Appendix A
Review of Existing Plans, Policies and Standards

REVIEW OF EXISTING PLANS, POLICIES, STANDARDS AND LAWS AND ASSESSMENT OF THE 1999 CARLTON TSP

The 2009 Carlton Transportation System Plan (TSP) update included a review of existing transportation plans and studies produced by federal, state, and local jurisdictions in the past. This review also included an assessment of the 1999 Carlton TSP to identify any conflicts and discrepancies between existing transportation planning documents and the 1999 Carlton TSP. Transportation plans and studies reviewed as part of the 2009 Carlton TSP update include the following:

- Oregon Transportation Planning Rule (TPR);
- Oregon Transportation Plan (OTP), including state modal plans;
- Oregon Administrative Rules (OAR) regarding access management;
- Freight Moves the Oregon Economy Report;
- Statewide Transportation Improvement Program (STIP) 2006-2009;
- Yamhill County Comprehensive Plan, Transportation Element;
- Yamhill County Transportation System Plan;
- Carlton Comprehensive Plan;
- Carlton Parks Plan;
- Carlton Development Code; and
- Carlton Public Works Design Standards.

The following section provides a summary of the relevant transportation plans and studies listed above, an assessment of the 1999 Carlton TSP, and a description of the key transportation issues that were addressed as part of the 2009 TSP update.

Key Transportation Issues

The 1999 Carlton TSP was reviewed to identify changed conditions in the transportation system and to identify key transportation issues within the Carlton Urban Growth Boundary (UGB). The community identified the following key transportation issues to address as part of the 2009 TSP update:

- Recently Rezoned Areas – identify transportation improvements needed to serve areas recently rezoned to meet the City's projected residential and employment land needs through the year 2027 as part of the 2007 Carlton Comprehensive Plan update.

- Local Street Network Plan – incorporate recent amendments to the Local Street Network Plan and update for recently rezoned areas.

- Bicycle and Pedestrian elements – were not adequately addressed in 1999 TSP and are outdated. An update is needed to identify and provide detailed project descriptions and cost estimates for an improved system of pedestrian and bicycle routes and investigate the feasibility of a trail within or along railroad right-of-way and spur routes. A recent City emphasis is sidewalk construction, so pedestrian needs identified in the TSP must be updated and prioritized, with cost estimates.

- Roadway Functional Classifications and Street Design Standards – review all classifications and street design standards, including street width and sidewalk requirements, to ensure they match the needs of the community and provide for adequate pedestrian facilities. Work with the Oregon Department of Transportation (ODOT) to establish a cross section for Highway 47, considering the Special Transportation Area designation within the downtown.

- Downtown Truck Bypass –review with ODOT the need and feasibility of routing truck traffic around the downtown.

- Rail Crossings – review rail crossing needs with the ODOT Rail Program and update as necessary.
- Capital Improvement Program – update and develop a Transportation Systems Development Charge (TSDC) for adoption.
- Safe Routes to School (SRTS) – inventory pedestrian and bicycle facilities within the walk zone of Carlton Elementary School and identify key deficiencies and barriers to students walking or biking to school.

Oregon Transportation Planning Rule (1991)

As applicable to the City of Carlton, the Oregon Transportation Planning Rule (TPR) requires local jurisdictions to develop a TSP to accommodate future travel demand resulting from adopted land uses. The plan must accommodate all travel modes in use within the City, be consistent with the Oregon Transportation Plan (OTP), and coordinated with Federal, State and local agencies and various transportation providers.

The TPR requires every local Transportation System Plan (TSP) to assess existing facilities for their adequacy and deficiencies; develop and evaluate system alternatives needed to accommodate land uses in the acknowledged comprehensive plan; and adopt local land use regulations to support implementation of the preferred alternative. The City TSP must also ensure its functional classification system is consistent or compatible with those applying to facilities maintained by adjacent jurisdictions.

The TPR includes a requirement for local governments to adopt land use or subdivision regulations for urban areas that, "...provide for safe and convenient pedestrian, bicycle and vehicular circulation, to ensure that new development provides on-site streets and accessways that provide reasonably direct routes for pedestrian and bicycle travel in areas where pedestrian and bicycle travel is likely if connections are provided, and which avoids wherever possible levels of automobile traffic which might interfere with or discourage pedestrian or bicycle travel." Local governments are required to establish their own standards or criteria for providing streets and accessways consistent with the TPR. Examples of these measures include standards for spacing of streets or accessways, and standards for excessive out-of-direction travel.

1999 TSP Assessment: While the Carlton TSP and Development Code both include general requirements to provide safe and convenient pedestrian, bicycle and vehicular travel, additional measures could be developed to strengthen these standards. For example, additional standards could be provided to require pedestrian accessways to be provided at reasonable distances (e.g. every 300-600 feet; between residential developments, schools, parks, commercial areas, through parking lots, etc.). Standards could also be developed to require additional pedestrian amenities (e.g. benches, plazas, lighting, etc.) and internal pedestrian circulation within commercial areas.

Oregon Transportation Plan (2006)

The Oregon Department of Transportation's (ODOT) Oregon Transportation Plan (OTP) utilizes several planning documents to guide transportation planning efforts and transportation system improvements in the State. The OTP is ODOT's overall policy guiding document. The OTP and its modal elements represent the State's TSP and drive all transportation planning Oregon. The plans provide a framework for cooperation between ODOT and local jurisdictions and offer guidance to cities and counties for developing local modal plans. The following list shows the different modal plans that have been established and the year the plan was adopted by the Oregon Transportation Commission.

Adopted Elements of the Oregon Transportation Plan

Oregon Transportation Plan or Plan Element	Year Adopted
Aviation System Plan	2000
Bicycle and Pedestrian Plan	1995
Transportation Safety Action Plan	1995
Public Transportation Plan	1995
Highway Plan	1999 with later amendments
Rail Freight and Passenger Plan	2001

The Oregon Transportation Commission (OTC) originally adopted the OTP in September 1992, and an update of the OTP was adopted by the OTC in September 2006. The OTP has three elements: (1) Goals and Policies, (2) Transportation System, and (3) Implementation. The OTP meets a legal requirement that the OTC develop and maintain a plan for a multimodal transportation system for Oregon. Additionally, the OTP implements the Federal Safe, Accountable, Flexible, Efficient Transportation Equite Act: A Legacy for Users (SAFETEA-LU, 2005) requirements for the State transportation plan. The OTP also meets land use planning requirements for State agency coordination and the Goal 12 Transportation Planning Rule. This rule requires ODOT, the cities and counties of Oregon to cooperatively plan and develop balanced transportation systems.

The OTP also requires local governments to prepare an analysis of future city, county and state funding for the short, medium and long term planning horizons and to develop alternative transportation improvement alternatives given a revenue constrained funding scenario.

1999 TSP Assessment: The 1999 Carlton TSP included a financial analysis but did not take into consideration a revenue constrained funding scenario. The 2009 TSP will need to include an updated financial analysis that is developed consistent with the 2006 Oregon Transportation Plan method of analysis. The updated financial analysis shall include an analysis of future local, county, and state funding in order to consider transportation improvements possible for the short, medium and long term planning horizon.

Oregon Bicycle and Pedestrian Plan (1995).

The Oregon Bicycle and Pedestrian Plan (OBPP) guides planning and the design and operation of facilities for bicycle and pedestrian travel. This Plan is divided into two sections, (1) Policy & Action and (2) Planning, Design, Maintenance & Safety. Section 1, Policy & Action, provides background information and addresses the goals, actions, and implementation strategies ODOT proposes to improve bicycle and pedestrian transportation. The material on Walkway Planning, Design Maintenance & Safety, provides guidelines to ODOT, cities and counties in designing, construction and maintaining pedestrian and bicycle facilities. The OBPP is often used by local governments as a guide for the planning and design of facilities for these travel modes. The 2003 Highway Design Manual (HDM) also contains sidewalk and bicycle lane standards that are inconsistent, and in some cases more stringent than those found in the 1995 OBPP. An update of the OBPP was due for completion in 2007. This update will modify the standards in the OBPP to bring them into consistency with the HDM.

1999 TSP Assessment: As of this writing, the ODOT website does not show that the OBPP update has been completed. If it is completed during the update of the Carlton TSP, the updated plan and the Carlton TSP and implementing ordinances will be reviewed for consistency.

Oregon Transportation Safety Action Plan (1995).

The Oregon Transportation Safety Action Plan established the safety priorities for Oregon by identifying 70 actions relating to all modes of transportation and the roadway, driver and vehicle aspects. Included in the plan is a specific action regarding the way safety issues should be considered in local transportation planning.

Local transportation plans, as well as modal and corridor plans should consider the following:

- Involvement in the planning process of engineering, enforcement, and emergency service personnel as well as local transportation safety groups;
- Safety objectives; and
- Resolution of goal conflicts between safety and other issues.

1999 TSP Assessment: The Carlton TSP was acknowledged and is consistent with the Oregon Transportation Safety Action Plan. During the Carlton TSP update, if changes are proposed, they will compared to the Safety Action Plan to ensure any changes to the TSP are consistent with the Safety Action Plan.

