	20	115	15	20	45	45	1,025	85	75	810	15
Future %	291	20	116	15	20	45	45	1,047	64	71	808	15
Future Obs	**296**	**20**	**116**	**15**	**20**	**45**	**45**	**1,036**	**75**	**73**	**809**	**15**
Analysis Volume	**295**	**20**	**115**	**15**	**20**	**45**	**45**	**1025**	**75**	**75**	**790**	**15**

*includes vols from Lawson

INTERSECTION: Oregon Way/Country Club/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	20	45	15	125	30	60	70	950	10	20	780	85
EX Model	10	1	10	130	5	55	55	855	20	20	895	105
Future Model	15	1	10	145	5	60	65	960	40	15	925	110
Future Delta	25	45	15	140	30	65	80	1,055	30	15	810	90
Future %	30	45	15	139	30	65	83	1,067	20	15	806	89
Future Obs	**28**	**45**	**15**	**140**	**30**	**65**	**81**	**1,061**	**25**	**15**	**808**	**90**
Analysis Volume	**30**	**45**	**15**	**140**	**30**	**65**	**80**	**1060**	**25**	**15**	**790**	**90**

INTERSECTION: Cascade/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	20		25					1,055	35	20	870	
EX Model	125		5					830	135	5	790	
Future Model	120		5					845	230	5	820	
Future Delta	15	0	25	0	0	0	0	1,070	130	20	900	0
Future %	19	#DIV/0!	25	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1,074	60	20	903	#DIV/0!
Future Obs	**17**	**#DIV/0!**	**25**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**1,072**	**95**	**20**	**902**	**#DIV/0!**
Analysis Volume	**15**		**25**					**1120**	**95**	**20**	**880**	

INTERSECTION: Astor/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed				15		15	30	1,055			910	40
EX Model				15		25	65	780			810	40
Future Model				40		20	50	810			835	110
Future Delta	0	0	0	40	0	10	15	1,085	0	0	935	110
Future %	#DIV/0!	#DIV/0!	#DIV/0!	40	#DIV/0!	12	23	1,096	#DIV/0!	#DIV/0!	938	110
Future Obs	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**40**	**#DIV/0!**	**11**	**19**	**1,090**	**#DIV/0!**	**#DIV/0!**	**937**	**110**
Analysis Volume				**40**		**10**	**20**	**1120**			**935**	**110**

INTERSECTION: Boones Ferry/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	275	165	130	145	220	135	145	650	250	185	510	110
EX Model	110	210	70	65	275	85	80	635	85	125	655	90
Future Model	175	430	60	60	490	85	70	670	110	105	695	60
Future Delta	340	385	120	140	435	135	135	685	275	165	550	80
Future %	438	338	111	134	392	135	127	686	324	155	541	73
Future Obs	**389**	**361**	**116**	**137**	**414**	**135**	**131**	**685**	**299**	**160**	**546**	**77**
Analysis Volume	**340**	**360**	**115**	**135**	**415**	**135**	**130**	**685**	**300**	**160**	**545**	**75**

INTERSECTION: Meridian/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	30	5	30	70	5	80	65	790	45	50	710	30
EX Model	20	1	10	15	1	55	30	710	45	20	785	10
Future Model	15	1	5	25	1	65	40	715	15	5	795	20
Future Delta	25	5	25	80	5	90	75	795	15	35	720	40
Future %	23	5	15	117	5	95	87	796	15	13	719	60
Future Obs	**24**	**5**	**20**	**98**	**5**	**92**	**81**	**795**	**15**	**24**	**720**	**50**
Analysis Volume	**25**	**5**	**20**	**100**	**5**	**90**	**80**	**795**	**15**	**25**	**720**	**50**

*Used node 1066

INTERSECTION: Front/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed				50		90	65	775			750	120
EX Model				210		15	20	760			755	255
Future Model				370		35	40	715			715	395
Future Delta	0	0	0	210	0	110	85	730	0	0	710	260
Future %	#DIV/0!	#DIV/0!	#DIV/0!	88	#DIV/0!	210	130	729	#DIV/0!	#DIV/0!	710	186
Future Obs	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**149**	**#DIV/0!**	**160**	**108**	**730**	**#DIV/0!**	**#DIV/0!**	**710**	**223**
Analysis Volume				**150**		**160**	**110**	**730**			**710**	**225**

INTERSECTION: Park/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	20	5	80	15	15	30	15	740	60	100	845	5
EX Model	45		10					885	85	55	965	
Future Model	10		25					1,050	40	110	1,100	
Future Delta	-15	5	95	15	15	30	15	905	15	155	980	5
Future %	4	#DIV/0!	200	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	878	28	200	963	#DIV/0!
Future Obs	**-5**	**#DIV/0!**	**148**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**891**	**22**	**178**	**972**	**#DIV/0!**
Analysis Volume	**5**	**5**	**150**	**15**	**15**	**30**	**15**	**890**	**20**	**180**	**970**	**5**

INTERSECTION: Progress/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	20	5	25	25	5	110	40	760	25	25	815	20
EX Model	10	5	5	0	15	375	220	635	35	10	635	0
Future Model	10	5	5	0	10	425	240	800	35	10	775	0
Future Delta	20	5	25	25	0	160	60	925	25	25	955	20
Future %	20	5	25	#DIV/0!	3	125	44	957	25	25	995	#DIV/0!
Future Obs	**20**	**5**	**25**	**#DIV/0!**	**2**	**142**	**52**	**941**	**25**	**25**	**975**	**#DIV/0!**
Analysis Volume	**20**	**5**	**25**	**25**	**2**	**140**	**50**	**940**	**25**	**25**	**975**	**20**

*Used node 1030

INTERSECTION: Highway 99/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	210	440	155	160	730	255	195	315	250	330	345	40
EX Model	60	510	110	70	560	400	385	205	55	120	185	55
Future Model	35	575	230	90	655	420	420	340	45	290	330	75
Future Delta	185	505	275	180	825	275	230	450	240	500	490	60
Future %	123	496	324	206	854	268	213	522	205	798	615	55
Future Obs	**154**	**501**	**300**	**193**	**839**	**271**	**221**	**486**	**222**	**649**	**553**	**57**
Analysis Volume	**185**	**500**	**300**	**195**	**840**	**270**	**220**	**485**	**240**	**500**	**555**	**55**

INTERSECTION: Crosby/Boones Ferry

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	60	100	15	10	175	20	15	90	85	25	25	5
EX Model	80	55	20	40	50	25	27	165	95	20	185	35
Future Model	220	55	20	30	55	45	50	215	290	40	330	30
Future Delta	200	100	15	0	180	40	38	140	280	45	170	0
Future %	165	100	15	8	193	36	28	117	259	50	45	4
Future Obs	**183**	**100**	**15**	**4**	**186**	**38**	**33**	**129**	**270**	**48**	**107**	**2**
Analysis Volume	**185**	**100**	**15**	**10**	**185**	**40**	**35**	**130**	**270**	**50**	**105**	**5**

INTERSECTION: Tukwila/Boones Ferry

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	15	190	35	10	295	10	5	5	15	25	1	10
EX Model	5	155	5	5	160	5	5	5	5	5	5	5
Future Model	110	325	5	25	340	50	30	25	85	5	40	25
Future Delta	120	360	35	30	475	55	30	25	95	25	36	30
Future %	330	398	35	50	627	100	30	25	255	25	8	50
Future Obs	**225**	**379**	**35**	**40**	**551**	**78**	**30**	**25**	**175**	**25**	**22**	**40**
Analysis Volume	**120**	**380**	**35**	**40**	**550**	**80**	**30**	**25**	**95**	**25**	**20**	**40**

INTERSECTION: Country Club/Boones Ferry

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	75	225			325	25	25		55			
EX Model	95	215			170	10	5		30			
Future Model	15	480			390	45	15		5			
Future Delta	-5	490	0	0	545	60	35	0	30	0	0	0
Future %	12	502	#DIV/0!	#DIV/0!	746	113	75	#DIV/0!	9	#DIV/0!	#DIV/0!	#DIV/0!
Future Obs	**3**	**496**	**#DIV/0!**	**#DIV/0!**	**645**	**86**	**55**	**#DIV/0!**	**20**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**
Analysis Volume	**10**	**495**			**645**	**85**	**55**		**20**			

INTERSECTION: Lincoln/Boones Ferry

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	10	375	35	115	440	30	10	15	10	25	20	115
EX Model	80	215	25	110	240	35	25	105	85	25	110	40
Future Model	55	270	20	180	300	35	35	275	75	30	195	215
Future Delta	-15	430	30	185	500	30	20	185	0	30	105	290
Future %	7	471	28	188	550	30	14	39	9	30	35	618
Future Obs	**-4**	**450**	**29**	**187**	**525**	**30**	**17**	**112**	**4**	**30**	**70**	**454**
Analysis Volume	**5**	**450**	**30**	**185**	**525**	**30**	**15**	**110**	**5**	**30**	**70**	**290**

INTERSECTION: Hayes/Boones Ferry

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	120	290	5	30	380	60	80	20	95	5	20	30
EX Model	1	260			270	65	60		1			
Future Model	1	305			350	30	35		1			
Future Delta	120	335	5	30	460	25	55	20	95	5	20	30
Future %	120	340	#DIV/0!	#DIV/0!	493	28	47	#DIV/0!	95	#DIV/0!	#DIV/0!	#DIV/0!
Future Obs	**120**	**338**	**#DIV/0!**	**#DIV/0!**	**476**	**26**	**51**	**#DIV/0!**	**95**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**
Analysis Volume	**120**	**340**	**5**	**30**	**475**	**25**	**50**	**20**	**95**	**5**	**20**	**30**

*Used node 1378

INTERSECTION: Garfield/Boones Ferry

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	5	255	10	155	300	25	15	5	5	15	10	130
EX Model												
Future Model												
Future Delta	5	255	10	155	300	25	15	5	5	15	10	130
Future %	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Future Obs	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**
Analysis Volume												

*Not coded

INTERSECTION: Cleveland/Boones Ferry

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed		160	5	120	200					15		105
EX Model		110	20	105	140					35		40
Future Model		240	30	160	325					70		150
Future Delta	0	290	15	175	385	0	0	0	0	50	0	215
Future %	#DIV/0!	349	8	183	464	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	30	#DIV/0!	394
Future Obs	**#DIV/0!**	**320**	**11**	**179**	**425**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**40**	**#DIV/0!**	**304**
Analysis Volume		**320**	**10**	**180**	**425**					**40**		**215**

INTERSECTION: Parr/Boones Ferry

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	25	70	35	5	85	55	55	35	25	50	45	5
EX Model	10	55	1	10	55	40	50	115	25	1	75	35
Future Model	140	80	1	30	75	170	160	440	215	1	420	85
Future Delta	155	95	35	25	105	185	165	360	215	50	390	55
Future %	350	102	35	15	116	234	176	134	215	50	252	12
Future Obs	**253**	**98**	**35**	**20**	**110**	**209**	**171**	**247**	**215**	**50**	**321**	**34**
Analysis Volume	**155**	**100**	**35**	**20**	**110**	**210**	**170**	**245**	**215**	**50**	**320**	**35**

INTERSECTION: Hardcastle/Front

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed		130	125	55	145					130		40
EX Model		20	180	25	45					155		20
Future Model		30	325	85	80					275		70
Future Delta	0	140	270	115	180	0	0	0	0	250	0	90
Future %	#DIV/0!	195	226	187	258	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	231	#DIV/0!	140
Future Obs	**#DIV/0!**	**168**	**248**	**151**	**219**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**240**	**#DIV/0!**	**115**
Analysis Volume		**170**	**250**	**150**	**220**					**240**		**115**

INTERSECTION: Lincoln/Front

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	25	120	40	35	135	15	25	130	15	40	135	30
EX Model	60	90	25	10	85	20	55	115	105	40	135	10
Future Model	145	205	105	50	210	40	50	320	140	165	290	15
Future Delta	110	235	120	75	260	35	20	335	50	165	290	35
Future %	60	273	168	175	334	30	23	362	20	165	290	45
Future Obs	**85**	**254**	**144**	**125**	**297**	**33**	**21**	**348**	**35**	**165**	**290**	**40**
Analysis Volume	**85**	**255**	**145**	**125**	**295**	**35**	**20**	**350**	**35**	**165**	**290**	**40**

INTERSECTION: Young/Front

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	10	90	35	50	115	30	25	200	30	40	175	70
EX Model		65	90	495	90					105		495
Future Model		285	190	410	345					225		425
Future Delta	10	310	135	-35	370	30	25	200	30	160	175	0
Future %	#DIV/0!	395	74	41	441	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	86	#DIV/0!	60
Future Obs	**#DIV/0!**	**352**	**104**	**3**	**405**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**123**	**#DIV/0!**	**30**
Analysis Volume	**10**	**350**	**105**	**40**	**405**	**30**	**25**	**200**	**30**	**125**	**175**	**60**

*Used node 1201

INTERSECTION: Cleveland/Front

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	5	70	35	75	70	15	15	140	15	35	90	45
EX Model	5	120	10	35	110	50	30	100	5	5	40	5
Future Model	1	425	40	70	445	60	35	155	1	60	160	15
Future Delta	1	375	65	110	405	25	20	195	11	90	210	55
Future %	1	248	140	150	283	18	18	217	3	420	360	135
Future Obs	**1**	**311**	**103**	**130**	**344**	**22**	**19**	**206**	**7**	**255**	**285**	**95**
Analysis Volume	**1**	**310**	**105**	**130**	**345**	**20**	**20**	**205**	**5**	**90**	**285**	**95**

INTERSECTION: Industrial/Highway 99

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	35	580	5	5	940	30	50	1	105	50	10	15
EX Model												
Future Model												
Future Delta	35	580	5	5	940	30	50	1	105	50	10	15
Future %	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Future Obs	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**
Analysis Volume												

*Not coded

INTERSECTION: Hardcastle/Highway 99

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	30	735	40	50	1,045	45	75	25	15	50	30	50
EX Model	1	545	60	45	660	40	60	80	1	75	65	40
Future Model	1	680	70	40	960	95	140	80	1	75	50	30
Future Delta	30	870	50	45	1,345	100	155	25	15	50	15	40
Future %	30	917	47	44	1,520	107	175	25	15	50	23	38
Future Obs	**30**	**894**	**48**	**45**	**1,433**	**103**	**165**	**25**	**15**	**50**	**19**	**39**
Analysis Volume	**30**	**895**	**50**	**45**	**1435**	**105**	**165**	**25**	**15**	**50**	**20**	**40**

INTERSECTION: Lincoln/Highway 99

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	65	755	15	15	1,005	100	110	35	60	90	45	15
EX Model	50	575	1	5	645	65	5	1	55	1	5	10
Future Model	35	635	1	5	770	235	100	1	35	1	5	5
Future Delta	50	815	15	15	1,130	270	205	35	40	90	45	10
Future %	46	834	15	15	1,200	362	2,200	35	38	90	45	8
Future Obs	**48**	**824**	**15**	**15**	**1,165**	**316**	**1,203**	**35**	**39**	**90**	**45**	**9**
Analysis Volume	**50**	**825**	**15**	**15**	**1165**	**315**	**205**	**35**	**40**	**90**	**45**	**10**

INTERSECTION: Young/Highway 99

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	90	425	15	230	785	130	125	95	25	45	150	145
EX Model	200	340	10	130	365	270	205	180	220	130	185	15
Future Model	215	410	30	120	470	240	180	310	300	40	305	125
Future Delta	105	495	35	220	890	100	100	225	105	-45	270	255
Future %	97	513	45	212	1,011	116	110	164	34	14	247	1,208
Future Obs	**101**	**504**	**40**	**216**	**950**	**108**	**105**	**194**	**70**	**-16**	**259**	**732**
Analysis Volume	**90**	**555**	**25**	**320**	**970**	**130**	**125**	**95**	**25**	**85**	**150**	**255**

INTERSECTION: Cleveland/Highway 99

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	60	535	5	5	610	220	95	1	60	15	5	45
EX Model	20	535			555	45	10		15			
Future Model	165	610			685	130	45		75			
Future Delta	205	610	5	5	740	305	130	1	120	15	5	45
Future %	495	610	#DIV/0!	#DIV/0!	753	636	428	#DIV/0!	300	#DIV/0!	#DIV/0!	#DIV/0!
Future Obs	**350**	**610**	**#DIV/0!**	**#DIV/0!**	**746**	**470**	**279**	**#DIV/0!**	**210**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**
Analysis Volume	**205**	**610**	**5**	**5**	**745**	**305**	**130**	**1**	**210**	**15**	**5**	**45**

INTERSECTION: Crosby/Butteville

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	10	35	20	75	85	5	10	45	20	20	20	50
EX Model												
Future Model												
Future Delta	10	35	20	75	85	5	10	45	20	20	20	50
Future %	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Future Obs	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**
Analysis Volume												

2020 No Build Intersection Operations
Weekday PM Peak Hour

Intersection	Control	V/C	LOS
Highway 214/Butteville Road	2-way stop	>1.00	F
Highway 214/Woodland Avenue	Signal	0.79	C
Highway 214/Arney Road	2-way stop	0.15	B
Highway 214/I-5 Southbound Ramp	Signal	0.93	E
Highway 214/I-5 Northbound Ramp	Signal	0.89	D
Highway 214/Evergreen Road	Signal	1.00	C
Highway 214/Oregon Way/Country Club Road	Signal	0.80	B
Highway 214/Cascade Drive	2-way stop	0.27	F
Highway 214/Astor Way	2-way stop	0.85	F
Highway 214/Boones Ferry Road	Signal	>1.00	F
Highway 214/Meridian Drive/5th	2-way stop	0.17	F
Highway 214/Front Street	2-way stop	>1.00	F
Highway 214/Park Avenue	2-way stop	>1.00	F
Highway 214/Progress	2-way stop	0.48	F
Highway 214/Highway 99E	Signal	>1.00	F
Highway 99E/Industrial/MacLaren	2-way stop	-	-
Highway 99E/Hardcastle Street	Signal	0.70	B
Highway 99E/Lincoln Street	Signal	0.80	B
Highway 99E/Young Street	Signal	0.67	C
Highway 99E/Cleveland Street	2-way stop	>1.00	F
Front Street/Hardcastle Street	2-way stop	>1.00	F
Front Street/Lincoln Street	4-way stop	>1.00	F
Front Street/Garfield/Young Street	4-way stop	>1.00	F
Front Street/Cleveland Street	4-way stop	>1.00	F
Boones Ferry Road/Crosby	4-way stop	-	-
Boones Ferry Road/Tukwila	2-way stop	0.54	F
Boones Ferry Road/Country Club Road	2-way stop	0.32	D
Boones Ferry Road/Lincoln Street	2-way stop	>1.00	F
Boones Ferry Road/Hayes Street	2-way stop	0.67	E
Boones Ferry Road/Garfield Street	2-way stop	-	-
Boones Ferry Road/Cleveland	2-way stop	0.50	C
Boones Ferry Road/Front/Parr Road	4-way stop	0.95	D
Crosby/Butteville	2-way stop	-	-

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Woodburn Transportation System Plan Update
2020 No Build Future Conditions Weekday PM Peak Hour

Scenario Report

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

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Woodburn Transportation System Plan Update
2020 No Build Future Conditions 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 Hwy 214/Boones Ferry Rd	F	82.6	1.085	F	82.6	1.085	+ 0.000 D/V
# 2 Hwy 214/Meridian Dr	F	307.9	0.000	F	307.9	0.000	+ 0.000 V/C
# 3 Hwy 214/Front St	F	514.3	0.000	F	514.3	0.000	+ 0.000 V/C
# 4 Hwy 214/Park Ave	F	294.7	0.000	F	294.7	0.000	+ 0.000 V/C
# 5 Hwy 214/Progress Wy	F	95.9	0.000	F	95.9	0.000	+ 0.000 V/C
# 7 Hwy 99/Hardcastle St	B	13.8	0.695	B	13.8	0.695	+ 0.000 D/V
# 8 Hwy 99/Lincoln St	B	19.2	0.795	B	19.2	0.795	+ 0.000 D/V
# 9 Hwy 99/Young St	C	23.2	0.670	C	23.2	0.670	+ 0.000 D/V
# 10 Hwy 99/Cleveland St	F	455.2	0.000	F	455.2	0.000	+ 0.000 V/C
# 11 Front St/Hardcastle St	F	161.4	0.000	F	161.4	0.000	+ 0.000 V/C
# 12 Front St/Lincoln St	F	131.2	1.260	F	131.2	1.260	+ 0.000 V/C
# 13 Front St/Garfield	F	58.5	1.036	F	58.5	1.036	+ 0.000 V/C
# 14 Front St/Cleveland St	F	73.0	1.109	F	73.0	1.109	+ 0.000 V/C
# 16 Boones Ferry Rd/Tukwila Dr	F	52.8	0.000	F	52.8	0.000	+ 0.000 V/C
# 17 Boones Ferry Rd/Country Club R	D	27.0	0.000	D	27.0	0.000	+ 0.000 V/C
# 18 Boones Ferry Rd/Lincoln St	F	OVRFL	0.000	F	OVRFL	0.000	+ 0.000 V/C
# 19 Boones Ferry Rd/Hayes St	E	44.3	0.000	E	44.3	0.000	+ 0.000 V/C
# 21 Boones Ferry Rd/Cleveland St	C	18.8	0.000	C	18.8	0.000	+ 0.000 V/C
# 22 Boones Ferry Rd/Front St	D	32.6	0.949	D	32.6	0.949	+ 0.000 V/C
# 24 Hwy 214/Astor Way	F	189.5	0.000	F	189.5	0.000	+ 0.000 V/C
# 25 Hwy 214/Cascade Drive	E	48.5	0.000	E	48.5	0.000	+ 0.000 V/C
# 26 Hwy 214/Oregon Way	B	19.1	0.804	B	19.1	0.804	+ 0.000 D/V
# 27 Hwy 214/Evergreen Road	C	31.1	0.998	C	31.1	0.998	+ 0.000 D/V

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2020 No Build Future Conditions Weekday PM Peak Hour

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 28 Hwy 214/I-5 NB ramp	D	39.7	0.892	D	39.7	0.892	+ 0.000 D/V
# 29 Hwy 214/I-5 SB ramp	E	57.2	0.928	E	57.2	0.928	+ 0.000 D/V
# 30 Hwy 214/Arney Road	B	13.6	0.000	B	13.6	0.000	+ 0.000 V/C
# 31 Hwy 214/Woodland Avenue	C	34.0	0.791	C	34.0	0.791	+ 0.000 D/V
# 32 Hwy 214/Butteville Road	F	OVRFL	0.000	F	OVRFL	0.000	+ 0.000 V/C
# 33 Hwy 214/Hwy 99E	F	81.0	1.074	F	81.0	1.074	+ 0.000 D/V

Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 No Build Future Conditions Weekday PM Peak Hour

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

Intersection #1 Hwy 214/Boones Ferry Rd

Cycle (sec): 120 Critical Vol./Cap. (X): 1.085
Loss Time (sec): 16 (Y+R = 4 sec) Average Delay (sec/veh): 82.6
Optimal Cycle: 180 Level Of Service: F

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Split Phase	Split Phase	Prot+Permit	Prot+Permit
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	0 1 0 0 1	1 0 1 1 0	1 0 1 1 0

Volume Module: 16:15 - 17: 15

	NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
Base Vol:	340	360	115	135	415	135	130	685	300	160	545	75
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:	340	360	115	135	415	135	130	685	300	160	545	75
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:	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 Volume:	340	360	115	135	415	135	130	685	300	160	545	75
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	340	360	115	135	415	135	130	685	300	160	545	75
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.:	340	360	115	135	415	135	130	685	300	160	545	75
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.94	0.95	0.95	0.97	0.97	0.83	0.37	0.88	0.88	0.32	0.89	0.89
Lanes:	1.00	0.76	0.24	0.25	0.75	1.00	1.00	1.39	0.61	1.00	1.76	0.24
Final Sat.:	1787	1374	439	452	1388	1583	696	2325	1018	612	2967	408
Capacity Analysis Module:												
Vol/Sat:	0.19	0.26	0.26	0.30	0.30	0.09	0.19	0.29	0.29	0.26	0.18	0.18
Crit Moves:		****			****			****		****		
Green/Cycle:	0.24	0.24	0.24	0.27	0.27	0.27	0.39	0.27	0.27	0.34	0.25	0.25
Volume/Cap:	0.80	1.09	1.09	1.09	1.09	0.31	0.48	1.09	1.09	0.77	0.73	0.73
Delay/Veh:	52.8	117	116.9	112.0	112	35.1	27.7	103	103.1	49.5	44.3	44.3
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:	52.8	117	116.9	112.0	112	35.1	27.7	103	103.1	49.5	44.3	44.3
DesignQueue:	18	20	6	7	22	7	8	36	16	10	28	4

```
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-------------------------------------------------------------------------------
                  Level Of Service Computation Report
        2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #2 Hwy 214/Meridian Dr
*******************************************************************************
Average Delay (sec/veh):    307.9          Worst Case Level Of Service:       F
*******************************************************************************
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       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      25    5   20   100    5   90    80  795   15    25  720   50
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    5   20   100    5   90    80  795   15    25  720   50
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:     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 Volume:    25    5   20   100    5   90    80  795   15    25  720   50
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Final Vol.:    25    5   20   100    5   90    80  795   15    25  720   50
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5  6.2   7.1  6.5  6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0  3.3   3.5  4.0  3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1805 1783  803  1770 1765  745   770 xxxx xxxxx   810 xxxx xxxxx
Potent Cap.:   62   82  385    65   84  416   840 xxxx xxxxx   820 xxxx xxxxx
Move Cap.:     42   72  385    53   74  416   840 xxxx xxxxx   820 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx 581.4 xxxx xxxxx   9.7 xxxx xxxxx   9.5 xxxx xxxxx
LOS by Move:    *    *    *     F    *    *     A    *    *     A    *    *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx   69 xxxxx  xxxx xxxx  334  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx  139 xxxxx xxxxx xxxx 20.0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    F    *     *    *    C     *    *    *     *    *    *
ApproachDel:      138.8           307.9           xxxxxx           xxxxxx
ApproachLOS:        F               F               *                *
```



```
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-------------------------------------------------------------------------------
                  Level Of Service Computation Report
        2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #3 Hwy 214/Front St
*******************************************************************************
Average Delay (sec/veh):    514.3          Worst Case Level Of Service:       F
*******************************************************************************
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       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0    0  0  1! 0  0    1  0  1  0  0    0  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0    0   150    0  160   110  730    0     0  710  225
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    0    0   150    0  160   110  730    0     0  710  225
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:     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 Volume:     0    0    0   150    0  160   110  730    0     0  710  225
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Final Vol.:     0    0    0   150    0  160   110  730    0     0  710  225
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4 xxxx  6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5 xxxx  3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1669 xxxx  710   935 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   106 xxxx  434   724 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx    93 xxxx  434   724 xxxx xxxxx  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.9 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  156 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx  514 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *    *     *    F    *     *    *    *     *    *    *
ApproachDel:     xxxxxx           514.3           xxxxxx           xxxxxx
ApproachLOS:        *               F               *                *
```

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-------------------------------------------------------------------------------
                    Level Of Service Computation Report
           2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #4 Hwy 214/Park Ave
*******************************************************************************
Average Delay (sec/veh):     294.7        Worst Case Level Of Service:       F
*******************************************************************************
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       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:         0  0  1! 0  0    0  0  1! 0  0    0  1  0  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        5    5   150    15   15    30    15  890    20   180  970     5
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:     5    5   150    15   15    30    15  890    20   180  970     5
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:      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 Volume:      5    5   150    15   15    30    15  890    20   180  970     5
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:      5    5   150    15   15    30    15  890    20   180  970     5
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:   7.5  6.5   6.9   7.5  6.5   6.9   4.2 xxxx xxxxx   4.2 xxxx xxxxx
FollowUpTim:   3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1784 2265   457  1812 2273   489   975 xxxx xxxxx   910 xxxx xxxxx
Potent Cap.:    52   41   553    50   41   531   691 xxxx xxxxx   738 xxxx xxxxx
Move Cap.:      24   30   552    26   30   530   691 xxxx xxxxx   738 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.2 xxxx xxxxx  11.4 xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     B    *     *     B    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.:  xxxx  249 xxxxx  xxxx   53 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx 42.2 xxxxx xxxxx  295 xxxxx  10.3 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    E     *     *    F     *     B    *     *     *    *     *
ApproachDel:        42.2             294.7            xxxxxx           xxxxxx
ApproachLOS:          E                F                *                *
```

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-------------------------------------------------------------------------------
                    Level Of Service Computation Report
           2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #5 Hwy 214/Progress Wy
*******************************************************************************
Average Delay (sec/veh):      95.9        Worst Case Level Of Service:       F
*******************************************************************************
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       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:         0  0  1! 0  0    0  1  0  0  1    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       20    5    25    25    2   140    50  940    25    25  975    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:    20    5    25    25    2   140    50  940    25    25  975    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:      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 Volume:     20    5    25    25    2   140    50  940    25    25  975    20
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     20    5    25    25    2   140    50  940    25    25  975    20
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:   7.5  6.5   6.9   7.5  6.5   6.9   4.2 xxxx xxxxx   4.2 xxxx xxxxx
FollowUpTim:   3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1602 2102   484  1613 2104   513   999 xxxx xxxxx   965 xxxx xxxxx
Potent Cap.:    72   52   535    71   52   512   677 xxxx xxxxx   703 xxxx xxxxx
Move Cap.:      46   47   534    57   46   506   674 xxxx xxxxx   703 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx  14.8  10.8 xxxx xxxxx  10.3 xxxx xxxxx
LOS by Move:     *    *     *     *    *     B     B    *     *     B    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.:  xxxx   85 xxxxx    56 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx 95.9 xxxxx 119.3 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    F     *     F    *     *     *    *     *     *    *     *
ApproachDel:        95.9              31.7            xxxxxx           xxxxxx
ApproachLOS:          F                D                *                *
```

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------------------------------------------------------------------------------
              Kittelson & Associates, Inc.  -- Project # 5367.0
                 Woodburn Transportation System Plan Update
            2020 No Build Future Conditions Weekday PM Peak Hour
------------------------------------------------------------------------------
                     Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #7 Hwy 99/Hardcastle St
******************************************************************************
Cycle (sec):            90              Critical Vol./Cap. (X):         0.695
Loss Time (sec):        12 (Y+R =  4 sec) Average Delay (sec/veh):       13.8
Optimal Cycle:          57              Level Of Service:                  B
******************************************************************************
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      Prot+Permit       Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:         1  0  1  1  0   1  0  1  1  0   0  1  0  0  1   0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     30  895    50    45 1435   105   165   25    15    50   20    40
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:  30  895    50    45 1435   105   165   25    15    50   20    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:    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 Volume:   30  895    50    45 1435   105   165   25    15    50   20    40
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  30  895    50    45 1435   105   165   25    15    50   20    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
Final Vol.:   30  895    50    45 1435   105   165   25    15    50   20    40
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment: 0.13 0.92  0.91  0.28 0.92  0.92  0.69 0.69  0.83  0.66 0.66  0.85
Lanes:      1.00 1.89  0.11  1.00 1.86  0.14  0.87 0.13  1.00  0.71 0.29  1.00
Final Sat.:  238 3293   184   540 3264   239  1135  172  1576   893  357  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.13 0.27  0.27  0.08 0.44  0.44  0.15 0.15  0.01  0.06 0.06  0.02
Crit Moves: ****                  ****             ****
Green/Cycle: 0.63 0.60 0.60  0.70 0.63  0.63  0.21 0.21  0.21  0.21 0.21  0.21
Volume/Cap: 0.20 0.45  0.45  0.12 0.69  0.69  0.69 0.69  0.05  0.27 0.27  0.12
Delay/Veh:  10.4 10.0  10.0   5.4 11.8  11.8  40.5 40.5  28.5  30.4 30.4  29.0
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: 10.4 10.0  10.0   5.4 11.8  11.8  40.5 40.5  28.5  30.4 30.4  29.0
DesignQueue:   1   19     1     2   30     2     7    1     1     2    1     2
******************************************************************************
```

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            2020 No Build Future Conditions Weekday PM Peak Hour
------------------------------------------------------------------------------
                     Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #8 Hwy 99/Lincoln St
******************************************************************************
Cycle (sec):            90              Critical Vol./Cap. (X):         0.795
Loss Time (sec):        12 (Y+R =  4 sec) Average Delay (sec/veh):       19.2
Optimal Cycle:          73              Level Of Service:                  B
******************************************************************************
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      Prot+Permit       Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:         1  0  1  1  0   1  0  1  1  0   0  0  1! 0  0   0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     50  825    15    15 1165   315   205   35    40    90   45    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:  50  825    15    15 1165   315   205   35    40    90   45    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:    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 Volume:   50  825    15    15 1165   315   205   35    40    90   45    10
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  50  825    15    15 1165   315   205   35    40    90   45    10
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.:   50  825    15    15 1165   315   205   35    40    90   45    10
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment: 0.12 0.92  0.92  0.29 0.90  0.90  0.64 0.65  0.65  0.71 0.71  0.83
Lanes:      1.00 1.96  0.04  1.00 1.57  0.43  0.74 0.12  0.14  0.67 0.33  1.00
Final Sat.:  232 3432    62   550 2694   728   898  153   175   897  449  1577
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.22 0.24  0.24  0.03 0.43  0.43  0.23 0.23  0.23  0.10 0.10  0.01
Crit Moves: ****                  ****             ****
Green/Cycle: 0.62 0.56 0.56  0.56 0.54  0.54  0.29 0.29  0.29  0.29 0.29  0.29
Volume/Cap: 0.35 0.43  0.43  0.05 0.80  0.80  0.80 0.80  0.80  0.35 0.35  0.02
Delay/Veh:  14.4 11.6  11.6   9.2 19.0  19.0  41.5 41.5  41.5  26.0 26.0  23.0
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: 14.4 11.6  11.6   9.2 19.0  19.0  41.5 41.5  41.5  26.0 26.0  23.0
DesignQueue:   2   19     0     1   30     8     8    1     1     3    2     0
******************************************************************************
```

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Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 No Build Future Conditions Weekday PM Peak Hour

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

Intersection #9 Hwy 99/Young St

Cycle (sec):	90	Critical Vol./Cap. (X):	0.670
Loss Time (sec):	12 (Y+R = 4 sec)	Average Delay (sec/veh):	23.2
Optimal Cycle:	54	Level Of Service:	C