Oregon Public Transportation Plan (1997)

The Oregon Public Transportation Plan is primarily focused on public transportation in metropolitan and urban areas. Carlton's most recent estimated population is 1,755 (Oregon Center for Population Research). The Oregon Public Transportation Plan's minimum public transportation level of service (LOS) standards for rural communities with a population less than 2,500 that will apply to Carlton by the year 2015 include:

- Provide public transportation service to the general public based on locally established service and funding priorities.
- Provide an accessible ride to anyone requesting service.
- Provide a coordinated centralized scheduling system in each county and at the state level.
- Provide phone access to the scheduling system at least 40 hours weekly between Monday and Friday.
- Respond to service requests within 24 hours (not necessarily provide a ride within 24 hours).

1999 TSP Assessment: Since 1999, a new transit district, known as the Yamhill County Transit Area (YCTA), was formed to serve the Yamhill County area. YCTA provides public transportation service to Yamhill County, including the City of Carlton, consistent with the level of service (LOS) standards established in the 1997 Oregon Public Transportation Plan. Public transportation services available to Carlton residents include dial-a-ride services and fixed route service to McMinnville twice daily. Goals and policies in the current Carlton TSP and Comprehensive Plan support the continued operation of regional transit services.

Oregon Highway Plan (1999)

The Oregon Highway Plan defines policies and investment strategies for Oregon's State highways for the next 20 years. Additionally, it refines the goals and policies of the OTP and is part of Oregon's Statewide Transportation Plan. The OHP has three main elements:

- The Vision presents a vision for the future of the State highway system, describes economic and demographic trends in Oregon, describes future transportation technologies, summarizes the policy and legal context of the Highway Plan, and contains information on the current highway system;

- The Policy Element contains goals, policies, and actions in five policy areas: system definition, system management, access management, travel alternatives, and environmental and scenic resources; and

- The System Element contains an analysis of State highway needs, revenue forecasts, descriptions of investment strategies and implementation strategies, and performance measures.

The Highway Plan gives policy and investment direction to corridor plans and transportation system plans that are being prepared around the State, but it leaves the responsibility for identifying specific projects and modal alternatives to these plans.

1999 TSP Assessment: Specifically relevant to the Carlton area are the Highway Plan traffic operational and access management standards that apply to Oregon Highway 47.

The 1999 TSP (Table 7-2, pg 7-7) and Carlton Development Code (Section 2.211.03) include access management standards for Highway 47 that range from 350 feet to 600 feet depending on the posted speed limit for each roadway segment. Access standards for Highway 47 adopted in 1999 vary by street segment and posted highway speed range. Highway 47 located between Yamhill Street to Pine Street requires a minimum spacing between driveways and/or streets of 350 feet. Between the north city limits to Yamhill Street there is a minimum 600 foot minimum spacing requirement. From the south city limits to Main Street there is a minimum spacing of 450 where the posted speed limit is 20 miles per hour and 600 feet where the posted speed limit is 30 mph. These access management spacing standards appear consistent with the requirements stated in the OHP for regional highways.

Since the 1999 TSP was completed, the segment of Highway 47 located between Yamhill and Pine streets (Main Street) has been designated a Special Transportation Area (STA). The minimum access management spacing for public road approaches in the STA is equal to the existing city block spacing. Public road connections are preferred over private driveways and in STAs driveways are discouraged. Where driveways are allowed in STAs, the minimum access management spacing for driveways is 175 feet or mid-block if the current city block is less than 350 feet. As part of the Carlton TSP update the TSP and Development Code will need to be updated to reflect access spacing requirements within the STA.

Oregon Rail Freight and Passenger Plan (2001)

This plan presents an overview of the rail system in Oregon. It outlines the State rail planning process and examines specific rail lines in detail that may be eligible for State or Federal financial assistance. The Plan examines the trend of service on low-density rail lines increasingly provided by the short haul (Class III) railroads. In addition, the plan describes minimum LOW standards for freight and passenger rail systems in Oregon. The previously adopted Passenger Policy and Plan (1994) is now a component of the Oregon Rail Freight and Passenger Plan.

In 1994, the Oregon Transportation Commission adopted policies relating to rail service, one of which is relevant to the Carlton TSP if the railroad ROW is used in the future for rail service and stated as follows:

Policy 3: Protect abandoned rights-of-way for alternative or future use.

Actions.

Ensure that political jurisdictions and private groups are familiar with how to preserve and convert abandoned rail rights-of-way for Public Use and Interim Trail Use, as allowed under Federal law.

Use Federal, State and local funds to preserve rail rights-of-way for future transportation purposes.

1999 TSP Assessment: Relative to the Carlton area, a railroad right-of-way (ROW) runs north/south through the middle of the City. The tracks have been removed from the ROW. The 1999 TSP indicates a desire to protect the ROW for future bike, pedestrian and possible rail use but there are currently no stated goals or policies in the TSP to indicate this is a priority.

Oregon Administrative Rules Regarding Access Management (OAR 734-051)

ODOT manages access to the highway facilities of the State to the degree necessary to maintain functional use, highway safety, and the preservation of public investment consistent with the 1999 OHP and adopted local comprehensive plans. The purpose of Oregon's Access Management Rules is to govern the issuing of construction, operation, maintenance and use permits for approaches onto State highways, State highway rights-of-way and properties under the State's jurisdiction. These rules also govern closure of existing approaches, spacing standards, medians, variances to the standards, appeal processes, and grants of access.

Through these rules, the State indicates its policy to manage the location, spacing and type of road and street intersections and approaches on State highways to assure the safe and efficient operation of State highways consistent with their classification, and the designation of the particular highway segment. OAR 734-051 contains policies and standards regulating access, and generally holds that access control should be considered beneficial when:

- Protecting resource lands;
- Preserving highway capacity on land adjacent to an urban growth boundary; or
- Ensuring safety on segments with sharp curves, steep grades or restricted sight distance or those with a history of accidents.

1999 TSP Assessment: State Highway 47 runs through Carlton from north to south with two 90 degree turns in the downtown area. The Carlton TSP includes a discussion of and a preferred alternative for a truck route off of Highway 47 through the downtown area. The truck route has not been constructed due to a lack of funding resources.

ODOT plans and Carlton's TSP call for coordination to address issues related to Highway 47 and there has been good coordination among the parties since the original TSP was adopted. The Carlton TSP and Development Code both include access management standards that comply with OAR 734-051.

Freight Moves the Oregon Economy

This publication states, "Freight plays a major role in moving the Oregon economy. Most freight moves by truck, rail, waterway, air and pipeline with trucks accounting for the greatest volume." According to the publication, Oregon's major roadway corridors for moving freight correspond to federal or state highways. This publication indicates that those highways not on the State Highway Freight System have common problems, including: congestion; access; pavement in poor condition; and inadequate bridges. It also notes

that freight haulers experience congestion related problems, including difficulty making turning movements between local roads and highways.

1999 TSP Assessment: Though the City of Carlton is not on the State Highway Freight System, the City has one highway on the State Highway System, Oregon 47 that receives frequent truck traffic. Truck traffic on Highway 47 has difficulty making turning movements in Carlton due to the two 90 degree turns found on Highway 47 as it passes through the downtown area.

Statewide Transportation Improvement Program 2006-2009

The Statewide Transportation Improvement Program (STIP) is the State's transportation capital improvement program. It fulfills the requirements of the Federal Safe, Accountable, Flexible, Efficient, Transportation Equity Act: a Legacy for Users (2005). The STIP lists the schedule of transportation projects for the four-year period from 2006 to 2009. It is a compilation of projects utilizing various Federal and State funding programs, and includes projects on the State, County and city transportation systems as well as projects in the National Parks, National Forests, and Indian Reservations.

1999 TSP Assessment: There are no improvement projects programmed in the 2008 to 2011 STIP for the Carlton urban area.

Yamhill County Comprehensive Plan, Transportation Element (1996)

The Comprehensive Plan for Yamhill County establishes the official goals and policies related to future development in the County. These goals and policies are divided into seven Sections:

I. Urban Growth and Change and Economic Development.
II. The Land and Water.
III. Transportation, Communication and Public Utilities.
IV. Public Land, Facilities and Services.
V. Environmental Quality.
VI. Energy Conservation.
VII. Implementation, Evaluation and Review.

Section III, Transportation, Communication and Public Utilities, includes one goal and several relevant policies as stated below.

GOAL STATEMENT

1. To provide and encourage an efficient, safe, convenient and economic transportation and communication system, including road, rail, waterways, public transit and air, to serve the needs of existing and projected urban and rural development within the county, as well as to accommodate the regional movement of people and goods and the transfer of energy, recognizing the economic, social and energy impacts of the various modes of transportation.

POLICIES

A. Yamhill County will encourage the establishment of a transportation system supportive of a geographically distributed and diversified industrial economy for the county including coordination with all city comprehensive plans.

B. All transportation-related decisions will be made in consideration of land use impacts including but not limited to adjacent land use patterns, both existing and planned, and their designated uses and densities.

C. Yamhill County will cooperate and establish close liaison with the State Department of Transportation, the cities of the county, the Tri-County Metropolitan Transportation District of Oregon (Tri-Met), the Union Pacific Railroad, the Federal Aviation Administration, Federal Highway Administration, and private utility companies operating in the county, in respect to matters relating to the location, design and programming of roads, railroads, public transit facilities, airports, transmission lines, pipelines, waterways, energy corridors and communications facilities to guide and accommodate the emerging development patterns of the county.

D. Yamhill County will, in cooperation with the State Highway Division and the cities of the county, establish a comprehensive list of recommended road improvements throughout the county, establish a suitable review mechanism for arriving at and amending priorities on a continuing basis and work towards the creation of an on-going capital improvement program closely coordinated with all agencies of government responsible, including cities for road location, construction, finance and maintenance.

F. Yamhill County will establish by ordinance in cooperation with the State Highway Division, the cities of the county, adjoining counties, the U.S. Postal Service and all affected special purpose districts, including fire protection districts, a system for naming all public roads and numbering property as prescribed by ORS 215.110(1)(c), and in doing so will give full consideration to the costs, benefits and timeliness of such action.

G. Yamhill County will appoint a committee of interested citizens to study all State highways within the county and inventory and evaluate the aesthetic features of the views from such highways, consider the eligibility of specific sections for designation as scenic areas under the provisions of the Scenic Areas Act, and make appropriate recommendations to the Planning Commission and Board of Commissioners in respect to a petition to the Scenic Area Board to hold hearings on the possible designation of scenic areas within Yamhill County.

H. Yamhill County will, in cooperation with the cities of the county, and in consultation with the Mid-Willamette Valley Council of Governments, the State Public Transit Division, the Public Utility Commissioner, and private companies providing transit services, make a comprehensive study of public transit possibilities, including bus and rail, and if economically feasible, will seek such services as are found to be safe, efficient, and convenient in serving the transportation needs of the residents of the county.

I. Yamhill County will encourage bicycle and pedestrian traffic as an element of the transportation system by coordinating with the cities within the county to develop an

integrated system of safe and convenient bicycle and pedestrian ways to complement other modes of transportation.

1999 TSP Assessment: The Carlton and Yamhill County Plans were acknowledged and are coordinated. No conflicts have been identified between the Carlton TSP and Yamhill County Comprehensive Plan.

Yamhill County Transportation System Plan (1996)

The Yamhill County TSP is a multimodal transportation system plan that includes automobile, bicycle, rail, transit, air, walking and transmission systems (such as pipelines). The TSP also serves as the Transportation Element of the County's Comprehensive Plan. The Yamhill County Transportation System Plan includes a county road management plan, a bicycle way plan, a air/rail/water/pipeline plan and goals and policies to implement each of these plans. The following goals and policies found in the Yamhill County TSP relate to the Carlton TSP:

Coordination and Implementation Goal 1.1. It is the goal of Yamhill County to encourage an efficient, safe, convenient and economic transportation and communication system, including road, rail, waterways, public transit, air, pipeline, and pedestrian and bicycle facilities. Yamhill County transportation system shall be designed to serve the existing and projected needs of urban and rural areas within the County and the system shall emphasize connections between different modes of transportation to reduce reliance on the single occupancy automobile.

Coordination and Implementation Goal 1.2. It is the goal of Yamhill County to have a vital, ongoing transportation planning process and a transportation plan that meets the needs of the County and its residents. The transportation plans and facilities of Yamhill County shall be coordinated with the plans and facilities of incorporated cities within Yamhill County, the larger region, and the State of Oregon.

Coordination and Implementation Goal 1.3. It is the goal of Yamhill County to: a. identify local, regional, and State transportation needs b. develop a transportation plan that will address these needs c. review and update the plan periodically d. have continuing coordination with relevant agencies and jurisdictions e. have continuing public input.

Coordination and Implementation Policy 1.1. It is the policy of Yamhill County to: a. continue to coordinate transportation planning with local, regional, and State plans by reviewing any changes to Yamhill County cities transportation plans, regional transportation plans, the Oregon Transportation Plan and ODOT's Transportation Improvement Plan b. continue public and interagency involvement in the transportation process c. continue to coordinate transportation planning with the cities of Yamhill County.

Coordination and Implementation Policy 1.5. The lead agency for transportation project review shall be: a. Yamhill County for facilities outside the UGBs b. The affected city for facilities within the UGBs c. The State of Oregon, Yamhill County, and affected cities on projects involving state-owned facilities.

Access Management/Roadway Functional Classification Policy 4. It is the policy of Yamhill County to coordinate the County Transportation System Plan with the transportation plans of the ten incorporated cities within Yamhill County. The County will emphasize continuity in the classification of roads and appropriate design standards for roadways which link urban areas with rural areas outside Urban Growth Boundaries. At the time of UGB amendment Yamhill County and the City involved shall agree on classification and design standards of all County Roads within the proposed UGB area prior to finalization of the amendment.

Intercity Bus and Passenger Rail Goal 1. It is the goal of Yamhill County to enhance intermodal connectivity throughout the transportation system.

Intercity Bus and Passenger Rail Policy 2. Yamhill County, in cooperation with the cities of the County, and in consultation with the Mid Willamette Valley Council of Governments, the Oregon Department of Transportation, and private companies providing transit services, will continue to investigate public transit possibilities, including bus and rail, and if economically feasible, will seek such services as are found to be safe, efficient, and convenient in serving the transportation needs of the residents of the County.

Intercity Bus and Passenger Rail Policy 3. It is the policy of Yamhill County to identify the needs of the transportation disadvantaged and attempt to fill those needs.

Bikeway Plan Goal 1. It is the goal of Yamhill County to provide and maintain a safe, convenient, and aesthetic bicycle system that is integrated with other forms of transportation.

Freight Rail Transportation Plan Policy 3. Yamhill County will pursue, whenever possible, conversion of abandoned rail lines through the federal "Rails to Trails" program and seek to integrate these abandoned lines into the County's trail/bikeway system.

Yamhill County Transportation Projects

The Yamhill County TSP identifies a 20-year project list for transportation improvement projects in Yamhill County. The project list includes several suggested bikeway and public transportation system improvements near the Carlton urban area as described below.

- **Yamhill County Bikeway System Suggested Improvements PRIORITY LIST "B":**

1. **Meadow Lake Road** - Vicinity Carlton Area

   Section Carlton city limits to Shelton Road
   Length 2.4 miles
   Alignment Horizontal Mostly straight with a few moderately sharp curves
   Vertical Flat except for one hill west of Westside Road
   Traffic Volume 3,300 vehicles per day
   Traffic Speeds 50 mph to 60 mph
   Surface Paved - Fair to Excellent Condition
   Width 20 feet wide (10 feet per each travel lane)
   Shoulders Narrow rock and earth shoulders
   Recommended Action Construct a 6 foot wide paved shoulder contiguous to each travel lane.
   Estimated Cost $367,804 (1995 Dollars)

2. **Hendricks Road** - Vicinity Carlton Area

   Section Carlton city limits to Abbey Road
   Length 3.5 miles
   Alignment Horizontal Predominately straight; Vertical Flat
   Traffic Volume 1,700 vehicles per day
   Traffic Speeds 50 mph to 70 mph
   Surface Paved - Average to Excellent Condition

Width 20 feet wide (10 feet per each travel lane)
Shoulders Narrow rock and earth shoulders
Recommended Action Construct a 6 foot wide paved shoulder contiguous to each travel lane.
Estimated Cost $627,264 (1995 Dollars)

- **Suggested Bikeway Improvements On Yamhill County State Highways:**

Hwy 47. - TUALATIN VALLEY HIGHWAY NO. 29
Section Washington County Line to State Highway No. 99W
Length 15.9 miles
Traffic Volume Moderately heavy use
Traffic Speeds 45 mph to 65 mph
Shoulders Paved
Shoulder Width: Less than 6 Feet 100% ; 6 Feet or Greater 0%
Recommended Action Construct a 6 foot wide paved shoulder contiguous to each (outside) travel lane.
Estimated Cost $2,094,750. (1995 Dollars - ODOT Funds)

- **Yamhill County Public Transportation Improvements for Carlton/Yamhill:**

A. Maintain
    1. Dial-A-Ride services.
B. Expand
    1. Twice daily commuter route to McMinnville.
    2. Localized Dial-A-Ride services.

1999 TSP Assessment: The Carlton TSP could be updated with a policy to support conversion of abandoned rail lines into a trail/bikeway system consistent with the County's Freight Rail Transportation Plan Policy 3. The bicycle and pedestrian plans found in the 1999 Carlton TSP do not include a plan to convert abandoned rail lines to a trail/bikeway system.

Bikeway improvements listed in the County transportation project list that are located near the Carlton urban area have not been constructed as of 2008.

Two of the three public transportation improvements identified for the cities of Carlton and Yamhill identified in the County transportation project list have been provided including, dial-a-ride services and commuter trips provided to McMinnville twice daily. Expanded services between the cities of Carlton and Yamhill continues to be a public transportation need today along with additional public transportation for special events.

Yamhill County Transit Area (YCTA) Coordinated Human Services Transportation Plan (2007)

The Yamhill Coordinated Human Services Transportation Plan is an update to the Yamhill County Public Transportation Needs Assessment completed in 2000 and the Yamhill County Public Transportation Action Plan completed in 2004. The Plan includes an evaluation of existing public transportation services and resources, an identification of unmet transportation needs, a list of prioritized strategies to meet the identified transportation needs. A special focus of the plan is to identify opportunities for transportation coordination between the numerous transportation providers and human service agencies.

The Plan identifies the need for intercommunity transportation between the communities of Carlton and Yamhill since the cities of Carlton and Yamhill share a high school and there is a need for transporting

students between the two communities. One of the strategies identified to meet this need is to improve local transportation systems by working with local communities to develop transportation systems, such as volunteer transportation systems, to meet internal community needs.