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			Prot+Permit			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 1 1 0			1 0 1 1 0			0 1 0 0 1			0 1 0 0 1		
Volume Module:												
Base Vol:	90	555	25	320	970	130	125	95	25	85	150	255
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:	90	555	25	320	970	130	125	95	25	85	150	255
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:	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 Volume:	90	555	25	320	970	130	125	95	25	85	150	255
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	90	555	25	320	970	130	125	95	25	85	150	255
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.:	90	555	25	320	970	130	125	95	25	85	150	255
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.33	0.92	0.92	0.56	0.91	0.91	0.54	0.55	0.81	0.72	0.72	0.82
Lanes:	1.00	1.91	0.09	1.00	1.76	0.24	0.57	0.43	1.00	0.36	0.64	1.00
Final Sat.:	636	3334	150	1064	3063	411	589	448	1540	495	874	1556
Capacity Analysis Module:												
Vol/Sat:	0.14	0.17	0.17	0.30	0.32	0.32	0.21	0.21	0.02	0.17	0.17	0.16
Crit Moves:	****				****			****				
Green/Cycle:	0.34	0.26	0.26	0.59	0.47	0.47	0.32	0.32	0.32	0.32	0.32	0.32
Volume/Cap:	0.42	0.63	0.63	0.51	0.67	0.67	0.67	0.67	0.05	0.54	0.54	0.52
Delay/Veh:	24.0	30.7	30.7	11.4	19.4	19.4	31.9	31.9	21.4	26.7	26.7	26.1
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:	24.0	30.7	30.7	11.4	19.4	19.4	31.9	31.9	21.4	26.7	26.7	26.1
DesignQueue:	4	21	1	12	28	4	4	3	1	3	5	9

Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 No Build Future Conditions Weekday PM Peak Hour

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

Intersection #10 Hwy 99/Cleveland St

Average Delay (sec/veh): 455.2 Worst Case Level Of Service: F

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 1 0			0 1 0 1 0			1 0 0 1 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	205	610	5	5	745	305	130	1	210	15	5	45
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:	205	610	5	5	745	305	130	1	210	15	5	45
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:	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 Volume:	205	610	5	5	745	305	130	1	210	15	5	45
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	205	610	5	5	745	305	130	1	210	15	5	45
Critical Gap Module:												
Critical Gp:	4.2	xxxx	xxxxx	4.1	xxxx	xxxxx	7.5	6.5	6.9	7.5	6.5	6.9
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:	1052	xxxx	xxxxx	615	xxxx	xxxxx	1627	1935	528	1407	2084	308
Potent Cap.:	651	xxxx	xxxxx	961	xxxx	xxxxx	69	67	500	101	54	694
Move Cap.:	650	xxxx	xxxxx	961	xxxx	xxxxx	42	42	499	41	34	694
Level Of Service Module:												
Stopped Del:	10.5	xxxx	xxxxx	8.7	xxxx	xxxxx	1164	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	B	*	*	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	475	xxxx	113	xxxxx
Shrd StpDel:	13.1	xxxx	xxxxx	8.8	xxxx	xxxxx	xxxxx	xxxx	18.5	xxxxx	73.0	xxxxx
Shared LOS:	B	*	*	A	*	*	*	*	C	*	F	*
ApproachDel:	xxxxxx			xxxxxx			455.2			73.0		
ApproachLOS:	*			*			F			F		

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----------------------------------------------------------------------------
            Kittelson & Associates, Inc.  -- Project # 5367.0
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          2020 No Build Future Conditions Weekday PM Peak Hour
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                    Level Of Service Computation Report
         2000 HCM Unsignalized Method (Base Volume Alternative)
****************************************************************************
Intersection #11 Front St/Hardcastle St
****************************************************************************
Average Delay (sec/veh):      161.4         Worst Case Level Of Service:     F
****************************************************************************
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       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  0  0  1  0    0  1  0  0  0    0  0  0  0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0  170   250   150  220     0     0     0     0   240     0   115
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  170   250   150  220     0     0     0     0   240     0   115
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:      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 Volume:      0  170   250   150  220     0     0     0     0   240     0   115
Reduct Vol:      0    0     0     0    0     0     0     0     0     0     0     0
Final Vol.:      0  170   250   150  220     0     0     0     0   240     0   115
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx   6.5   6.2   7.1  6.5 xxxxx xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx   4.0   3.3   3.5  4.0 xxxxx xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx   595     9   632  538 xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx
Potent Cap.: xxxx   417  1073   395  451 xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx
Move Cap.:   xxxx   417  1065   205  451 xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
LOS by Move:    *     *     *     *    *     *     *     *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx   654   303 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx  19.8 161.4 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *     *     C     F    *     *     *     *     *     *    *     *
ApproachDel:        19.8            161.4            xxxxxx           xxxxxx
ApproachLOS:          C                F                *                *
```



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----------------------------------------------------------------------------
            Kittelson & Associates, Inc.  -- Project # 5367.0
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          2020 No Build Future Conditions Weekday PM Peak Hour
----------------------------------------------------------------------------

                    Level Of Service Computation Report
          2000 HCM 4-Way Stop Method (Base Volume Alternative)
****************************************************************************
Intersection #12 Front St/Lincoln St
****************************************************************************
Cycle (sec):          100               Critical Vol./Cap. (X):         1.260
Loss Time (sec):        0 (Y+R =  4 sec) Average Delay (sec/veh):      131.2
Optimal Cycle:          0               Level Of Service:                  F
****************************************************************************
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:
Base Vol:       85  255   145   125  295    35    20   350    35   165   290    40
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:    85  255   145   125  295    35    20   350    35   165   290    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:      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 Volume:     85  255   145   125  295    35    20   350    35   165   290    40
Reduct Vol:      0    0     0     0    0     0     0     0     0     0     0     0
Reduced Vol:    85  255   145   125  295    35    20   350    35   165   290    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
Final Vol.:     85  255   145   125  295    35    20   350    35   165   290    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:        0.17 0.53  0.30  0.27 0.65  0.08  0.05  0.86  0.09  0.33  0.59  0.08
Final Sat.:     70  210   119   108  255    30    20   342    34   131   230    32
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      1.21 1.21  1.21  1.16 1.16  1.16  1.02  1.02  1.02  1.26  1.26  1.26
Crit Moves:   ****                  ****        ****                    ****
Delay/Veh:   145.3  145 145.3 124.8  125 124.8  82.3  82.3  82.3 163.2   163 163.2
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:  145.3  145 145.3 124.8  125 124.8  82.3  82.3  82.3 163.2   163 163.2
LOS by Move:    F     F     F     F    F     F     F     F     F     F     F     F
ApproachDel:       145.3            124.8             82.3            163.2
Delay Adj:          1.00             1.00             1.00             1.00
ApprAdjDel:        145.3            124.8             82.3            163.2
LOS by Appr:          F                F                F                F
****************************************************************************
```

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---------------------------------------------------------------------------
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---------------------------------------------------------------------------
                  Level Of Service Computation Report
           2000 HCM 4-Way Stop Method (Base Volume Alternative)
***************************************************************************
Intersection #13 Front St/Garfield
***************************************************************************
Cycle (sec):        100             Critical Vol./Cap. (X):        1.036
Loss Time (sec):      0 (Y+R =  4 sec) Average Delay (sec/veh):     58.5
Optimal Cycle:        0             Level Of Service:                  F
***************************************************************************
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:
Base Vol:      10  350   105    40  405    30    25  200    30   125  175    60
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:   10  350   105    40  405    30    25  200    30   125  175    60
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:     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 Volume:    10  350   105    40  405    30    25  200    30   125  175    60
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   10  350   105    40  405    30    25  200    30   125  175    60
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.:    10  350   105    40  405    30    25  200    30   125  175    60
------------|---------------||---------------||---------------||---------------|
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:       0.02 0.75  0.23  0.08 0.86  0.06  0.10 0.78  0.12  0.35 0.48  0.17
Final Sat.:    10  350   105    39  391    29    40  317    48   151  211    72
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     1.00 1.00  1.00  1.04 1.04  1.04  0.63 0.63  0.63  0.83 0.83  0.83
Crit Moves:       ****             ****             ****        ****
Delay/Veh:   69.7 69.7  69.7  79.9 79.9  79.9  24.7 24.7  24.7  39.6 39.6  39.6
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:  69.7 69.7  69.7  79.9 79.9  79.9  24.7 24.7  24.7  39.6 39.6  39.6
LOS by Move:    F    F     F     F    F     F     C    C     C     E    E     E
ApproachDel:      69.7            79.9            24.7            39.6
Delay Adj:        1.00            1.00            1.00            1.00
ApprAdjDel:       69.7            79.9            24.7            39.6
LOS by Appr:         F               F               C               E
***************************************************************************
```



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                  Level Of Service Computation Report
           2000 HCM 4-Way Stop Method (Base Volume Alternative)
***************************************************************************
Intersection #14 Front St/Cleveland St
***************************************************************************
Cycle (sec):        100             Critical Vol./Cap. (X):        1.109
Loss Time (sec):      0 (Y+R =  4 sec) Average Delay (sec/veh):     73.0
Optimal Cycle:        0             Level Of Service:                  F
***************************************************************************
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:
Base Vol:       1  310   105   130  345    20    20  205     5    90  285    95
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:    1  310   105   130  345    20    20  205     5    90  285    95
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:     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 Volume:     1  310   105   130  345    20    20  205     5    90  285    95
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    1  310   105   130  345    20    20  205     5    90  285    95
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.:     1  310   105   130  345    20    20  205     5    90  285    95
------------|---------------||---------------||---------------||---------------|
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:       0.01 0.74  0.25  0.26 0.70  0.04  0.09 0.89  0.02  0.19 0.61  0.20
Final Sat.:     1  334   113   117  311    18    34  351     9    87  274    91
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.93 0.93  0.93  1.11 1.11  1.11  0.58 0.58  0.58  1.04 1.04  1.04
Crit Moves:             ****       ****             ****             ****
Delay/Veh:   54.6 54.6  54.6 103.7  104 103.7  23.4 23.4  23.4  81.3 81.3  81.3
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:  54.6 54.6  54.6 103.7  104 103.7  23.4 23.4  23.4  81.3 81.3  81.3
LOS by Move:    F    F     F     F    F     F     C    C     C     F    F     F
ApproachDel:      54.6           103.7            23.4            81.3
Delay Adj:        1.00            1.00            1.00            1.00
ApprAdjDel:       54.6           103.7            23.4            81.3
LOS by Appr:         F               F               C               F
***************************************************************************
```

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------------------------------------------------------------------------------
                     Level Of Service Computation Report
            2000 HCM Unsignalized Method (Base Volume Alternative)
******************************************************************************
Intersection #16 Boones Ferry Rd/Tukwila Dr
******************************************************************************
Average Delay (sec/veh):      52.8        Worst Case Level Of Service:       F
******************************************************************************
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:
Base Vol:     120  380    35    40  550    80    30   25    95    25   20    40
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:  120  380    35    40  550    80    30   25    95    25   20    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:     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 Volume:   120  380    35    40  550    80    30   25    95    25   20    40
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:   120  380    35    40  550    80    30   25    95    25   20    40
------------|---------------||---------------||---------------||---------------|
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:  630 xxxx xxxxx   415 xxxx xxxxx  1337 1325   590  1368 1348   398
Potent Cap.:  957 xxxx xxxxx  1149 xxxx xxxxx   131  157   511   125  152   656
Move Cap.:    957 xxxx xxxxx  1149 xxxx xxxxx    95  131   511    76  127   656
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:  8.8 xxxx xxxxx   8.1 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  217 xxxxx  xxxx  156 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 52.1 xxxxx xxxxx 52.8 xxxxx
Shared LOS:     *    *     *     *    *     *     *    F     *     *    F     *
ApproachDel:     xxxxxx           xxxxxx            52.1             52.8
ApproachLOS:        *                *                F                F
```

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                     Level Of Service Computation Report
            2000 HCM Unsignalized Method (Base Volume Alternative)
******************************************************************************
Intersection #17 Boones Ferry Rd/Country Club Rd
******************************************************************************
Average Delay (sec/veh):      27.0        Worst Case Level Of Service:       D
******************************************************************************
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:
Base Vol:      10  495     0     0  645    85    55    0    20     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:   10  495     0     0  645    85    55    0    20     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:     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 Volume:    10  495     0     0  645    85    55    0    20     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    10  495     0     0  645    85    55    0    20     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:  730 xxxx xxxxx  xxxx xxxx xxxxx  1204 xxxx   688  xxxx xxxx xxxxx
Potent Cap.:  874 xxxx xxxxx  xxxx xxxx xxxxx   204 xxxx   448  xxxx xxxx xxxxx
Move Cap.:    874 xxxx xxxxx  xxxx xxxx xxxxx   202 xxxx   448  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:  9.1 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  237 xxxxx  xxxx xxxx xxxxx
Shrd StpDel:  9.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 27.0 xxxxx xxxxx xxxx xxxxx
Shared LOS:     A    *     *     *    *     *     *    D     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx            27.0            xxxxxx
ApproachLOS:        *                *                D                *
```

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

Intersection #18 Boones Ferry Rd/Lincoln St

Average Delay (sec/veh): 1482.0 Worst Case Level Of Service: F

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:												
Base Vol:	5	450	30	185	525	30	15	110	5	30	70	290
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:	5	450	30	185	525	30	15	110	5	30	70	290
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:	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 Volume:	5	450	30	185	525	30	15	110	5	30	70	290
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	5	450	30	185	525	30	15	110	5	30	70	290
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:	562	xxxx	xxxxx	486	xxxx	xxxxx	1585	1413	547	1449	1413	484
Potent Cap.:	1014	xxxx	xxxxx	1082	xxxx	xxxxx	88	138	539	110	138	585
Move Cap.:	1008	xxxx	xxxxx	1077	xxxx	xxxxx	19	113	536	10	113	576
Level Of Service Module:												
Stopped Del:	8.6	xxxx	xxxxx	9.0	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	73	xxxxx	xxxx	95	xxxxx
Shrd StpDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	490	xxxxx	xxxxx	1482	xxxxx
Shared LOS:	*	*	*	*	*	*	*	F	*	*	F	*
ApproachDel:		xxxxxx			xxxxxx			489.6			1482.0	
ApproachLOS:		*			*			F			F	

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

Intersection #19 Boones Ferry Rd/Hayes St

Average Delay (sec/veh): 44.3 Worst Case Level Of Service: E

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:												
Base Vol:	120	340	5	30	475	25	50	20	95	5	20	30
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:	120	340	5	30	475	25	50	20	95	5	20	30
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:	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 Volume:	120	340	5	30	475	25	50	20	95	5	20	30
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	120	340	5	30	475	25	50	20	95	5	20	30
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:	509	xxxx	xxxxx	346	xxxx	xxxxx	1169	1143	497	1190	1153	349
Potent Cap.:	1061	xxxx	xxxxx	1219	xxxx	xxxxx	171	201	575	166	199	699
Move Cap.:	1053	xxxx	xxxxx	1218	xxxx	xxxxx	131	171	570	112	169	696
Level Of Service Module:												
Stopped Del:	8.4	xxxx	xxxxx	8.0	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	248	xxxxx	xxxx	267	xxxxx
Shrd StpDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	44.3	xxxxx	xxxxx	21.9	xxxxx
Shared LOS:	*	*	*	*	*	*	*	E	*	*	C	*
ApproachDel:		xxxxxx			xxxxxx			44.3			21.9	
ApproachLOS:		*			*			E			C	

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

Intersection #21 Boones Ferry Rd/Cleveland St

Average Delay (sec/veh): 18.8 Worst Case Level Of Service: C

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 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	0	320	10	180	425	0	0	0	0	40	0	215
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	320	10	180	425	0	0	0	0	40	0	215
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:	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 Volume:	0	320	10	180	425	0	0	0	0	40	0	215
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	320	10	180	425	0	0	0	0	40	0	215
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	330	xxxx	xxxxx	xxxx	xxxx	xxxxx	1116	xxxx	325
Potent Cap.:	xxxx	xxxx	xxxxx	1235	xxxx	xxxxx	xxxx	xxxx	xxxxx	231	xxxx	718
Move Cap.:	xxxx	xxxx	xxxxx	1235	xxxx	xxxxx	xxxx	xxxx	xxxxx	201	xxxx	718
Level Of Service Module:												
Stopped Del:	xxxxx	xxxx	xxxxx	7.9	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	xxxx	xxxxx	xxxx	512	xxxxx
Shrd StpDel:	xxxxx	xxxx	xxxxx	8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	18.8	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	C	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			18.8		
ApproachLOS:	*			*			*			C		

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

Intersection #22 Boones Ferry Rd/Front St

Cycle (sec): 100 Critical Vol./Cap. (X): 0.949
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 32.6
Optimal Cycle: 0 Level Of Service: D

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			1 0 0 1 0			1 0 0 1 0		
Volume Module:												
Base Vol:	155	100	35	20	110	210	170	245	215	50	320	35
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:	155	100	35	20	110	210	170	245	215	50	320	35
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:	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 Volume:	155	100	35	20	110	210	170	245	215	50	320	35
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	155	100	35	20	110	210	170	245	215	50	320	35
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.:	155	100	35	20	110	210	170	245	215	50	320	35
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	0.74	0.26	1.00	0.34	0.66	1.00	0.53	0.47	1.00	0.90	0.10
Final Sat.:	387	309	108	396	153	293	432	258	227	412	401	44
Capacity Analysis Module:												
Vol/Sat:	0.40	0.32	0.32	0.05	0.72	0.72	0.39	0.95	0.95	0.12	0.80	0.80
Crit Moves:	****				****			****				****
Delay/Veh:	17.2	14.7	14.7	12.0	26.8	26.8	16.1	55.3	55.3	12.4	33.9	33.9
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:	17.2	14.7	14.7	12.0	26.8	26.8	16.1	55.3	55.3	12.4	33.9	33.9
LOS by Move:	C	B	B	B	D	D	C	F	F	B	D	D
ApproachDel:		16.0			25.9			44.7			31.2	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		16.0			25.9			44.7			31.2	
LOS by Appr:		C			D			E			D	