1999 TSP Assessment: In addition to the need for more frequent transportation service between the cities of Carlton and Yamhill, there is a need for more public transportation in the City of Carlton during special events such as the Carlton Fun Days and wine-related events. There is also a need for bus shelters to better identify bus stop areas.

Carlton Comprehensive Plan (1979, 2000, 2007)

The City of Carlton Comprehensive Plan was adopted by the City of Carlton in 1979 and acknowledged by the Land Conservation and Development Commission on May 6, 1980. Since 1979, the Plan has been updated and amended in 2000 and 2007. The purpose of the Plan is to provide for orderly growth and to encourage development of a community that meets the needs of its current and future residents. The Plan is the City's highest policy document and establishes the policy framework for future growth decisions.

The Carlton Comprehensive Plan goals and policies relevant to the TSP include the following:

Open Spaces and Scenic Sites, Policy 2. Efforts shall be made to preserve creeks and floodplain areas as open space. These efforts shall be maintained to provide a natural storm water and drainage system. Bicycle and pedestrian pathways should be examined for possible inclusion in these areas.

Air Resources, Policy 3. The City shall encourage alternative forms of transportation to reduce automobile emission pollution.

Public Facilities and Services Goal. To develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for future development.

Public Facilities and Services Policy 1. Public facilities and service plans shall coordinate the type, location, and delivery of public facilities and services in a manner that best supports the existing and proposed land use of Carlton.

Public Facilities and Services Policy 6. Carlton shall examine, identify, and promote energy efficient and cost effective methods to provide and maintain public facilities and services. These include, but are not limited to street, curb, and sidewalk construction and provision of adequate storm drainage measures, both man-made and natural, to accommodate storm runoff.

Public Facilities and Services Policy 7. A public facility and service should not be provided in a developed area unless there is provision for the coordinated development of all facilities and services applicable to the kind of development intended.

Urbanization Policy 8. The City shall require new developments to pay all costs of capital improvements to that development.

Urbanization Policy 10. Development shall avoid locating in areas, which are subject to, and/or generate adverse environmental impacts.

The Carlton TSP serves as the Transportation Element of the Comprehensive Plan. The Planning Atlas Resource section of the Carlton Comprehensive Plan includes a synopsis of the TSP under the Transportation findings section.

1999 TSP Assessment: The findings found in the Transportation section of the Comprehensive Plan Planning Atlas will need to be updated with the adoption of the 2009 TSP update. Additionally, the Public Facilities and Services Section includes findings regarding the amount and source of annual revenues received for street maintenance in 2000-01 should also be updated.

Carlton Parks Development Plan (2005)

The City of Carlton adopted a Parks Master Plan in 2005 to guide the future development of parks and recreation facilities in the city. The following policies found in the Parks Development Plan relate to Carlton's bicycle and pedestrian plan:

- Encourage the development of bicycle and pedestrian pathways as potential recreational resources for members of the community.
- When possible, require land divisions and planned unit developments to provide for pedestrian access to parks and potential park sites.
- The City recognizes the importance of the Hawn Creek drainage as a significant natural resource within the community. The City encourages retention of land in and around the Hawn Creek floodplain as open space and for future use as a pedestrian and bicycle trail.

1999 TSP Assessment: The 1999 TSP Pedestrian Plan (Figure 7-4) does not indicate a pedestrian and bicycle trail near the Hawn Creek drainage area and should be updated in the 2009 TSP to be consistent with the 2005 Parks Plan.

Carlton Development Code (2002)

The Carlton Development Code includes street standards as found in Section 2.202 that indicate right-of-way and improvement widths consistent with standards found in the TSP. The Development Code also includes access control standards as found in Section 2.211 that indicate the minimum access spacing standards between driveways and streets. Access spacing standards for driveways are also found in each of the residential zoning districts (Sections 2.101.05(G); 2.102.05(G); and 2.103.05(H)).

1999 TSP Assessment: There appears to be a conflict within the Development Code regarding access spacing standards for residential driveways and the access spacing standards stated in Section 2.211. The residential zones require driveways to be separated from an intersection by at least 50 feet or one-half the lot frontage, whichever is greater; while Section 2.211 requires greater spacing separation on collectors (75 feet) and Highway 47 (350-600 feet).

The subdivision and PUD application requirements lack a requirement for a traffic impact analysis if requested by the City (Section 3.109.02).

The street improvement section 2.202.03(E) and (F) includes provisions for improvements to existing streets and the construction of new streets but does not require an individual determination for street improvements that is roughly proportionate to the impacts of the proposed development.

Section 2.203.11 includes requirements for bicycle parking facilities for duplexes and triplexes, while the 1999 TSP Goal 3, Policy A.9 states bicycle parking facilities shall be provided at all new residential multi-family developments of four or more.

Appendix B
Roadway Inventory

APPENDIX B
2008 ROADWAY INVENTORY
City of Carlton Transportation System Plan

Street Segment	Jurisdiction	Classification	Speed Limit (mph)	ROW Width (feet)	Street Width (feet)	# of Travel Lanes	Curbs	On-Street Parking	Sidewalk	Bikeway	Pavement Condition
1st Street											
Roosevelt St to Jefferson St	City	local	25	50	34	2	both	west side	west side	no	good
Jefferson St to Monroe St	City	local	25	40	21	2	east	east	east side	no	good
Monroe St to Market St	City	local	25	40	24	2	no	west side	east side	no	fair-good
Market St to Main St	City	local	25	40	12-15	1	no	west side	no	no	fair
Taylor St to southern terminus	City	local	25	50	34	2	both	both	no	no	good
Taft St to northern terminus	City	local	25	50	34	2	both	both	both	no	good
2nd Street											
Jefferson St to Madison St	City	local	25	40	30	2	both	both	both	no	fair
Madison St to Monroe St	City	local	25	40	20	2	int - both	no	int - both	no	poor
Monroe St to Market St	City	local	25	40	21	2	int - both	west side	int - both	no	fair
Market St to Main St	City	local	25	40	12-15	1	no	west side	no	no	fair
Northern terminus to Washington St	City	local	25	50	32	2	both	both	both	no	fair
Washington St to Taft St	City	local	25	50	24	2	west side	west side	west side	no	good
Taft St to Polk St	City	local	25	50	34	2	both	both	both	no	good
Polk St to southern terminus	City	local	25	50	20	2	no	no	no	no	gravel-poor
3rd Street											
Jefferson St to Madison St	City	local	25	50	16-18	2	no	west side	no	no	fair
Madison St to Monroe St	City	local	25	50	25-30	2	int - west side	both	both	no	poor
Monroe St to Main St	City	local	25	50	20	2	no	both	west side	no	fair
Main St to Washington St	City	collector	25	40-50	21	2	no	west side	west side	no	poor-fair
Washington St to Harrison St	City	collector	20	50	21	2	no	west side	both/int - east side	no	poor-fair
Harrison St to Polk St	City	collector	20	50	21-24	2	int - east side	no	int both	no	poor-fair
Polk St to southern terminus	City	collector	25	50	15-16	1/2	no	no	no	no	gravel
4th Street											
Northern terminus to Johnson St	City	collector	25	30-36	12-16	1/2	no	no	int - west side	no	gravel
Johnson St to Jefferson St	City	collector	25	30-36	12-16	1/2	no	no	int - both side	no	fair
Jefferson St to Madison St	City	collector	25	36-40	19-24	2	int - east side	no	no	no	good
Madison St to Monroe St	City	collector	25	60	20	2	no	east side	int - east side	no	good
Monroe St to Main St	City	collector	25	60	25	2	no	both	both	no	good

APPENDIX B
2008 ROADWAY INVENTORY
City of Carlton Transportation System Plan

Street Segment	Jurisdiction	Classification	Speed Limit (mph)	ROW Width (feet)	Street Width (feet)	# of Travel Lanes	Curbs	On-Street Parking	Sidewalk	Bikeway	Pavement Condition
5th Street											
Monroe St to Main St	City	local	25	40-50	11-15	1/2	no	no	int-west side	no	gravel
Main St to Washington St	City	local	25	50	34	2	both	both	both	no	good
6th Street											
Monroe to Main St	City	local	25	50	19	2	no	both	no	no	fair
Johnson St to Lincoln St	City	local	25	50	34	2	yes	both	no	no	good
Main St to Washington St	City	local	25	50	34	2	both	yes	both	no	good
7th Street											
Main St to Madison St	City	local	25	50	34	2	both	east side	east side	no	good
Madison to 8th Pl	City	collector	25	60	40	2	both	east side	east side	no	good
8th Pl to Johnson St	City	collector	25	60	40	2	both	both	int - both	no	good
Johnson St to northerly terminus	City	collector	25	60	40	2	both	both	no	no	good
8th Place											
7th St to Garfield St	City	local	25	50	34	2	both	both	both	no	good
8th Street											
Northern terminus to 8th Pl	City	local	25	50	34	2	both	both	both	no	good
Adams Street											
Park St to Pine St	City	local	25	40	30	2	south side	south side	north side	no	poor-fair
Pine St to Highway 47	City	local	25	40	13	2	no	no	no	no	poor-fair
Arthur Street											
Polk St to Cleveland St	City	local	25	40	17-19	2	no	no	no	no	fair
Cleveland St to Wilson St	City	local	25	40	17-19	2	no	no	no	no	fair
Wilson St to Highway 47	City	local	25	40	17-19	2	no	no	no	no	fair
Carr Street											
Main St to Cunningham St	City	local	25	50	20	2	no	both	west side	no	poor-fair

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City of Carlton Transportation System Plan

Street Segment	Jurisdiction	Classification	Speed Limit (mph)	ROW Width (feet)	Street Width (feet)	# of Travel Lanes	Curbs	On-Street Parking	Sidewalk	Bikeway	Pavement Condition
Cleveland Street											
Pine St to Arthur St	City	local	25	50	22	2	no	both	int - south side	no	good
Coolidge Street											
Garfield St to 1st St	City	local	25	50	34	2	both	both	both	no	good
Cunningham Street											
Main St to Grant St	City	collector	25	50	20	2	no	both	no	no	fair
Garfield Street											
Yamhill St to Kutch	City	local	20	30	24	1	south side	no	south side	no	good
Coolidge St to 1st St	City	local	25	50	34	2	both	both	both	no	good
7th St to eastern terminus	City	local	25	50	34	2	both	both	int - south	no	good
Gilwood Street											
Monroe Street to Northern terminus	City	local	20	30	28	2	both	both	int - west side	no	fair
Grant Street											
Park Entrance to Cunningham St	City	local	5	50	20	2	no	no	no	no	fair
Cunningham St to Carr St	City	collector	25	50	19-20	2	no	both	both	no	fair
Carr St to Scott St	City	collector	25	50	20-21	2	int-south side	south side	int - south side	no	fair
Scott St to Howe St	City	collector	25	40	20	2	int-south side	no	int - south side	no	fair
Howe St to Yamhill St	City	collector	25	40	22	2	int-south side	no	int - both	no	good
Yamhill St to Kutch St	City	collector	15	40	39	2	no	both	no	no	poor-fair
Kutch St to Park St	City	collector	15	40	20-36	2	no	north side	south side	no	poor-fair
Park St to Pine St	City	collector	25	40	32	2	north side	north side	int - both	no	fair
Harrison Street											
Western terminus to Kutch St	City	local	25	50	15-16	2	no	no	no	no	poor
Kutch St to Park St	City	local	25	50	18-19	2	no	no	north side	no	poor
Park St to Pine St	City	local	25	50	18-19	2	no	no	south side	no	good
Western terminus to 2nd St	City	local	25	50	34	1/2	both	both	both	no	good
3rd St to Linke Ave	City	local	25	50	32	2	both	both	no	no	fair

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City of Carlton Transportation System Plan

Street Segment	Jurisdiction	Classification	Speed Limit (mph)	ROW Width (feet)	Street Width (feet)	# of Travel Lanes	Curbs	On-Street Parking	Sidewalk	Bikeway	Pavement Condition
Highway 47											
Pine St to Wilson St	ODOT	arterial	30	50	22/29	2	no	no	no	no	fair
Wilson St to Adams St	ODOT	arterial	30	50	22/29	2	no	no	no	no	fair
Adams St to Taylor St	ODOT	arterial	30	50	22/29	2	no	no	no	no	fair
Taylor St to South City Limits	ODOT	arterial	30	50	22/29	2	no	no	no	no	fair
Howe Street											
Grant St to Southern terminus	City	local	25	50	15-19	1/2	no	west side	no	no	gravel
Lincoln Street to Southern terminus	City	local	25	60	20	2	no	west side	no	no	poor-fair
Northern terminus to Lincoln St	City	local	25	60	15-19	1/2	no	west side	no	no	gravel
Jefferson Street											
Yamhill St to Kutch St	City	collector	25	60	20	2	no	both	int - north side	no	fair
Kutch St to eastern terminus	City	local	25	60	20-21	2	no	both	no	no	fair
2nd St to 3rd St	City	local	25	30-40	15-26	1-2	int-north side	int-north side	int-both	no	poor-good
3rd St to 4th St	City	local	25	30	18	2	int-north side	south side	int-north side	no	good
Johnson Street											
Howe St to Yamhill St	City	local	25	50	15-19	1/2	no	no	int - north side	no	gravel
Yamhill St to Kutch St	City	collector	25	60	21	2	no	both	int - both	no	fair
Kutch St to RR right-of-way	City	local	25	60	19	2	no	both	north side	no	poor-fair
6th St to 7th St	City	local	25	50	34	2	both	both	both	no	good
Kennedy Ct											
7th St to western terminus	City	local	25	50	38	2	both	both	both	no	good
Kutch Street											
Nothern terminus to McKinnley St	City	local	25	50	36	2	both	both	both	no	fair
McKinnley St to Lincoln Street	City	local	25	50	36	2	both	both	both	no	fair
Lincoln Street to Johnson St	City	local	25	25-60	22-36	2	both	both	int - both	no	fair
Johnson St to Jefferson St	City	collector	25	75	22	2	no	both	both	no	fair
Jefferson St to Madison St	City	collector	25	75	21	2	no	both	both	no	fair
Madison St to Monroe St	City	collector	25	75	30	2	west side	east side	west side	no	poor-fair
Monroe St to Main St	City	local	25	75	52	2	both	both	both/int - west side	no	poor-fair

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2008 ROADWAY INVENTORY
City of Carlton Transportation System Plan

Street Segment	Jurisdiction	Classification	Speed Limit (mph)	ROW Width (feet)	Street Width (feet)	# of Travel Lanes	Curbs	On-Street Parking	Sidewalk	Bikeway	Pavement Condition
Grant St to Washington St	City	local	25	50	20	2	no	no	no	no	poor-fair
Washington St to Harrison St	City	local	25	50	20	2	no	no	no	no	poor-fair
Harrison St to Taft St	City	local	25	50	21	2	no	no	east side	no	fair
Taft St to Polk St	City	local	25	50	21	2	no	no	no	no	fair
Lincoln Street											
Western terminus to Howe St	City	local	25	60	11-26	1/2	no	no	no	no	gravel
Howe St to Yamhill St	City	local	25	60	14-15	1	no	no	int - both	no	poor-fair
Yamhill St to Kutch St	City	local	25	50	36	2	both	both	both	no	fair
Kutch St to Coolidge St	City	local	25	50	36	2	both	both	both	no	fair
6th Street to eastern terminus	City	local	25	50	34	2	both	both	no	no	good
Linke Avenue											
Harrison St to southern terminus	City	local	25	50	32	2	both	both	no	no	fair
Madison Street											
Yamhill St to Kutch St	City	collector	25	60	30	2	int-north side	north side	north side	no	good
Kutch St to eastern terminus	City	local	25	60	30	2	no	north side	north side	no	gravel
2nd St to 3rd St	City	local	25	40	15-20	2	int - south side	both	int - south side	no	poor
3rd St to 4th St	City	local	25	40	13	1	no	south side	south side	no	gravel
4th St to Eastern terminus	City	local	25	10-14	22	2	no	no	no	no	fair-good
Main Street											
Western City Limits to Cunningham St	City	arterial	45	84-92	21	2	no	no	no	no	good
Cunningham St to Carr St	City	arterial	25	60-90	24-32	2	no	both	both	bo	poor-fair
Carr St to Scott St	City	arterial	25	52-60	24-32	2	no	south side	both	no	poor-fair
Scott St to Yamhill St	City	arterial	25	60	24-32	2	no	south side	both	no	poor-fair
Yamhill St to Kutch St	ODOT	arterial	20	60	40	2	both	both	both	no	poor
Kutch St to Park St	ODOT	arterial	20	60	40	2	both	both	both	no	poor
Park St to Pine St	ODOT	arterial	20	60	40	2	both	both	both	no	poor
Pine St to 1st St	City	arterial	25	60	40	2	both	both	both	no	fair
1st St to 2nd St	City	arterial	25	60	22	2	no	both	both	no	fair
2nd St to 3rd St	City	arterial	25	60	22	2	no	both	both	no	fair
3rd St to 4th St	City	arterial	25	60	23	2	no	both	both	no	fair

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2008 ROADWAY INVENTORY
City of Carlton Transportation System Plan

Street Segment	Jurisdiction	Classification	Speed Limit (mph)	ROW Width (feet)	Street Width (feet)	# of Travel Lanes	Curbs	On-Street Parking	Sidewalk	Bikeway	Pavement Condition
4th St to 5th St	City	arterial	25	60	22	2	no	north side	north side	no	good
5th St to 6th St	City	arterial	25	60	22	2	no	north side	north side	no	good
6th St to Eastern City Limits	City	arterial	35	60	33	2	north side	north side	north side	no	good
McKinnley Street											
Kutch St to eastern terminus	City	local	25	50	36	2	both	both	both	no	good
Monroe Street											
Western terminus to Scott St	City	local	25	50	15-17	2	no	no	no	no	poor-fair
Scott St to Yamhill St	City	collector	25	50	20-28	2	no	both	int - both	no	poor-fair
Yamhill St to Kutch St	City	collector	25	40	25	2	no	no	no	no	poor-fair
Kutch St to Pine St	City	collector	25	50-75	20	2	no	both	south side	no	poor
Pine St to Gilwood St	City	collector	25	60	22-28	2	both	south side	south side	no	poor-fair
Gilwood St to 1st St	City	collector	25	60	37	2	both	both	south side	no	fair-good
1st St to 2nd St	City	collector	25	60	20-21	2	no	both	both	no	fair-good
2nd St to 3rd St	City	collector	25	60	22	2	no	int - both	both/north - int	no	poor-fair
3rd St to 4th St	City	collector	25	60	24	2	no	both	both/south - int	no	poor-fair
4th St to 5th St	City	collector	25	60	19-20	2	no	both	north side	no	fair
5th St to Eastern terminus	City	local	25	60	19-20	2	no	both	north side	no	poor
Park Street											
Main St to Grant St	City	local	25	16-36	28	2	int - both	both	both	no	fair
Grant St to Washington St	City	collector	25	40	21	2	no	west side	west side	no	good
Washington St to Harrison St	City	collector	25	50	20	2	no	west side	west side	no	poor
Harrison St to Taft St	City	collector	25	50	14-19	2	no	no	east side	no	fair
Taft St to Polk St	City	collector	25	50	19	2	no	no	int - west side	no	poor-fair
Polk St to Wilson St	City	collector	25	50	15-19	2	no	no	no	no	poor-good
Wilson St to Adams St	City	collector	25	50	15-19	2	no	no	no	no	fair
Adams St to Taylor St	City	collector	25	50	15-19	2	no	no	no	no	poor-fair
Taylor St to South City Limits	City	collector	25	40	27	2	int -east side	east side	int - east side	no	poor-fair
Pine Street											
Monroe St to Main St	City	local	25	30	42	2	int - east side	both	both	no	good
Main St to Grant St	ODOT	arterial	20	50	34	2	west side	west side	west side	no	fair-good