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                  Level Of Service Computation Report
         2000 HCM Unsignalized Method (Base Volume Alternative)
**********************************************************************************
Intersection #24 Hwy 214/Astor Way
**********************************************************************************
Average Delay (sec/veh):     189.5        Worst Case Level Of Service:          F
**********************************************************************************
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       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0    0  0  1! 0  0    1  0  1  0  0    0  0  0  1  0
------------|----------------||----------------||----------------||----------------|
Volume Module:
Base Vol:        0     0     0    40     0    10    20  1120     0     0   935   110
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     0     0    40     0    10    20  1120     0     0   935   110
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:      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 Volume:      0     0     0    40     0    10    20  1120     0     0   935   110
Reduct Vol:      0     0     0     0     0     0     0     0     0     0     0     0
Final Vol.:      0     0     0    40     0    10    20  1120     0     0   935   110
------------|----------------||----------------||----------------||----------------|
Critical Gap Module:
Critical Gp:xxxxx  xxxx xxxxx   6.5  xxxx   6.3   4.1  xxxx xxxxx xxxxx  xxxx xxxxx
FollowUpTim:xxxxx  xxxx xxxxx   3.6  xxxx   3.4   2.2  xxxx xxxxx xxxxx  xxxx xxxxx
------------|----------------||----------------||----------------||----------------|
Capacity Module:
Cnflict Vol: xxxx  xxxx xxxxx  2153  xxxx   999  1046  xxxx xxxxx  xxxx  xxxx xxxxx
Potent Cap.: xxxx  xxxx xxxxx    50  xxxx   287   665  xxxx xxxxx  xxxx  xxxx xxxxx
Move Cap.:   xxxx  xxxx xxxxx    49  xxxx   284   665  xxxx xxxxx  xxxx  xxxx xxxxx
------------|----------------||----------------||----------------||----------------|
Level Of Service Module:
Stopped Del:xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx  10.6  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     0 xxxxx  xxxx    59 xxxxx  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx
Shrd StpDel:xxxxx  xxxx xxxxx xxxxx   190 xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx
Shared LOS:      *     *     *     *     F     *     *     *     *     *     *     *
ApproachDel:      xxxxxx            189.5            xxxxxx            xxxxxx
ApproachLOS:        *                 F                *                 *
```



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                  Level Of Service Computation Report
         2000 HCM Unsignalized Method (Base Volume Alternative)
**********************************************************************************
Intersection #25 Hwy 214/Cascade Drive
**********************************************************************************
Average Delay (sec/veh):      48.5        Worst Case Level Of Service:          E
**********************************************************************************
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       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        1  0  0  0  1    0  0  0  0  0    0  0  0  1  0    1  0  1  0  0
------------|----------------||----------------||----------------||----------------|
Volume Module:
Base Vol:       15     0    25     0     0     0     0  1120    95    20   880     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:    15     0    25     0     0     0     0  1120    95    20   880     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:      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 Volume:     15     0    25     0     0     0     0  1120    95    20   880     0
Reduct Vol:      0     0     0     0     0     0     0     0     0     0     0     0
Final Vol.:     15     0    25     0     0     0     0  1120    95    20   880     0
------------|----------------||----------------||----------------||----------------|
Critical Gap Module:
Critical Gp:   6.4  xxxx   6.2 xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx   4.1  xxxx xxxxx
FollowUpTim:   3.5  xxxx   3.3 xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx   2.2  xxxx xxxxx
------------|----------------||----------------||----------------||----------------|
Capacity Module:
Cnflict Vol: 2092  xxxx  1168  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx  1215  xxxx xxxxx
Potent Cap.:   57  xxxx   235  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx   567  xxxx xxxxx
Move Cap.:     55  xxxx   235  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx   567  xxxx xxxxx
------------|----------------||----------------||----------------||----------------|
Level Of Service Module:
Stopped Del:  92.5  xxxx  22.2 xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx  11.6  xxxx xxxxx
LOS by Move:     F     *     C     *     *     *     *     *     *     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
Shrd StpDel:xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx
Shared LOS:      *     *     *     *     *     *     *     *     *     *     *     *
ApproachDel:       48.5            xxxxxx            xxxxxx            xxxxxx
ApproachLOS:        E                *                 *                 *
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Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #26 Hwy 214/Oregon Way

Cycle (sec):	90	Critical Vol./Cap. (X):	0.804
Loss Time (sec):	12 (Y+R = 4 sec)	Average Delay (sec/veh):	19.1
Optimal Cycle:	75	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
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	1 0	0	1 0	1 0	0	1 0
Volume Module: 45												
Base Vol:	30	45	15	140	30	65	80	1060	25	15	790	90
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:	30	45	15	140	30	65	80	1060	25	15	790	90
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:	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 Volume:	30	45	15	140	30	65	80	1060	25	15	790	90
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	30	45	15	140	30	65	80	1060	25	15	790	90
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.:	30	45	15	140	30	65	80	1060	25	15	790	90
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.67	0.96	0.96	0.71	0.90	0.89	0.93	0.98	0.98	0.91	0.95	0.95
Lanes:	1.00	0.75	0.25	1.00	0.31	0.69	1.00	0.98	0.02	1.00	0.90	0.10
Final Sat.:	1267	1371	457	1348	536	1162	1769	1814	43	1736	1616	184
Capacity Analysis Module:												
Vol/Sat:	0.02	0.03	0.03	0.10	0.06	0.06	0.05	0.58	0.58	0.01	0.49	0.49
Crit Moves:				****				****		****		
Green/Cycle:	0.13	0.13	0.13	0.13	0.13	0.13	0.06	0.73	0.73	0.01	0.68	0.68
Volume/Cap:	0.18	0.25	0.25	0.80	0.43	0.43	0.72	0.80	0.80	0.80	0.72	0.72
Delay/Veh:	35.5	35.9	35.9	61.2	37.5	37.5	62.4	11.7	11.7	161.4	11.5	11.5
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:	35.5	35.9	35.9	61.2	37.5	37.5	62.4	11.7	11.7	161.4	11.5	11.5
DesignQueue:	1	2	1	6	1	3	4	17	0	1	15	2

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2000 HCM Operations Method (Base Volume Alternative)

Intersection #27 Hwy 214/Evergreen Road

Cycle (sec):	60	Critical Vol./Cap. (X):	0.998
Loss Time (sec):	8 (Y+R = 4 sec)	Average Delay (sec/veh):	31.1
Optimal Cycle:	127	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Prot+Permit			Prot+Permit		
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	1 0	0	1 0	1 0	0	1 0
Volume Module:												
Base Vol:	295	20	115	15	20	45	45	1025	75	75	790	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:	295	20	115	15	20	45	45	1025	75	75	790	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:	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 Volume:	295	20	115	15	20	45	45	1025	75	75	790	15
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	295	20	115	15	20	45	45	1025	75	75	790	15
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.:	295	20	115	15	20	45	45	1025	75	75	790	15
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.71	0.86	0.86	0.55	0.86	0.86	0.23	0.96	0.96	0.15	0.96	0.96
Lanes:	1.00	0.15	0.85	1.00	0.31	0.69	1.00	0.93	0.07	1.00	0.98	0.02
Final Sat.:	1344	243	1395	1049	503	1133	428	1702	125	290	1788	34
Capacity Analysis Module:												
Vol/Sat:	0.22	0.08	0.08	0.01	0.04	0.04	0.11	0.60	0.60	0.26	0.44	0.44
Crit Moves:	****							****		****		
Green/Cycle:	0.22	0.22	0.22	0.22	0.22	0.22	0.64	0.60	0.60	0.68	0.61	0.61
Volume/Cap:	1.00	0.37	0.37	0.07	0.18	0.18	0.16	1.00	1.00	0.38	0.72	0.72
Delay/Veh:	75.2	20.6	20.6	18.6	19.3	19.3	6.8	38.5	38.5	16.2	10.5	10.5
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:	75.2	20.6	20.6	18.6	19.3	19.3	6.8	38.5	38.5	16.2	10.5	10.5
DesignQueue:	8	1	3	0	1	1	1	16	1	2	12	0

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2000 HCM Operations Method (Base Volume Alternative)

Intersection #28 Hwy 214/I-5 NB ramp

Cycle (sec): 90 Critical Vol./Cap. (X): 0.892
Loss Time (sec): 12 (Y+R = 4 sec) Average Delay (sec/veh): 39.7
Optimal Cycle: 100 Level Of Service: D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
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			0 0 0 0 0			1 0 1 0 0			0 0 2 0 1		
Volume Module:												
Base Vol:	315	5	500	0	0	0	350	815	0	0	780	350
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:	315	5	500	0	0	0	350	815	0	0	780	350
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:	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 Volume:	315	5	500	0	0	0	350	815	0	0	780	350
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	315	5	500	0	0	0	350	815	0	0	780	350
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.:	315	5	500	0	0	0	350	815	0	0	780	350
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.77	0.77	0.77	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.90	0.81
Lanes:	1.00	0.01	0.99	0.00	0.00	0.00	1.00	1.00	0.00	0.00	2.00	1.00
Final Sat.:	1468	15	1454	0	0	0	1805	1900	0	0	3432	1535
Capacity Analysis Module:												
Vol/Sat:	0.21	0.34	0.34	0.00	0.00	0.00	0.19	0.43	0.00	0.00	0.23	0.23
Crit Moves:		****						****		****		
Green/Cycle:	0.39	0.39	0.39	0.00	0.00	0.00	0.22	0.48	0.00	0.00	0.26	0.26
Volume/Cap:	0.56	0.89	0.89	0.00	0.00	0.00	0.88	0.89	0.00	0.00	0.87	0.88
Delay/Veh:	22.8	42.1	42.1	0.0	0.0	0.0	53.1	32.2	0.0	0.0	41.5	51.1
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:	22.8	42.1	42.1	0.0	0.0	0.0	53.1	32.2	0.0	0.0	41.5	51.1
DesignQueue:	10	0	17	0	0	0	14	24	0	0	31	14

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Intersection #29 Hwy 214/I-5 SB ramp

Cycle (sec): 90 Critical Vol./Cap. (X): 0.928
Loss Time (sec): 12 (Y+R = 4 sec) Average Delay (sec/veh): 57.2
Optimal Cycle: 180 Level Of Service: E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Prot+Permit		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 0 0 0			0 1 0 0 1			0 0 2 0 1			1 0 1 0 0		
Volume Module:												
Base Vol:	0	0	0	480	5	475	0	690	470	520	575	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:	0	0	0	480	5	475	0	690	470	520	575	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:	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 Volume:	0	0	0	480	5	475	0	690	470	520	575	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	480	5	475	0	690	470	520	575	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	0	0	480	5	475	0	690	470	520	575	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.79	0.79	0.79	1.00	0.88	0.78	0.53	0.97	1.00
Lanes:	0.00	0.00	0.00	0.99	0.01	1.00	0.00	2.00	1.00	1.00	1.00	0.00
Final Sat.:	0	0	0	1491	16	1507	0	3334	1491	1010	1845	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.32	0.32	0.32	0.00	0.21	0.32	0.51	0.31	0.00
Crit Moves:					****				****	****		
Green/Cycle:	0.00	0.00	0.00	0.30	0.30	0.30	0.00	0.29	0.29	0.57	0.57	0.00
Volume/Cap:	0.00	0.00	0.00	1.08	1.08	1.05	0.00	0.71	1.08	0.91	0.55	0.00
Delay/Veh:	0.0	0.0	0.0	96.2	96.2	89.2	0.0	30.8	97.1	39.6	12.8	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	0.0	0.0	96.2	96.2	89.2	0.0	30.8	97.1	39.6	12.8	0.0
DesignQueue:	0	0	0	18	0	18	0	26	18	20	14	0

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

Intersection #30 Hwy 214/Arney Road

Average Delay (sec/veh): 13.6 Worst Case Level Of Service: B

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			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 0 0 1			0 0 2 0 0			0 0 1 1 0		
Volume Module:												
Base Vol:	0	0	0	0	0	75	0	1160	0	0	815	235
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	0	0	0	0	75	0	1160	0	0	815	235
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:	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 Volume:	0	0	0	0	0	75	0	1160	0	0	815	235
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	0	0	0	0	75	0	1160	0	0	815	235
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	7.0	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	526	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	494	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	493	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	13.6	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	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:		xxxxxx			13.6			xxxxxx			xxxxxx	
ApproachLOS:		*			B			*			*	

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

Intersection #31 Hwy 214/Woodland Avenue

Cycle (sec): 90 Critical Vol./Cap. (X): 0.791
Loss Time (sec): 12 (Y+R = 4 sec) Average Delay (sec/veh): 34.0
Optimal Cycle: 72 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
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			1 0 1! 0 0			1 0 0 1 0			1 0 1 0 1		
Volume Module:												
Base Vol:	20	10	270	300	5	15	65	590	10	95	590	205
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:	20	10	270	300	5	15	65	590	10	95	590	205
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:	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 Volume:	20	10	270	300	5	15	65	590	10	95	590	205
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	20	10	270	300	5	15	65	590	10	95	590	205
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.:	20	10	270	300	5	15	65	590	10	95	590	205
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.76	0.76	0.76	0.94	0.94	0.94	0.92	0.97	0.97	0.91	0.96	0.82
Lanes:	0.07	0.03	0.90	1.88	0.03	0.09	1.00	0.98	0.02	1.00	1.00	1.00
Final Sat.:	96	48	1292	3358	52	157	1753	1809	31	1736	1828	1554
Capacity Analysis Module:												
Vol/Sat:	0.21	0.21	0.21	0.09	0.10	0.10	0.04	0.33	0.33	0.05	0.32	0.13
Crit Moves:	****				****			****		****		
Green/Cycle:	0.26	0.26	0.26	0.12	0.12	0.12	0.05	0.41	0.41	0.07	0.43	0.43
Volume/Cap:	0.79	0.79	0.79	0.74	0.79	0.79	0.75	0.79	0.79	0.79	0.75	0.31
Delay/Veh:	41.5	41.5	41.5	45.0	48.6	48.6	71.6	28.7	28.7	70.1	25.4	17.0
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:	41.5	41.5	41.5	45.0	48.6	48.6	71.6	28.7	28.7	70.1	25.4	17.0
DesignQueue:	1	0	10	13	0	1	3	19	0	4	18	6

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

Intersection #32 Hwy 214/Butteville Road

Average Delay (sec/veh): 1970.5 Worst Case Level Of Service: F

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			Uncontrolled			Uncontrolled	
Rights:		Include			Include			Include			Include	
Lanes:		0 0 1! 0 0			0 0 0 0 0			0 0 0 1 0			0 1 0 0 0	
Volume Module:												
Base Vol:	370	0	405	0	0	0	0	260	315	420	205	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:	370	0	405	0	0	0	0	260	315	420	205	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:	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 Volume:	370	0	405	0	0	0	0	260	315	420	205	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	370	0	405	0	0	0	0	260	315	420	205	0
Critical Gap Module:												
Critical Gp:	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1463	xxxx	418	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	575	xxxx	xxxxx
Potent Cap.:	142	xxxx	638	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	993	xxxx	xxxxx
Move Cap.:	80	xxxx	638	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	993	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.6	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	148	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	1971	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	11.3	xxxx	xxxxx
Shared LOS:	*	F	*	*	*	*	*	*	*	B	*	*
ApproachDel:		1970.5			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		F			*			*			*	

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

Intersection #33 Hwy 214/Hwy 99E

Cycle (sec): 120 Critical Vol./Cap. (X): 1.074
Loss Time (sec): 16 (Y+R = 4 sec) Average Delay (sec/veh): 81.0
Optimal Cycle: 180 Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:		Protected			Protected			Protected			Protected	
Rights:		Include			Include			Include			Include	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:		2 0 2 0 1			1 0 1 1 0			1 0 1 0 1			1 0 0 1 0	
Volume Module:												
Base Vol:	185	500	300	195	840	270	220	485	240	500	555	55
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:	185	500	300	195	840	270	220	485	240	500	555	55
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:	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 Volume:	185	500	300	195	840	270	220	485	240	500	555	55
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	185	500	300	195	840	270	220	485	240	500	555	55
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.:	185	500	300	195	840	270	220	485	240	500	555	55
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.89	0.91	0.82	0.93	0.90	0.90	0.92	0.97	0.83	0.91	0.95	0.95
Lanes:	2.00	2.00	1.00	1.00	1.51	0.49	1.00	1.00	1.00	1.00	0.91	0.09
Final Sat.:	3369	3473	1554	1769	2581	830	1753	1845	1568	1736	1641	163
Capacity Analysis Module:												
Vol/Sat:	0.05	0.14	0.19	0.11	0.33	0.33	0.13	0.26	0.15	0.29	0.34	0.34
Crit Moves:	****				****			****		****		
Green/Cycle:	0.05	0.23	0.23	0.13	0.30	0.30	0.14	0.24	0.24	0.27	0.37	0.37
Volume/Cap:	1.07	0.64	0.86	0.86	1.07	1.07	0.90	1.07	0.63	1.07	0.90	0.90
Delay/Veh:	146.7	43.8	63.1	77.2	92.1	92.1	84.3	109	43.7	107.1	51.2	51.2
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:	146.7	43.8	63.1	77.2	92.1	92.1	84.3	109	43.7	107.1	51.2	51.2
DesignQueue:	12	27	16	12	42	14	13	26	13	26	25	3

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

Intersection #34 OR 219/Butteville (North Intersection)

Average Delay (sec/veh): 104.4 Worst Case Level Of Service: F[310.6]

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			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			1 0 0 0 1			0 1 0 0 0			0 0 0 1 0		
Volume Module:												
Base Vol:	0	0	0	280	0	295	295	295	0	0	295	280
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	0	0	280	0	295	295	295	0	0	295	280
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	280	0	295	295	295	0	0	295	280
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:	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 Volume:	0	0	0	280	0	295	295	295	0	0	295	280
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	0	0	280	0	295	295	295	0	0	295	280
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	1320	xxxx	435	575	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	175	xxxx	625	1008	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	127	xxxx	625	1008	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	2.20	xxxx	0.47	0.29	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
Queue:	xxxxx	xxxx	xxxxx	23.6	xxxx	2.5	1.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Stopped Del:	xxxxx	xxxx	xxxxx	621.3	xxxx	15.8	10.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	F	*	C	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	1.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	10.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	B	*	*	*	*	*
ApproachDel:		xxxxxx			310.6			xxxxxx			xxxxxx	
ApproachLOS:		*			F			*			*	

Woodburn TSP Traffic Volumes

INTERSECTION: Butteville/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed		30	70	200	60					115		175
EX Model		15	85	180	25					70		155
Future Model		265	330	255	190					210		240
Future Delta	0	280	315	275	225	0	0	0	0	255	0	260
Future %	#DIV/0!	530	272	283	456	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	345	#DIV/0!	271
Future Obs	**#DIV/0!**	**405**	**293**	**279**	**341**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**300**	**#DIV/0!**	**265**
Analysis Volume		**405**	**295**	**280**	**340**					**300**		**265**

INTERSECTION: Woodland/Highway 214

	NB			SB			EB			WB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
EX Observed	5	10	85	400	5	15	25	290	5	65	280	205	
EX Model	30	10	45	250	2	1	15	220	30	115	190	1	*EB left-turn from Arney
Future Model	50	10	220	215	2	1	40	480	40	150	385	1	*EB left-turn from Arney
Future Delta	25	10	260	365	5	15	50	550	15	100	475	205	
Future %	8	10	416	344	5	15	67	633	7	85	567	205	
Future Obs	**17**	**10**	**338**	**355**	**5**	**15**	**58**	**591**	**11**	**92**	**521**	**205**	
Analysis Volume	**15**	**10**	**250**	**345**	**5**	**15**	**60**	**530**	**10**	**90**	**510**	**200**	

INTERSECTION: I-5 SB/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed				440	5	280		515	260	395	520	
EX Model				360	1	95		435	150	415	540	
Future Model				485	1	200		625	250	600	700	
Future Delta	0	0	0	565	5	385	0	705	360	580	680	0
Future %	#DIV/0!	#DIV/0!	#DIV/0!	593	5	589	#DIV/0!	740	433	571	674	#DIV/0!
Future Obs	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**579**	**5**	**487**	**#DIV/0!**	**722**	**397**	**576**	**677**	**#DIV/0!**
Analysis Volume				**580**	**5**	**385**		**720**	**400**	**575**	**675**	

INTERSECTION: I-5 NB/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	160	5	380				165	790			755	305
EX Model	145	1	405				90	705			810	345
Future Model	245	1	580				170	935			1,055	410
Future Delta	260	5	555	0	0	0	245	1,020	0	0	1,000	370
Future %	270	5	544	#DIV/0!	#DIV/0!	#DIV/0!	312	1,048	#DIV/0!	#DIV/0!	983	362
Future Obs	**265**	**5**	**550**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**278**	**1,034**	**#DIV/0!**	**#DIV/0!**	**992**	**366**
Analysis Volume	**265**	**5**	**550**				**280**	**1020**			**985**	**365**

INTERSECTION: Evergreen/Highway 214

	NB			SB			EB			WB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
EX Observed	270	20	125	15	20	45	45	895	60	100	750	15	
EX Model	385	1	140	1	1	1	1	765	340	85	770	1	*includes vols from Lawson
Future Model	465	1	165	1	1	1	1	1,060	455	85	1,080	1	
Future Delta	350	20	150	15	20	45	45	1,190	175	100	1,060	15	
Future %	326	20	147	15	20	45	45	1,240	80	100	1,052	15	
Future Obs	**338**	**20**	**149**	**15**	**20**	**45**	**45**	**1,215**	**128**	**100**	**1,056**	**15**	
Analysis Volume	**340**	**20**	**150**	**15**	**20**	**45**	**45**	**1240**	**130**	**100**	**1055**	**15**	

INTERSECTION: Oregon Way/Country Club/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	20	45	15	125	30	60	70	950	10	20	780	85
EX Model	10	1	10	130	5	55	55	855	20	20	895	105
Future Model	80	40	30	95	60	65	65	1,060	95	25	1,020	70
Future Delta	90	84	35	90	85	70	80	1,155	85	25	905	50
Future %	160	1,800	45	91	360	71	83	1,178	48	25	889	57
Future Obs	**125**	**942**	**40**	**91**	**223**	**70**	**81**	**1,166**	**66**	**25**	**897**	**53**
Analysis Volume	**125**	**85**	**40**	**90**	**85**	**70**	**80**	**1185**	**75**	**25**	**960**	**60**

INTERSECTION: Cascade/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	20		25					1,055	35	20	870	
EX Model	125		5					830	135	5	790	
Future Model	230		10					920	265	5	890	
Future Delta	125	0	30	0	0	0	0	1,145	165	20	970	0
Future %	37	#DIV/0!	50	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1,169	69	20	980	#DIV/0!
Future Obs	**81**	**#DIV/0!**	**40**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**1,157**	**117**	**20**	**975**	**#DIV/0!**
Analysis Volume	**80**		**40**					**1180**	**125**	**20**	**975**	

INTERSECTION: Boones Ferry/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	275	165	130	145	220	135	145	650	250	185	510	110
EX Model	110	210	70	65	275	85	80	635	85	125	655	90
Future Model	130	335	110	55	405	110	85	655	110	130	685	70
Future Delta	295	290	170	135	350	160	150	670	275	190	540	90
Future %	325	263	204	123	324	175	154	670	324	192	533	86
Future Obs	310	277	187	129	337	167	152	670	299	191	537	88
Analysis Volume	210	275	185	130	335	165	150	670	300	200	505	95

INTERSECTION: Meridian/Highway 214

	NB			SB			EB			WB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
EX Observed	30	5	30	70	5	80	65	790	45	50	710	30	
EX Model	20	1	10	15	1	55	30	710	45	20	785	10	*Used node 1066
Future Model	20	1	5	15	1	50	30	745	45	20	815	10	
Future Delta	30	5	25	70	5	75	65	825	45	50	740	30	
Future %	30	5	15	70	5	73	65	829	45	50	737	30	
Future Obs	30	5	20	70	5	74	65	827	45	50	739	30	
Analysis Volume	30	5	20	70	5	75	65	825	45	55	795	30	

INTERSECTION: Front/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed				50		90	65	775			750	120
EX Model				210		15	20	760			755	255
Future Model				330		40	35	750			725	355
Future Delta	0	0	0	170	0	115	80	765	0	0	720	220
Future %	#DIV/0!	#DIV/0!	#DIV/0!	79	#DIV/0!	240	114	765	#DIV/0!	#DIV/0!	720	167
Future Obs	#DIV/0!	#DIV/0!	#DIV/0!	124	#DIV/0!	178	97	765	#DIV/0!	#DIV/0!	720	194
Analysis Volume				135		180	95	765			760	205

INTERSECTION: Park/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	20	5	80	15	15	30	15	740	60	100	845	5
EX Model	45		10					885	85	55	965	
Future Model	15		30					1,045	40	85	1,065	
Future Delta	-10	5	100	15	15	30	15	900	15	130	945	5
Future %	7	#DIV/0!	240	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	874	28	155	933	#DIV/0!
Future Obs	-2	#DIV/0!	170	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	887	22	142	939	#DIV/0!
Analysis Volume	5	5	170	15	15	30	15	885	20	140	940	5

INTERSECTION: Highway 99/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	210	440	155	160	730	255	195	315	250	330	345	40
EX Model	60	510	110	70	560	400	385	205	55	120	185	55
Future Model	35	555	210	90	655	415	440	345	35	285	320	75
Future Delta	185	485	255	180	825	270	250	455	230	495	480	60
Future %	123	479	296	206	854	265	223	530	159	784	597	55
Future Obs	154	482	275	193	839	267	236	493	195	639	538	57
Analysis Volume	155	480	275	195	840	265	235	495	195	640	540	55

INTERSECTION: Crosby/Boones Ferry

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	60	100	15	10	175	20	15	90	85	25	25	5
EX Model	80	55	20	40	50	25	27	165	95	20	185	35
Future Model	95	55	25	30	60	50	50	290	180	40	290	30
Future Delta	75	100	20	0	185	45	38	215	170	45	130	0
Future %	71	100	19	8	210	40	28	158	161	50	39	4
Future Obs	73	100	19	4	198	43	33	187	166	48	85	2
Analysis Volume	75	100	20	10	200	45	35	185	165	50	85	5

INTERSECTION: Parr/Boones Ferry

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	25	70	35	5	85	55	55	35	25	50	45	5
EX Model	10	55	1	10	55	40	50	115	25	1	75	35
Future Model	210	30	1	30	30	40	50	365	280	1	105	110
Future Delta	225	45	35	25	60	55	55	285	280	50	75	80
Future %	525	38	35	15	46	55	55	111	280	50	63	16
Future Obs	375	42	35	20	53	55	55	198	280	50	69	48
Analysis Volume	225	40	35	20	55	55	55	200	280	50	70	50

INTERSECTION: Hardcastle/Front

	NB			SB			EB			WB		
	LT	**TH**	**RT**	**LT**	**TH**	**RT**	**LT**	**TH**	**RT**	**LT**	**TH**	**RT**
EX Observed		130	125	55	145					130		40
EX Model		20	180	25	45					155		20
Future Model		25	335	80	70					245		55
Future Delta	0	135	280	110	170	0	0	0	0	220	0	75
Future %	#DIV/0!	163	233	176	226	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	205	#DIV/0!	110
Future Obs	**#DIV/0!**	**149**	**256**	**143**	**198**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**213**	**#DIV/0!**	**93**
Analysis Volume		**150**	**255**	**145**	**200**					**215**		**95**

INTERSECTION: Lincoln/Front

	NB			SB			EB			WB		
	LT	**TH**	**RT**	**LT**	**TH**	**RT**	**LT**	**TH**	**RT**	**LT**	**TH**	**RT**
EX Observed	25	120	40	35	135	15	25	130	15	40	135	30
EX Model	60	90	25	10	85	20	55	115	105	40	135	10
Future Model	60	175	85	20	145	30	130	240	70	130	275	10
Future Delta	25	205	100	45	195	25	100	255	-20	130	275	30
Future %	25	233	136	70	230	23	59	271	10	130	275	30
Future Obs	**25**	**219**	**118**	**58**	**213**	**24**	**80**	**263**	**-5**	**130**	**275**	**30**
Analysis Volume	**25**	**220**	**120**	**65**	**245**	**30**	**80**	**265**	**10**	**130**	**275**	**30**

INTERSECTION: Young/Front

	NB			SB			EB			WB			
	LT	**TH**	**RT**	**LT**	**TH**	**RT**	**LT**	**TH**	**RT**	**LT**	**TH**	**RT**	
EX Observed	10	90	35	50	115	30	25	200	30	40	175	70	
EX Model		65	90	495	90					105		495	*Used node 1201
Future Model		230	160	500	255					225		465	
Future Delta	10	255	105	55	280	30	25	200	30	160	175	40	
Future %	#DIV/0!	318	62	51	326	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	86	#DIV/0!	66	
Future Obs	**#DIV/0!**	**287**	**84**	**53**	**303**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**123**	**#DIV/0!**	**53**	
Analysis Volume	**10**	**285**	**85**	**55**	**300**	**30**	**25**	**200**	**30**	**125**	**175**	**55**	

INTERSECTION: Cleveland/Front

	NB			SB			EB			WB		
	LT	**TH**	**RT**	**LT**	**TH**	**RT**	**LT**	**TH**	**RT**	**LT**	**TH**	**RT**
EX Observed	5	70	35	75	70	15	15	140	15	35	90	45
EX Model	5	120	10	35	110	50	30	100	5	5	40	5
Future Model	5	340	30	50	385	40	35	140	10	45	145	10
Future Delta	5	290	55	90	345	5	20	180	20	75	195	50
Future %	5	198	105	107	245	12	18	196	30	315	326	90
Future Obs	**5**	**244**	**80**	**99**	**295**	**9**	**19**	**188**	**25**	**195**	**261**	**70**
Analysis Volume	**5**	**270**	**80**	**110**	**325**	**10**	**25**	**190**	**25**	**75**	**260**	**75**

INTERSECTION: Cleveland/Highway 99

	NB			SB			EB			WB		
	LT	**TH**	**RT**	**LT**	**TH**	**RT**	**LT**	**TH**	**RT**	**LT**	**TH**	**RT**
EX Observed	60	535	5	5	610	220	95	1	60	15	5	45
EX Model	20	535			555	45	10		15			
Future Model	150	600			680	100	35		50			
Future Delta	190	600	5	5	735	275	120	1	95	15	5	45
Future %	450	600	#DIV/0!	#DIV/0!	747	489	333	#DIV/0!	200	#DIV/0!	#DIV/0!	#DIV/0!
Future Obs	**320**	**600**	**#DIV/0!**	**#DIV/0!**	**741**	**382**	**226**	**#DIV/0!**	**148**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**
Analysis Volume	**200**	**600**	**5**	**5**	**740**	**380**	**225**	**1**	**150**	**15**	**5**	**45**

Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 1 Weekday PM Peak Hour

Scenario Report

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

Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 1 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 Hwy 214/Boones Ferry Rd	E	61.4	0.947	E	61.4	0.947	+ 0.000 D/V
# 2 Hwy 214/Meridian Dr	F	15.5	0.000	F	15.5	0.000	+ 0.000 V/C
# 3 Hwy 214/Front St	F	76.6	0.000	F	76.6	0.000	+ 0.000 V/C
# 4 Hwy 214/Park Ave	F	5.6	0.000	F	5.6	0.000	+ 0.000 V/C
# 10 Hwy 99/Cleveland St	F	108.4	0.000	F	108.4	0.000	+ 0.000 V/C
# 11 Front St/Hardcastle St	F	25.0	0.000	F	25.0	0.000	+ 0.000 V/C
# 12 Front St/Lincoln St	E	41.9	0.959	E	41.9	0.959	+ 0.000 V/C
# 13 Front St/Garfield	C	24.8	0.782	C	24.8	0.782	+ 0.000 V/C
# 14 Front St/Cleveland St	E	35.5	0.923	E	35.5	0.923	+ 0.000 V/C
# 15 Boones Ferry Rd/Crosby Rd	B	12.5	0.576	B	12.5	0.576	+ 0.000 V/C
# 22 Boones Ferry Rd/Parr Rd	C	17.6	0.780	C	17.6	0.780	+ 0.000 V/C
# 25 Hwy 214/Cascade Drive	F	2.7	0.000	F	2.7	0.000	+ 0.000 V/C
# 26 Hwy 214/Oregon Way	C	21.6	0.591	C	21.6	0.591	+ 0.000 D/V
# 27 Hwy 214/Evergreen Road	C	21.5	0.661	C	21.5	0.661	+ 0.000 D/V
# 28 Hwy 214/I-5 NB ramp	C	20.3	0.538	C	20.3	0.538	+ 0.000 D/V
# 29 Hwy 214/I-5 SB ramp	B	19.7	0.631	B	19.7	0.631	+ 0.000 D/V
# 31 Hwy 214/Woodland Avenue	D	39.1	0.565	D	39.1	0.565	+ 0.000 D/V
# 32 Hwy 214/Butteville Road	F	395.7	0.000	F	395.7	0.000	+ 0.000 V/C
# 33 Hwy 214/Hwy 99E	F	80.7	1.021	F	80.7	1.021	+ 0.000 D/V

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Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 1 Weekday PM Peak Hour

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

Intersection #1 Hwy 214/Boones Ferry Rd

Cycle (sec):	120	Critical Vol./Cap. (X):	0.947
Loss Time (sec):	16 (Y+R = 4 sec)	Average Delay (sec/veh):	61.4
Optimal Cycle:	159	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Prot+Permit			Prot+Permit		
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			0 1 0 0 1			1 0 2 0 1			1 0 1 1 0		
Volume Module: 16:15 - 17:15												
Base Vol:	210	275	185	130	335	165	150	670	300	200	565	95
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:	210	275	185	130	335	165	150	670	300	200	565	95
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:	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 Volume:	210	275	185	130	335	165	150	670	300	200	565	95
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	210	275	185	130	335	165	150	670	300	200	565	95
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.:	210	275	185	130	335	165	150	670	300	200	565	95
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.94	0.93	0.93	0.97	0.97	0.83	0.41	0.92	0.82	0.40	0.88	0.88
Lanes:	1.00	0.60	0.40	0.28	0.72	1.00	1.00	2.00	1.00	1.00	1.71	0.29
Final Sat.:	1787	1057	711	513	1323	1583	780	3505	1564	758	2877	484
Capacity Analysis Module:												
Vol/Sat:	0.12	0.26	0.26	0.25	0.25	0.10	0.19	0.19	0.19	0.26	0.20	0.20
Crit Moves:			****	****				****		****		
Green/Cycle:	0.27	0.27	0.27	0.27	0.27	0.27	0.30	0.20	0.20	0.36	0.23	0.23
Volume/Cap:	0.43	0.95	0.95	0.95	0.95	0.39	0.64	0.95	0.95	0.74	0.87	0.87
Delay/Veh:	36.4	70.7	70.7	70.9	70.9	36.5	39.6	69.1	84.8	40.7	55.2	55.2
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:	36.4	70.7	70.7	70.9	70.9	36.5	39.6	69.1	84.8	40.7	55.2	55.2
DesignQueue:	10	14	10	7	17	8	9	37	17	12	31	5

Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 1 Weekday PM Peak Hour

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

Intersection #2 Hwy 214/Meridian Dr

Average Delay (sec/veh):	15.5	Worst Case Level Of Service:	F

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			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			1 0 0 1 0			1 0 0 1 0			1 0 0 1 0		
Volume Module:												
Base Vol:	30	5	20	70	5	75	65	825	45	55	795	30
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:	30	5	20	70	5	75	65	825	45	55	795	30
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:	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 Volume:	30	5	20	70	5	75	65	825	45	55	795	30
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	30	5	20	70	5	75	65	825	45	55	795	30
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1938	1913	848	1910	1920	810	825	xxxx	xxxxx	870	xxxx	xxxxx
Potent Cap.:	50	68	363	52	68	381	801	xxxx	xxxxx	779	xxxx	xxxxx
Move Cap.:	33	58	363	41	58	381	801	xxxx	xxxxx	779	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	xxxxx	xxxx	xxxxx	559.8	xxxx	xxxxx	9.9	xxxx	xxxxx	10.0	xxxx	xxxxx
LOS by Move:	*	*	*	F	*	*	A	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	53	xxxxx	xxxx	xxxx	282	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	263	xxxxx	xxxxx	xxxx	22.7	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	F	*	*	*	C	*	*	*	*	*	*
ApproachDel:	263.1			273.4			xxxxxx			xxxxxx		
ApproachLOS:	F			F			*			*		

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              Kittelson & Associates, Inc.  -- Project # 5367.0
                Woodburn Transportation System Plan Update
          2020 Future Conditions Alternative 1 Weekday PM Peak Hour
-----------------------------------------------------------------------------
                     Level Of Service Computation Report
           2000 HCM Unsignalized Method (Base Volume Alternative)
*****************************************************************************
Intersection #3 Hwy 214/Front St
*****************************************************************************
Average Delay (sec/veh):       76.6        Worst Case Level Of Service:      F
*****************************************************************************
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      Uncontrolled     Uncontrolled
Rights:          Include          Include         Include          Include
Lanes:        0  0  0  0  0   0  0  1! 0  0   1  0  1  0  0   0  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0    0     0   135    0   180    95  765     0     0  760   205
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    0     0   135    0   180    95  765     0     0  760   205
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:      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 Volume:      0    0     0   135    0   180    95  765     0     0  760   205
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:      0    0     0   135    0   180    95  765     0     0  760   205
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4 xxxx   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5 xxxx   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1724 xxxx   760   965 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx    98 xxxx   406   706 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx    87 xxxx   406   706 xxxx xxxxx  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.9 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  158 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx  517 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    F     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           516.9           xxxxxx           xxxxxx
ApproachLOS:        *               F                *                *
```



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              Kittelson & Associates, Inc.  -- Project # 5367.0
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          2020 Future Conditions Alternative 1 Weekday PM Peak Hour
-----------------------------------------------------------------------------
                     Level Of Service Computation Report
           2000 HCM Unsignalized Method (Base Volume Alternative)
*****************************************************************************
Intersection #4 Hwy 214/Park Ave
*****************************************************************************
Average Delay (sec/veh):        5.6        Worst Case Level Of Service:      F
*****************************************************************************
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      Uncontrolled     Uncontrolled
Rights:          Include          Include         Include          Include
Lanes:        0  0  1! 0  0   0  0  1! 0  0   0  1  0  1  0   1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        5    5   170    15   15    30    15  885    20   140  940     5
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:     5    5   170    15   15    30    15  885    20   140  940     5
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:      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 Volume:      5    5   170    15   15    30    15  885    20   140  940     5
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:      5    5   170    15   15    30    15  885    20   140  940     5
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.5  6.5   6.9   7.5  6.5   6.9   4.2 xxxx xxxxx   4.2 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1684 2150   455  1700 2158   474   945 xxxx xxxxx   905 xxxx xxxxx
Potent Cap.:   62   48   555    61   48   543   710 xxxx xxxxx   741 xxxx xxxxx
Move Cap.:     35   38   555    32   38   542   710 xxxx xxxxx   741 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.2 xxxx xxxxx  11.0 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     B    *     *     B    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  309 xxxxx  xxxx   66 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx 31.6 xxxxx xxxxx  192 xxxxx  10.2 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    D     *     *    F     *     B    *     *     *    *     *
ApproachDel:      31.6            192.3           xxxxxx           xxxxxx
ApproachLOS:        D               F                *                *
```

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-----------------------------------------------------------------------------
             Kittelson & Associates, Inc.  -- Project # 5367.0
                Woodburn Transportation System Plan Update
           2020 Future Conditions Alternative 1 Weekday PM Peak Hour
-----------------------------------------------------------------------------
                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
*****************************************************************************
Intersection #10 Hwy 99/Cleveland St
*****************************************************************************
Average Delay (sec/veh):      108.4        Worst Case Level Of Service:     F
*****************************************************************************
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  1  0   0  1  0  1  0   1  0  0  1  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     200  600    5     5  740  380   225    1  150    15    5   45
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:  200  600    5     5  740  380   225    1  150    15    5   45
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:     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 Volume:   200  600    5     5  740  380   225    1  150    15    5   45
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Final Vol.:   200  600    5     5  740  380   225    1  150    15    5   45
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.2 xxxx xxxxx  4.1 xxxx xxxxx  7.5  6.5  6.9   7.5  6.5  6.9
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: 1122 xxxx xxxxx  605 xxxx xxxxx  1645 1947  563  1384 2135  303
Potent Cap.:  613 xxxx xxxxx  969 xxxx xxxxx    67   65  475   105   50  700
Move Cap.:    612 xxxx xxxxx  969 xxxx xxxxx    39   41  473    50   31  700
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del: 13.7 xxxx xxxxx  8.7 xxxx xxxxx  2327 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    B    *    *     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  443  xxxx  124 xxxxx
Shrd StpDel: 13.7 xxxx xxxxx  8.7 xxxx xxxxx xxxxx xxxx 17.3 xxxxx 62.5 xxxxx
Shared LOS:     B    *    *     A    *    *     *    *    C     *    F    *
ApproachDel:      xxxxxx          xxxxxx          1399.3            62.5
ApproachLOS:        *               *               F                F
```

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-----------------------------------------------------------------------------
                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
*****************************************************************************
Intersection #11 Front St/Hardcastle St
*****************************************************************************
Average Delay (sec/veh):       25.0        Worst Case Level Of Service:     F
*****************************************************************************
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      Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  1  0   0  1  0  0  0   0  0  0  0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  150  255   145  200    0     0    0    0   215    0   95
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  150  255   145  200    0     0    0    0   215    0   95
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:     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 Volume:     0  150  255   145  200    0     0    0    0   215    0   95
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Final Vol.:     0  150  255   145  200    0     0    0    0   215    0   95
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx  6.5  6.2   7.1  6.5 xxxxx xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx  4.0  3.3   3.5  4.0 xxxxx xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx  525    9   562  478 xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx
Potent Cap.: xxxx  458 1073   439  488 xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx
Move Cap.:   xxxx  458 1065   247  488 xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
LOS by Move:    *    *    *     *    *    *     *    *    *     A    *    *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx  714   346 xxxx xxxxx  xxxx xxxx xxxxx xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx 16.4  82.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *    C     F    *    *     *    *    *     *    *    *
ApproachDel:       16.4            82.7           xxxxxx           xxxxxx
ApproachLOS:        C               F                *                *
```

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               Kittelson & Associates, Inc.  -- Project # 5367.0
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           2020 Future Conditions Alternative 1 Weekday PM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #33 Hwy 214/Hwy 99E
********************************************************************************
Cycle (sec):        120                Critical Vol./Cap. (X):         1.021
Loss Time (sec):     16 (Y+R =  4 sec) Average Delay (sec/veh):         80.7
Optimal Cycle:      180                Level Of Service:                  F
********************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:        2  0  2  0  1   1  0  1  1  0   1  0  1  0  1   1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     266  477   215   365  828   134   140  455   250   489  567   122
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:  266  477   215   365  828   134   140  455   250   489  567   122
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:     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 Volume:   266  477   215   365  828   134   140  455   250   489  567   122
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  266  477   215   365  828   134   140  455   250   489  567   122
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.:   266  477   215   365  828   134   140  455   250   489  567   122
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.89 0.91  0.82  0.93 0.91  0.91  0.92 0.97  0.83  0.91 0.94  0.94
Lanes:       2.00 2.00  1.00  1.00 1.72  0.28  1.00 1.00  1.00  1.00 0.82  0.18
Final Sat.:  3369 3473  1554  1769 2981   482  1753 1845  1568  1736 1464   315
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.14  0.14  0.21 0.28  0.28  0.08 0.25  0.16  0.28 0.39  0.39
Crit Moves:  ****                  ****             ****        ****
Green/Cycle: 0.08 0.14  0.14  0.21 0.27  0.27  0.09 0.24  0.24  0.28 0.43  0.43
Volume/Cap:  1.02 0.98  0.99  0.99 1.02  1.02  0.90 1.02  0.66  1.02 0.90  0.90
Delay/Veh:  116.7 86.7 108.5  90.4 78.4  78.4  99.2 93.6  45.3  90.0 46.0  46.0
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: 116.7 86.7 108.5  90.4 78.4  78.4  99.2 93.6  45.3  90.0 46.0  46.0
DesignQueue:   17   28    13    20   43     7     9   25    13    25   24     5
********************************************************************************
```