APPENDIX B
2008 ROADWAY INVENTORY
City of Carlton Transportation System Plan

Street Segment	Jurisdiction	Classification	Speed Limit (mph)	ROW Width (feet)	Street Width (feet)	# of Travel Lanes	Curbs	On-Street Parking	Sidewalk	Bikeway	Pavement Condition
Grant St to Washington St	ODOT	arterial	20	50	30	2	west side	west side	west side	no	fair-good
Washington St to Harrison St	ODOT	arterial	30	50	23	2	no	no	both	no	good
Harrison St to Taft St	ODOT	arterial	30	50	23	2	no	no	both	no	good
Taft St to Polk St	ODOT	arterial	30/20	50	22-23	2	no	no	both	no	good
Polk St to Cleveland St	ODOT	arterial	30/20	50	22-23	2	no	no	both	no	good
Cleveland St to Highway 47	ODOT	arterial	30	50	22-23	2	no	no	int - east side	no	good
Highway 47 to Wilson St	City	local	25	50	17	2	no	no	no	no	fair
Wilson St to Adams St	City	local	25	50	17	2	no	no	no	no	fair
Adams St to Taylor St	City	local	25	50	17	2	no	no	int - east side	no	fair
Polk Street											
Park St to Pine St	City	collector	25	50	20	2	no	no	no	no	good
Pine St to Arthur St	City	collector	25	50	20	2	no	no	north side	no	fair
Arthur St to 2nd St	City	collector	25	50	20	2	no	no	north side	no	fair
2nd St to 3rd St	City	collector	20	50	20	2	no	no	north side	no	fair
Roosevelt Street											
RR right-of-way to eastern terminus	City	collector	25	60	25	2	south side	south side	south side	no	good
Scott Street											
Monroe St to Main St	City	collector	25	50	16-19	2	no	int - west side	int - west side	no	fair
Main St to Grant St	City	local	25	50	22	2	no	both	no	no	fair
Taft Street											
Kutch St to Park St	City	local	25	50	20	2	no	no	no	no	fair
Park St to Pine St	City	local	25	50	16	2	no	no	south side	no	poor
Pine St to eastern terminus	City	local	25	50	16	2	no	no	north side	no	gravel
Western terminus to 2nd St	City	local	25	50	34	2	both	both	both	no	good
Taylor Street											
Park St to Pine St	City	local	25	20	11-12	1	no	no	no	no	poor
Pine St to 1st St	City	local	25	20	12	1	no	no	no	no	good
1st St to Highway 47	City	local	25	30	24	2	int-both	no	int-bot	no	good

APPENDIX B
2008 ROADWAY INVENTORY
City of Carlton Transportation System Plan

Street Segment	Jurisdiction	Classification	Speed Limit (mph)	ROW Width (feet)	Street Width (feet)	# of Travel Lanes	Curbs	On-Street Parking	Sidewalk	Bikeway	Pavement Condition
Washington Street											
Yamhill St to Kutch St	City	local	25	50	20-23	2	no	north side	int - both	no	poor-fair
Kutch St to Park St	City	local	25	50	19	2	no	no	int - south side	no	poor
Park St to Pine St	City	local	25	50	19	2	no	no	no	no	good
Western terminus to 2nd St	City	local	25	50	18-20	2	no	no	int - both	no	gravel
2nd St to 3rd St	City	local	25	50	25	2	no	both	int - both	no	good
3rd St to eastern terminus	City	local	25	50	34	2	both	both	both	no	good
Wilson Street											
Park St to Pine St	City	local	25	50	17	2	no	no	no	no	fair
Pine St to Highway 47	City	local	25	50	22	2	no	no	no	no	fair
Highway 47 to Arthur St	City	local	25	50	28	2	both	both	both	no	good
Yamhill Street											
North City Limits to Lincoln St	ODOT	arterial	30	40-60	23/30	2	no	no	no	no	poor-fair
Lincoln St to Johnson St	ODOT	arterial	30	40-74	23/30-32	2	int - west side	west side	int - west side	no	poor-fair
Johnson St to Jefferson St	ODOT	arterial	30	60-90	23/35	2	west side	west side	west side	no	poor-fair
Jefferson St to Madison St	ODOT	arterial	30	55	22/28-37	2	int - east side		int - east side	no	poor-fair
Madison St to Monroe Street	ODOT	arterial	30	55	23/33	2	int - west side	no	int - west side	no	poor-fair
Monroe St to Main Street	ODOT	arterial	30	55	38	2	int - both	west side	int - both	no	fair
Main Street to Grant Street	City	local	25	28-40	28-29/38	2	no	both	int - west side	no	poor-fair
Grant Street to Washington St	City	local	25	50	22	2	no	both	int - west side	no	poor

Appendix C
Methodology Memo

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
610 SW Alder Street, Suite 700, Portland, OR 97205 503.228.5230 503.273.8169

MEMORANDUM

Date: June 7, 2008 Project #: 9086

To: Doug Norval
ODOT-Salem/TPAU
555 13th St NE, Suite 2
Salem, Oregon 97301-4178

cc: Sue Geniesse, ODOT
Suzanne Dufner, MWVCOG
Steven Weaver, City of Carlton

From: Susan Wright, P.E. and Conor Semler
Project: Carlton Transportation System Plan Update
Subject: Existing/Future Conditions Forecasting Methodology

The purpose of this memorandum is to confirm the traffic operations forecasting methodology for the City of Carlton Transportation System Plan (TSP) Update. The methodologies included in this memorandum are based on guidance provided in the ODOT Transportation System Plan Guidelines and the Analysis Procedures Manual (APM) as they relate to small urban areas.

The APM assists the analyst in stepping through the development of design hour volumes for the future year planning horizon. This process is based on several inputs, including existing and historic traffic conditions, existing and future land use, population, and employment data, and community characteristics. The following sections describe the process used to arrive at the design hour volumes.

SEASONAL ADJUSTMENT FACTOR

Traffic counts in Carlton were collected in the first week of October 2007. In order to identify traffic conditions for the peak month, these volumes were adjusted according to the Oregon Department of Transportation's (ODOT) Seasonal Trend Table[1]. For the purpose of identifying a seasonal trend, Carlton was assumed to share characteristics of an Agricultural area, which generally peaks in the late summer and fall harvest months. Table 1 shows the Seasonal Trend calculations.

[1] There are no Automatic Traffic Recorder stations located along Highway 47 within the site vicinity to obtain a seasonal adjustment factor specific to Highway 47.

Table 1 Seasonal Trend Calculations

Seasonal Traffic Trend	Oct 1	Peak Period Seasonal Factor	Seasonal Adjustment Factor
Agriculture	0.9010	0.8788	1.0252

As shown in Table 1, a seasonal adjustment factor of 1.0252 was identified for use with the Carlton traffic count data.

BACKGROUND GROWTH RATE

Based on a review of ODOT's Future Volume Tables (which are based on historic traffic volumes), a background growth rate was estimated for the Carlton area. Four data points on Oregon 47 in Carlton were used in the calculation, including points at the north and south city limits. To determine a growth rate estimate, Transportation Volume Tables (TVTs) for the year 2006 were compared with ODOT's 2026 estimates. Table 2 illustrates the TVT growth rates.

Table 2 Background Growth Rate Calculations on Oregon 47

Mile Point	Location	Average Annual Daily Traffic		R-Squared Value	Per Year Growth Rate (2006-2026)[1]
		2006	2026		
37.37	North city limits	6100	7900	0.9399	1.5%
37.86	Yamhill (N of Main)	6600	8200	0.8561	1.2%
38.00	Pine (S of Main)	5600	6800	0.8282	1.1%
38.53	South city limits	5400	6700	0.8128	1.2%
Average					**1.2%**

[1] Per Year Growth Rate = [(2026 Population – 2006 Population) / (2006 Population)] / (2026 – 2006)

The R-Squared Value indicates the degree of correlation between the dependent variable (historical traffic volume) and the independent variable (time). The APM states that values over 0.75 are preferred, which indicates that the chosen mile points are acceptable for this analysis. As shown in Table 2, a 1.2% annual growth rate was identified for background traffic volumes in Carlton. Therefore, traffic volumes from 2007 will be increased by 27.6% to the forecast year 2030.

EMPLOYMENT AND HOUSING GROWTH

The methodology to relate anticipated household and employment growth to future traffic increases will be based on the Cumulative Analysis traffic forecasting methodology outlined in the APM. This methodology combines an analysis of specific growth in land uses within the city as well as anticipated increases in "through" traffic.

For the purposes of this analysis, population and employment forecasts for the City will be based on estimates published in the 2007 Update of the Carlton Comprehensive Plan. The report reviewed historic trends and projected population and employment to a forecast year of 2027. A

straight line projection to forecast growth from 2027 to 2030 was applied. Tables 3 and 4 illustrate the resultant employment and population growth assumptions.

Table 3 Employment Growth Projections (2005-2030)

Sector	2005	2007[1]	2027	2030	Growth (2007-2030)
Agriculture, Forestry, Fishing & Hunting	237	245	321	332	88
Construction	82	85	111	115	30
Manufacturing	187	193	254	263	70
Wholesale Trade, Transportation, and Warehousing	63	65	86	89	24
Retail Trade	31	32	42	44	12
Finance and Insurance	18	19	24	25	6
Services and Real Estate	157	162	213	221	59
Public Sector Employment	14	14	19	20	5
Total	**789**	**815**	**1,070**	**1,108**	**294**

1 – Estimates based on straight-line projection between 2005 and 2027 data

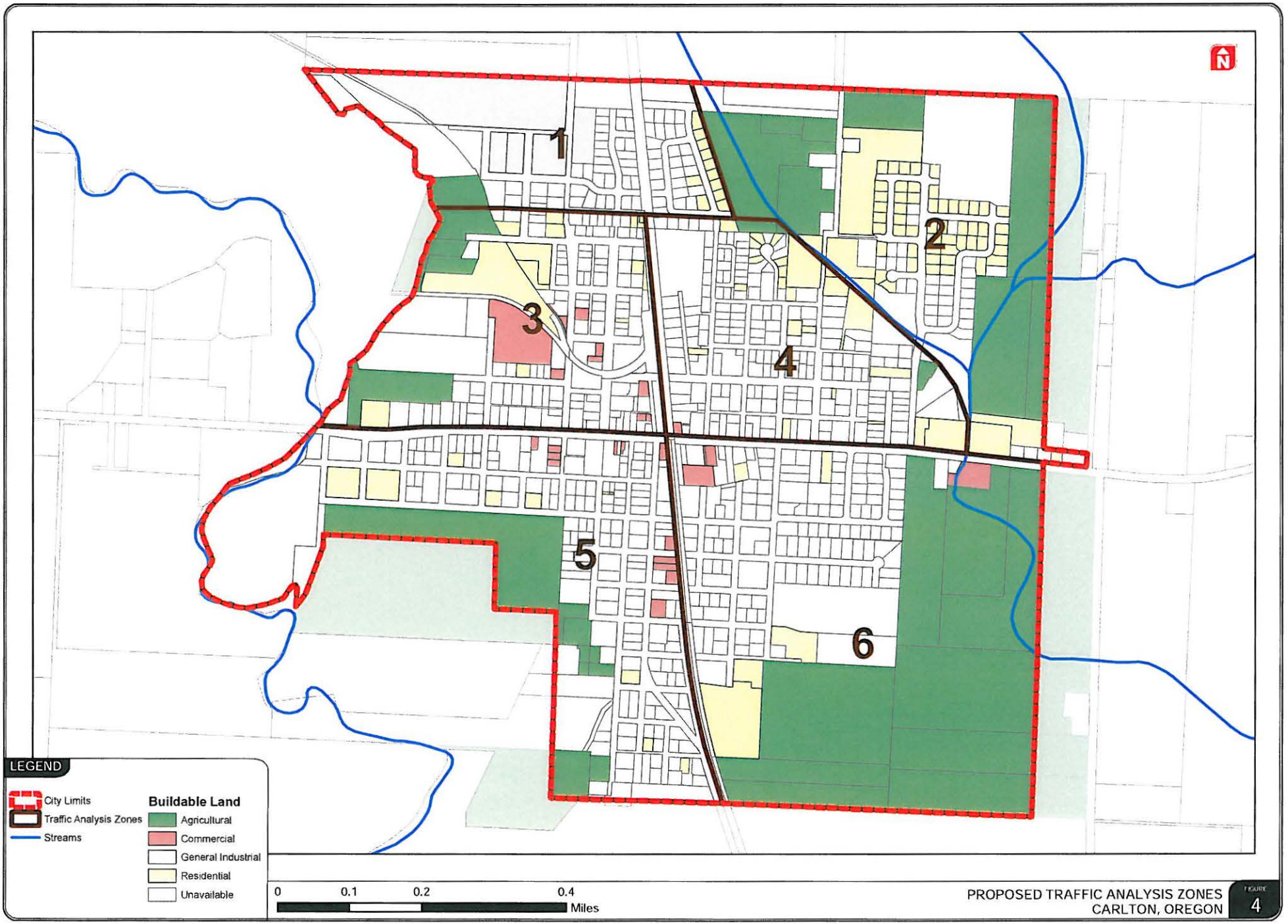
Table 4 Population and Housing Growth Projections (2007-2030)

	2007	2027	2030	Growth (2030-2007)
Population	1,670	2,379	2,485	815
Housing Units	673	906	941	268

The Mid-Willamette Valley Council of Goverments (MWVCOG) estimates that 25 percent of new housing units will be multi-family units and 75 percent will be single-family units. As shown in Tables 3 and 4, an increase of 294 jobs and 268 housing units (202 single-family/66 multi-family) are anticipated within the City of Carlton between 2007 and 2030.

TRAFFIC ANALYSIS ZONES

In order to evaluate the anticipated growth in the City, the employment and housing growth will be estimated and assigned to the traffic network according to Traffic Analysis Zones (TAZs) established as part of the project. The proposed TAZ boundaries are intended to aggregate areas that have common access to major transportation facilities. Figure 1 illustrates the proposed TAZs for Carlton. Figure 2 illustrates the existing buildable lands inventory which was used to assign the growth to each TAZ. Table 5 shows the assignment of growth identified in Tables 3 and 4 to the respective TAZs.



PROPOSED TRAFFIC ANALYSIS ZONES
CARLTON, OREGON

FIGURE 4

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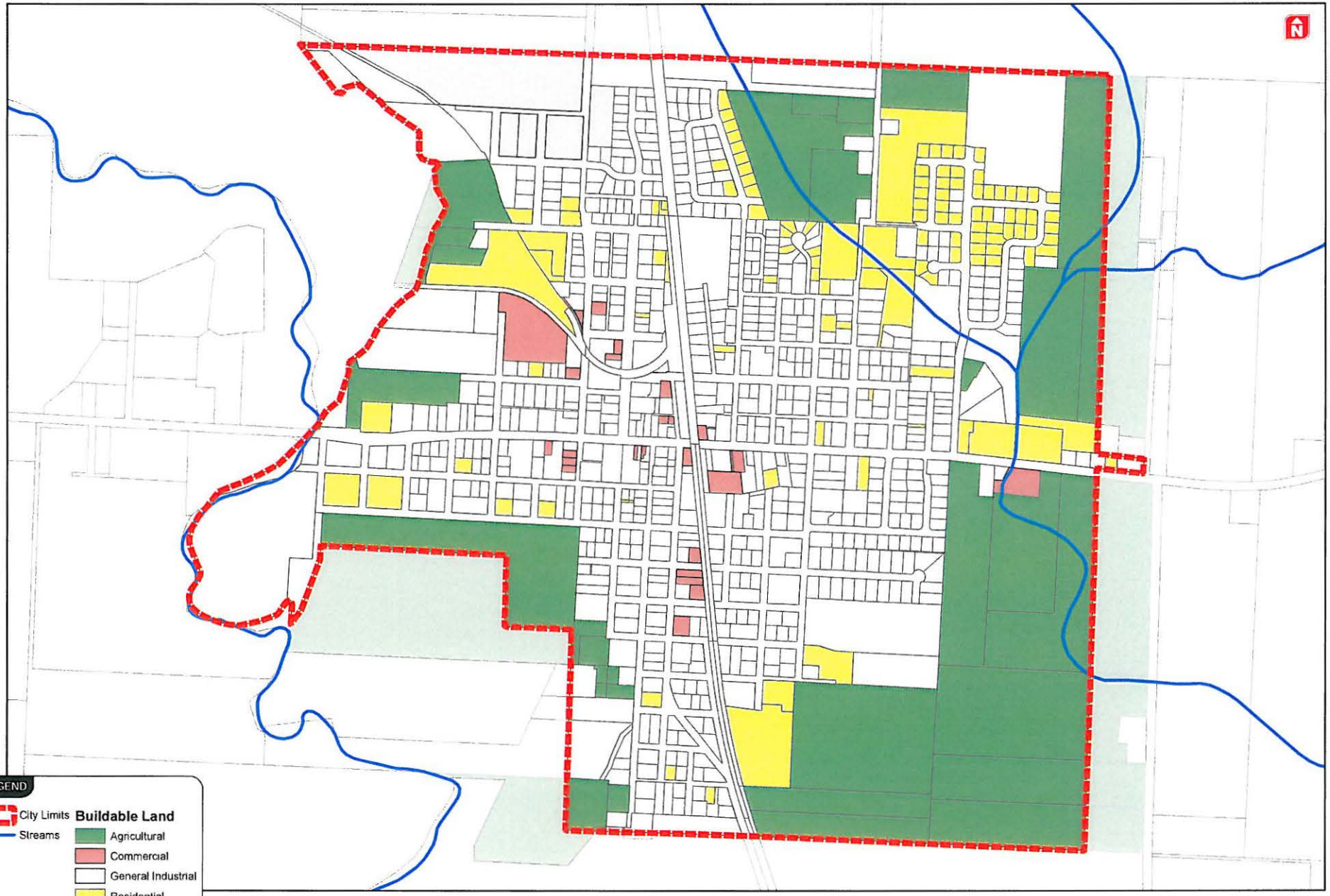

BUILDABLE LAND
CARLTON, OREGON

FIGURE 2

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The estimates in Table 5 were generated based on a review of existing land use and vacant lots in the City. Housing growth was distributed to the TAZs according to the amount of available vacant residential land. Employment growth was similarly distributed according to the available land within each respective land use.