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--------------------------------------------------------------------------------
           Kittelson & Associates, Inc.  -- Project # 5367.0
              Woodburn Transportation System Plan Update
       2020 Future Conditions Alternative 1 Weekday PM Peak Hour
--------------------------------------------------------------------------------
                  Level Of Service Computation Report
       2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #34 OR 219/Butteville (North Intersection)
********************************************************************************
Average Delay (sec/veh):    433.9   Worst Case Level Of Service:      F[1317.2]
********************************************************************************
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       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0    0  0  1! 0  0    0  1  0  0  0    0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   340    0   280   310  280     0     0  370   310
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    0     0   340    0   280   310  280     0     0  370   310
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0   340    0   280   310  280     0     0  370   310
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:     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 Volume:     0    0     0   340    0   280   310  280     0     0  370   310
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     0    0     0   340    0   280   310  280     0     0  370   310
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4 xxxx   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5 xxxx   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1425 xxxx   525   680 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   151 xxxx   556   922 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   103 xxxx   556   922 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  3.30 xxxx  0.50  0.34 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx xxxx xxxxx xxxxx xxxx xxxxx   1.5 xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.9 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  163 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx 60.9 xxxxx   1.5 xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx 1317 xxxxx  10.9 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    F     *     B    *     *     *    *     *
ApproachDel:     xxxxxx           1317.2           xxxxxx           xxxxxx
ApproachLOS:        *                F                *                *
```

Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 1 (Mitigated) Weekday PM Peak Hour

Scenario Report

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

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Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 1 (Mitigated) 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 Hwy 214/Boones Ferry Rd	D	41.7	0.740	D	41.7	0.740	+ 0.000 D/V
# 2 Hwy 214/Meridian Dr	B	13.8	0.641	B	13.8	0.641	+ 0.000 D/V
# 3 Hwy 214/Front St	B	11.7	0.699	B	11.7	0.699	+ 0.000 D/V
# 4 Hwy 214/Park Ave	F	4.5	0.000	F	4.5	0.000	+ 0.000 V/C
# 10 Hwy 99/Cleveland St	B	10.5	0.672	B	10.5	0.672	+ 0.000 D/V
# 11 Front St/Hardcastle St	D	13.0	0.000	D	13.0	0.000	+ 0.000 V/C
# 12 Front St/Lincoln St	D	27.0	0.792	D	27.0	0.792	+ 0.000 V/C
# 14 Front St/Cleveland St	D	25.7	0.830	D	25.7	0.830	+ 0.000 V/C
# 32 Hwy 214/Butteville Road	B	19.1	0.834	B	19.1	0.834	+ 0.000 D/V
# 33 Hwy 214/Hwy 99E	D	51.9	0.849	D	51.9	0.849	+ 0.000 D/V

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2020 Future Conditions Alternative 1 (Mitigated) Weekday PM Peak Hour

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

Intersection #1 Hwy 214/Boones Ferry Rd

Cycle (sec): 120 Critical Vol./Cap. (X): 0.740
Loss Time (sec): 16 (Y+R = 4 sec) Average Delay (sec/veh): 41.7
Optimal Cycle: 79 Level Of Service: D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Prot+Permit			Prot+Permit		
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	1	0 1	1 0	2	0 1	1 0	1	1 0
Volume Module: 16:15 - 17: 15												
Base Vol:	210	275	185	130	335	165	150	670	300	200	565	95
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:	210	275	185	130	335	165	150	670	300	200	565	95
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:	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 Volume:	210	275	185	130	335	165	150	670	300	200	565	95
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	210	275	185	130	335	165	150	670	300	200	565	95
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.:	210	275	185	130	335	165	150	670	300	200	565	95
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.94	0.93	0.93	0.93	0.98	0.83	0.42	0.92	0.82	0.41	0.88	0.88
Lanes:	1.00	0.60	0.40	1.00	1.00	1.00	1.00	2.00	1.00	1.00	1.71	0.29
Final Sat.:	1787	1057	711	1769	1862	1583	805	3505	1565	776	2877	484
Capacity Analysis Module:												
Vol/Sat:	0.12	0.26	0.26	0.07	0.18	0.10	0.19	0.19	0.19	0.26	0.20	0.20
Crit Moves:		****		****				****		****		
Green/Cycle:	0.18	0.35	0.35	0.10	0.27	0.27	0.38	0.26	0.26	0.45	0.29	0.29
Volume/Cap:	0.66	0.74	0.74	0.74	0.66	0.38	0.48	0.74	0.74	0.57	0.68	0.68
Delay/Veh:	51.0	38.8	38.8	67.9	41.9	36.0	27.5	44.1	48.0	25.7	39.6	39.6
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:	51.0	38.8	38.8	67.9	41.9	36.0	27.5	44.1	48.0	25.7	39.6	39.6
DesignQueue:	12	13	9	8	17	8	9	35	15	12	28	5

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Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 1 (Mitigated) Weekday PM Peak Hour

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

Intersection #2 Hwy 214/Meridian Dr

Cycle (sec): 90 Critical Vol./Cap. (X): 0.641
Loss Time (sec): 12 (Y+R = 4 sec) Average Delay (sec/veh): 13.8
Optimal Cycle: 51 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
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	1 0	0	1 0	1 0	0	1 0	1 0	0	1 0
Volume Module:												
Base Vol:	30	5	20	70	5	75	65	825	45	55	795	30
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:	30	5	20	70	5	75	65	825	45	55	795	30
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:	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 Volume:	30	5	20	70	5	75	65	825	45	55	795	30
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	30	5	20	70	5	75	65	825	45	55	795	30
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.:	30	5	20	70	5	75	65	825	45	55	795	30
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.73	0.73	0.73	0.79	0.85	0.85	0.92	0.96	0.96	0.94	0.99	0.99
Lanes:	0.55	0.09	0.36	1.00	0.06	0.94	1.00	0.95	0.05	1.00	0.96	0.04
Final Sat.:	759	127	506	1495	101	1515	1753	1735	95	1787	1804	68
Capacity Analysis Module:												
Vol/Sat:	0.04	0.04	0.04	0.05	0.05	0.05	0.04	0.48	0.48	0.03	0.44	0.44
Crit Moves:					****			****		****		
Green/Cycle:	0.08	0.08	0.08	0.08	0.08	0.08	0.06	0.74	0.74	0.05	0.73	0.73
Volume/Cap:	0.51	0.51	0.51	0.61	0.64	0.64	0.61	0.64	0.64	0.64	0.61	0.61
Delay/Veh:	44.0	44.0	44.0	49.1	51.1	51.1	50.7	6.8	6.8	57.3	6.7	6.7
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:	44.0	44.0	44.0	49.1	51.1	51.1	50.7	6.8	6.8	57.3	6.7	6.7
DesignQueue:	1	0	1	3	0	3	3	12	1	3	12	0

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

Intersection #3 Hwy 214/Front St

Cycle (sec): 60 Critical Vol./Cap. (X): 0.699
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 11.7
Optimal Cycle: 44 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 0 0 0			0 0 1! 0 0			1 0 1 0 0			0 0 1 0 1		
Volume Module:												
Base Vol:	0	0	0	135	0	180	95	765	0	0	760	205
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	0	0	135	0	180	95	765	0	0	760	205
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:	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 Volume:	0	0	0	135	0	180	95	765	0	0	760	205
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	135	0	180	95	765	0	0	760	205
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	0	0	135	0	180	95	765	0	0	760	205
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.89	1.00	0.89	0.22	0.96	1.00	1.00	0.97	0.83
Lanes:	0.00	0.00	0.00	0.43	0.00	0.57	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	721	0	961	420	1828	0	0	1845	1568
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.19	0.00	0.19	0.23	0.42	0.00	0.00	0.41	0.13
Crit Moves:						****		****				
Green/Cycle:	0.00	0.00	0.00	0.27	0.00	0.27	0.60	0.60	0.00	0.00	0.60	0.60
Volume/Cap:	0.00	0.00	0.00	0.70	0.00	0.70	0.38	0.70	0.00	0.00	0.69	0.22
Delay/Veh:	0.0	0.0	0.0	24.6	0.0	24.6	7.2	10.3	0.0	0.0	10.1	5.7
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	0.0	0.0	24.6	0.0	24.6	7.2	10.3	0.0	0.0	10.1	5.7
DesignQueue:	0	0	0	3	0	5	1	11	0	0	11	3

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

Intersection #4 Hwy 214/Park Ave

Average Delay (sec/veh): 4.5 Worst Case Level Of Service: F

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			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			1 0 0 1 0			0 1 0 1 0			1 0 1 1 0		
Volume Module:												
Base Vol:	5	5	170	15	15	30	15	885	20	140	940	5
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:	5	5	170	15	15	30	15	885	20	140	940	5
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:	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 Volume:	5	5	170	15	15	30	15	885	20	140	940	5
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	5	5	170	15	15	30	15	885	20	140	940	5
Critical Gap Module:												
Critical Gp:	7.5	6.5	6.9	7.5	6.5	6.9	4.2	xxxx	xxxxx	4.2	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1684	2150	455	1700	2158	474	945	xxxx	xxxxx	905	xxxx	xxxxx
Potent Cap.:	62	48	555	61	48	543	710	xxxx	xxxxx	741	xxxx	xxxxx
Move Cap.:	35	38	555	32	38	542	710	xxxx	xxxxx	741	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	xxxxx	xxxx	xxxxx	192.4	xxxx	xxxxx	10.2	xxxx	xxxxx	11.0	xxxx	xxxxx
LOS by Move:	*	*	*	F	*	*	B	*	*	B	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	309	xxxxx	xxxx	xxxx	101	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	31.6	xxxxx	xxxxx	xxxx	66.9	10.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	D	*	*	*	F	B	*	*	*	*	*
ApproachDel:		31.6			98.3			xxxxxx			xxxxxx	
ApproachLOS:		D			F			*			*	

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

Intersection #10 Hwy 99/Cleveland St

Cycle (sec): 60 Critical Vol./Cap. (X): 0.672
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 10.5
Optimal Cycle: 41 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	1 0	0 1	0	1 0	1 0	0	1 0	0 0	1!	0 0
Volume Module:												
Base Vol:	200	600	5	5	740	380	225	1	150	15	5	45
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:	200	600	5	5	740	380	225	1	150	15	5	45
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:	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 Volume:	200	600	5	5	740	380	225	1	150	15	5	45
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	200	600	5	5	740	380	225	1	150	15	5	45
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.:	200	600	5	5	740	380	225	1	150	15	5	45
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.51	0.51	0.51	0.84	0.84	0.84	0.72	0.85	0.85	0.84	0.84	0.84
Lanes:	0.50	1.49	0.01	0.01	1.32	0.67	1.00	0.01	0.99	0.23	0.08	0.69
Final Sat.:	479	1438	12	14	2102	1080	1360	11	1606	369	123	1107
Capacity Analysis Module:												
Vol/Sat:	0.42	0.42	0.42	0.35	0.35	0.35	0.17	0.09	0.09	0.04	0.04	0.04
Crit Moves:		****					****					
Green/Cycle:	0.62	0.62	0.62	0.62	0.62	0.62	0.25	0.25	0.25	0.25	0.25	0.25
Volume/Cap:	0.67	0.67	0.67	0.57	0.57	0.57	0.67	0.38	0.38	0.17	0.17	0.17
Delay/Veh:	8.9	8.9	8.9	7.1	7.1	7.1	25.7	19.4	19.4	18.0	18.0	18.0
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:	8.9	8.9	8.9	7.1	7.1	7.1	25.7	19.4	19.4	18.0	18.0	18.0
DesignQueue:	3	8	0	0	10	5	6	0	4	0	0	1

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

Intersection #11 Front St/Hardcastle St

Average Delay (sec/veh): 13.0 Worst Case Level Of Service: D

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			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	0	1 0	1 0	1	0 0	0 0	0	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	0	150	255	145	200	0	0	0	0	215	0	95
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	150	255	145	200	0	0	0	0	215	0	95
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:	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 Volume:	0	150	255	145	200	0	0	0	0	215	0	95
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	150	255	145	200	0	0	0	0	215	0	95
Critical Gap Module:												
Critical Gp:	xxxxx	6.5	6.2	7.1	6.5	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	4.0	3.3	3.5	4.0	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	525	9	562	478	xxxxx	xxxx	xxxx	xxxxx	0	xxxx	xxxxx
Potent Cap.:	xxxx	458	1073	439	488	xxxxx	xxxx	xxxx	xxxxx	0	xxxx	xxxxx
Move Cap.:	xxxx	458	1065	247	488	xxxxx	xxxx	xxxx	xxxxx	0	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	xxxxx	xxxx	xxxxx	38.3	17.4	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
LOS by Move:	*	*	*	E	C	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	714	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	xxxx	16.4	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	C	*	*	*	*	*	*	*	*	*
ApproachDel:		16.4			26.2			xxxxxx			xxxxxx	
ApproachLOS:		C			D			*			*	

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

Intersection #12 Front St/Lincoln St

Cycle (sec): 100 Critical Vol./Cap. (X): 0.792
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 27.0
Optimal Cycle: 0 Level Of Service: D

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			1 0 0 1 0		
Volume Module:												
Base Vol:	25	220	120	65	245	30	80	265	10	130	275	30
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	220	120	65	245	30	80	265	10	130	275	30
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:	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 Volume:	25	220	120	65	245	30	80	265	10	130	275	30
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	25	220	120	65	245	30	80	265	10	130	275	30
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.:	25	220	120	65	245	30	80	265	10	130	275	30
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:	0.07	0.60	0.33	0.19	0.72	0.09	0.22	0.75	0.03	1.00	0.90	0.10
Final Sat.:	32	280	153	86	323	40	101	335	13	410	395	43
Capacity Analysis Module:												
Vol/Sat:	0.79	0.79	0.79	0.76	0.76	0.76	0.79	0.79	0.79	0.32	0.70	0.70
Crit Moves:		****			****			****			****	
Delay/Veh:	29.3	29.3	29.3	27.6	27.6	27.6	30.7	30.7	30.7	14.7	24.7	24.7
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:	29.3	29.3	29.3	27.6	27.6	27.6	30.7	30.7	30.7	14.7	24.7	24.7
LOS by Move:	D	D	D	D	D	D	D	D	D	B	C	C
ApproachDel:		29.3			27.6			30.7			21.7	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		29.3			27.6			30.7			21.7	
LOS by Appr:		D			D			D			C	

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

Intersection #14 Front St/Cleveland St

Cycle (sec): 100 Critical Vol./Cap. (X): 0.830
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 25.7
Optimal Cycle: 0 Level Of Service: D

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			1 0 0 1 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	5	270	80	110	325	10	25	190	25	75	260	75
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:	5	270	80	110	325	10	25	190	25	75	260	75
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:	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 Volume:	5	270	80	110	325	10	25	190	25	75	260	75
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	5	270	80	110	325	10	25	190	25	75	260	75
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.:	5	270	80	110	325	10	25	190	25	75	260	75
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:	0.01	0.76	0.23	1.00	0.97	0.03	0.10	0.80	0.10	0.18	0.64	0.18
Final Sat.:	7	362	107	430	445	14	44	337	44	90	313	90
Capacity Analysis Module:												
Vol/Sat:	0.75	0.75	0.75	0.26	0.73	0.73	0.56	0.56	0.56	0.83	0.83	0.83
Crit Moves:		****			****			****		****		
Delay/Veh:	25.9	25.9	25.9	13.4	26.2	26.2	18.1	18.1	18.1	32.9	32.9	32.9
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:	25.9	25.9	25.9	13.4	26.2	26.2	18.1	18.1	18.1	32.9	32.9	32.9
LOS by Move:	D	D	D	B	D	D	C	C	C	D	D	D
ApproachDel:		25.9			23.0			18.1			32.9	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		25.9			23.0			18.1			32.9	
LOS by Appr:		D			C			C			D	

Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 1 (Mitigated) Weekday PM Peak Hour

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

Intersection #32 Hwy 214/Butteville Road

Cycle (sec): 60 Critical Vol./Cap. (X): 0.834
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 19.1
Optimal Cycle: 62 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 0 0 1			0 0 0 0 0			0 0 0 1 0			0 1 0 0 0		
Volume Module:												
Base Vol:	405	0	295	0	0	0	0	280	340	310	275	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:	405	0	295	0	0	0	0	280	340	310	275	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:	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 Volume:	405	0	295	0	0	0	0	280	340	310	275	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	405	0	295	0	0	0	0	280	340	310	275	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.:	405	0	295	0	0	0	0	280	340	310	275	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.94	1.00	0.84	1.00	1.00	1.00	1.00	0.89	0.89	0.62	0.62	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.45	0.55	0.53	0.47	0.00
Final Sat.:	1787	0	1599	0	0	0	0	764	928	625	554	0
Capacity Analysis Module:												
Vol/Sat:	0.23	0.00	0.18	0.00	0.00	0.00	0.00	0.37	0.37	0.50	0.50	0.00
Crit Moves:	****										****	
Green/Cycle:	0.27	0.00	0.27	0.00	0.00	0.00	0.00	0.59	0.59	0.59	0.59	0.00
Volume/Cap:	0.83	0.00	0.68	0.00	0.00	0.00	0.00	0.62	0.62	0.83	0.83	0.00
Delay/Veh:	32.4	0.0	23.8	0.0	0.0	0.0	0.0	8.9	8.9	18.3	18.3	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:	32.4	0.0	23.8	0.0	0.0	0.0	0.0	8.9	8.9	18.3	18.3	0.0
DesignQueue:	10	0	7	0	0	0	0	4	5	5	4	0

Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 1 (Mitigated) Weekday PM Peak Hour

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

Intersection #33 Hwy 214/Hwy 99E

Cycle (sec): 120 Critical Vol./Cap. (X): 0.849
Loss Time (sec): 16 (Y+R = 4 sec) Average Delay (sec/veh): 51.9
Optimal Cycle: 107 Level Of Service: D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	2 0 2 0 1			1 0 2 0 1			1 0 1 0 1			2 0 1 0 1		
Volume Module:												
Base Vol:	266	477	215	365	828	134	140	455	250	489	567	122
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:	266	477	215	365	828	134	140	455	250	489	567	122
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:	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 Volume:	266	477	215	365	828	134	140	455	250	489	567	122
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	266	477	215	365	828	134	140	455	250	489	567	122
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.:	266	477	215	365	828	134	140	455	250	489	567	122
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.89	0.91	0.82	0.93	0.93	0.83	0.92	0.97	0.83	0.89	0.96	0.82
Lanes:	2.00	2.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00	2.00	1.00	1.00
Final Sat.:	3369	3473	1554	1769	3538	1583	1753	1845	1568	3369	1828	1554
Capacity Analysis Module:												
Vol/Sat:	0.08	0.14	0.14	0.21	0.23	0.08	0.08	0.25	0.16	0.15	0.31	0.08
Crit Moves:		****		****				****		****		
Green/Cycle:	0.10	0.16	0.16	0.24	0.30	0.30	0.09	0.29	0.29	0.17	0.37	0.37
Volume/Cap:	0.77	0.85	0.86	0.85	0.77	0.28	0.84	0.85	0.55	0.85	0.84	0.21
Delay/Veh:	62.9	60.5	72.7	57.9	41.6	32.2	84.3	52.2	37.3	59.6	44.5	26.3
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:	62.9	60.5	72.7	57.9	41.6	32.2	84.3	52.2	37.3	59.6	44.5	26.3
DesignQueue:	16	28	12	19	41	6	9	23	12	28	26	5

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               Kittelson & Associates, Inc. -- Project # 5367.0
                  Woodburn Transportation System Plan Update
     2020 Future Conditions Alternative 1 (Mitigated) Weekday PM Peak Hour
--------------------------------------------------------------------------------

                      Level Of Service Computation Report
            2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #34 OR 219/Butteville (North Intersection)
********************************************************************************
Cycle (sec):          60               Critical Vol./Cap. (X):          0.806
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):         17.4
Optimal Cycle:        57               Level Of Service:                    B
********************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Split Phase      Split Phase        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        0  0  0  0  0   1  0  0  0  1   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      0     0     0  340     0   280  310   280     0    0   370   310
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     0     0  340     0   280  310   280     0    0   370   310
Added Vol:     0     0     0    0     0     0    0     0     0    0     0     0
PasserByVol:   0     0     0    0     0     0    0     0     0    0     0     0
Initial Fut:   0     0     0  340     0   280  310   280     0    0   370   310
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:     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 Volume:    0     0     0  340     0   280  310   280     0    0   370   310
Reduct Vol:    0     0     0    0     0     0    0     0     0    0     0     0
Reduced Vol:   0     0     0  340     0   280  310   280     0    0   370   310
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     0     0  340     0   280  310   280     0    0   370   310
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  1.00 1.00  1.00 0.95 1.00  0.85 0.61 0.61  1.00 1.00 0.94  0.94
Lanes:       0.00 0.00  0.00 1.00 0.00  1.00 0.53 0.47  0.00 0.00 0.54  0.46
Final Sat.:    0     0     0 1805     0  1615  608   549     0    0   970   812
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00 0.19 0.00  0.17 0.51 0.51  0.00 0.00 0.38  0.38
Crit Moves:                  ****                  ****
Green/Cycle: 0.00 0.00  0.00 0.23 0.00  0.23 0.63 0.63  0.00 0.00 0.63  0.63
Volume/Cap:  0.00 0.00  0.00 0.81 0.00  0.74 0.81 0.81  0.00 0.00 0.60  0.60
Delay/Veh:    0.0  0.0   0.0 32.5  0.0  29.0 14.8 14.8   0.0  0.0  7.5   7.5
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  0.0   0.0 32.5  0.0  29.0 14.8 14.8   0.0  0.0  7.5   7.5
AustraQueue:   0     0     0    6     0     5    5     5     0    0     4     3
********************************************************************************
```

Woodburn TSP Traffic Volumes

INTERSECTION: Butteville/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed		30	70	200	60					115		175
EX Model		15	85	180	25					70		155
Future Model		160	495	270	120					360		270
Future Delta	0	175	480	290	155	0	0	0	0	405	0	290
Future %	#DIV/0!	320	408	300	288	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	591	#DIV/0!	305
Future Obs	**#DIV/0!**	**248**	**444**	**295**	**222**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**498**	**#DIV/0!**	**297**
Analysis Volume		**250**	**535**	**355**	**220**					**510**		**305**

INTERSECTION: Woodland/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	5	10	85	400	5	15	25	290	5	65	280	205
EX Model	30	10	45	250	2	1	15	220	30	115	190	1
Future Model	80	10	190	300	1	1	70	640	60	135	535	1
Future Delta	55	10	230	450	4	15	80	710	35	85	625	205
Future %	13	10	359	480	3	15	117	844	10	76	788	205
Future Obs	**34**	**10**	**294**	**465**	**3**	**15**	**98**	**777**	**23**	**81**	**707**	**205**
Analysis Volume	**35**	**10**	**295**	**465**	**5**	**15**	**100**	**775**	**25**	**95**	**775**	**205**

*EB left-turn from Arney

INTERSECTION: I-5 SB/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed				440	5	280		515	260	395	520	
EX Model				360	1	95		435	150	415	540	
Future Model				500	1	185		770	280	570	805	
Future Delta	0	0	0	580	5	370	0	850	390	550	785	0
Future %	#DIV/0!	#DIV/0!	#DIV/0!	611	5	545	#DIV/0!	912	485	543	775	#DIV/0!
Future Obs	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**596**	**5**	**458**	**#DIV/0!**	**881**	**438**	**546**	**780**	**#DIV/0!**
Analysis Volume				**595**	**5**	**360**		**925**	**445**	**545**	**785**	

INTERSECTION: I-5 NB/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	160	5	380				165	790			755	305
EX Model	145	1	405				90	705			810	345
Future Model	215	1	605				170	1,100			1,160	490
Future Delta	230	5	580	0	0	0	245	1,185	0	0	1,105	450
Future %	237	5	568	#DIV/0!	#DIV/0!	#DIV/0!	312	1,233	#DIV/0!	#DIV/0!	1,081	433
Future Obs	**234**	**5**	**574**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**278**	**1,209**	**#DIV/0!**	**#DIV/0!**	**1,093**	**442**
Analysis Volume	**235**	**5**	**580**				**285**	**1235**			**1095**	**415**

INTERSECTION: Evergreen/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	270	20	125	15	20	45	45	895	60	100	750	15
EX Model	385	1	140	1	1	1	1	765	340	85	770	1
Future Model	445	1	221	1	1	1	1	1,225	480	140	1,205	1
Future Delta	330	20	206	15	20	45	45	1,355	200	155	1,185	15
Future %	312	20	197	15	20	45	45	1,433	85	165	1,174	15
Future Obs	**321**	**20**	**202**	**15**	**20**	**45**	**45**	**1,394**	**142**	**160**	**1,179**	**15**
Analysis Volume	**320**	**20**	**200**	**15**	**20**	**45**	**50**	**1525**	**90**	**150**	**1110**	**15**

*includes vols from Lawson

INTERSECTION: Oregon Way/Country Club/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	20	45	15	125	30	60	70	950	10	20	780	85
EX Model	10	1	10	130	5	55	55	855	20	20	895	105
Future Model	20	25	80	115	40	60	60	1,360	30	115	1,260	90
Future Delta	30	69	85	110	65	65	75	1,455	20	115	1,145	70
Future %	40	1,125	120	111	240	65	76	1,511	15	115	1,098	73
Future Obs	**35**	**597**	**103**	**110**	**153**	**65**	**76**	**1,483**	**18**	**115**	**1,122**	**71**
Analysis Volume	**35**	**70**	**105**	**110**	**65**	**65**	**80**	**1590**	**30**	**115**	**1120**	**70**

INTERSECTION: Cascade/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	20		25					1,055	35	20	870	
EX Model	125		5					830	135	5	790	
Future Model	195		5					1,345	210	5	1,265	
Future Delta	90	0	25	0	0	0	0	1,570	110	20	1,345	0
Future %	31	#DIV/0!	25	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1,710	54	20	1,393	#DIV/0!
Future Obs	**61**	**#DIV/0!**	**25**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**1,640**	**82**	**20**	**1,369**	**#DIV/0!**
Analysis Volume	**60**		**25**					**1665**	**85**	**20**	**1300**	

INTERSECTION: Boones Ferry/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	275	165	130	145	220	135	145	650	250	185	510	110
EX Model	110	210	70	65	275	85	80	635	85	125	655	90
Future Model	75	270	160	110	312	145	140	1,050	60	260	1,100	100
Future Delta	240	225	220	190	257	195	205	1,065	225	320	955	120
Future %	188	212	297	245	250	230	254	1,075	176	385	856	122
Future Obs	**214**	**219**	**259**	**218**	**253**	**213**	**229**	**1,070**	**201**	**352**	**906**	**121**
Analysis Volume	**215**	**220**	**260**	**220**	**255**	**215**	**245**	**1140**	**215**	**360**	**935**	**130**

INTERSECTION: Meridian/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	30	5	30	70	5	80	65	790	45	50	710	30
EX Model	20	1	10	15	1	55	30	710	45	20	785	10
Future Model	20	1	10	20	1	50	30	1,245	45	20	1,380	15
Future Delta	30	5	30	75	5	75	65	1,325	45	50	1,305	35
Future %	30	5	30	93	5	73	65	1,385	45	50	1,248	45
Future Obs	**30**	**5**	**30**	**84**	**5**	**74**	**65**	**1,355**	**45**	**50**	**1,277**	**40**
Analysis Volume	**30**	**5**	**30**	**85**	**5**	**75**	**70**	**1455**	**50**	**55**	**1375**	**40**

*Used node 1066

INTERSECTION: Front/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed				50		90	65	775			750	120
EX Model				210		15	20	760			755	255
Future Model				135		65	80	1,265			1,265	255
Future Delta	0	0	0	-25	0	140	125	1,280	0	0	1,260	120
Future %	#DIV/0!	#DIV/0!	#DIV/0!	32	#DIV/0!	390	260	1,290	#DIV/0!	#DIV/0!	1,257	120
Future Obs	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**4**	**#DIV/0!**	**265**	**193**	**1,285**	**#DIV/0!**	**#DIV/0!**	**1,258**	**120**
Analysis Volume				**30**		**265**	**200**	**1320**			**1260**	**120**

INTERSECTION: Park/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	20	5	80	15	15	30	15	740	60	100	845	5
EX Model	45		10					885	85	55	965	
Future Model	130		5					1,235	190	25	1,390	
Future Delta	105	5	75	15	15	30	15	1,090	165	70	1,270	5
Future %	58	#DIV/0!	40	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1,033	134	45	1,217	#DIV/0!
Future Obs	**81**	**#DIV/0!**	**58**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**1,061**	**150**	**58**	**1,244**	**#DIV/0!**
Analysis Volume	**85**	**5**	**60**	**15**	**15**	**30**	**20**	**1115**	**155**	**60**	**1280**	**5**

INTERSECTION: Highway 99/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	210	440	155	160	730	255	195	315	250	330	345	40
EX Model	60	510	110	70	560	400	385	205	55	120	185	55
Future Model	105	520	175	85	580	500	490	410	75	215	405	75
Future Delta	255	450	220	175	750	355	300	520	270	425	565	60
Future %	368	449	247	194	756	319	248	630	341	591	755	55
Future Obs	**311**	**449**	**233**	**185**	**753**	**337**	**274**	**575**	**305**	**508**	**660**	**57**
Analysis Volume	**310**	**450**	**235**	**185**	**753**	**335**	**275**	**575**	**305**	**510**	**660**	**55**

INTERSECTION: Crosby/Boones Ferry

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	60	100	15	10	175	20	15	90	85	25	25	5
EX Model	80	55	20	40	50	25	27	165	95	20	185	35
Future Model	65	65	15	35	55	45	35	90	85	35	115	35
Future Delta	45	110	10	5	180	40	23	15	75	40	-45	5
Future %	49	118	11	9	193	36	19	49	76	44	16	5
Future Obs	**47**	**114**	**11**	**7**	**186**	**38**	**21**	**32**	**76**	**42**	**-15**	**5**
Analysis Volume	**45**	**115**	**10**	**10**	**185**	**40**	**20**	**50**	**75**	**40**	**15**	**5**

*Node 1214 not coded

INTERSECTION: Parr/Boones Ferry

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	25	70	35	5	85	55	55	35	25	50	45	5
EX Model	10	55	1	10	55	40	50	115	25	1	75	35
Future Model	15	60	1	25	65	30	50	140	40	1	55	60
Future Delta	30	75	35	20	95	45	55	60	40	50	25	30
Future %	38	76	35	13	100	41	55	43	40	50	33	9
Future Obs	**34**	**76**	**35**	**16**	**98**	**43**	**55**	**51**	**40**	**50**	**29**	**19**
Analysis Volume	**35**	**75**	**35**	**15**	**100**	**45**	**55**	**50**	**40**	**50**	**30**	**20**

INTERSECTION: Hardcastle/Front

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed		130	125	55	145					130		40
EX Model		20	180	25	45					155		20
Future Model		25	105	10	50					65		5
Future Delta	0	135	50	40	150	0	0	0	0	40	0	25
Future %	#DIV/0!	163	73	22	161	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	55	#DIV/0!	10
Future Obs	**#DIV/0!**	**149**	**61**	**31**	**156**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**47**	**#DIV/0!**	**18**
Analysis Volume		**150**	**60**	**30**	**155**					**45**		**20**

INTERSECTION: Lincoln/Front

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	25	120	40	35	135	15	25	130	15	40	135	30
EX Model	60	90	25	10	85	20	55	115	105	40	135	10
Future Model	70	85	30	15	90	15	40	125	130	95	125	10
Future Delta	35	115	45	40	140	10	10	140	40	95	125	30
Future %	29	113	48	53	143	11	18	141	19	95	125	30
Future Obs	**32**	**114**	**47**	**46**	**141**	**11**	**14**	**141**	**29**	**95**	**125**	**30**
Analysis Volume	**30**	**115**	**45**	**45**	**140**	**10**	**14**	**140**	**30**	**95**	**125**	**30**

INTERSECTION: Young/Front

	NB			SB			EB			WB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
EX Observed	10	90	35	50	115	30	25	200	30	40	175	70	
EX Model		65	90	495	90					105		495	*Used node 1201
Future Model		90	80	465	125					90		470	
Future Delta	10	115	25	20	150	30	25	200	30	25	175	45	
Future %	#DIV/0!	125	31	47	160	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	34	#DIV/0!	66	
Future Obs	**#DIV/0!**	**120**	**28**	**33**	**155**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**30**	**#DIV/0!**	**56**	
Analysis Volume	**10**	**120**	**30**	**35**	**155**	**30**	**25**	**200**	**30**	**30**	**175**	**55**	

INTERSECTION: Cleveland/Front

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	5	70	35	75	70	15	15	140	15	35	90	45
EX Model	5	120	10	35	110	50	30	100	5	5	40	5
Future Model	1	135	15	40	140	35	25	65	15	10	25	10
Future Delta	1	85	40	80	100	0	10	105	25	40	75	50
Future %	1	79	53	86	89	11	13	91	45	70	56	90
Future Obs	**1**	**82**	**46**	**83**	**95**	**5**	**11**	**98**	**35**	**55**	**66**	**70**
Analysis Volume	**5**	**80**	**45**	**85**	**95**	**10**	**10**	**100**	**35**	**55**	**65**	**70**

INTERSECTION: Cleveland/Highway 99

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	60	535	5	5	610	220	95	1	60	15	5	45
EX Model	20	535			555	45	10		15			
Future Model	25	780			795	30	15		20	15		20
Future Delta	65	780	5	5	850	205	100	1	65	30	5	65
Future %	75	780	#DIV/0!	#DIV/0!	874	147	143	#DIV/0!	80	#DIV/0!	#DIV/0!	#DIV/0!
Future Obs	**70**	**780**	**#DIV/0!**	**#DIV/0!**	**862**	**176**	**121**	**#DIV/0!**	**73**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**
Analysis Volume	**70**	**780**	**5**	**5**	**860**	**175**	**120**	**1**	**70**	**15**	**5**	**45**

Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 2 Weekday PM Peak Hour

Scenario Report

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

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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 Hwy 214/Boones Ferry Rd	F	137.1	1.376	F	137.1	1.376	+ 0.000 D/V
# 2 Hwy 214/Meridian Dr	F	115.3	0.000	F	115.3	0.000	+ 0.000 V/C
# 3 Hwy 214/Front St	D	2.3	0.000	D	2.3	0.000	+ 0.000 V/C
# 4 Hwy 214/Park Ave	F	128.9	0.000	F	128.9	0.000	+ 0.000 V/C
# 10 Hwy 99/Cleveland St	F	14.7	0.000	F	14.7	0.000	+ 0.000 V/C
# 11 Front St/Hardcastle St	B	5.7	0.000	B	5.7	0.000	+ 0.000 V/C
# 12 Front St/Lincoln St	B	10.5	0.381	B	10.5	0.381	+ 0.000 V/C
# 13 Front St/Garfield	B	11.0	0.398	B	11.0	0.398	+ 0.000 V/C
# 14 Front St/Cleveland St	A	9.2	0.274	A	9.2	0.274	+ 0.000 V/C
# 15 Boones Ferry Rd/Crosby Rd	A	9.1	0.306	A	9.1	0.306	+ 0.000 V/C
# 22 Boones Ferry Rd/Parr Rd	A	8.9	0.215	A	8.9	0.215	+ 0.000 V/C
# 25 Hwy 214/Cascade Drive	F	1.7	0.000	F	1.7	0.000	+ 0.000 V/C
# 26 Hwy 214/Oregon Way	C	22.4	0.729	C	22.4	0.729	+ 0.000 D/V
# 27 Hwy 214/Evergreen Road	C	22.7	0.769	C	22.7	0.769	+ 0.000 D/V
# 28 Hwy 214/I-5 NB ramp	B	19.8	0.606	B	19.8	0.606	+ 0.000 D/V
# 29 Hwy 214/I-5 SB ramp	C	20.0	0.615	C	20.0	0.615	+ 0.000 D/V
# 31 Hwy 214/Woodland Avenue	D	43.2	0.731	D	43.2	0.731	+ 0.000 D/V
# 32 Hwy 214/Butteville Road	F	661.4	0.000	F	661.4	0.000	+ 0.000 V/C
# 33 Hwy 214/Hwy 99E	E	71.1	1.044	E	71.1	1.044	+ 0.000 D/V

1C/14PRINT

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

Intersection #1 Hwy 214/Boones Ferry Rd

Cycle (sec): 120 Critical Vol./Cap. (X): 1.376
Loss Time (sec): 16 (Y+R = 4 sec) Average Delay (sec/veh): 137.1
Optimal Cycle: 180 Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Prot+Permit			Prot+Permit		
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			0 1 0 0 1			1 0 1 1 0			1 0 1 1 0		
Volume Module: 16:15 - 17: 15												
Base Vol:	215	220	260	220	255	215	245	1140	215	360	935	130
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:	215	220	260	220	255	215	245	1140	215	360	935	130
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:	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 Volume:	215	220	260	220	255	215	245	1140	215	360	935	130
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	215	220	260	220	255	215	245	1140	215	360	935	130
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.:	215	220	260	220	255	215	245	1140	215	360	935	130
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.94	0.91	0.91	0.96	0.96	0.83	0.37	0.90	0.90	0.35	0.89	0.89
Lanes:	1.00	0.46	0.54	0.46	0.54	1.00	1.00	1.68	0.32	1.00	1.76	0.24
Final Sat.:	1787	792	936	843	977	1583	699	2878	543	674	2963	412
Capacity Analysis Module:												
Vol/Sat:	0.12	0.28	0.28	0.26	0.26	0.14	0.35	0.40	0.40	0.53	0.32	0.32
Crit Moves:			****		****			****		****		
Green/Cycle:	0.21	0.21	0.21	0.20	0.20	0.20	0.44	0.30	0.30	0.49	0.32	0.32
Volume/Cap:	0.57	1.32	1.32	1.32	1.32	0.69	0.79	1.32	1.32	1.09	0.99	0.99
Delay/Veh:	44.7	210	209.7	210.6	211	51.0	43.9	193	193.1	112.2	66.5	66.5
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:	44.7	210	209.7	210.6	211	51.0	43.9	193	193.1	112.2	66.5	66.5
DesignQueue:	12	12	15	13	15	12	15	59	11	21	46	6

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

Intersection #2 Hwy 214/Meridian Dr

Average Delay (sec/veh): 115.3 Worst Case Level Of Service: F

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			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			1 0 0 1 0			1 0 1 1 0			1 0 1 1 0		
Volume Module:												
Base Vol:	30	5	30	85	5	75	70	1455	50	55	1375	40
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:	30	5	30	85	5	75	70	1455	50	55	1375	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:	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 Volume:	30	5	30	85	5	75	70	1455	50	55	1375	40
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	30	5	30	85	5	75	70	1455	50	55	1375	40
Critical Gap Module:												
Critical Gp:	7.5	6.5	6.9	7.5	6.5	6.9	4.2	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	2420	3145	753	2375	3150	708	1415	xxxx	xxxxx	1505	xxxx	xxxxx
Potent Cap.:	17	11	355	18	11	380	472	xxxx	xxxxx	446	xxxx	xxxxx
Move Cap.:	6	8	355	7	8	380	472	xxxx	xxxxx	446	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	xxxxx	xxxx	xxxxx	5933	xxxx	xxxxx	13.9	xxxx	xxxxx	14.2	xxxx	xxxxx
LOS by Move:	*	*	*	F	*	*	B	*	*	B	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	11	xxxxx	xxxx	xxxx	98	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	2903	xxxxx	xxxxx	xxxx	123.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	F	*	*	*	F	*	*	*	*	*	*
ApproachDel:	2903.0			3116.4			xxxxxx			xxxxxx		
ApproachLOS:	F			F			*			*		

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

Intersection #3 Hwy 214/Front St

Average Delay (sec/veh): 2.3 Worst Case Level Of Service: D

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			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 1			0 0 0 0 1			0 0 2 0 1			0 0 2 0 1		
Volume Module:												
Base Vol:	0	0	30	0	0	265	0	1320	200	0	1260	120
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	0	30	0	0	265	0	1320	200	0	1260	120
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:	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 Volume:	0	0	30	0	0	265	0	1320	200	0	1260	120
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	0	30	0	0	265	0	1320	200	0	1260	120
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	6.9	xxxxx	xxxx	6.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	3.3	xxxxx	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	669	xxxx	xxxx	630	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	405	xxxx	xxxx	424	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	402	xxxx	xxxx	424	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	xxxxx	xxxx	14.7	xxxxx	xxxx	26.6	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	B	*	*	D	*	*	*	*	*	*
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
Shrd StpDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	14.7			26.6			xxxxxx			xxxxxx		
ApproachLOS:	B			D			*			*		

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

Intersection #4 Hwy 214/Park Ave

Average Delay (sec/veh): 128.9 Worst Case Level Of Service: F

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			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			1 0 1 1 0			1 0 1 1 0		
Volume Module:												
Base Vol:	85	5	60	15	15	30	20	1115	155	60	1280	5
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:	85	5	60	15	15	30	20	1115	155	60	1280	5
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:	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 Volume:	85	5	60	15	15	30	20	1115	155	60	1280	5
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	85	5	60	15	15	30	20	1115	155	60	1280	5
Critical Gap Module:												
Critical Gp:	7.5	6.5	6.9	7.5	6.5	6.9	4.2	xxxx	xxxxx	4.2	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	2001	2638	637	2005	2713	644	1285	xxxx	xxxxx	1270	xxxx	xxxxx
Potent Cap.:	36	23	422	36	21	421	525	xxxx	xxxxx	537	xxxx	xxxxx
Move Cap.:	9	20	422	22	18	420	525	xxxx	xxxxx	537	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	12.1	xxxx	xxxxx	12.5	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	B	*	*	B	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	16	xxxxx	xxxx	38	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	4289	xxxxx	xxxxx	517	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	F	*	*	F	*	*	*	*	*	*	*
ApproachDel:	4289.2			516.7			xxxxxx			xxxxxx		
ApproachLOS:	F			F			*			*		

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--------------------------------------------------------------------------------
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               Woodburn Transportation System Plan Update
      2020 Future Conditions Alternative 2 Weekday PM Peak Hour
--------------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #10 Hwy 99/Cleveland St
********************************************************************************
Average Delay (sec/veh):      14.7          Worst Case Level Of Service:       F
********************************************************************************
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  1  0   0  1  0  1  0    1  0  0  1  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       70  780    5     5  860  175    120    1   70     15    5   45
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:    70  780    5     5  860  175    120    1   70     15    5   45
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:      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 Volume:     70  780    5     5  860  175    120    1   70     15    5   45
Reduct Vol:      0    0    0     0    0    0      0    0    0      0    0    0
Final Vol.:     70  780    5     5  860  175    120    1   70     15    5   45
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:   4.2 xxxx xxxxx  4.1 xxxx xxxxx   7.5  6.5  6.9    7.5  6.5  6.9
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:  1037 xxxx xxxxx  785 xxxx xxxxx  1492 1885  521   1364 1970  393
Potent Cap.:   660 xxxx xxxxx  829 xxxx xxxxx    87   72  506    108   63  612
Move Cap.:     659 xxxx xxxxx  829 xxxx xxxxx    68   63  505     84   56  612
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:  11.1 xxxx xxxxx  9.4 xxxx xxxxx 492.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     B    *    *     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  459   xxxx  190 xxxxx
Shrd StpDel:  11.1 xxxx xxxxx  9.4 xxxx xxxxx xxxxx xxxx 14.3 xxxxx 33.5 xxxxx
Shared LOS:      B    *    *     A    *    *      *    *    B      *    D    *
ApproachDel:       xxxxxx           xxxxxx           314.8             33.5
ApproachLOS:          *                *                F                D
```

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--------------------------------------------------------------------------------
            Kittelson & Associates, Inc.  -- Project # 5367.0
               Woodburn Transportation System Plan Update
      2020 Future Conditions Alternative 2 Weekday PM Peak Hour
--------------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #11 Front St/Hardcastle St
********************************************************************************
Average Delay (sec/veh):       5.7          Worst Case Level Of Service:       B
********************************************************************************
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      Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  0  0  1  0   0  1  0  0  0    0  0  0  0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0  150   60    30  155    0      0    0    0     45    0   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:     0  150   60    30  155    0      0    0    0     45    0   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:      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 Volume:      0  150   60    30  155    0      0    0    0     45    0   20
Reduct Vol:      0    0    0     0    0    0      0    0    0      0    0    0
Final Vol.:      0  150   60    30  155    0      0    0    0     45    0   20
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx  6.5  6.2    7.1  6.5 xxxxx xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx  4.0  3.3    3.5  4.0 xxxxx xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx  110    9    184  100 xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx
Potent Cap.: xxxx  780 1073    779  792 xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx
Move Cap.:   xxxx  780 1065    622  792 xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
LOS by Move:     *    *    *     *    *    *      *    *    *      A    *    *
Movement:       LT - LTR - RT   LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.:  xxxx xxxx  845   758 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx 10.7   11.3 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *    B     B    *    *      *    *    *      *    *    *
ApproachDel:        10.7             11.3           xxxxxx           xxxxxx
ApproachLOS:          B                B                *                *
```

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```
Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 2 Weekday PM Peak Hour
-------------------------------------------------------------------------------
Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)
*******************************************************************************
Intersection #12 Front St/Lincoln St
*******************************************************************************
Cycle (sec):        100          Critical Vol./Cap. (X):        0.381
Loss Time (sec):      0 (Y+R =  4 sec) Average Delay (sec/veh):   10.5
Optimal Cycle:        0          Level Of Service:                 B
*******************************************************************************
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:
Base Vol:      30  115   45    45  140   10    15  140   30    95  125   30
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:   30  115   45    45  140   10    15  140   30    95  125   30
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:     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 Volume:    30  115   45    45  140   10    15  140   30    95  125   30
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   30  115   45    45  140   10    15  140   30    95  125   30
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.:    30  115   45    45  140   10    15  140   30    95  125   30
------------|---------------||---------------||---------------||---------------|
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:       0.16 0.60 0.24  0.23 0.72 0.05  0.08 0.76 0.16  0.38 0.50 0.12
Final Sat.:   101  388  152   146  453   32    52  489  105   249  328   79
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.30 0.30 0.30  0.31 0.31 0.31  0.29 0.29 0.29  0.38 0.38 0.38
Crit Moves:            ****       ****             ****             ****
Delay/Veh:   10.2 10.2 10.2  10.4 10.4 10.4  10.1 10.1 10.1  11.1 11.1 11.1
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:  10.2 10.2 10.2  10.4 10.4 10.4  10.1 10.1 10.1  11.1 11.1 11.1
LOS by Move:    B    B    B     B    B    B     B    B    B     B    B    B
ApproachDel:      10.2             10.4             10.1             11.1
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       10.2             10.4             10.1             11.1
LOS by Appr:         B                B                B                B
*******************************************************************************
```



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Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 2 Weekday PM Peak Hour
-------------------------------------------------------------------------------
Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)
*******************************************************************************
Intersection #13 Front St/Garfield
*******************************************************************************
Cycle (sec):        100          Critical Vol./Cap. (X):        0.398
Loss Time (sec):      0 (Y+R =  4 sec) Average Delay (sec/veh):   11.0
Optimal Cycle:        0          Level Of Service:                 B
*******************************************************************************
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:
Base Vol:      10  120   30    30  155   30    25  200   30    30  175   55
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:   10  120   30    30  155   30    25  200   30    30  175   55
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:     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 Volume:    10  120   30    30  155   30    25  200   30    30  175   55
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   10  120   30    30  155   30    25  200   30    30  175   55
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.:    10  120   30    30  155   30    25  200   30    30  175   55
------------|---------------||---------------||---------------||---------------|
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:       0.06 0.75 0.19  0.14 0.72 0.14  0.10 0.78 0.12  0.12 0.67 0.21
Final Sat.:    38  450  113    86  444   86    63  506   76    75  440  138
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.27 0.27 0.27  0.35 0.35 0.35  0.40 0.40 0.40  0.40 0.40 0.40
Crit Moves:       ****             ****             ****             ****
Delay/Veh:   10.2 10.2 10.2  11.0 11.0 11.0  11.3 11.3 11.3  11.3 11.3 11.3
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:  10.2 10.2 10.2  11.0 11.0 11.0  11.3 11.3 11.3  11.3 11.3 11.3
LOS by Move:    B    B    B     B    B    B     B    B    B     B    B    B
ApproachDel:      10.2             11.0             11.3             11.3
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       10.2             11.0             11.3             11.3
LOS by Appr:         B                B                B                B
*******************************************************************************
```

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---------------------------------------------------------------------------
            Kittelson & Associates, Inc.  -- Project # 5367.0
               Woodburn Transportation System Plan Update
        2020 Future Conditions Alternative 2 Weekday PM Peak Hour
---------------------------------------------------------------------------
                    Level Of Service Computation Report
           2000 HCM 4-Way Stop Method (Base Volume Alternative)
***************************************************************************
Intersection #14 Front St/Cleveland St
***************************************************************************
Cycle (sec):          100              Critical Vol./Cap. (X):        0.274
Loss Time (sec):        0 (Y+R =  4 sec) Average Delay (sec/veh):       9.2
Optimal Cycle:          0              Level Of Service:                  A
***************************************************************************
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:
Base Vol:       5   80   45    85   95   10    10  100   35    55   65   70
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:    5   80   45    85   95   10    10  100   35    55   65   70
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:     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 Volume:     5   80   45    85   95   10    10  100   35    55   65   70
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:    5   80   45    85   95   10    10  100   35    55   65   70
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.:     5   80   45    85   95   10    10  100   35    55   65   70
------------|---------------||---------------||---------------||---------------|
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:       0.04 0.61 0.35  0.45 0.50 0.05  0.07 0.69 0.24  0.29 0.34 0.37
Final Sat.:    27  436  245   310  346   36    49  487  170   209  247  266
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.18 0.18 0.18  0.27 0.27 0.27  0.21 0.21 0.21  0.26 0.26 0.26
Crit Moves:            ****       ****       ****                  ****
Delay/Veh:    8.7  8.7  8.7   9.6  9.6  9.6   8.9  8.9  8.9   9.2  9.2  9.2
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:   8.7  8.7  8.7   9.6  9.6  9.6   8.9  8.9  8.9   9.2  9.2  9.2
LOS by Move:    A    A    A     A    A    A     A    A    A     A    A    A
ApproachDel:       8.7              9.6              8.9              9.2
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:        8.7              9.6              8.9              9.2
LOS by Appr:         A                A                A                A
***************************************************************************

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---------------------------------------------------------------------------
            Kittelson & Associates, Inc.  -- Project # 5367.0
               Woodburn Transportation System Plan Update
        2020 Future Conditions Alternative 2 Weekday PM Peak Hour
---------------------------------------------------------------------------
                    Level Of Service Computation Report
           2000 HCM 4-Way Stop Method (Base Volume Alternative)
***************************************************************************
Intersection #15 Boones Ferry Rd/Crosby Rd
***************************************************************************
Cycle (sec):          100              Critical Vol./Cap. (X):        0.306
Loss Time (sec):        0 (Y+R =  4 sec) Average Delay (sec/veh):       9.1
Optimal Cycle:          0              Level Of Service:                  A
***************************************************************************
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:
Base Vol:      45  115   10    10  185   40    20   50   75    40   15    5
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:   45  115   10    10  185   40    20   50   75    40   15    5
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:     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 Volume:    45  115   10    10  185   40    20   50   75    40   15    5
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   45  115   10    10  185   40    20   50   75    40   15    5
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.:    45  115   10    10  185   40    20   50   75    40   15    5
------------|---------------||---------------||---------------||---------------|
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:       0.26 0.68 0.06  0.04 0.79 0.17  0.14 0.34 0.52  0.67 0.25 0.08
Final Sat.:   193  494   43    33  605  131   100  249  374   435  163   54
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.23 0.23 0.23  0.31 0.31 0.31  0.20 0.20 0.20  0.09 0.09 0.09
Crit Moves:  ****                 ****             ****        ****
Delay/Veh:    9.1  9.1  9.1   9.4  9.4  9.4   8.7  8.7  8.7   8.5  8.5  8.5
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:   9.1  9.1  9.1   9.4  9.4  9.4   8.7  8.7  8.7   8.5  8.5  8.5
LOS by Move:    A    A    A     A    A    A     A    A    A     A    A    A
ApproachDel:       9.1              9.4              8.7              8.5
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:        9.1              9.4              8.7              8.5
LOS by Appr:         A                A                A                A
***************************************************************************

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------------------------------------------------------------------------------
            Kittelson & Associates, Inc.  -- Project # 5367.0
                Woodburn Transportation System Plan Update
        2020 Future Conditions Alternative 2 Weekday PM Peak Hour
------------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM 4-Way Stop Method (Base Volume Alternative)
******************************************************************************
Intersection #22 Boones Ferry Rd/Parr Rd
******************************************************************************
Cycle (sec):          100               Critical Vol./Cap. (X):        0.215
Loss Time (sec):        8 (Y+R =  4 sec) Average Delay (sec/veh):        8.9
Optimal Cycle:          0               Level Of Service:                  A
******************************************************************************
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   1  0  0  1  0   1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      35    75    35    15   100    45    55    50    40    50    30    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:   35    75    35    15   100    45    55    50    40    50    30    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:     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 Volume:    35    75    35    15   100    45    55    50    40    50    30    20
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:   35    75    35    15   100    45    55    50    40    50    30    20
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.:    35    75    35    15   100    45    55    50    40    50    30    20
------------|---------------||---------------||---------------||---------------|
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  0.68  0.32  1.00  0.69  0.31  1.00  0.56  0.44  1.00  0.60  0.40
Final Sat.:   597   462   216   594   466   210   584   373   298   577   396   264
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06  0.16  0.16  0.03  0.21  0.21  0.09  0.13  0.13  0.09  0.08  0.08
Crit Moves:              ****              ****        ****        ****
Delay/Veh:    8.9   8.7   8.7   8.7   9.2   9.2   9.2   8.6   8.6   9.2   8.3   8.3
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:   8.9   8.7   8.7   8.7   9.2   9.2   9.2   8.6   8.6   9.2   8.3   8.3
LOS by Move:    A     A     A     A     A     A     A     A     A     A     A     A
ApproachDel:        8.8               9.1               8.8               8.7
Delay Adj:         1.00              1.00              1.00              1.00
ApprAdjDel:         8.8               9.1               8.8               8.7
LOS by Appr:          A                 A                 A                 A
******************************************************************************

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------------------------------------------------------------------------------
            Kittelson & Associates, Inc.  -- Project # 5367.0
                Woodburn Transportation System Plan Update
        2020 Future Conditions Alternative 2 Weekday PM Peak Hour
------------------------------------------------------------------------------
                    Level Of Service Computation Report
         2000 HCM Unsignalized Method (Base Volume Alternative)
******************************************************************************
Intersection #25 Hwy 214/Cascade Drive
******************************************************************************
Average Delay (sec/veh):     1.7         Worst Case Level Of Service:     F
******************************************************************************
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      Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       1  0  0  0  1   0  0  0  0  0   0  0  1  1  0   1  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      22     0    25     0     0     0     0  1665    85    20  1300     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:   22     0    25     0     0     0     0  1665    85    20  1300     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:     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 Volume:    22     0    25     0     0     0     0  1665    85    20  1300     0
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Final Vol.:    22     0    25     0     0     0     0  1665    85    20  1300     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.9  xxxx   7.0 xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx   4.2  xxxx xxxxx
FollowUpTim:  3.5  xxxx   3.3 xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx   2.2  xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 2403  xxxx   875  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx  1750  xxxx xxxxx
Potent Cap.:   27  xxxx   290  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx   346  xxxx xxxxx
Move Cap.:     26  xxxx   290  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx   346  xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:341.9  xxxx  18.6 xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx  16.0  xxxx xxxxx
LOS by Move:    F     *     C     *     *     *     *     *     *     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
Shrd StpDel:xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx
Shared LOS:     *     *     *     *     *     *     *     *     *     *     *     *
ApproachDel:      169.9            xxxxxx            xxxxxx            xxxxxx
ApproachLOS:          F                 *                 *                 *

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Woodburn Transportation System Plan Update
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Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #26 Hwy 214/Oregon Way

Cycle (sec): 120 Critical Vol./Cap. (X): 0.729
Loss Time (sec): 12 (Y+R = 4 sec) Average Delay (sec/veh): 22.4
Optimal Cycle: 66 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:		Permitted			Permitted			Protected			Protected	
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			1 0 1 1 0			1 0 1 1 0	
Volume Module: 45												
Base Vol:	73	70	105	110	65	65	80	1590	30	115	1098	70
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:	73	70	105	110	65	65	80	1590	30	115	1098	70
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:	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 Volume:	73	70	105	110	65	65	80	1590	30	115	1098	70
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	73	70	105	110	65	65	80	1590	30	115	1098	70
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.:	73	70	105	110	65	65	80	1590	30	115	1098	70
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.55	0.91	0.91	0.44	0.93	0.92	0.93	0.93	0.93	0.91	0.91	0.91
Lanes:	1.00	0.40	0.60	1.00	0.50	0.50	1.00	1.96	0.04	1.00	1.88	0.12
Final Sat.:	1052	690	1035	840	878	878	1769	3462	65	1736	3235	206
Capacity Analysis Module:												
Vol/Sat:	0.07	0.10	0.10	0.13	0.07	0.07	0.05	0.46	0.46	0.07	0.34	0.34
Crit Moves:				****				****		****		
Green/Cycle:	0.18	0.18	0.18	0.18	0.18	0.18	0.08	0.63	0.63	0.09	0.64	0.64
Volume/Cap:	0.39	0.57	0.57	0.73	0.41	0.41	0.53	0.73	0.73	0.73	0.53	0.53
Delay/Veh:	44.7	47.4	47.4	62.9	44.5	44.5	56.4	16.5	16.5	68.9	12.3	12.3
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:	44.7	47.4	47.4	62.9	44.5	44.5	56.4	16.5	16.5	68.9	12.3	12.3
DesignQueue:	4	4	6	6	4	4	5	44	1	7	29	2

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

Intersection #27 Hwy 214/Evergreen Road

Cycle (sec): 120 Critical Vol./Cap. (X): 0.769
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 22.7
Optimal Cycle: 61 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:		Permitted			Permitted			Prot+Permit			Prot+Permit	
Rights:		Include			Include			Include			Include	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:		1 1 0 0 1			1 0 0 1 0			1 0 2 0 1			1 0 1 1 0	
Volume Module:												
Base Vol:	320	20	200	15	20	45	50	1525	90	150	1110	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:	320	20	200	15	20	45	50	1525	90	150	1110	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:	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 Volume:	320	20	200	15	20	45	50	1525	90	150	1110	15
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	320	20	200	15	20	45	50	1525	90	150	1110	15
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.:	320	20	200	15	20	45	50	1525	90	150	1110	15
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.46	0.46	0.84	0.72	0.86	0.86	0.24	0.92	0.82	0.20	0.91	0.91
Lanes:	1.88	0.12	1.00	1.00	0.31	0.69	1.00	2.00	1.00	1.00	1.97	0.03
Final Sat.:	1633	102	1597	1373	504	1133	455	3505	1557	385	3420	46
Capacity Analysis Module:												
Vol/Sat:	0.20	0.20	0.13	0.01	0.04	0.04	0.11	0.44	0.06	0.39	0.32	0.32
Crit Moves:		****						****		****		
Green/Cycle:	0.25	0.25	0.25	0.25	0.25	0.25	0.62	0.57	0.57	0.70	0.62	0.62
Volume/Cap:	0.77	0.77	0.49	0.04	0.16	0.16	0.18	0.77	0.10	0.56	0.52	0.52
Delay/Veh:	49.4	49.4	39.0	33.7	34.9	34.9	11.1	21.9	12.0	26.6	12.8	12.8
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:	49.4	49.4	39.0	33.7	34.9	34.9	11.1	21.9	12.0	26.6	12.8	12.8
DesignQueue:	16	1	10	1	1	2	3	49	3	9	30	0

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

Intersection #28 Hwy 214/I-5 NB ramp

Cycle (sec):	120	Critical Vol./Cap. (X):	0.606
Loss Time (sec):	8 (Y+R = 4 sec)	Average Delay (sec/veh):	19.8
Optimal Cycle:	40	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1!	0 1	0 0	0	0 0	0 0	2	0 1	0 0	2	0 1
Volume Module:												
Base Vol:	235	0	580	0	0	0	0	1235	285	0	1095	415
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:	235	0	580	0	0	0	0	1235	285	0	1095	415
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:	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 Volume:	235	0	580	0	0	0	0	1235	285	0	1095	415
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	235	0	580	0	0	0	0	1235	285	0	1095	415
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.:	235	0	580	0	0	0	0	1235	285	0	1095	415
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.80	1.00	0.80	1.00	1.00	1.00	1.00	0.95	0.85	1.00	0.90	0.81
Lanes:	1.29	0.00	1.71	0.00	0.00	0.00	0.00	2.00	1.00	0.00	2.00	1.00
Final Sat.:	1955	0	2597	0	0	0	0	3610	1615	0	3432	1535
Capacity Analysis Module:												
Vol/Sat:	0.12	0.00	0.22	0.00	0.00	0.00	0.00	0.34	0.18	0.00	0.32	0.27
Crit Moves:			****					****				
Green/Cycle:	0.37	0.00	0.37	0.00	0.00	0.00	0.00	0.56	0.56	0.00	0.56	0.56
Volume/Cap:	0.33	0.00	0.61	0.00	0.00	0.00	0.00	0.61	0.31	0.00	0.57	0.48
Delay/Veh:	27.3	0.0	31.6	0.0	0.0	0.0	0.0	17.8	14.0	0.0	17.1	16.0
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:	27.3	0.0	31.6	0.0	0.0	0.0	0.0	17.8	14.0	0.0	17.1	16.0
DesignQueue:	10	0	26	0	0	0	0	39	9	0	34	13

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

Intersection #29 Hwy 214/I-5 SB ramp

Cycle (sec):	120	Critical Vol./Cap. (X):	0.615
Loss Time (sec):	8 (Y+R = 4 sec)	Average Delay (sec/veh):	20.0
Optimal Cycle:	40	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0 0	1 0	1!	0 1	0 0	2	0 1	0 0	2	0 1
Volume Module:												
Base Vol:	0	0	0	596	0	360	0	925	445	0	785	545
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	0	0	596	0	360	0	925	445	0	785	545
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:	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 Volume:	0	0	0	596	0	360	0	925	445	0	785	545
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	596	0	360	0	925	445	0	785	545
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	0	0	596	0	360	0	925	445	0	785	545
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.85	1.00	0.85	1.00	0.88	0.78	1.00	0.92	0.83
Lanes:	0.00	0.00	0.00	1.62	0.00	1.38	0.00	2.00	1.00	0.00	2.00	1.00
Final Sat.:	0	0	0	2633	0	2232	0	3334	1491	0	3506	1569
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.23	0.00	0.16	0.00	0.28	0.30	0.00	0.22	0.35
Crit Moves:				****								****
Green/Cycle:	0.00	0.00	0.00	0.37	0.00	0.37	0.00	0.57	0.57	0.00	0.57	0.57
Volume/Cap:	0.00	0.00	0.00	0.61	0.00	0.44	0.00	0.49	0.53	0.00	0.40	0.61
Delay/Veh:	0.0	0.0	0.0	31.7	0.0	28.7	0.0	15.9	16.8	0.0	14.8	18.7
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	0.0	0.0	31.7	0.0	28.7	0.0	15.9	16.8	0.0	14.8	18.7
DesignQueue:	0	0	0	26	0	16	0	29	14	0	24	17

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

Intersection #31 Hwy 214/Woodland Avenue

Cycle (sec): 120 Critical Vol./Cap. (X): 0.731
Loss Time (sec): 12 (Y+R = 4 sec) Average Delay (sec/veh): 43.2
Optimal Cycle: 67 Level Of Service: D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
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	1 0	1!	0 0	1 0	2	0 1	1 0	2	0 1
Volume Module:												
Base Vol:	35	10	295	465	5	15	100	775	25	95	775	225
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:	35	10	295	465	5	15	100	775	25	95	775	225
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:	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 Volume:	35	10	295	465	5	15	100	775	25	95	775	225
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	35	10	295	465	5	15	100	775	25	95	775	225
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.:	35	10	295	465	5	15	100	775	25	95	775	225
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.76	0.76	0.76	0.94	0.94	0.94	0.92	0.92	0.83	0.91	0.91	0.82
Lanes:	0.10	0.03	0.87	1.92	0.02	0.06	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	148	42	1248	3430	35	106	1753	3505	1568	1736	3473	1554
Capacity Analysis Module:												
Vol/Sat:	0.24	0.24	0.24	0.14	0.14	0.14	0.06	0.22	0.02	0.05	0.22	0.14
Crit Moves:			****			****	****				****	
Green/Cycle:	0.32	0.32	0.32	0.19	0.19	0.19	0.08	0.31	0.31	0.08	0.31	0.31
Volume/Cap:	0.73	0.73	0.73	0.70	0.73	0.73	0.73	0.72	0.05	0.72	0.73	0.47
Delay/Veh:	41.8	41.8	41.8	48.4	49.6	49.6	72.2	39.4	29.3	71.6	39.9	34.6
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:	41.8	41.8	41.8	48.4	49.6	49.6	72.2	39.4	29.3	71.6	39.9	34.6
DesignQueue:	2	0	14	26	0	1	6	38	1	6	38	11

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

Intersection #32 Hwy 214/Butteville Road

Average Delay (sec/veh): 661.4 Worst Case Level Of Service: F

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			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1!	0 0	0 0	0	0 0	0 0	0	1 0	1 0	1	0 0
Volume Module:												
Base Vol:	250	0	535	0	0	0	0	355	220	510	305	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:	250	0	535	0	0	0	0	355	220	510	305	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:	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 Volume:	250	0	535	0	0	0	0	355	220	510	305	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	250	0	535	0	0	0	0	355	220	510	305	0
Critical Gap Module:												
Critical Gp:	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1790	xxxx	465	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	575	xxxx	xxxxx
Potent Cap.:	90	xxxx	599	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	993	xxxx	xxxxx
Move Cap.:	53	xxxx	599	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	993	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	12.4	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	B	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	141	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	2124	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	F	*	*	*	*	*	*	*	*	*	*
ApproachDel:		2123.7			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		F			*			*			*	

Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 2 Weekday PM Peak Hour

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

Intersection #33 Hwy 214/Hwy 99E

Cycle (sec): 120 Critical Vol./Cap. (X): 1.044
Loss Time (sec): 16 (Y+R = 4 sec) Average Delay (sec/veh): 71.1
Optimal Cycle: 180 Level Of Service: E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	2 0	2 0	1	1 0	1 1	0	1 0	2 0	1	1 0	1 1	0
Volume Module:												
Base Vol:	310	450	235	185	755	340	275	575	305	510	660	55
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:	310	450	235	185	755	340	275	575	305	510	660	55
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:	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 Volume:	310	450	235	185	755	340	275	575	305	510	660	55
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	310	450	235	185	755	340	275	575	305	510	660	55
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.:	310	450	235	185	755	340	275	575	305	510	660	55
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.89	0.91	0.82	0.93	0.89	0.89	0.92	0.92	0.83	0.91	0.90	0.90
Lanes:	2.00	2.00	1.00	1.00	1.38	0.62	1.00	2.00	1.00	1.00	1.85	0.15
Final Sat.:	3369	3473	1554	1769	2325	1047	1753	3505	1568	1736	3167	264
Capacity Analysis Module:												
Vol/Sat:	0.09	0.13	0.15	0.10	0.32	0.32	0.16	0.16	0.19	0.29	0.21	0.21
Crit Moves:	****				****				****	****		
Green/Cycle:	0.09	0.24	0.24	0.16	0.31	0.31	0.20	0.19	0.19	0.28	0.27	0.27
Volume/Cap:	1.04	0.55	0.64	0.64	1.04	1.04	0.78	0.88	1.04	1.04	0.78	0.78
Delay/Veh:	119.0	41.0	45.1	51.7	81.4	81.4	56.2	60.7	113.5	95.9	45.2	45.2
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:	119.0	41.0	45.1	51.7	81.4	81.4	56.2	60.7	113.5	95.9	45.2	45.2
DesignQueue:	19	24	12	11	38	17	15	32	17	26	34	3

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---------------------------------------------------------------------------------
            Kittelson & Associates, Inc.  -- Project # 5367.0
               Woodburn Transportation System Plan Update
        2020 Future Conditions Alternative 2 Weekday PM Peak Hour
---------------------------------------------------------------------------------
                  Level Of Service Computation Report
        2000 HCM Unsignalized Method (Future Volume Alternative)
*********************************************************************************
Intersection #34 OR 219/Butteville (North Intersection)
*********************************************************************************
Average Delay (sec/veh):    250.7   Worst Case Level Of Service:       F[744.8]
*********************************************************************************
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       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  0  1! 0  0   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   275    0   300   290  300     0     0  290   265
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    0     0   275    0   300   290  300     0     0  290   265
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0   275    0   300   290  300     0     0  290   265
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:     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 Volume:     0    0     0   275    0   300   290  300     0     0  290   265
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     0    0     0   275    0   300   290  300     0     0  290   265
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4 xxxx   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5 xxxx   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1303 xxxx   422   555 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   179 xxxx   636  1026 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   132 xxxx   636  1026 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  2.08 xxxx  0.47  0.28 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx xxxx xxxxx xxxxx xxxx xxxxx   1.2 xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   9.9 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  225 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx 48.2 xxxxx   1.2 xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx  745 xxxxx   9.9 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    F     *     A    *     *     *    *     *
ApproachDel:     xxxxxx           744.8           xxxxxx           xxxxxx
ApproachLOS:        *               F                *                *
```

Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 2 (Mitigated) Weekday PM Peak Hour

Scenario Report

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

Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 2 (Mitigated) 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 Hwy 214/Boones Ferry Rd	D	53.3	0.895	D	53.3	0.895	+ 0.000 D/V
# 2 Hwy 214/Meridian Dr	B	10.9	0.599	B	10.9	0.599	+ 0.000 D/V
# 4 Hwy 214/Park Ave	A	6.7	0.554	A	6.7	0.554	+ 0.000 D/V
# 10 Hwy 99/Cleveland St	A	6.7	0.467	A	6.7	0.467	+ 0.000 D/V
# 33 Hwy 214/Hwy 99E	D	46.5	0.774	D	46.5	0.774	+ 0.000 D/V
# 34 Hwy 214/Butteville Road	B	15.6	0.728	B	15.6	0.728	+ 0.000 D/V

Traffix 7.5.0715 (c) 2002 Dowling Assoc. Licensed to DOWLING ASSOCIATES, INC.

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Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 2 (Mitigated) Weekday PM Peak Hour
-----------------------------------------------------------------------------
Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #1 Hwy 214/Boones Ferry Rd
*****************************************************************************
Cycle (sec):        120               Critical Vol./Cap. (X):        0.895
Loss Time (sec):     16 (Y+R =  4 sec) Average Delay (sec/veh):       53.3
Optimal Cycle:      159               Level Of Service:                  D
*****************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:       1  0  1  0  1   1  0  1  0  1   1  0  2  0  1   1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15 - 17: 15
Base Vol:     215  220  260   220  255  215   245 1140  215   360  935  130
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:  215  220  260   220  255  215   245 1140  215   360  935  130
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:     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 Volume:   215  220  260   220  255  215   245 1140  215   360  935  130
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:  215  220  260   220  255  215   245 1140  215   360  935  130
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.:   215  220  260   220  255  215   245 1140  215   360  935  130
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment:  0.94 0.99 0.84  0.93 0.98 0.83  0.37 0.92 0.82  0.39 0.89 0.89
Lanes:       1.00 1.00 1.00  1.00 1.00 1.00  1.00 2.00 1.00  1.00 1.76 0.24
Final Sat.:  1787 1881 1599  1769 1862 1583   707 3505 1566   737 2963  412
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.12 0.16  0.12 0.14 0.14  0.35 0.33 0.14  0.49 0.32 0.32
Crit Moves:            ****  ****                  ****       ****
Green/Cycle: 0.14 0.17 0.17  0.13 0.16 0.16  0.52 0.34 0.34  0.60 0.39 0.39
Volume/Cap:  0.85 0.68 0.95  0.95 0.85 0.84  0.67 0.95 0.40  0.82 0.81 0.81
Delay/Veh:   73.1 52.5 89.5  96.4 68.9 70.6  33.0 53.6 30.5  45.2 36.3 36.3
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:  73.1 52.5 89.5  96.4 68.9 70.6  33.0 53.6 30.5  45.2 36.3 36.3
DesignQueue:   13   13   15    13   15   12    14   54   10    20   41    6
*****************************************************************************
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Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 2 (Mitigated) Weekday PM Peak Hour
-----------------------------------------------------------------------------
Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #2 Hwy 214/Meridian Dr
*****************************************************************************
Cycle (sec):         90               Critical Vol./Cap. (X):        0.599
Loss Time (sec):     12 (Y+R =  4 sec) Average Delay (sec/veh):       10.9
Optimal Cycle:       47               Level Of Service:                  B
*****************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected        Protected
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   1  0  0  1  0   1  0  1  1  0   1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      30    5   30    85    5   75    70 1455   50    55 1375   40
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:   30    5   30    85    5   75    70 1455   50    55 1375   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:     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 Volume:    30    5   30    85    5   75    70 1455   50    55 1375   40
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   30    5   30    85    5   75    70 1455   50    55 1375   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
Final Vol.:    30    5   30    85    5   75    70 1455   50    55 1375   40
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment:  0.75 0.75 0.75  0.79 0.85 0.85  0.92 0.92 0.92  0.94 0.94 0.94
Lanes:       0.46 0.08 0.46  1.00 0.06 0.94  1.00 1.93 0.07  1.00 1.94 0.06
Final Sat.:   660  110  660  1499  101 1515  1753 3372  116  1787 3459  101
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.05 0.05  0.06 0.05 0.05  0.04 0.43 0.43  0.03 0.40 0.40
Crit Moves:                  ****                  ****       ****
Green/Cycle: 0.09 0.09 0.09  0.09 0.09 0.09  0.07 0.72 0.72  0.05 0.70 0.70
Volume/Cap:  0.48 0.48 0.48  0.60 0.52 0.52  0.57 0.60 0.60  0.60 0.57 0.57
Delay/Veh:   41.3 41.3 41.3  46.0 42.1 42.1  46.5  6.6  6.6  52.2  7.0  7.0
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:  41.3 41.3 41.3  46.0 42.1 42.1  46.5  6.6  6.6  52.2  7.0  7.0
DesignQueue:    1    0    1     4    0    3     3   23    1     3   23    1
*****************************************************************************
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Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 2 (Mitigated) Weekday PM Peak Hour

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

Intersection #4 Hwy 214/Park Ave

Cycle (sec):	60	Critical Vol./Cap. (X):	0.554
Loss Time (sec):	8 (Y+R = 4 sec)	Average Delay (sec/veh):	6.7
Optimal Cycle:	33	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
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			1 0 1 1 0			1 0 1 1 0		
Volume Module:												
Base Vol:	85	5	60	15	15	30	20	1115	155	60	1280	5
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:	85	5	60	15	15	30	20	1115	155	60	1280	5
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:	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 Volume:	85	5	60	15	15	30	20	1115	155	60	1280	5
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	85	5	60	15	15	30	20	1115	155	60	1280	5
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.:	85	5	60	15	15	30	20	1115	155	60	1280	5
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.73	0.73	0.73	0.85	0.85	0.85	0.17	0.90	0.90	0.17	0.92	0.92
Lanes:	0.57	0.03	0.40	0.25	0.25	0.50	1.00	1.76	0.24	1.00	1.99	0.01
Final Sat.:	790	46	557	405	405	809	318	2994	416	327	3488	14
Capacity Analysis Module:												
Vol/Sat:	0.11	0.11	0.11	0.04	0.04	0.04	0.06	0.37	0.37	0.18	0.37	0.37
Crit Moves:		****						****				
Green/Cycle:	0.19	0.19	0.19	0.19	0.19	0.19	0.67	0.67	0.67	0.67	0.67	0.67
Volume/Cap:	0.55	0.55	0.55	0.19	0.19	0.19	0.09	0.55	0.55	0.27	0.55	0.55
Delay/Veh:	24.3	24.3	24.3	20.5	20.5	20.5	3.6	5.4	5.4	4.6	5.4	5.4
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:	24.3	24.3	24.3	20.5	20.5	20.5	3.6	5.4	5.4	4.6	5.4	5.4
DesignQueue:	2	0	2	0	0	1	0	13	2	1	15	0

Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 2 (Mitigated) Weekday PM Peak Hour

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

Intersection #10 Hwy 99/Cleveland St

Cycle (sec):	60	Critical Vol./Cap. (X):	0.467
Loss Time (sec):	8 (Y+R = 4 sec)	Average Delay (sec/veh):	6.7
Optimal Cycle:	29	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1 0 1 0			0 1 0 1 0			1 0 0 1 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	70	780	5	5	860	175	120	1	70	15	5	45
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:	70	780	5	5	860	175	120	1	70	15	5	45
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:	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 Volume:	70	780	5	5	860	175	120	1	70	15	5	45
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	70	780	5	5	860	175	120	1	70	15	5	45
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.:	70	780	5	5	860	175	120	1	70	15	5	45
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.74	0.74	0.74	0.86	0.86	0.86	0.72	0.85	0.85	0.84	0.84	0.84
Lanes:	0.16	1.83	0.01	0.01	1.65	0.34	1.00	0.01	0.99	0.23	0.08	0.69
Final Sat.:	231	2572	16	16	2715	553	1370	23	1596	370	123	1111
Capacity Analysis Module:												
Vol/Sat:	0.30	0.30	0.30	0.32	0.32	0.32	0.09	0.04	0.04	0.04	0.04	0.04
Crit Moves:					****		****					
Green/Cycle:	0.68	0.68	0.68	0.68	0.68	0.68	0.19	0.19	0.19	0.19	0.19	0.19
Volume/Cap:	0.45	0.45	0.45	0.47	0.47	0.47	0.47	0.23	0.23	0.22	0.22	0.22
Delay/Veh:	4.6	4.6	4.6	4.7	4.7	4.7	23.0	21.1	21.1	21.0	21.0	21.0
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:	4.6	4.6	4.6	4.7	4.7	4.7	23.0	21.1	21.1	21.0	21.0	21.0
DesignQueue:	1	9	0	0	10	2	3	0	2	0	0	1

Traffix 7.5.0715 (c) 2002 Dowling Assoc. Licensed to DOWLING ASSOCIATES, INC.

Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 2 (Mitigated) Weekday PM Peak Hour

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

Intersection #33 Hwy 214/Hwy 99E

Cycle (sec): 120 Critical Vol./Cap. (X): 0.774
Loss Time (sec): 16 (Y+R = 4 sec) Average Delay (sec/veh): 46.5
Optimal Cycle: 86 Level Of Service: D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	2 0 2 0 1			1 0 2 0 1			1 0 2 0 1			2 0 1 1 0		
Volume Module:												
Base Vol:	310	450	235	185	755	340	275	575	305	510	660	55
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:	310	450	235	185	755	340	275	575	305	510	660	55
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:	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 Volume:	310	450	235	185	755	340	275	575	305	510	660	55
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	310	450	235	185	755	340	275	575	305	510	660	55
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.:	310	450	235	185	755	340	275	575	305	510	660	55
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.89	0.91	0.82	0.93	0.93	0.83	0.92	0.92	0.83	0.89	0.90	0.90
Lanes:	2.00	2.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00	2.00	1.85	0.15
Final Sat.:	3369	3473	1554	1769	3538	1583	1753	3505	1568	3369	3167	264
Capacity Analysis Module:												
Vol/Sat:	0.09	0.13	0.15	0.10	0.21	0.21	0.16	0.16	0.19	0.15	0.21	0.21
Crit Moves:	****				****		****				****	
Green/Cycle:	0.12	0.23	0.23	0.16	0.28	0.28	0.20	0.27	0.27	0.21	0.27	0.27
Volume/Cap:	0.77	0.56	0.65	0.65	0.77	0.78	0.77	0.62	0.73	0.73	0.77	0.77
Delay/Veh:	60.4	41.4	45.6	52.3	43.9	48.8	55.4	40.0	46.8	48.5	44.6	44.6
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:	60.4	41.4	45.6	52.3	43.9	48.8	55.4	40.0	46.8	48.5	44.6	44.6
DesignQueue:	19	24	12	11	38	17	15	29	16	28	34	3

Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 2 (Mitigated) Weekday PM Peak Hour

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

Intersection #34 Hwy 214/Butteville Road

Cycle (sec): 60 Critical Vol./Cap. (X): 0.728
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 15.6
Optimal Cycle: 47 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 1 0 1			1 0 1 0 0			0 0 0 0 0			1 0 0 0 1		
Volume Module:												
Base Vol:	0	250	535	355	220	0	0	0	0	510	0	305
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	250	535	355	220	0	0	0	0	510	0	305
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:	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 Volume:	0	250	535	355	220	0	0	0	0	510	0	305
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	250	535	355	220	0	0	0	0	510	0	305
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	250	535	355	220	0	0	0	0	510	0	305
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.99	0.84	0.55	0.96	1.00	1.00	1.00	1.00	0.92	1.00	0.83
Lanes:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1881	1599	1046	1828	0	0	0	0	1753	0	1568
Capacity Analysis Module:												
Vol/Sat:	0.00	0.13	0.33	0.34	0.12	0.00	0.00	0.00	0.00	0.29	0.00	0.19
Crit Moves:				****						****		
Green/Cycle:	0.00	0.47	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.40	0.00	0.40
Volume/Cap:	0.00	0.28	0.72	0.73	0.26	0.00	0.00	0.00	0.00	0.73	0.00	0.49
Delay/Veh:	0.0	10.0	16.2	18.4	9.9	0.0	0.0	0.0	0.0	19.1	0.0	14.0
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	10.0	16.2	18.4	9.9	0.0	0.0	0.0	0.0	19.1	0.0	14.0
DesignQueue:	0	5	10	7	4	0	0	0	0	11	0	6

Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 2 (Mitigated) Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #35 OR 219/Butteville (North Intersection)

Cycle (sec):	60	Critical Vol./Cap. (X):	0.765
Loss Time (sec):	8 (Y+R = 4 sec)	Average Delay (sec/veh):	15.4
Optimal Cycle:	51	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:		Split Phase			Split Phase			Permitted			Permitted	
Rights:		Include			Include			Include			Include	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 0 0 0			1 0 0 0 1			0 1 0 0 0			0 0 0 1 0		
Volume Module:												
Base Vol:	0	0	0	275	0	300	290	300	0	0	290	265
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	0	0	275	0	300	290	300	0	0	290	265
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	275	0	300	290	300	0	0	290	265
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:	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 Volume:	0	0	0	275	0	300	290	300	0	0	290	265
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	275	0	300	290	300	0	0	290	265
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	0	0	275	0	300	290	300	0	0	290	265
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.65	0.65	1.00	1.00	0.94	0.94
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.49	0.51	0.00	0.00	0.52	0.48
Final Sat.:	0	0	0	1805	0	1615	608	629	0	0	929	849
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.15	0.00	0.19	0.48	0.48	0.00	0.00	0.31	0.31
Crit Moves:						****		****				
Green/Cycle:	0.00	0.00	0.00	0.24	0.00	0.24	0.62	0.62	0.00	0.00	0.62	0.62
Volume/Cap:	0.00	0.00	0.00	0.63	0.00	0.76	0.76	0.76	0.00	0.00	0.50	0.50
Delay/Veh:	0.0	0.0	0.0	23.2	0.0	29.8	12.7	12.7	0.0	0.0	6.5	6.5
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	0.0	0.0	23.2	0.0	29.8	12.7	12.7	0.0	0.0	6.5	6.5
AustraQueue:	0	0	0	4	0	5	4	4	0	0	3	3

Woodburn TSP Traffic Volumes

INTERSECTION: Butteville/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed		30	70	200	60					115		175
EX Model		15	85	180	25					70		155
Future Model		300	370	345	230					290		280
Future Delta	0	315	355	365	265	0	0	0	0	335	0	300
Future %	#DIV/0!	600	305	383	552	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	476	#DIV/0!	316
Future Obs	**#DIV/0!**	**458**	**330**	**374**	**409**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**406**	**#DIV/0!**	**308**
Analysis Volume		**315**	**380**	**430**	**265**					**405**		**310**

INTERSECTION: Woodland/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	5	10	85	400	5	15	25	290	5	65	280	205
EX Model	30	10	45	250	2	1	15	220	30	115	190	1
Future Model	105	10	160	213	1	1	70	565	85	110	445	1
Future Delta	80	10	200	363	4	15	80	635	60	60	535	205
Future %	18	10	302	341	3	15	117	745	14	62	656	205
Future Obs	**49**	**10**	**251**	**352**	**3**	**15**	**98**	**690**	**37**	**61**	**595**	**205**
Analysis Volume	**50**	**10**	**250**	**350**	**5**	**15**	**100**	**690**	**35**	**65**	**645**	**220**

*EB left-turn from Arney

INTERSECTION: I-5 SB/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed				440	5	280		515	260	395	520	
EX Model				360	1	95		435	150	415	540	
Future Model				485	1	190		550	320	530	635	
Future Delta	0	0	0	565	5	375	0	630	430	510	615	0
Future %	#DIV/0!	#DIV/0!	#DIV/0!	593	5	560	#DIV/0!	651	555	504	611	#DIV/0!
Future Obs	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**579**	**5**	**468**	**#DIV/0!**	**641**	**492**	**507**	**613**	**#DIV/0!**
Analysis Volume				**595**	**5**	**360**		**655**	**490**	**500**	**620**	

INTERSECTION: I-5 NB/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	160	5	380				165	790			755	305
EX Model	145	1	405				90	705			810	345
Future Model	215	1	605				170	875			950	490
Future Delta	230	5	580	0	0	0	245	960	0	0	895	450
Future %	237	5	568	#DIV/0!	#DIV/0!	#DIV/0!	312	980	#DIV/0!	#DIV/0!	885	433
Future Obs	**234**	**5**	**574**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**278**	**970**	**#DIV/0!**	**#DIV/0!**	**890**	**442**
Analysis Volume	**235**	**5**	**580**				**280**	**970**			**885**	**420**

INTERSECTION: Evergreen/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	270	20	125	15	20	45	45	895	60	100	750	15
EX Model	385	1	140	1	1	1	1	765	340	85	770	1
Future Model	475	1	200	1	1	1	1	1,005	480	140	970	1
Future Delta	360	20	185	15	20	45	45	1,135	200	155	950	15
Future %	333	20	179	15	20	45	45	1,176	85	165	945	15
Future Obs	**347**	**20**	**182**	**15**	**20**	**45**	**45**	**1,155**	**142**	**160**	**947**	**15**
Analysis Volume	**345**	**20**	**180**	**15**	**20**	**45**	**50**	**1260**	**90**	**160**	**945**	**15**

*includes vols from Lawson

INTERSECTION: Oregon Way/Country Club/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	20	45	15	125	30	60	70	950	10	20	780	85
EX Model	10	1	10	130	5	55	55	855	20	20	895	105
Future Model	15	25	115	115	40	60	60	1,115	30	165	1,035	90
Future Delta	25	69	120	110	65	65	75	1,210	20	165	920	70
Future %	30	1,125	173	111	240	65	76	1,239	15	165	902	73
Future Obs	**28**	**597**	**146**	**110**	**153**	**65**	**76**	**1,224**	**18**	**165**	**911**	**71**
Analysis Volume	**30**	**70**	**145**	**110**	**65**	**65**	**80**	**1305**	**20**	**175**	**970**	**75**

INTERSECTION: Cascade/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	20		25					1,055	35	20	870	
EX Model	125		5					830	135	5	790	
Future Model	170		5					1,130	215	5	1,125	
Future Delta	65	0	25	0	0	0	0	1,355	115	20	1,205	0
Future %	27	#DIV/0!	25	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1,436	56	20	1,239	#DIV/0!
Future Obs	**46**	**#DIV/0!**	**25**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**1,396**	**85**	**20**	**1,222**	**#DIV/0!**
Analysis Volume	**45**		**25**					**1425**	**85**	**20**	**1220**	

INTERSECTION: Boones Ferry/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	275	165	130	145	220	135	145	650	250	185	510	110
EX Model	110	210	70	65	275	85	80	635	85	125	655	90
Future Model	120	230	125	65	270	170	170	805	55	220	900	80
Future Delta	285	185	185	145	215	220	235	820	220	280	755	100
Future %	300	181	232	145	216	270	308	824	162	326	701	98
Future Obs	**293**	**183**	**209**	**145**	**216**	**245**	**272**	**822**	**191**	**303**	**728**	**99**
Analysis Volume	**295**	**185**	**210**	**145**	**215**	**245**	**285**	**860**	**200**	**305**	**730**	**100**

INTERSECTION: Meridian/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	30	5	30	70	5	80	65	790	45	50	710	30
EX Model	20	1	10	15	1	55	30	710	45	20	785	10
Future Model	20	1	10	20	1	50	30	920	45	20	1,125	15
Future Delta	30	5	30	75	5	75	65	1,000	45	50	1,050	35
Future %	30	5	30	93	5	73	65	1,024	45	50	1,018	45
Future Obs	**30**	**5**	**30**	**84**	**5**	**74**	**65**	**1,012**	**45**	**50**	**1,034**	**40**
Analysis Volume	**30**	**5**	**30**	**85**	**5**	**75**	**70**	**1045**	**45**	**50**	**1035**	**40**

*Used node 1066

INTERSECTION: Front/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed			50			90		775	65		750	120
EX Model			210			15		760	20		755	255
Future Model			40			105		910	95		970	45
Future Delta	0	0	-120	0	0	180	0	925	140	0	965	-90
Future %	#DIV/0!	#DIV/0!	10	#DIV/0!	#DIV/0!	630	#DIV/0!	928	309	#DIV/0!	964	21
Future Obs	**#DIV/0!**	**#DIV/0!**	**-55**	**#DIV/0!**	**#DIV/0!**	**405**	**#DIV/0!**	**926**	**224**	**#DIV/0!**	**964**	**-34**
Analysis Volume			**10**			**180**		**925**	**225**		**965**	**20**

INTERSECTION: Park/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	20	5	80	15	15	30	15	740	60	100	845	5
EX Model	45		10					885	85	55	965	
Future Model	95		5					840	115	25	920	
Future Delta	70	5	75	15	15	30	15	695	90	70	800	5
Future %	42	#DIV/0!	40	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	702	81	45	806	#DIV/0!
Future Obs	**56**	**#DIV/0!**	**58**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**699**	**86**	**58**	**803**	**#DIV/0!**
Analysis Volume	**60**	**5**	**60**	**15**	**15**	**35**	**20**	**800**	**95**	**60**	**875**	**35**

INTERSECTION: Highway 99/Highway 214

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	210	440	155	160	730	255	195	315	250	330	345	40
EX Model	60	510	110	70	560	400	385	205	55	120	185	55
Future Model	85	550	160	195	645	210	275	315	55	205	340	150
Future Delta	235	480	205	285	815	65	85	425	250	415	500	135
Future %	298	475	225	446	841	134	139	484	250	564	634	109
Future Obs	**266**	**477**	**215**	**365**	**828**	**99**	**112**	**455**	**250**	**489**	**567**	**122**
Analysis Volume	**265**	**475**	**215**	**365**	**830**	**135**	**140**	**455**	**250**	**489**	**565**	**120**

INTERSECTION: Crosby/Boones Ferry

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	60	100	15	10	175	20	15	90	85	25	25	5
EX Model	80	55	20	40	50	25	27	165	95	20	185	35
Future Model	50	55	85	55	35	45	35	375	75	125	415	45
Future Delta	30	100	80	25	160	40	23	300	65	130	255	15
Future %	38	100	64	14	123	36	19	205	67	156	56	6
Future Obs	**34**	**100**	**72**	**19**	**141**	**38**	**21**	**252**	**66**	**143**	**156**	**11**
Analysis Volume	**40**	**100**	**70**	**20**	**140**	**40**	**20**	**250**	**65**	**145**	**55**	**10**

*Node 1214 not coded

INTERSECTION: Parr/Boones Ferry

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	25	70	35	5	85	55	55	35	25	50	45	5
EX Model	10	55	1	10	55	40	50	115	25	1	75	35
Future Model	10	55	1	25	60	30	50	140	40	1	50	60
Future Delta	25	70	35	20	90	45	55	60	40	50	20	30
Future %	25	70	35	13	93	41	55	43	40	50	30	9
Future Obs	**25**	**70**	**35**	**16**	**91**	**43**	**55**	**51**	**40**	**50**	**25**	**19**
Analysis Volume	**25**	**70**	**35**	**15**	**90**	**45**	**55**	**50**	**40**	**50**	**25**	**20**

INTERSECTION: Hardcastle/Front

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed		130	125	55	145					130		40
EX Model		20	180	25	45					155		20
Future Model		75	80	15	70					65		5
Future Delta	0	185	25	45	170	0	0	0	0	40	0	25
Future %	#DIV/0!	488	56	33	226	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	55	#DIV/0!	10
Future Obs	**#DIV/0!**	**336**	**40**	**39**	**198**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**47**	**#DIV/0!**	**18**
Analysis Volume		**200**	**40**	**40**	**200**					**45**		**20**

INTERSECTION: Lincoln/Front

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	25	120	40	35	135	15	25	130	15	40	135	30
EX Model	60	90	25	10	85	20	55	115	105	40	135	10
Future Model	20	105	25	15	100	20	45	120	65	30	110	10
Future Delta	-15	135	40	40	150	15	15	135	-25	30	110	30
Future %	8	140	40	53	159	15	20	136	9	30	110	30
Future Obs	**-3**	**138**	**40**	**46**	**154**	**15**	**18**	**135**	**-8**	**30**	**110**	**30**
Analysis Volume	**10**	**140**	**40**	**45**	**155**	**15**	**20**	**135**	**10**	**30**	**110**	**30**

INTERSECTION: Young/Front

	NB			SB			EB			WB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
EX Observed	10	90	35	50	115	30	25	200	30	40	175	70	
EX Model		65	90	495	90					105		495	*Used node 1201
Future Model		105	60	420	125					85		435	
Future Delta	10	130	5	-25	150	30	25	200	30	20	175	10	
Future %	#DIV/0!	145	23	42	160	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	32	#DIV/0!	62	
Future Obs	**#DIV/0!**	**138**	**14**	**9**	**155**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**26**	**#DIV/0!**	**36**	
Analysis Volume	**10**	**140**	**25**	**40**	**155**	**30**	**25**	**200**	**30**	**25**	**175**	**60**	

INTERSECTION: Cleveland/Front

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	5	70	35	75	70	15	15	140	15	35	90	45
EX Model	5	120	10	35	110	50	30	100	5	5	40	5
Future Model	5	125	15	40	135	30	20	50	15	5	25	5
Future Delta	5	75	40	80	95	-5	5	90	25	35	75	45
Future %	5	73	53	86	86	9	10	70	45	35	56	45
Future Obs	**5**	**74**	**46**	**83**	**90**	**2**	**8**	**80**	**35**	**35**	**66**	**45**
Analysis Volume	**5**	**75**	**45**	**85**	**90**	**10**	**10**	**80**	**35**	**35**	**65**	**45**

INTERSECTION: Cleveland/Highway 99

	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
EX Observed	60	535	5	5	610	220	95	1	60	15	5	45
EX Model	20	535			555	45	10		15			
Future Model	20	610			630	30	15		15			
Future Delta	60	610	5	5	685	205	100	1	60	15	5	45
Future %	60	610	#DIV/0!	#DIV/0!	692	147	143	#DIV/0!	60	#DIV/0!	#DIV/0!	#DIV/0!
Future Obs	**60**	**610**	**#DIV/0!**	**#DIV/0!**	**689**	**176**	**121**	**#DIV/0!**	**60**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**
Analysis Volume	**60**	**610**	**5**	**5**	**690**	**175**	**120**	**1**	**60**	**15**	**5**	**45**

Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 3 Weekday PM Peak Hour

Scenario Report

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

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Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 3 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 Hwy 214/Boones Ferry Rd	E	63.1	0.979	E	63.1	0.979	+ 0.000 D/V
# 2 Hwy 214/Meridian Dr	F	22.2	0.000	F	22.2	0.000	+ 0.000 V/C
# 3 Hwy 214/Front St	B	1.4	0.000	B	1.4	0.000	+ 0.000 V/C
# 4 Hwy 214/Park Ave	F	3.8	0.000	F	3.8	0.000	+ 0.000 V/C
# 10 Hwy 99/Cleveland St	F	8.0	0.000	F	8.0	0.000	+ 0.000 V/C
# 11 Front St/Hardcastle St	B	5.9	0.000	B	5.9	0.000	+ 0.000 V/C
# 12 Front St/Lincoln St	A	9.8	0.316	A	9.8	0.316	+ 0.000 V/C
# 13 Front St/Garfield	B	11.3	0.404	B	11.3	0.404	+ 0.000 V/C
# 14 Front St/Cleveland St	A	8.8	0.256	A	8.8	0.256	+ 0.000 V/C
# 15 Boones Ferry Rd/Crosby Rd	B	11.9	0.517	B	11.9	0.517	+ 0.000 V/C
# 22 Boones Ferry Rd/Front St	D	32.6	0.949	D	32.6	0.949	+ 0.000 V/C
# 25 Hwy 214/Cascade Drive	F	2.2	0.000	F	2.2	0.000	+ 0.000 V/C
# 26 Hwy 214/Oregon Way	C	25.6	0.690	C	25.6	0.690	+ 0.000 D/V
# 27 Hwy 214/Evergreen Road	C	23.4	0.708	C	23.4	0.708	+ 0.000 D/V
# 28 Hwy 214/I-5 NB ramp	C	20.9	0.532	C	20.9	0.532	+ 0.000 D/V
# 29 Hwy 214/I-5 SB ramp	C	20.4	0.594	C	20.4	0.594	+ 0.000 D/V
# 31 Hwy 214/Woodland Avenue	D	39.5	0.629	D	39.5	0.629	+ 0.000 D/V
# 32 Hwy 214/Butteville Road	F	562.1	0.000	F	562.1	0.000	+ 0.000 V/C
# 33 Hwy 214/Hwy 99E	E	58.5	0.922	E	58.5	0.922	+ 0.000 D/V

Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 3 Weekday PM Peak Hour

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

Intersection #1 Hwy 214/Boones Ferry Rd

Cycle (sec): 120 Critical Vol./Cap. (X): 0.979
Loss Time (sec): 16 (Y+R = 4 sec) Average Delay (sec/veh): 63.1
Optimal Cycle: 120 Level Of Service: E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Prot+Permit			Prot+Permit		
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			0 1 0 0 1			1 0 2 0 1			1 0 1 1 0		
Volume Module: 16:15 - 17: 15												
Base Vol:	295	185	210	145	215	245	285	860	200	305	730	100
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:	295	185	210	145	215	245	285	860	200	305	730	100
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:	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 Volume:	295	185	210	145	215	245	285	860	200	305	730	100
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	295	185	210	145	215	245	285	860	200	305	730	100
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.:	295	185	210	145	215	245	285	860	200	305	730	100
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.94	0.91	0.91	0.96	0.96	0.83	0.45	0.92	0.82	0.42	0.89	0.89
Lanes:	1.00	0.47	0.53	0.40	0.60	1.00	1.00	2.00	1.00	1.00	1.76	0.24
Final Sat.:	1787	810	920	735	1090	1583	859	3505	1565	799	2968	407
Capacity Analysis Module:												
Vol/Sat:	0.17	0.23	0.23	0.20	0.20	0.15	0.33	0.25	0.13	0.38	0.25	0.25
Crit Moves:			****		****			****		****		
Green/Cycle:	0.23	0.23	0.23	0.20	0.20	0.20	0.42	0.25	0.25	0.47	0.26	0.26
Volume/Cap:	0.71	0.98	0.98	0.98	0.98	0.77	0.79	0.98	0.51	0.82	0.95	0.95
Delay/Veh:	47.8	84.8	84.8	88.8	88.8	56.0	40.7	69.8	39.8	45.6	62.1	62.1
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:	47.8	84.8	84.8	88.8	88.8	56.0	40.7	69.8	39.8	45.6	62.1	62.1
DesignQueue:	16	10	11	8	12	14	16	46	10	17	38	5

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

Intersection #2 Hwy 214/Meridian Dr

Average Delay (sec/veh): 22.2 Worst Case Level Of Service: F

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			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			1 0 0 1 0			1 0 1 1 0			1 0 1 1 0		
Volume Module:												
Base Vol:	30	5	30	85	5	74	70	1045	45	50	1035	40
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:	30	5	30	85	5	74	70	1045	45	50	1035	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:	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 Volume:	30	5	30	85	5	74	70	1045	45	50	1035	40
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	30	5	30	85	5	74	70	1045	45	50	1035	40
Critical Gap Module:												
Critical Gp:	7.5	6.5	6.9	7.5	6.5	6.9	4.2	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1828	2383	545	1820	2385	538	1075	xxxx	xxxxx	1090	xxxx	xxxxx
Potent Cap.:	48	34	485	49	34	491	638	xxxx	xxxxx	642	xxxx	xxxxx
Move Cap.:	31	28	485	34	28	491	638	xxxx	xxxxx	642	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	xxxxx	xxxx	xxxxx	917.9	xxxx	xxxxx	11.3	xxxx	xxxxx	11.1	xxxx	xxxxx
LOS by Move:	*	*	*	F	*	*	B	*	*	B	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	53	xxxxx	xxxx	xxxx	240	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	320	xxxxx	xxxxx	xxxx	27.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	F	*	*	*	D	*	*	*	*	*	*
ApproachDel:	319.9			488.8			xxxxxx			xxxxxx		
ApproachLOS:	F			F			*			*		

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---------------------------------------------------------------------------
         Kittelson & Associates, Inc.  -- Project # 5367.0
               Woodburn Transportation System Plan Update
      2020 Future Conditions Alternative 3 Weekday PM Peak Hour
---------------------------------------------------------------------------
                  Level Of Service Computation Report
        2000 HCM Unsignalized Method (Base Volume Alternative)
***************************************************************************
Intersection #3 Hwy 214/Front St
***************************************************************************
Average Delay (sec/veh):         1.4        Worst Case Level Of Service:     B
***************************************************************************
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       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  1    0  0  0  0  1    0  0  1  1  0    0  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0   150     0    0   160     0  730   110     0  710   225
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    0   150     0    0   160     0  730   110     0  710   225
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:     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 Volume:     0    0   150     0    0   160     0  730   110     0  710   225
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     0    0   150     0    0   160     0  730   110     0  710   225
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx   6.9 xxxxx xxxx   6.9 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx   3.3 xxxxx xxxx   3.3 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx   429  xxxx xxxx   355  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx   580  xxxx xxxx   641  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx   575  xxxx xxxx   641  xxxx xxxx xxxxx  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx  13.4 xxxxx xxxx  12.5 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     B     *    *     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
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:       13.4             12.5            xxxxxx           xxxxxx
ApproachLOS:         B                B                *                *
```



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         Kittelson & Associates, Inc.  -- Project # 5367.0
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      2020 Future Conditions Alternative 3 Weekday PM Peak Hour
---------------------------------------------------------------------------
                  Level Of Service Computation Report
        2000 HCM Unsignalized Method (Base Volume Alternative)
***************************************************************************
Intersection #4 Hwy 214/Park Ave
***************************************************************************
Average Delay (sec/veh):         3.8        Worst Case Level Of Service:     F
***************************************************************************
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       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0    0  0  1! 0  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      55    5    60    15   15    30    15  700    85    60  805     5
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:   55    5    60    15   15    30    15  700    85    60  805     5
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:     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 Volume:    55    5    60    15   15    30    15  700    85    60  805     5
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    55    5    60    15   15    30    15  700    85    60  805     5
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.5  6.5   6.9   7.5  6.5   6.9   4.2 xxxx xxxxx   4.2 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1304 1703   395  1312 1743   406   810 xxxx xxxxx   785 xxxx xxxxx
Potent Cap.:  119   92   607   118   88   600   799 xxxx xxxxx   823 xxxx xxxxx
Move Cap.:     90   83   606    95   80   599   799 xxxx xxxxx   823 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   9.6 xxxx xxxxx   9.7 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  156 xxxxx  xxxx  151 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx 79.4 xxxxx xxxxx 43.7 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    F     *     *    E     *     *    *     *     *    *     *
ApproachDel:       79.4             43.7            xxxxxx           xxxxxx
ApproachLOS:         F                E                *                *
```

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------------------------------------------------------------------------------
          Kittelson & Associates, Inc.  -- Project # 5367.0
             Woodburn Transportation System Plan Update
      2020 Future Conditions Alternative 3 Weekday PM Peak Hour
------------------------------------------------------------------------------
                  Level Of Service Computation Report
       2000 HCM Unsignalized Method (Base Volume Alternative)
******************************************************************************
Intersection #10 Hwy 99/Cleveland St
******************************************************************************
Average Delay (sec/veh):       8.0          Worst Case Level Of Service:     F
******************************************************************************
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  1  0    0  1  0  1  0    1  0  0  1  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       60  610    5     5  690  175   121    1   60    15    5   45
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:    60  610    5     5  690  175   121    1   60    15    5   45
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:      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 Volume:     60  610    5     5  690  175   121    1   60    15    5   45
Reduct Vol:      0    0    0     0    0    0     0    0    0     0    0    0
Final Vol.:     60  610    5     5  690  175   121    1   60    15    5   45
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:   4.2 xxxx xxxxx  4.1 xxxx xxxxx  7.5  6.5  6.9   7.5  6.5  6.9
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:   867 xxxx xxxxx  615 xxxx xxxxx 1217 1525  436  1089 1610  308
Potent Cap.:   766 xxxx xxxxx  961 xxxx xxxxx  139  119  574   172  106  694
Move Cap.:     765 xxxx xxxxx  961 xxxx xxxxx  116  109  573   143   96  694
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:  10.1 xxxx xxxxx  8.8 xxxx xxxxx 165.3 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     B    *    *     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  535  xxxx  293 xxxxx
Shrd StpDel:  10.1 xxxx xxxxx  8.8 xxxx xxxxx xxxxx xxxx 12.6 xxxxx 20.7 xxxxx
Shared LOS:      B    *    *     A    *    *     *    *    B     *    C    *
ApproachDel:      xxxxxx          xxxxxx           114.1            20.7
ApproachLOS:         *               *                F                C
```

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------------------------------------------------------------------------------
          Kittelson & Associates, Inc.  -- Project # 5367.0
             Woodburn Transportation System Plan Update
      2020 Future Conditions Alternative 3 Weekday PM Peak Hour
------------------------------------------------------------------------------
                  Level Of Service Computation Report
       2000 HCM Unsignalized Method (Base Volume Alternative)
******************************************************************************
Intersection #11 Front St/Hardcastle St
******************************************************************************
Average Delay (sec/veh):       5.9          Worst Case Level Of Service:     B
******************************************************************************
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       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  1  0    0  1  0  0  0    0  0  0  0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0  200   40    40  200    0     0    0    0    45    0   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:     0  200   40    40  200    0     0    0    0    45    0   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:      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 Volume:      0  200   40    40  200    0     0    0    0    45    0   20
Reduct Vol:      0    0    0     0    0    0     0    0    0     0    0    0
Final Vol.:      0  200   40    40  200    0     0    0    0    45    0   20
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx  6.5  6.2   7.1  6.5 xxxxx xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx  4.0  3.3   3.5  4.0 xxxxx xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx  110    9   209  100 xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx
Potent Cap.: xxxx  780 1073   750  792 xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx
Move Cap.:   xxxx  780 1065   575  792 xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
LOS by Move:     *    *    *     *    *    *     *    *    *     A    *    *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx  816   745 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx 11.2  12.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *    B     B    *    *     *    *    *     *    *    *
ApproachDel:       11.2            12.1           xxxxxx           xxxxxx
ApproachLOS:         B               B                *                *
```

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Woodburn Transportation System Plan Update
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Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #12 Front St/Lincoln St

Cycle (sec): 100 Critical Vol./Cap. (X): 0.316
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 9.8
Optimal Cycle: 0 Level Of Service: A

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:												
Base Vol:	10	140	40	45	155	15	20	135	10	30	110	30
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:	10	140	40	45	155	15	20	135	10	30	110	30
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:	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 Volume:	10	140	40	45	155	15	20	135	10	30	110	30
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	10	140	40	45	155	15	20	135	10	30	110	30
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.:	10	140	40	45	155	15	20	135	10	30	110	30
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:	0.05	0.74	0.21	0.21	0.72	0.07	0.12	0.82	0.06	0.17	0.65	0.18
Final Sat.:	36	504	144	142	490	47	79	535	40	117	428	117
Capacity Analysis Module:												
Vol/Sat:	0.28	0.28	0.28	0.32	0.32	0.32	0.25	0.25	0.25	0.26	0.26	0.26
Crit Moves:	****				****			****			****	
Delay/Veh:	9.7	9.7	9.7	10.1	10.1	10.1	9.7	9.7	9.7	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:	9.7	9.7	9.7	10.1	10.1	10.1	9.7	9.7	9.7	9.7	9.7	9.7
LOS by Move:	A	A	A	B	B	B	A	A	A	A	A	A
ApproachDel:		9.7			10.1			9.7			9.7	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		9.7			10.1			9.7			9.7	
LOS by Appr:		A			B			A			A	

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Woodburn Transportation System Plan Update
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Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #13 Front St/Garfield

Cycle (sec): 100 Critical Vol./Cap. (X): 0.404
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 11.3
Optimal Cycle: 0 Level Of Service: B

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:												
Base Vol:	10	140	25	40	155	30	25	200	30	25	175	60
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:	10	140	25	40	155	30	25	200	30	25	175	60
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:	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 Volume:	10	140	25	40	155	30	25	200	30	25	175	60
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	10	140	25	40	155	30	25	200	30	25	175	60
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.:	10	140	25	40	155	30	25	200	30	25	175	60
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:	0.06	0.80	0.14	0.18	0.69	0.13	0.10	0.78	0.12	0.10	0.67	0.23
Final Sat.:	34	475	85	108	420	81	62	496	74	62	433	148
Capacity Analysis Module:												
Vol/Sat:	0.29	0.29	0.29	0.37	0.37	0.37	0.40	0.40	0.40	0.40	0.40	0.40
Crit Moves:	****					****		****			****	
Delay/Veh:	10.6	10.6	10.6	11.3	11.3	11.3	11.6	11.6	11.6	11.4	11.4	11.4
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:	10.6	10.6	10.6	11.3	11.3	11.3	11.6	11.6	11.6	11.4	11.4	11.4
LOS by Move:	B	B	B	B	B	B	B	B	B	B	B	B
ApproachDel:		10.6			11.3			11.6			11.4	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		10.6			11.3			11.6			11.4	
LOS by Appr:		B			B			B			B	

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

Intersection #14 Front St/Cleveland St

Cycle (sec): 100 Critical Vol./Cap. (X): 0.256
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 8.8
Optimal Cycle: 0 Level Of Service: A

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:												
Base Vol:	5	75	46	85	90	10	10	80	35	35	65	45
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:	5	75	46	85	90	10	10	80	35	35	65	45
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:	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 Volume:	5	75	46	85	90	10	10	80	35	35	65	45
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	5	75	46	85	90	10	10	80	35	35	65	45
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.:	5	75	46	85	90	10	10	80	35	35	65	45
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:	0.04	0.60	0.36	0.46	0.49	0.05	0.08	0.64	0.28	0.24	0.45	0.31
Final Sat.:	30	444	272	333	352	39	58	465	203	176	327	227
Capacity Analysis Module:												
Vol/Sat:	0.17	0.17	0.17	0.26	0.26	0.26	0.17	0.17	0.17	0.20	0.20	0.20
Crit Moves:			****		****			****			****	
Delay/Veh:	8.4	8.4	8.4	9.3	9.3	9.3	8.6	8.6	8.6	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:	8.4	8.4	8.4	9.3	9.3	9.3	8.6	8.6	8.6	8.7	8.7	8.7
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:		8.4			9.3			8.6			8.7	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		8.4			9.3			8.6			8.7	
LOS by Appr:		A			A			A			A	

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Woodburn Transportation System Plan Update
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Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #15 Boones Ferry Rd/Crosby Rd

Cycle (sec): 100 Critical Vol./Cap. (X): 0.517
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 11.9
Optimal Cycle: 0 Level Of Service: B

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:												
Base Vol:	40	100	70	20	140	40	20	250	65	145	55	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:	40	100	70	20	140	40	20	250	65	145	55	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:	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 Volume:	40	100	70	20	140	40	20	250	65	145	55	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	40	100	70	20	140	40	20	250	65	145	55	10
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.:	40	100	70	20	140	40	20	250	65	145	55	10
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:	0.19	0.48	0.33	0.10	0.70	0.20	0.06	0.75	0.19	0.69	0.26	0.05
Final Sat.:	113	283	198	59	412	118	39	484	126	410	155	28
Capacity Analysis Module:												
Vol/Sat:	0.35	0.35	0.35	0.34	0.34	0.34	0.52	0.52	0.52	0.35	0.35	0.35
Crit Moves:	****				****			****			****	
Delay/Veh:	11.2	11.2	11.2	11.1	11.1	11.1	13.3	13.3	13.3	11.4	11.4	11.4
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:	11.2	11.2	11.2	11.1	11.1	11.1	13.3	13.3	13.3	11.4	11.4	11.4
LOS by Move:	B	B	B	B	B	B	B	B	B	B	B	B
ApproachDel:		11.2			11.1			13.3			11.4	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		11.2			11.1			13.3			11.4	
LOS by Appr:		B			B			B			B	

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

Intersection #22 Boones Ferry Rd/Front St

Cycle (sec):	100	Critical Vol./Cap. (X):	0.949
Loss Time (sec):	8 (Y+R = 4 sec)	Average Delay (sec/veh):	32.6
Optimal Cycle:	0	Level Of Service:	D

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			1 0 0 1 0			1 0 0 1 0	
Volume Module:												
Base Vol:	155	100	35	20	110	210	170	245	215	50	320	35
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:	155	100	35	20	110	210	170	245	215	50	320	35
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:	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 Volume:	155	100	35	20	110	210	170	245	215	50	320	35
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	155	100	35	20	110	210	170	245	215	50	320	35
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.:	155	100	35	20	110	210	170	245	215	50	320	35
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	0.74	0.26	1.00	0.34	0.66	1.00	0.53	0.47	1.00	0.90	0.10
Final Sat.:	387	309	108	396	153	293	432	258	227	412	401	44
Capacity Analysis Module:												
Vol/Sat:	0.40	0.32	0.32	0.05	0.72	0.72	0.39	0.95	0.95	0.12	0.80	0.80
Crit Moves:	****				****			****				****
Delay/Veh:	17.2	14.7	14.7	12.0	26.8	26.8	16.1	55.3	55.3	12.4	33.9	33.9
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:	17.2	14.7	14.7	12.0	26.8	26.8	16.1	55.3	55.3	12.4	33.9	33.9
LOS by Move:	C	B	B	B	D	D	C	F	F	B	D	D
ApproachDel:		16.0			25.9			44.7			31.2	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		16.0			25.9			44.7			31.2	
LOS by Appr:		C			D			E			D	

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

Intersection #25 Hwy 214/Cascade Drive

Average Delay (sec/veh): 2.2 Worst Case Level Of Service: F

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			Uncontrolled			Uncontrolled	
Rights:		Include			Include			Include			Include	
Lanes:		1 0 0 0 1			0 0 0 0 0			0 0 1 1 0			1 0 2 0 0	
Volume Module:												
Base Vol:	35	0	25	0	0	0	0	1425	85	20	1220	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:	35	0	25	0	0	0	0	1425	85	20	1220	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:	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 Volume:	35	0	25	0	0	0	0	1425	85	20	1220	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	35	0	25	0	0	0	0	1425	85	20	1220	0
Critical Gap Module:												
Critical Gp:	6.9	xxxx	7.0	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.2	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	2123	xxxx	755	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1510	xxxx	xxxxx
Potent Cap.:	42	xxxx	349	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	429	xxxx	xxxxx
Move Cap.:	41	xxxx	349	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	429	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	248.6	xxxx	16.1	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	13.8	xxxx	xxxxx
LOS by Move:	F	*	C	*	*	*	*	*	*	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
Shrd StpDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:		151.7			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		F			*			*			*	

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                     Level Of Service Computation Report
           2000 HCM Operations Method (Base Volume Alternative)
****************************************************************************
Intersection #26 Hwy 214/Oregon Way
****************************************************************************
Cycle (sec):          120         Critical Vol./Cap. (X):          0.690
Loss Time (sec):       12 (Y+R =  4 sec) Average Delay (sec/veh):   25.6
Optimal Cycle:         60         Level Of Service:                    C
****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Permitted        Permitted        Protected        Protected
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   1  0  1  1  0   1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 45
Base Vol:      40   70  145   110   65   65    80 1305   20   175  960   75
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   70  145   110   65   65    80 1305   20   175  960   75
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:     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 Volume:    40   70  145   110   65   65    80 1305   20   175  960   75
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   40   70  145   110   65   65    80 1305   20   175  960   75
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.:    40   70  145   110   65   65    80 1305   20   175  960   75
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment:  0.58 0.90 0.90  0.40 0.93 0.92  0.93 0.93 0.93  0.91 0.90 0.90
Lanes:       1.00 0.32 0.68  1.00 0.50 0.50  1.00 1.97 0.03  1.00 1.86 0.14
Final Sat.:  1098  555 1149   757  878  878  1769 3477   53  1736 3186  249
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.13 0.13  0.15 0.07 0.07  0.05 0.38 0.38  0.10 0.30 0.30
Crit Moves:                  ****                 ****       ****
Green/Cycle: 0.21 0.21 0.21  0.21 0.21 0.21  0.09 0.54 0.54  0.15 0.60 0.60
Volume/Cap:  0.17 0.60 0.60  0.69 0.35 0.35  0.50 0.69 0.69  0.69 0.50 0.50
Delay/Veh:   39.2 45.6 45.6  55.9 41.0 41.0  54.6 21.1 21.1  56.5 14.0 14.0
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:  39.2 45.6 45.6  55.9 41.0 41.0  54.6 21.1 21.1  56.5 14.0 14.0
DesignQueue:    2    4    8     6    3    3     5   44    1    10   28    2
****************************************************************************
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                     Level Of Service Computation Report
           2000 HCM Operations Method (Base Volume Alternative)
****************************************************************************
Intersection #27 Hwy 214/Evergreen Road
****************************************************************************
Cycle (sec):          120         Critical Vol./Cap. (X):          0.708
Loss Time (sec):        8 (Y+R =  4 sec) Average Delay (sec/veh):   23.4
Optimal Cycle:         51         Level Of Service:                    C
****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Permitted        Permitted       Prot+Permit      Prot+Permit
Rights:         Include          Include          Include          Include
Min. Green:    0    0    0    0    0    0    0    0    0    0    0    0
Lanes:        1  1  0  0  1   1  0  0  1  0   1  0  2  0  1   1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     345   20  180    15   20   45    50 1260   90   160  945   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:  345   20  180    15   20   45    50 1260   90   160  945   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:     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 Volume:   345   20  180    15   20   45    50 1260   90   160  945   15
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:  345   20  180    15   20   45    50 1260   90   160  945   15
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.:   345   20  180    15   20   45    50 1260   90   160  945   15
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment:  0.46 0.46 0.84  0.72 0.86 0.86  0.28 0.92 0.82  0.26 0.91 0.91
Lanes:       1.89 0.11 1.00  1.00 0.31 0.69  1.00 2.00 1.00  1.00 1.97 0.03
Final Sat.:  1648   96 1597  1373  504 1133   534 3505 1556   492 3412   54
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.21 0.21 0.11  0.01 0.04 0.04  0.09 0.36 0.06  0.33 0.28 0.28
Crit Moves:       ****                             ****       ****
Green/Cycle: 0.30 0.30 0.30  0.30 0.30 0.30  0.57 0.51 0.51  0.65 0.58 0.58
Volume/Cap:  0.71 0.71 0.38  0.04 0.13 0.13  0.17 0.71 0.11  0.50 0.48 0.48
Delay/Veh:   42.2 42.2 34.1  30.1 31.1 31.1  13.3 24.1 15.5  17.3 15.0 15.0
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:  42.2 42.2 34.1  30.1 31.1 31.1  13.3 24.1 15.5  17.3 15.0 15.0
DesignQueue:   17    1    9     1    1    2     3   45    3     9   28    0
****************************************************************************
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Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #28 Hwy 214/I-5 NB ramp

Cycle (sec): 120 Critical Vol./Cap. (X): 0.532
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 20.9
Optimal Cycle: 34 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 1! 0 1			0 0 0 0 0			0 0 2 0 1			0 0 2 0 1		
Volume Module:												
Base Vol:	235	0	580	0	0	0	0	970	280	0	885	420
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:	235	0	580	0	0	0	0	970	280	0	885	420
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:	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 Volume:	235	0	580	0	0	0	0	970	280	0	885	420
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	235	0	580	0	0	0	0	970	280	0	885	420
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.:	235	0	580	0	0	0	0	970	280	0	885	420
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.80	1.00	0.80	1.00	1.00	1.00	1.00	0.95	0.85	1.00	0.90	0.81
Lanes:	1.29	0.00	1.71	0.00	0.00	0.00	0.00	2.00	1.00	0.00	2.00	1.00
Final Sat.:	1955	0	2597	0	0	0	0	3610	1615	0	3432	1535
Capacity Analysis Module:												
Vol/Sat:	0.12	0.00	0.22	0.00	0.00	0.00	0.00	0.27	0.17	0.00	0.26	0.27
Crit Moves:			****									****
Green/Cycle:	0.42	0.00	0.42	0.00	0.00	0.00	0.00	0.51	0.51	0.00	0.51	0.51
Volume/Cap:	0.29	0.00	0.53	0.00	0.00	0.00	0.00	0.52	0.34	0.00	0.50	0.53
Delay/Veh:	23.0	0.0	26.4	0.0	0.0	0.0	0.0	19.7	17.4	0.0	19.3	20.2
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:	23.0	0.0	26.4	0.0	0.0	0.0	0.0	19.7	17.4	0.0	19.3	20.2
DesignQueue:	9	0	24	0	0	0	0	34	9	0	31	14

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

Intersection #29 Hwy 214/I-5 SB ramp

Cycle (sec): 120 Critical Vol./Cap. (X): 0.594
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 20.4
Optimal Cycle: 39 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 0 0 0			1 0 1! 0 1			0 0 2 0 1			0 0 2 0 1		
Volume Module:												
Base Vol:	0	0	0	595	0	360	0	655	490	0	620	500
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	0	0	595	0	360	0	655	490	0	620	500
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:	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 Volume:	0	0	0	595	0	360	0	655	490	0	620	500
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	595	0	360	0	655	490	0	620	500
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	0	0	595	0	360	0	655	490	0	620	500
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.85	1.00	0.85	1.00	0.88	0.78	1.00	0.92	0.83
Lanes:	0.00	0.00	0.00	1.62	0.00	1.38	0.00	2.00	1.00	0.00	2.00	1.00
Final Sat.:	0	0	0	2632	0	2233	0	3334	1491	0	3506	1569
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.23	0.00	0.16	0.00	0.20	0.33	0.00	0.18	0.32
Crit Moves:				****					****			
Green/Cycle:	0.00	0.00	0.00	0.38	0.00	0.38	0.00	0.55	0.55	0.00	0.55	0.55
Volume/Cap:	0.00	0.00	0.00	0.59	0.00	0.42	0.00	0.36	0.59	0.00	0.32	0.58
Delay/Veh:	0.0	0.0	0.0	30.4	0.0	27.6	0.0	15.0	19.0	0.0	14.7	18.6
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	0.0	0.0	30.4	0.0	27.6	0.0	15.0	19.0	0.0	14.7	18.6
DesignQueue:	0	0	0	26	0	15	0	20	16	0	19	16

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

Intersection #31 Hwy 214/Woodland Avenue

Cycle (sec):	120	Critical Vol./Cap. (X):	0.629
Loss Time (sec):	12 (Y+R = 4 sec)	Average Delay (sec/veh):	39.5
Optimal Cycle:	53	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
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			1 0 1! 0 0			1 0 2 0 1			1 0 2 0 1		
Volume Module:												
Base Vol:	50	10	250	350	5	15	100	690	35	65	645	220
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:	50	10	250	350	5	15	100	690	35	65	645	220
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:	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 Volume:	50	10	250	350	5	15	100	690	35	65	645	220
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	50	10	250	350	5	15	100	690	35	65	645	220
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.:	50	10	250	350	5	15	100	690	35	65	645	220
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.76	0.76	0.76	0.94	0.94	0.94	0.92	0.92	0.83	0.91	0.91	0.82
Lanes:	0.16	0.03	0.81	1.90	0.02	0.08	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	233	47	1167	3388	46	137	1753	3505	1568	1736	3473	1554
Capacity Analysis Module:												
Vol/Sat:	0.21	0.21	0.21	0.10	0.11	0.11	0.06	0.20	0.02	0.04	0.19	0.14
Crit Moves:		****			****		****				****	
Green/Cycle:	0.34	0.34	0.34	0.17	0.17	0.17	0.09	0.32	0.32	0.06	0.30	0.30
Volume/Cap:	0.63	0.63	0.63	0.60	0.63	0.63	0.63	0.61	0.07	0.61	0.63	0.48
Delay/Veh:	35.8	35.8	35.8	47.3	48.2	48.2	60.4	35.1	28.1	64.5	37.9	35.5
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:	35.8	35.8	35.8	47.3	48.2	48.2	60.4	35.1	28.1	64.5	37.9	35.5
DesignQueue:	2	0	11	20	0	1	6	33	2	4	32	11

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

Intersection #32 Hwy 214/Butteville Road

Average Delay (sec/veh): 562.1 Worst Case Level Of Service: F

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			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 0 0 1 0			1 0 1 0 0		
Volume Module:												
Base Vol:	315	0	380	0	0	0	0	430	265	405	310	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:	315	0	380	0	0	0	0	430	265	405	310	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:	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 Volume:	315	0	380	0	0	0	0	430	265	405	310	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	315	0	380	0	0	0	0	430	265	405	310	0
Critical Gap Module:												
Critical Gp:	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1683	xxxx	563	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	695	xxxx	xxxxx
Potent Cap.:	104	xxxx	528	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	896	xxxx	xxxxx
Move Cap.:	67	xxxx	528	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	896	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	12.3	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	B	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	129	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	2043	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	F	*	*	*	*	*	*	*	*	*	*
ApproachDel:	2043.2			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	F			*			*			*		

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              Kittelson & Associates, Inc.  -- Project # 5367.0
                Woodburn Transportation System Plan Update
         2020 Future Conditions Alternative 3 Weekday PM Peak Hour
---------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
***************************************************************************
Intersection #33 Hwy 214/Hwy 99E
***************************************************************************
Cycle (sec):          120               Critical Vol./Cap. (X):        0.922
Loss Time (sec):       16 (Y+R =  4 sec) Average Delay (sec/veh):       58.5
Optimal Cycle:        120               Level Of Service:                 E
***************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Protected        Protected        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        2  0  2  0  1   1  0  1  1  0   1  0  2  0  1   1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     265   475   215   365   830   135   140   455   250   490   567   120
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:  265   475   215   365   830   135   140   455   250   490   567   120
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:     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 Volume:   265   475   215   365   830   135   140   455   250   490   567   120
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:  265   475   215   365   830   135   140   455   250   490   567   120
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.:   265   475   215   365   830   135   140   455   250   490   567   120
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:  0.89  0.91  0.82  0.93  0.91  0.91  0.92  0.92  0.83  0.91  0.89  0.89
Lanes:       2.00  2.00  1.00  1.00  1.72  0.28  1.00  2.00  1.00  1.00  1.65  0.35
Final Sat.:  3369  3473  1554  1769  2979   485  1753  3505  1568  1736  2792   591
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08  0.14  0.14  0.21  0.28  0.28  0.08  0.13  0.16  0.28  0.20  0.20
Crit Moves:  ****                    ****                    ****  ****
Green/Cycle: 0.09  0.16  0.16  0.23  0.30  0.30  0.14  0.17  0.17  0.31  0.34  0.34
Volume/Cap:  0.92  0.88  0.89  0.89  0.92  0.92  0.59  0.75  0.92  0.92  0.59  0.59
Delay/Veh:   87.7  64.8  80.2  65.1  53.5  53.5  52.7  52.4  83.4  61.9  33.2  33.2
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:  87.7  64.8  80.2  65.1  53.5  53.5  52.7  52.4  83.4  61.9  33.2  33.2
DesignQueue:   16    28    12    20    41     7     8    26    14    24    26     6
***************************************************************************
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              Kittelson & Associates, Inc.  -- Project # 5367.0
                Woodburn Transportation System Plan Update
          2020 Future Conditions Alternative 3 Weekday PM Peak Hour
------------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
******************************************************************************
Intersection #34 OR 219/Butteville (North Intersection)
******************************************************************************
Average Delay (sec/veh):    222.5    Worst Case Level Of Service:      F[607.4]
******************************************************************************
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        Uncontrolled      Uncontrolled
Rights:          Include           Include           Include           Include
Lanes:        0  0  0  0  0    1  0  0  0  1    0  1  0  0  0    0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0    0     0   385    0   310   280  310     0     0  380   245
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    0     0   385    0   310   280  310     0     0  380   245
Added Vol:       0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     0    0     0   385    0   310   280  310     0     0  380   245
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:      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 Volume:      0    0     0   385    0   310   280  310     0     0  380   245
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:      0    0     0   385    0   310   280  310     0     0  380   245
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4 xxxx   6.2   4.1 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5 xxxx   3.3   2.2 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1373 xxxx   503   625 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   162 xxxx   573   966 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   119 xxxx   573   966 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  3.23 xxxx  0.54  0.29 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx xxxx xxxxx  37.1 xxxx   3.2   1.2 xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:xxxxx xxxx xxxxx  1082 xxxx  18.4  10.2 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     F    *     C     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   1.2 xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.2 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     B    *     *     *    *     *
ApproachDel:      xxxxxx            607.4            xxxxxx            xxxxxx
ApproachLOS:        *                 F                 *                 *
```

Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 3 (Mitigated) Weekday PM Peak Hour

Scenario Report

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

Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 3 (Mitigated) 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 Hwy 214/Boones Ferry Rd	D	47.0	0.812	D	47.0	0.812	+ 0.000 D/V
# 2 Hwy 214/Meridian Dr	B	11.8	0.463	B	11.8	0.463	+ 0.000 D/V
# 10 Hwy 99/Cleveland St	A	7.1	0.409	A	7.1	0.409	+ 0.000 D/V
# 22 Boones Ferry Rd/Front St	C	22.3	0.791	C	22.3	0.791	+ 0.000 V/C
# 32 Hwy 214/Butteville Road	B	15.2	0.737	B	15.2	0.737	+ 0.000 D/V
# 33 Hwy 214/Hwy 99E	D	46.4	0.764	D	46.4	0.764	+ 0.000 D/V

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Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 3 (Mitigated) Weekday PM Peak Hour

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

Intersection #1 Hwy 214/Boones Ferry Rd

Cycle (sec):	120	Critical Vol./Cap. (X):	0.812
Loss Time (sec):	16 (Y+R = 4 sec)	Average Delay (sec/veh):	47.0
Optimal Cycle:	110	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Prot+Permit			Prot+Permit		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 1 0 1			1 0 1 0 1			1 0 2 0 1			1 0 1 1 0		
Volume Module: 16:15 - 17:15												
Base Vol:	295	185	210	145	215	245	285	860	200	305	730	100
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:	295	185	210	145	215	245	285	860	200	305	730	100
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:	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 Volume:	295	185	210	145	215	245	285	860	200	305	730	100
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	295	185	210	145	215	245	285	860	200	305	730	100
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.:	295	185	210	145	215	245	285	860	200	305	730	100
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.94	0.99	0.84	0.93	0.98	0.83	0.44	0.92	0.82	0.42	0.89	0.89
Lanes:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.00	1.76	0.24
Final Sat.:	1787	1881	1599	1769	1862	1583	841	3505	1565	790	2968	407
Capacity Analysis Module:												
Vol/Sat:	0.17	0.10	0.13	0.08	0.12	0.15	0.34	0.25	0.13	0.39	0.25	0.25
Crit Moves:	****					****		****		****		
Green/Cycle:	0.19	0.23	0.23	0.14	0.18	0.18	0.48	0.29	0.29	0.53	0.30	0.30
Volume/Cap:	0.86	0.43	0.57	0.57	0.64	0.86	0.70	0.86	0.45	0.73	0.83	0.83
Delay/Veh:	65.6	40.2	43.1	51.1	49.6	69.4	33.6	47.9	35.8	36.7	45.2	45.2
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:	65.6	40.2	43.1	51.1	49.6	69.4	33.6	47.9	35.8	36.7	45.2	45.2
DesignQueue:	17	10	11	8	12	14	16	44	10	17	36	5

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Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 3 (Mitigated) Weekday PM Peak Hour

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

Intersection #2 Hwy 214/Meridian Dr

Cycle (sec):	90	Critical Vol./Cap. (X):	0.463
Loss Time (sec):	12 (Y+R = 4 sec)	Average Delay (sec/veh):	11.8
Optimal Cycle:	38	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
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			1 0 0 1 0			1 0 1 1 0			1 0 1 1 0		
Volume Module:												
Base Vol:	30	5	30	85	5	74	70	1045	45	50	1035	40
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:	30	5	30	85	5	74	70	1045	45	50	1035	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:	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 Volume:	30	5	30	85	5	74	70	1045	45	50	1035	40
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	30	5	30	85	5	74	70	1045	45	50	1035	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
Final Vol.:	30	5	30	85	5	74	70	1045	45	50	1035	40
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.77	0.77	0.77	0.76	0.85	0.85	0.92	0.92	0.92	0.94	0.93	0.93
Lanes:	0.46	0.08	0.46	1.00	0.06	0.94	1.00	1.92	0.08	1.00	1.93	0.07
Final Sat.:	679	113	679	1448	102	1514	1753	3340	144	1787	3420	132
Capacity Analysis Module:												
Vol/Sat:	0.04	0.04	0.04	0.06	0.05	0.05	0.04	0.31	0.31	0.03	0.30	0.30
Crit Moves:				****			****				****	
Green/Cycle:	0.13	0.13	0.13	0.13	0.13	0.13	0.09	0.68	0.68	0.06	0.65	0.65
Volume/Cap:	0.35	0.35	0.35	0.46	0.39	0.39	0.46	0.46	0.46	0.46	0.46	0.46
Delay/Veh:	37.0	37.0	37.0	38.3	37.3	37.3	41.4	6.9	6.9	43.9	7.9	7.9
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:	37.0	37.0	37.0	38.3	37.3	37.3	41.4	6.9	6.9	43.9	7.9	7.9
DesignQueue:	1	0	1	4	0	3	3	18	1	2	19	1

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

Intersection #10 Hwy 99/Cleveland St

Cycle (sec):	60	Critical Vol./Cap. (X):	0.409
Loss Time (sec):	8 (Y+R = 4 sec)	Average Delay (sec/veh):	7.1
Optimal Cycle:	27	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:		Permitted			Permitted			Permitted			Permitted	
Rights:		Include			Include			Include			Include	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0 1	0	0 1	0 1	0	1 0	0 1	0	0 0	1!	0 0
Volume Module:												
Base Vol:	60	610	5	5	690	175	121	1	60	15	5	45
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:	60	610	5	5	690	175	121	1	60	15	5	45
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:	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 Volume:	60	610	5	5	690	175	121	1	60	15	5	45
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	60	610	5	5	690	175	121	1	60	15	5	45
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.:	60	610	5	5	690	175	121	1	60	15	5	45
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.77	0.77	0.77	0.86	0.86	0.86	0.72	0.85	0.85	0.85	0.85	0.85
Lanes:	0.18	1.81	0.01	0.01	1.59	0.40	1.00	0.02	0.98	0.23	0.08	0.69
Final Sat.:	259	2630	22	19	2594	658	1362	27	1592	373	124	1119
Capacity Analysis Module:												
Vol/Sat:	0.23	0.23	0.23	0.27	0.27	0.27	0.09	0.04	0.04	0.04	0.04	0.04
Crit Moves:					****		****					
Green/Cycle:	0.65	0.65	0.65	0.65	0.65	0.65	0.22	0.22	0.22	0.22	0.22	0.22
Volume/Cap:	0.36	0.36	0.36	0.41	0.41	0.41	0.41	0.17	0.17	0.19	0.19	0.19
Delay/Veh:	4.9	4.9	4.9	5.1	5.1	5.1	21.1	19.4	19.4	19.4	19.4	19.4
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:	4.9	4.9	4.9	5.1	5.1	5.1	21.1	19.4	19.4	19.4	19.4	19.4
DesignQueue:	1	7	0	0	9	2	3	0	2	0	0	1

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Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 3 (Mitigated) Weekday PM Peak Hour

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

Intersection #22 Boones Ferry Rd/Front St

Cycle (sec):	100	Critical Vol./Cap. (X):	0.791
Loss Time (sec):	8 (Y+R = 4 sec)	Average Delay (sec/veh):	22.3
Optimal Cycle:	0	Level Of Service:	C

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	1 0	1 0	1	1 0	0 1	0
Volume Module:												
Base Vol:	155	100	35	20	110	210	170	245	215	50	320	35
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:	155	100	35	20	110	210	170	245	215	50	320	35
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:	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 Volume:	155	100	35	20	110	210	170	245	215	50	320	35
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	155	100	35	20	110	210	170	245	215	50	320	35
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.:	155	100	35	20	110	210	170	245	215	50	320	35
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	0.74	0.26	1.00	0.34	0.66	1.00	1.00	1.00	1.00	0.90	0.10
Final Sat.:	388	310	108	394	155	296	401	427	463	410	404	44
Capacity Analysis Module:												
Vol/Sat:	0.40	0.32	0.32	0.05	0.71	0.71	0.42	0.57	0.46	0.12	0.79	0.79
Crit Moves:	****				****			****				****
Delay/Veh:	16.9	14.4	14.4	11.9	26.0	26.0	17.5	21.0	16.3	12.3	33.1	33.1
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:	16.9	14.4	14.4	11.9	26.0	26.0	17.5	21.0	16.3	12.3	33.1	33.1
LOS by Move:	C	B	B	B	D	D	C	C	C	B	D	D
ApproachDel:		15.7			25.2			18.4			30.5	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		15.7			25.2			18.4			30.5	
LOS by Appr:		C			D			C			D	

Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 3 (Mitigated) Weekday PM Peak Hour

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

Intersection #32 Hwy 214/Butteville Road

Cycle (sec): 60 Critical Vol./Cap. (X): 0.737
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 15.2
Optimal Cycle: 48 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 0 0 1			0 0 0 0 0			0 0 0 1 0			1 0 1 0 0		
Volume Module:												
Base Vol:	315	0	380	0	0	0	0	430	265	405	310	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:	315	0	380	0	0	0	0	430	265	405	310	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:	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 Volume:	315	0	380	0	0	0	0	430	265	405	310	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	315	0	380	0	0	0	0	430	265	405	310	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.:	315	0	380	0	0	0	0	430	265	405	310	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.94	1.00	0.84	1.00	1.00	1.00	1.00	0.91	0.91	0.56	0.97	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.62	0.38	1.00	1.00	0.00
Final Sat.:	1787	0	1599	0	0	0	0	1073	661	1066	1845	0
Capacity Analysis Module:												
Vol/Sat:	0.18	0.00	0.24	0.00	0.00	0.00	0.00	0.40	0.40	0.38	0.17	0.00
Crit Moves:			****					****				
Green/Cycle:	0.32	0.00	0.32	0.00	0.00	0.00	0.00	0.54	0.54	0.54	0.54	0.00
Volume/Cap:	0.55	0.00	0.74	0.00	0.00	0.00	0.00	0.74	0.74	0.70	0.31	0.00
Delay/Veh:	17.8	0.0	23.6	0.0	0.0	0.0	0.0	13.5	13.5	13.8	7.7	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	17.8	0.0	23.6	0.0	0.0	0.0	0.0	13.5	13.5	13.8	7.7	0.0
DesignQueue:	7	0	9	0	0	0	0	7	4	7	5	0

Kittelson & Associates, Inc. -- Project # 5367.0
Woodburn Transportation System Plan Update
2020 Future Conditions Alternative 3 (Mitigated) Weekday PM Peak Hour

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

Intersection #33 Hwy 214/Hwy 99E

Cycle (sec): 120 Critical Vol./Cap. (X): 0.764
Loss Time (sec): 16 (Y+R = 4 sec) Average Delay (sec/veh): 46.4
Optimal Cycle: 84 Level Of Service: D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	2 0 2 0 1			1 0 1 1 0			1 0 2 0 1			2 0 1 1 0		
Volume Module:												
Base Vol:	265	475	215	365	830	135	140	455	250	490	567	120
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:	265	475	215	365	830	135	140	455	250	490	567	120
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:	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 Volume:	265	475	215	365	830	135	140	455	250	490	567	120
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	265	475	215	365	830	135	140	455	250	490	567	120
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.:	265	475	215	365	830	135	140	455	250	490	567	120
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.89	0.91	0.82	0.93	0.91	0.91	0.92	0.92	0.83	0.89	0.89	0.89
Lanes:	2.00	2.00	1.00	1.00	1.72	0.28	1.00	2.00	1.00	2.00	1.65	0.35
Final Sat.:	3369	3473	1554	1769	2979	485	1753	3505	1568	3369	2792	591
Capacity Analysis Module:												
Vol/Sat:	0.08	0.14	0.14	0.21	0.28	0.28	0.08	0.13	0.16	0.15	0.20	0.20
Crit Moves:	****				****				****	****		
Green/Cycle:	0.10	0.19	0.19	0.28	0.36	0.36	0.11	0.21	0.21	0.19	0.29	0.29
Volume/Cap:	0.76	0.73	0.74	0.74	0.76	0.76	0.71	0.62	0.76	0.76	0.71	0.71
Delay/Veh:	62.1	50.0	55.4	45.0	36.4	36.4	62.7	44.8	54.9	51.5	40.8	40.8
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:	62.1	50.0	55.4	45.0	36.4	36.4	62.7	44.8	54.9	51.5	40.8	40.8
DesignQueue:	16	27	12	18	38	6	8	25	14	27	28	6

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           Kittelson & Associates, Inc.  -- Project # 5367.0
              Woodburn Transportation System Plan Update
    2020 Future Conditions Alternative 3 (Mitigated) Weekday PM Peak Hour
------------------------------------------------------------------------------
                     Level Of Service Computation Report
            2000 HCM Operations Method (Future Volume Alternative)
******************************************************************************
Intersection #34 OR 219/Butteville (North Intersection)
******************************************************************************
Cycle (sec):          60               Critical Vol./Cap. (X):         0.790
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):        17.2
Optimal Cycle:        55               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Split Phase      Split Phase        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:        0  0  0  0  0   1  0  0  0  1   0  1  0  0  0   0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      0    0     0  385    0   310  280  310     0    0  380   245
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    0     0  385    0   310  280  310     0    0  380   245
Added Vol:     0    0     0    0    0     0    0    0     0    0    0     0
PasserByVol:   0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:   0    0     0  385    0   310  280  310     0    0  380   245
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:     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 Volume:    0    0     0  385    0   310  280  310     0    0  380   245
Reduct Vol:    0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:   0    0     0  385    0   310  280  310     0    0  380   245
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    0     0  385    0   310  280  310     0    0  380   245
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  1.00 1.00  1.00 0.95 1.00  0.85 0.66 0.66  1.00 1.00 0.95  0.95
Lanes:       0.00 0.00  0.00 1.00 0.00  1.00 0.47 0.53  0.00 0.00 0.61  0.39
Final Sat.:    0    0     0 1805    0  1615  594  658     0    0 1094   705
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00 0.21 0.00  0.19 0.47 0.47  0.00 0.00 0.35  0.35
Crit Moves:                  ****                  ****
Green/Cycle: 0.00 0.00  0.00 0.27 0.00  0.27 0.60 0.60  0.00 0.00 0.60  0.60
Volume/Cap:  0.00 0.00  0.00 0.79 0.00  0.71 0.79 0.79  0.00 0.00 0.58  0.58
Delay/Veh:    0.0  0.0   0.0 28.8  0.0  25.2 14.9 14.9   0.0  0.0  8.3   8.3
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  0.0   0.0 28.8  0.0  25.2 14.9 14.9   0.0  0.0  8.3   8.3
AustraQueue:   0    0     0    7    0     5    5    5     0    0    4     3
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Appendix F

MUTCD Signal Warrant
Analysis

KITTELSON & ASSOCIATES, INC.
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

Project #:	5367
Project Name:	Woodburn TSP
Analyst:	JCW
Date:	5/25/2004
File:	H:\projfile\5367\analysis\Signal Warrants\Alternative 1\[Butteville_214_N.xls]Warrant Summary
Intersection:	Butteville/Oregon 214 (North)
Scenario:	Alternative 1

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	590	680	0	620
2nd	Highest Hour	566	653	0	595
3rd	Highest Hour	555	639	0	583
4th	Highest Hour	472	544	0	496
5th	Highest Hour	448	517	0	471
6th	Highest Hour	401	462	0	422
7th	Highest Hour	372	428	0	391
8th	Highest Hour	354	408	0	372
9th	Highest Hour	283	326	0	298
10th	Highest Hour	266	306	0	279
11th	Highest Hour	266	306	0	279
12th	Highest Hour	254	292	0	267
13th	Highest Hour	230	265	0	242
14th	Highest Hour	212	245	0	223
15th	Highest Hour	212	245	0	223
16th	Highest Hour	207	238	0	217
17th	Highest Hour	118	136	0	124
18th	Highest Hour	65	75	0	68
19th	Highest Hour	59	68	0	62
20th	Highest Hour	24	27	0	25
21st	Highest Hour	18	20	0	19
22nd	Highest Hour	18	20	0	19
23rd	Highest Hour	12	14	0	12
24th	Highest Hour	12	14	0	12

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	590	680	0	620
2nd	Highest Hour	566	653	0	595
3rd	Highest Hour	555	639	0	583
4th	Highest Hour	472	544	0	496
5th	Highest Hour	448	517	0	471
6th	Highest Hour	401	462	0	422
7th	Highest Hour	372	428	0	391
8th	Highest Hour	354	408	0	372
9th	Highest Hour	283	326	0	298
10th	Highest Hour	266	306	0	279
11th	Highest Hour	266	306	0	279
12th	Highest Hour	254	292	0	267
13th	Highest Hour	230	265	0	242
14th	Highest Hour	212	245	0	223
15th	Highest Hour	212	245	0	223
16th	Highest Hour	207	238	0	217
17th	Highest Hour	118	136	0	124
18th	Highest Hour	65	75	0	68
19th	Highest Hour	59	68	0	62
20th	Highest Hour	24	27	0	25
21st	Highest Hour	18	20	0	19
22nd	Highest Hour	18	20	0	19
23rd	Highest Hour	12	14	0	12
24th	Highest Hour	12	14	0	12

KITTELSON & ASSOCIATES, INC.
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

Project #:	5367
Project Name:	Woodburn TSP
Analyst:	JCW
Date:	1/5/2004
File:	H:\projfile\5367\analysis\Signal Warrants\Alternative 1\[Butteville_214.xls]Warrant Summary
Intersection:	Butteville/Oregon 214
Scenario:	Alternative 1

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	620	585	405	0
2nd	Highest Hour	595	562	389	0
3rd	Highest Hour	583	550	381	0
4th	Highest Hour	496	468	324	0
5th	Highest Hour	471	445	308	0
6th	Highest Hour	422	398	275	0
7th	Highest Hour	391	369	255	0
8th	Highest Hour	372	351	243	0
9th	Highest Hour	298	281	194	0
10th	Highest Hour	279	263	182	0
11th	Highest Hour	279	263	182	0
12th	Highest Hour	267	252	174	0
13th	Highest Hour	242	228	158	0
14th	Highest Hour	223	211	146	0
15th	Highest Hour	223	211	146	0
16th	Highest Hour	217	205	142	0
17th	Highest Hour	124	117	81	0
18th	Highest Hour	68	64	45	0
19th	Highest Hour	62	59	41	0
20th	Highest Hour	25	23	16	0
21st	Highest Hour	19	18	12	0
22nd	Highest Hour	19	18	12	0
23rd	Highest Hour	12	12	8	0
24th	Highest Hour	12	12	8	0

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	620	585	405	0
2nd	Highest Hour	595	562	389	0
3rd	Highest Hour	583	550	381	0
4th	Highest Hour	496	468	324	0
5th	Highest Hour	471	445	308	0
6th	Highest Hour	422	398	275	0
7th	Highest Hour	391	369	255	0
8th	Highest Hour	372	351	243	0
9th	Highest Hour	298	281	194	0
10th	Highest Hour	279	263	182	0
11th	Highest Hour	279	263	182	0
12th	Highest Hour	267	252	174	0
13th	Highest Hour	242	228	158	0
14th	Highest Hour	223	211	146	0
15th	Highest Hour	223	211	146	0
16th	Highest Hour	217	205	142	0
17th	Highest Hour	124	117	81	0
18th	Highest Hour	68	64	45	0
19th	Highest Hour	62	59	41	0
20th	Highest Hour	25	23	16	0
21st	Highest Hour	19	18	12	0
22nd	Highest Hour	19	18	12	0
23rd	Highest Hour	12	12	8	0
24th	Highest Hour	12	12	8	0

KITTELSON & ASSOCIATES, INC.
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

Project #:	5367
Project Name:	Woodburn TSP
Analyst:	JCW
Date:	1/5/2004
File:	H:\projfile\5367\analysis\Signal Warrants\Alternative 1\[Meridian_214.xls]Warrant Summary
Intersection:	Meridian/5th/Oregon 214
Scenario:	Alternative 1

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	2
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	935	880	55	150
2nd	Highest Hour	898	845	53	144
3rd	Highest Hour	879	827	52	141
4th	Highest Hour	748	704	44	120
5th	Highest Hour	711	669	42	114
6th	Highest Hour	636	598	37	102
7th	Highest Hour	589	554	35	95
8th	Highest Hour	561	528	33	90
9th	Highest Hour	449	422	26	72
10th	Highest Hour	421	396	25	68
11th	Highest Hour	421	396	25	68
12th	Highest Hour	402	378	24	65
13th	Highest Hour	365	343	21	59
14th	Highest Hour	337	317	20	54
15th	Highest Hour	337	317	20	54
16th	Highest Hour	327	308	19	53
17th	Highest Hour	187	176	11	30
18th	Highest Hour	103	97	6	17
19th	Highest Hour	94	88	6	15
20th	Highest Hour	37	35	2	6
21st	Highest Hour	28	26	2	5
22nd	Highest Hour	28	26	2	5
23rd	Highest Hour	19	18	1	3
24th	Highest Hour	19	18	1	3

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	935	880	55	150
2nd	Highest Hour	898	845	53	144
3rd	Highest Hour	879	827	52	141
4th	Highest Hour	748	704	44	120
5th	Highest Hour	711	669	42	114
6th	Highest Hour	636	598	37	102
7th	Highest Hour	589	554	35	95
8th	Highest Hour	561	528	33	90
9th	Highest Hour	449	422	26	72
10th	Highest Hour	421	396	25	68
11th	Highest Hour	421	396	25	68
12th	Highest Hour	402	378	24	65
13th	Highest Hour	365	343	21	59
14th	Highest Hour	337	317	20	54
15th	Highest Hour	337	317	20	54
16th	Highest Hour	327	308	19	53
17th	Highest Hour	187	176	11	30
18th	Highest Hour	103	97	6	17
19th	Highest Hour	94	88	6	15
20th	Highest Hour	37	35	2	6
21st	Highest Hour	28	26	2	5
22nd	Highest Hour	28	26	2	5
23rd	Highest Hour	19	18	1	3
24th	Highest Hour	19	18	1	3

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Project #:	5367
Project Name:	Woodburn TSP
Analyst:	JCW
Date:	1/5/2004
File:	H:\projfile\5367\analysis\Signal Warrants\Alternative 1\[Front_214.xls]Warrant Summary
Intersection:	Front/Oregon 214
Scenario:	Alternative 1

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	860	965	0	315
2nd	Highest Hour	826	926	0	302
3rd	Highest Hour	808	907	0	296
4th	Highest Hour	688	772	0	252
5th	Highest Hour	654	733	0	239
6th	Highest Hour	585	656	0	214
7th	Highest Hour	542	608	0	198
8th	Highest Hour	516	579	0	189
9th	Highest Hour	413	463	0	151
10th	Highest Hour	387	434	0	142
11th	Highest Hour	387	434	0	142
12th	Highest Hour	370	415	0	135
13th	Highest Hour	335	376	0	123
14th	Highest Hour	310	347	0	113
15th	Highest Hour	310	347	0	113
16th	Highest Hour	301	338	0	110
17th	Highest Hour	172	193	0	63
18th	Highest Hour	95	106	0	35
19th	Highest Hour	86	97	0	32
20th	Highest Hour	34	39	0	13
21st	Highest Hour	26	29	0	9
22nd	Highest Hour	26	29	0	9
23rd	Highest Hour	17	19	0	6
24th	Highest Hour	17	19	0	6

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	2
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	860	965	0	315
2nd	Highest Hour	826	926	0	302
3rd	Highest Hour	808	907	0	296
4th	Highest Hour	688	772	0	252
5th	Highest Hour	654	733	0	239
6th	Highest Hour	585	656	0	214
7th	Highest Hour	542	608	0	198
8th	Highest Hour	516	579	0	189
9th	Highest Hour	413	463	0	151
10th	Highest Hour	387	434	0	142
11th	Highest Hour	387	434	0	142
12th	Highest Hour	370	415	0	135
13th	Highest Hour	335	376	0	123
14th	Highest Hour	310	347	0	113
15th	Highest Hour	310	347	0	113
16th	Highest Hour	301	338	0	110
17th	Highest Hour	172	193	0	63
18th	Highest Hour	95	106	0	35
19th	Highest Hour	86	97	0	32
20th	Highest Hour	34	39	0	13
21st	Highest Hour	26	29	0	9
22nd	Highest Hour	26	29	0	9
23rd	Highest Hour	17	19	0	6
24th	Highest Hour	17	19	0	6

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Project #:	5367
Project Name:	Woodburn TSP
Analyst:	JCW
Date:	1/5/2004
File:	H:\projfile\5367\analysis\Signal Warrants\Alternative 1\[Cleveland_99E.xls]Warrant Summary
Intersection:	Cleveland St/Oregon 99E
Scenario:	Alternative 1

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	805	1125	375	65
2nd	Highest Hour	773	1080	360	62
3rd	Highest Hour	757	1058	353	61
4th	Highest Hour	644	900	300	52
5th	Highest Hour	612	855	285	49
6th	Highest Hour	547	765	255	44
7th	Highest Hour	507	709	236	41
8th	Highest Hour	483	675	225	39
9th	Highest Hour	386	540	180	31
10th	Highest Hour	362	506	169	29
11th	Highest Hour	362	506	169	29
12th	Highest Hour	346	484	161	28
13th	Highest Hour	314	439	146	25
14th	Highest Hour	290	405	135	23
15th	Highest Hour	290	405	135	23
16th	Highest Hour	282	394	131	23
17th	Highest Hour	161	225	75	13
18th	Highest Hour	89	124	41	7
19th	Highest Hour	81	113	38	7
20th	Highest Hour	32	45	15	3
21st	Highest Hour	24	34	11	2
22nd	Highest Hour	24	34	11	2
23rd	Highest Hour	16	23	8	1
24th	Highest Hour	16	23	8	1

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	2
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	805	1125	375	65
2nd	Highest Hour	773	1080	360	62
3rd	Highest Hour	757	1058	353	61
4th	Highest Hour	644	900	300	52
5th	Highest Hour	612	855	285	49
6th	Highest Hour	547	765	255	44
7th	Highest Hour	507	709	236	41
8th	Highest Hour	483	675	225	39
9th	Highest Hour	386	540	180	31
10th	Highest Hour	362	506	169	29
11th	Highest Hour	362	506	169	29
12th	Highest Hour	346	484	161	28
13th	Highest Hour	314	439	146	25
14th	Highest Hour	290	405	135	23
15th	Highest Hour	290	405	135	23
16th	Highest Hour	282	394	131	23
17th	Highest Hour	161	225	75	13
18th	Highest Hour	89	124	41	7
19th	Highest Hour	81	113	38	7
20th	Highest Hour	32	45	15	3
21st	Highest Hour	24	34	11	2
22nd	Highest Hour	24	34	11	2
23rd	Highest Hour	16	23	8	1
24th	Highest Hour	16	23	8	1

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Project #:	5367
Project Name:	Woodburn TSP
Analyst:	JCW
Date:	5/25/2004
File:	H:\projfile\5367\analysis\Signal Warrants\Alternative 2\[Butteville_214_N.xls]Warrant Summary
Intersection:	Butteville/Oregon 214 (North)
Scenario:	Alternative 2

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	590	555	0	575
2nd	Highest Hour	566	533	0	552
3rd	Highest Hour	555	522	0	541
4th	Highest Hour	472	444	0	460
5th	Highest Hour	448	422	0	437
6th	Highest Hour	401	377	0	391
7th	Highest Hour	372	350	0	362
8th	Highest Hour	354	333	0	345
9th	Highest Hour	283	266	0	276
10th	Highest Hour	266	250	0	259
11th	Highest Hour	266	250	0	259
12th	Highest Hour	254	239	0	247
13th	Highest Hour	230	216	0	224
14th	Highest Hour	212	200	0	207
15th	Highest Hour	212	200	0	207
16th	Highest Hour	207	194	0	201
17th	Highest Hour	118	111	0	115
18th	Highest Hour	65	61	0	63
19th	Highest Hour	59	56	0	58
20th	Highest Hour	24	22	0	23
21st	Highest Hour	18	17	0	17
22nd	Highest Hour	18	17	0	17
23rd	Highest Hour	12	11	0	12
24th	Highest Hour	12	11	0	12

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	590	555	0	575
2nd	Highest Hour	566	533	0	552
3rd	Highest Hour	555	522	0	541
4th	Highest Hour	472	444	0	460
5th	Highest Hour	448	422	0	437
6th	Highest Hour	401	377	0	391
7th	Highest Hour	372	350	0	362
8th	Highest Hour	354	333	0	345
9th	Highest Hour	283	266	0	276
10th	Highest Hour	266	250	0	259
11th	Highest Hour	266	250	0	259
12th	Highest Hour	254	239	0	247
13th	Highest Hour	230	216	0	224
14th	Highest Hour	212	200	0	207
15th	Highest Hour	212	200	0	207
16th	Highest Hour	207	194	0	201
17th	Highest Hour	118	111	0	115
18th	Highest Hour	65	61	0	63
19th	Highest Hour	59	56	0	58
20th	Highest Hour	24	22	0	23
21st	Highest Hour	18	17	0	17
22nd	Highest Hour	18	17	0	17
23rd	Highest Hour	12	11	0	12
24th	Highest Hour	12	11	0	12

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Project #:	5367
Project Name:	Woodburn TSP
Analyst:	JCW
Date:	1/5/2004
File:	H:\projfile\5367\analysis\Signal Warrants\Alternative 2\[Butteville_214.xls]Warrant Summary
Intersection:	Butteville/Oregon 214
Scenario:	Alternative 2

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	575	815	250	0
2nd	Highest Hour	552	782	240	0
3rd	Highest Hour	541	766	235	0
4th	Highest Hour	460	652	200	0
5th	Highest Hour	437	619	190	0
6th	Highest Hour	391	554	170	0
7th	Highest Hour	362	513	158	0
8th	Highest Hour	345	489	150	0
9th	Highest Hour	276	391	120	0
10th	Highest Hour	259	367	113	0
11th	Highest Hour	259	367	113	0
12th	Highest Hour	247	350	108	0
13th	Highest Hour	224	318	98	0
14th	Highest Hour	207	293	90	0
15th	Highest Hour	207	293	90	0
16th	Highest Hour	201	285	88	0
17th	Highest Hour	115	163	50	0
18th	Highest Hour	63	90	28	0
19th	Highest Hour	58	82	25	0
20th	Highest Hour	23	33	10	0
21st	Highest Hour	17	24	8	0
22nd	Highest Hour	17	24	8	0
23rd	Highest Hour	12	16	5	0
24th	Highest Hour	12	16	5	0

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	575	815	250	0
2nd	Highest Hour	552	782	240	0
3rd	Highest Hour	541	766	235	0
4th	Highest Hour	460	652	200	0
5th	Highest Hour	437	619	190	0
6th	Highest Hour	391	554	170	0
7th	Highest Hour	362	513	158	0
8th	Highest Hour	345	489	150	0
9th	Highest Hour	276	391	120	0
10th	Highest Hour	259	367	113	0
11th	Highest Hour	259	367	113	0
12th	Highest Hour	247	350	108	0
13th	Highest Hour	224	318	98	0
14th	Highest Hour	207	293	90	0
15th	Highest Hour	207	293	90	0
16th	Highest Hour	201	285	88	0
17th	Highest Hour	115	163	50	0
18th	Highest Hour	63	90	28	0
19th	Highest Hour	58	82	25	0
20th	Highest Hour	23	33	10	0
21st	Highest Hour	17	24	8	0
22nd	Highest Hour	17	24	8	0
23rd	Highest Hour	12	16	5	0
24th	Highest Hour	12	16	5	0

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Project #:	5367
Project Name:	Woodburn TSP
Analyst:	JCW
Date:	1/5/2004
File:	H:\projfile\5367\analysis\Signal Warrants\Alternative 2\[Meridian_214.xls]Warrant Summary
Intersection:	Meridian/5th/Oregon 214
Scenario:	Alternative 2

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	2
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	1575	1470	65	165
2nd	Highest Hour	1512	1411	62	158
3rd	Highest Hour	1481	1382	61	155
4th	Highest Hour	1260	1176	52	132
5th	Highest Hour	1197	1117	49	125
6th	Highest Hour	1071	1000	44	112
7th	Highest Hour	992	926	41	104
8th	Highest Hour	945	882	39	99
9th	Highest Hour	756	706	31	79
10th	Highest Hour	709	662	29	74
11th	Highest Hour	709	662	29	74
12th	Highest Hour	677	632	28	71
13th	Highest Hour	614	573	25	64
14th	Highest Hour	567	529	23	59
15th	Highest Hour	567	529	23	59
16th	Highest Hour	551	515	23	58
17th	Highest Hour	315	294	13	33
18th	Highest Hour	173	162	7	18
19th	Highest Hour	158	147	7	17
20th	Highest Hour	63	59	3	7
21st	Highest Hour	47	44	2	5
22nd	Highest Hour	47	44	2	5
23rd	Highest Hour	32	29	1	3
24th	Highest Hour	32	29	1	3

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	1575	1470	65	165
2nd	Highest Hour	1512	1411	62	158
3rd	Highest Hour	1481	1382	61	155
4th	Highest Hour	1260	1176	52	132
5th	Highest Hour	1197	1117	49	125
6th	Highest Hour	1071	1000	44	112
7th	Highest Hour	992	926	41	104
8th	Highest Hour	945	882	39	99
9th	Highest Hour	756	706	31	79
10th	Highest Hour	709	662	29	74
11th	Highest Hour	709	662	29	74
12th	Highest Hour	677	632	28	71
13th	Highest Hour	614	573	25	64
14th	Highest Hour	567	529	23	59
15th	Highest Hour	567	529	23	59
16th	Highest Hour	551	515	23	58
17th	Highest Hour	315	294	13	33
18th	Highest Hour	173	162	7	18
19th	Highest Hour	158	147	7	17
20th	Highest Hour	63	59	3	7
21st	Highest Hour	47	44	2	5
22nd	Highest Hour	47	44	2	5
23rd	Highest Hour	32	29	1	3
24th	Highest Hour	32	29	1	3

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Project #:	5367
Project Name:	Woodburn TSP
Analyst:	JCW
Date:	1/5/2004
File:	H:\projfile\5367\analysis\Signal Warrants\Alternative 2\[Front_214.xls]Warrant Summary
Intersection:	Front/Oregon 214
Scenario:	Alternative 2

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	2
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	1520	1380	0	295
2nd	Highest Hour	1459	1325	0	283
3rd	Highest Hour	1429	1297	0	277
4th	Highest Hour	1216	1104	0	236
5th	Highest Hour	1155	1049	0	224
6th	Highest Hour	1034	938	0	201
7th	Highest Hour	958	869	0	186
8th	Highest Hour	912	828	0	177
9th	Highest Hour	730	662	0	142
10th	Highest Hour	684	621	0	133
11th	Highest Hour	684	621	0	133
12th	Highest Hour	654	593	0	127
13th	Highest Hour	593	538	0	115
14th	Highest Hour	547	497	0	106
15th	Highest Hour	547	497	0	106
16th	Highest Hour	532	483	0	103
17th	Highest Hour	304	276	0	59
18th	Highest Hour	167	152	0	32
19th	Highest Hour	152	138	0	30
20th	Highest Hour	61	55	0	12
21st	Highest Hour	46	41	0	9
22nd	Highest Hour	46	41	0	9
23rd	Highest Hour	30	28	0	6
24th	Highest Hour	30	28	0	6

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	1520	1380	0	295
2nd	Highest Hour	1459	1325	0	283
3rd	Highest Hour	1429	1297	0	277
4th	Highest Hour	1216	1104	0	236
5th	Highest Hour	1155	1049	0	224
6th	Highest Hour	1034	938	0	201
7th	Highest Hour	958	869	0	186
8th	Highest Hour	912	828	0	177
9th	Highest Hour	730	662	0	142
10th	Highest Hour	684	621	0	133
11th	Highest Hour	684	621	0	133
12th	Highest Hour	654	593	0	127
13th	Highest Hour	593	538	0	115
14th	Highest Hour	547	497	0	106
15th	Highest Hour	547	497	0	106
16th	Highest Hour	532	483	0	103
17th	Highest Hour	304	276	0	59
18th	Highest Hour	167	152	0	32
19th	Highest Hour	152	138	0	30
20th	Highest Hour	61	55	0	12
21st	Highest Hour	46	41	0	9
22nd	Highest Hour	46	41	0	9
23rd	Highest Hour	30	28	0	6
24th	Highest Hour	30	28	0	6

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Project #:	5367
Project Name:	Woodburn TSP
Analyst:	JCW
Date:	1/5/2004
File:	H:\projfile\5367\analysis\Signal Warrants\Alternative 2\[Park_214.xls]Warrant Summary
Intersection:	Park/Oregon 214
Scenario:	Alternative 2

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	1290	1345	150	60
2nd	Highest Hour	1238	1291	144	58
3rd	Highest Hour	1213	1264	141	56
4th	Highest Hour	1032	1076	120	48
5th	Highest Hour	980	1022	114	46
6th	Highest Hour	877	915	102	41
7th	Highest Hour	813	847	95	38
8th	Highest Hour	774	807	90	36
9th	Highest Hour	619	646	72	29
10th	Highest Hour	581	605	68	27
11th	Highest Hour	581	605	68	27
12th	Highest Hour	555	578	65	26
13th	Highest Hour	503	525	59	23
14th	Highest Hour	464	484	54	22
15th	Highest Hour	464	484	54	22
16th	Highest Hour	452	471	53	21
17th	Highest Hour	258	269	30	12
18th	Highest Hour	142	148	17	7
19th	Highest Hour	129	135	15	6
20th	Highest Hour	52	54	6	2
21st	Highest Hour	39	40	5	2
22nd	Highest Hour	39	40	5	2
23rd	Highest Hour	26	27	3	1
24th	Highest Hour	26	27	3	1

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	1290	1345	150	60
2nd	Highest Hour	1238	1291	144	58
3rd	Highest Hour	1213	1264	141	56
4th	Highest Hour	1032	1076	120	48
5th	Highest Hour	980	1022	114	46
6th	Highest Hour	877	915	102	41
7th	Highest Hour	813	847	95	38
8th	Highest Hour	774	807	90	36
9th	Highest Hour	619	646	72	29
10th	Highest Hour	581	605	68	27
11th	Highest Hour	581	605	68	27
12th	Highest Hour	555	578	65	26
13th	Highest Hour	503	525	59	23
14th	Highest Hour	464	484	54	22
15th	Highest Hour	464	484	54	22
16th	Highest Hour	452	471	53	21
17th	Highest Hour	258	269	30	12
18th	Highest Hour	142	148	17	7
19th	Highest Hour	129	135	15	6
20th	Highest Hour	52	54	6	2
21st	Highest Hour	39	40	5	2
22nd	Highest Hour	39	40	5	2
23rd	Highest Hour	26	27	3	1
24th	Highest Hour	26	27	3	1

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	2
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

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Project #:	5367
Project Name:	Woodburn TSP
Analyst:	JCW
Date:	1/5/2004
File:	H:\projfile\5367\analysis\Signal Warrants\Alternative 2\[Cleveland_99E.xls]Warrant Summary
Intersection:	Cleveland St/Oregon 99E
Scenario:	Alternative 2

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	2
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	855	1040	190	65
2nd	Highest Hour	821	998	182	62
3rd	Highest Hour	804	978	179	61
4th	Highest Hour	684	832	152	52
5th	Highest Hour	650	790	144	49
6th	Highest Hour	581	707	129	44
7th	Highest Hour	539	655	120	41
8th	Highest Hour	513	624	114	39
9th	Highest Hour	410	499	91	31
10th	Highest Hour	385	468	86	29
11th	Highest Hour	385	468	86	29
12th	Highest Hour	368	447	82	28
13th	Highest Hour	333	406	74	25
14th	Highest Hour	308	374	68	23
15th	Highest Hour	308	374	68	23
16th	Highest Hour	299	364	67	23
17th	Highest Hour	171	208	38	13
18th	Highest Hour	94	114	21	7
19th	Highest Hour	86	104	19	7
20th	Highest Hour	34	42	8	3
21st	Highest Hour	26	31	6	2
22nd	Highest Hour	26	31	6	2
23rd	Highest Hour	17	21	4	1
24th	Highest Hour	17	21	4	1

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	855	1040	190	65
2nd	Highest Hour	821	998	182	62
3rd	Highest Hour	804	978	179	61
4th	Highest Hour	684	832	152	52
5th	Highest Hour	650	790	144	49
6th	Highest Hour	581	707	129	44
7th	Highest Hour	539	655	120	41
8th	Highest Hour	513	624	114	39
9th	Highest Hour	410	499	91	31
10th	Highest Hour	385	468	86	29
11th	Highest Hour	385	468	86	29
12th	Highest Hour	368	447	82	28
13th	Highest Hour	333	406	74	25
14th	Highest Hour	308	374	68	23
15th	Highest Hour	308	374	68	23
16th	Highest Hour	299	364	67	23
17th	Highest Hour	171	208	38	13
18th	Highest Hour	94	114	21	7
19th	Highest Hour	86	104	19	7
20th	Highest Hour	34	42	8	3
21st	Highest Hour	26	31	6	2
22nd	Highest Hour	26	31	6	2
23rd	Highest Hour	17	21	4	1
24th	Highest Hour	17	21	4	1

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Project #:	5367
Project Name:	Woodburn TSP
Analyst:	JCW
Date:	5/25/2004
File:	H:\projfile\5367\analysis\Signal Warrants\Alternative 3\[Butteville_214_N.xls]Warrant Summary
Intersection:	Butteville/Oregon 214 (North)
Scenario:	Alternative 3

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	590	625	0	695
2nd	Highest Hour	566	600	0	667
3rd	Highest Hour	555	588	0	653
4th	Highest Hour	472	500	0	556
5th	Highest Hour	448	475	0	528
6th	Highest Hour	401	425	0	473
7th	Highest Hour	372	394	0	438
8th	Highest Hour	354	375	0	417
9th	Highest Hour	283	300	0	334
10th	Highest Hour	266	281	0	313
11th	Highest Hour	266	281	0	313
12th	Highest Hour	254	269	0	299
13th	Highest Hour	230	244	0	271
14th	Highest Hour	212	225	0	250
15th	Highest Hour	212	225	0	250
16th	Highest Hour	207	219	0	243
17th	Highest Hour	118	125	0	139
18th	Highest Hour	65	69	0	76
19th	Highest Hour	59	63	0	70
20th	Highest Hour	24	25	0	28
21st	Highest Hour	18	19	0	21
22nd	Highest Hour	18	19	0	21
23rd	Highest Hour	12	13	0	14
24th	Highest Hour	12	13	0	14

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	590	625	0	695
2nd	Highest Hour	566	600	0	667
3rd	Highest Hour	555	588	0	653
4th	Highest Hour	472	500	0	556
5th	Highest Hour	448	475	0	528
6th	Highest Hour	401	425	0	473
7th	Highest Hour	372	394	0	438
8th	Highest Hour	354	375	0	417
9th	Highest Hour	283	300	0	334
10th	Highest Hour	266	281	0	313
11th	Highest Hour	266	281	0	313
12th	Highest Hour	254	269	0	299
13th	Highest Hour	230	244	0	271
14th	Highest Hour	212	225	0	250
15th	Highest Hour	212	225	0	250
16th	Highest Hour	207	219	0	243
17th	Highest Hour	118	125	0	139
18th	Highest Hour	65	69	0	76
19th	Highest Hour	59	63	0	70
20th	Highest Hour	24	25	0	28
21st	Highest Hour	18	19	0	21
22nd	Highest Hour	18	19	0	21
23rd	Highest Hour	12	13	0	14
24th	Highest Hour	12	13	0	14

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Project #:	5367
Project Name:	Woodburn TSP
Analyst:	JCW
Date:	1/5/2004
File:	H:\projfile\5367\analysis\Signal Warrants\Alternative 3\[Butteville_214.xls]Warrant Summary
Intersection:	Butteville/Oregon 214
Scenario:	Alternative 3

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	695	715	315	0
2nd	Highest Hour	667	686	302	0
3rd	Highest Hour	653	672	296	0
4th	Highest Hour	556	572	252	0
5th	Highest Hour	528	543	239	0
6th	Highest Hour	473	486	214	0
7th	Highest Hour	438	450	198	0
8th	Highest Hour	417	429	189	0
9th	Highest Hour	334	343	151	0
10th	Highest Hour	313	322	142	0
11th	Highest Hour	313	322	142	0
12th	Highest Hour	299	307	135	0
13th	Highest Hour	271	279	123	0
14th	Highest Hour	250	257	113	0
15th	Highest Hour	250	257	113	0
16th	Highest Hour	243	250	110	0
17th	Highest Hour	139	143	63	0
18th	Highest Hour	76	79	35	0
19th	Highest Hour	70	72	32	0
20th	Highest Hour	28	29	13	0
21st	Highest Hour	21	21	9	0
22nd	Highest Hour	21	21	9	0
23rd	Highest Hour	14	14	6	0
24th	Highest Hour	14	14	6	0

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	695	715	315	0
2nd	Highest Hour	667	686	302	0
3rd	Highest Hour	653	672	296	0
4th	Highest Hour	556	572	252	0
5th	Highest Hour	528	543	239	0
6th	Highest Hour	473	486	214	0
7th	Highest Hour	438	450	198	0
8th	Highest Hour	417	429	189	0
9th	Highest Hour	334	343	151	0
10th	Highest Hour	313	322	142	0
11th	Highest Hour	313	322	142	0
12th	Highest Hour	299	307	135	0
13th	Highest Hour	271	279	123	0
14th	Highest Hour	250	257	113	0
15th	Highest Hour	250	257	113	0
16th	Highest Hour	243	250	110	0
17th	Highest Hour	139	143	63	0
18th	Highest Hour	76	79	35	0
19th	Highest Hour	70	72	32	0
20th	Highest Hour	28	29	13	0
21st	Highest Hour	21	21	9	0
22nd	Highest Hour	21	21	9	0
23rd	Highest Hour	14	14	6	0
24th	Highest Hour	14	14	6	0

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Project #:	5367
Project Name:	Woodburn TSP
Analyst:	JCW
Date:	1/5/2004
File:	H:\projfile\5367\analysis\Signal Warrants\Alternative 3\[Meridian_214.xls]Warrant Summary
Intersection:	Meridian/5th/Oregon 214
Scenario:	Alternative 3

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	2
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	1160	1125	65	164
2nd	Highest Hour	1114	1080	62	157
3rd	Highest Hour	1090	1058	61	154
4th	Highest Hour	928	900	52	131
5th	Highest Hour	882	855	49	125
6th	Highest Hour	789	765	44	112
7th	Highest Hour	731	709	41	103
8th	Highest Hour	696	675	39	98
9th	Highest Hour	557	540	31	79
10th	Highest Hour	522	506	29	74
11th	Highest Hour	522	506	29	74
12th	Highest Hour	499	484	28	71
13th	Highest Hour	452	439	25	64
14th	Highest Hour	418	405	23	59
15th	Highest Hour	418	405	23	59
16th	Highest Hour	406	394	23	57
17th	Highest Hour	232	225	13	33
18th	Highest Hour	128	124	7	18
19th	Highest Hour	116	113	7	16
20th	Highest Hour	46	45	3	7
21st	Highest Hour	35	34	2	5
22nd	Highest Hour	35	34	2	5
23rd	Highest Hour	23	23	1	3
24th	Highest Hour	23	23	1	3

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	1160	1125	65	164
2nd	Highest Hour	1114	1080	62	157
3rd	Highest Hour	1090	1058	61	154
4th	Highest Hour	928	900	52	131
5th	Highest Hour	882	855	49	125
6th	Highest Hour	789	765	44	112
7th	Highest Hour	731	709	41	103
8th	Highest Hour	696	675	39	98
9th	Highest Hour	557	540	31	79
10th	Highest Hour	522	506	29	74
11th	Highest Hour	522	506	29	74
12th	Highest Hour	499	484	28	71
13th	Highest Hour	452	439	25	64
14th	Highest Hour	418	405	23	59
15th	Highest Hour	418	405	23	59
16th	Highest Hour	406	394	23	57
17th	Highest Hour	232	225	13	33
18th	Highest Hour	128	124	7	18
19th	Highest Hour	116	113	7	16
20th	Highest Hour	46	45	3	7
21st	Highest Hour	35	34	2	5
22nd	Highest Hour	35	34	2	5
23rd	Highest Hour	23	23	1	3
24th	Highest Hour	23	23	1	3

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Project #:	5367
Project Name:	Woodburn TSP
Analyst:	JCW
Date:	1/5/2004
File:	H:\projfile\5367\analysis\Signal Warrants\Alternative 3\[Cleveland_99E.xls]Warrant Summary
Intersection:	Cleveland St/Oregon 99E
Scenario:	Alternative 3

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	2
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	675	870	180	65
2nd	Highest Hour	648	835	173	62
3rd	Highest Hour	635	818	169	61
4th	Highest Hour	540	696	144	52
5th	Highest Hour	513	661	137	49
6th	Highest Hour	459	592	122	44
7th	Highest Hour	425	548	113	41
8th	Highest Hour	405	522	108	39
9th	Highest Hour	324	418	86	31
10th	Highest Hour	304	392	81	29
11th	Highest Hour	304	392	81	29
12th	Highest Hour	290	374	77	28
13th	Highest Hour	263	339	70	25
14th	Highest Hour	243	313	65	23
15th	Highest Hour	243	313	65	23
16th	Highest Hour	236	305	63	23
17th	Highest Hour	135	174	36	13
18th	Highest Hour	74	96	20	7
19th	Highest Hour	68	87	18	7
20th	Highest Hour	27	35	7	3
21st	Highest Hour	20	26	5	2
22nd	Highest Hour	20	26	5	2
23rd	Highest Hour	14	17	4	1
24th	Highest Hour	14	17	4	1

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	675	870	180	65
2nd	Highest Hour	648	835	173	62
3rd	Highest Hour	635	818	169	61
4th	Highest Hour	540	696	144	52
5th	Highest Hour	513	661	137	49
6th	Highest Hour	459	592	122	44
7th	Highest Hour	425	548	113	41
8th	Highest Hour	405	522	108	39
9th	Highest Hour	324	418	86	31
10th	Highest Hour	304	392	81	29
11th	Highest Hour	304	392	81	29
12th	Highest Hour	290	374	77	28
13th	Highest Hour	263	339	70	25
14th	Highest Hour	243	313	65	23
15th	Highest Hour	243	313	65	23
16th	Highest Hour	236	305	63	23
17th	Highest Hour	135	174	36	13
18th	Highest Hour	74	96	20	7
19th	Highest Hour	68	87	18	7
20th	Highest Hour	27	35	7	3
21st	Highest Hour	20	26	5	2
22nd	Highest Hour	20	26	5	2
23rd	Highest Hour	14	17	4	1
24th	Highest Hour	14	17	4	1