Table 5 2030 Population and Employment Growth by TAZ

	Growth Sector	TAZ						Total
		1	2	3	4	5	6	
Housing	Single Family	15	85	20	30	14	38	202
	Multifamily	-	15	5	-	-	46	66
Employment	Agriculture	5	15	39	-	13	15	87
	Construction	30	-	-	-	-	-	30
	Manufacturing	70	-	-	-	-	-	70
	Trade/Transportation	24	-	-	-	-	-	24
	Retail Trade	-	-	4	-	4	4	12
	Finance/Insurance	-	-	3	-	3	-	6
	Services and Real Estate	-	-	29	-	15	15	59
	Public Sector	-	-	-	-	6	-	6
Total Employment		**129**	**15**	**75**	**-**	**41**	**34**	**294**

CUMULATIVE ANALYSIS

Future traffic volumes at the study intersections were estimated according to the Cumulative Analysis procedure in ODOT's Analysis Procedures Manual. The following section outlines the process used to determine future traffic volumes.

Trip Generation

Trip generation estimates for the anticipated growth were based on data published in the standard reference manual, *Trip Generation,* 7th Edition, published by the Institute of Transportation Engineers (ITE). The growth sectors listed in Table 5 were evaluated according to equivalent land uses published in *Trip Generation,* which we identified by considering characteristics of ITE categories and those of the growth sectors. *Attachment "A" includes a detailed breakdown of the trip generation estimates by TAZ.*

Table 6 illustrates the estimated trip generation associated with the anticipated population and employment growth in the City.

Table 6 Estimated Trip Generation by TAZ

TAZ	Growth Sector	2030 Growth	2030 PM Peak Hour		
			Total	In	Out
1	Residential (units)	15	15	10	5
	Employment	129	125	69	56
TAZ 1 Total			**140**	**79**	**61**
2	Residential (units)	100	96	60	36
	Employment	15	7	3	4
TAZ 2 Total			**103**	**63**	**40**
3	Residential (units)	25	23	15	8
	Employment	75	99	44	55
TAZ 3 Total			**122**	**59**	**63**
4	Residential (units)	30	30	19	11
	Employment	-	-	-	-
TAZ 4 Total			**30**	**19**	**11**
5	Residential (units)	14	14	9	5
	Employment	41	65	32	33
TAZ 5 Total			**79**	**41**	**38**
6	Residential (units)	84	67	43	24
	Employment	34	50	23	27
TAZ 6 Total			**116**	**65**	**51**
Grand Total			**590**	**326**	**264**

External-External Trips

Existing traffic volumes at the study intersections were reviewed to identify travel patterns within Carlton. Oregon 47 is the major highway traveling through the City on which the majority of "through" (i.e., External) traffic is expected to travel. External-External trips (i.e. those with both trip ends outside the city) were isolated from the volumes and will be grown according to the 1.4% annual growth rate identified above. The analysis procedure identifies the external-external trips by reviewing the volumes at each external station and tracing those volumes to another external station by subtracting the turn volumes at each intersection downstream. For example, traffic traveling southbound along Highway 47 was measured as it crossed the study intersections. Southbound through movements at the N Yamhill Street/W Madison Street intersection were recorded. Then, proceeding to the next intersection (N Yamhill Street/W Main Street), the southbound approach movements that do not continue on Highway 47, such as the southbound through and right-turn movements, were subtracted from the southbound through volume recorded from the previous intersection (N Yamhill Street/W Madison Street). This process was repeated at each study intersection as you continue along Highway 47 to the southern city limits. This process was also completed in the northbound direction as well as

to/from the west and north side of town as well as the south and east side of town as these movements also have a high percentage of external-external trips according to city staff. *Attachment "B" illustrates the external-external trip calculations.* Table 7 illustrates the breakdown of trips according to External and Internal. The existing traffic volumes used to calculate 2007 and 2030 DHV and external trips are shown in Figure 3.

Table 7 Internal/External Trip Calculations

External Trip Station	Direction	2007 DHV	Growth Factor[1]	2007 E-E Trips[2]	2030 DHV[3]	E-E Trip Probability[4]	2030 E-E Trip Growth[5]	2030 E-I, I-E Trip Growth[6]
N Yamhill/ W Madison	Enter	390	1.276	232	498	0.59	64	44
	Exit	343	1.276	121	438	0.35	33	61
S Pine/ W Polk	Enter	229	1.276	76	292	0.33	21	42
	Exit	233	1.276	108	297	0.46	30	35
W Main/ Scott	Enter	185	1.276	80	236	0.43	22	29
	Exit	303	1.276	148	387	0.49	41	43
E Main/ N 4th	Enter	212	1.276	24	271	0.11	6	52
	Exit	116	1.276	35	148	0.30	10	22

1 – Background growth rate calculated above

2 – Total traffic volume carried through to an external gate

3 – 2030 DHV = (2007 DHV)*(Growth Factor=1.322)

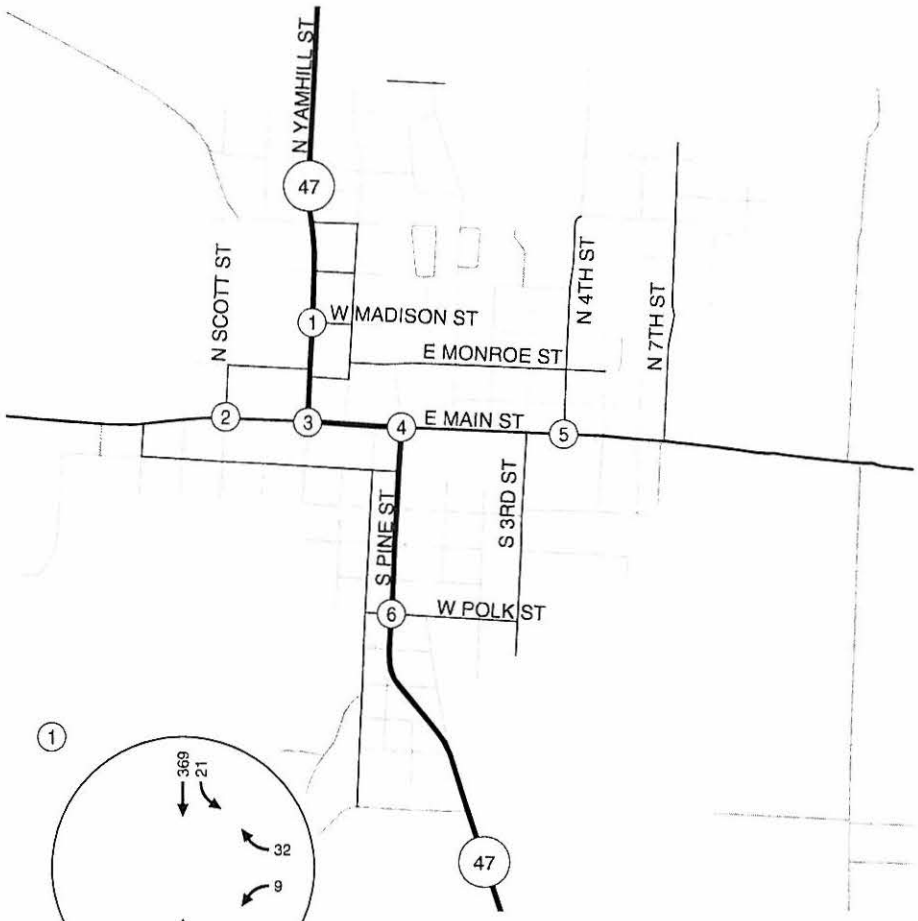
4 – E-E Trip Probability = (2007 E-E Trips)/(2007 DHV)

5 – 2030 E-E Trip Growth = (E-E Trip Probability)*((2030 DHV)-(2007 DHV))

6 – 2030 E-I, I-E Trip Growth = (2030 DHV) – (2007 DHV) – (2030 E-E Trip Growth)

External-Internal, Internal-External Trips

The next step was to identify the future trips with one trip-end inside Carlton and one trip-end outside Carlton. After removing the External-External trips the local growth in trips identified in Table 6 was distributed to Internal-External and External-Internal trips. This was done by first calculating the production and attraction probabilities for each TAZ (i.e. TAZ 1 productions divided by total trip productions). Then, the trips were distributed to each external station by multiplying these trips by each zone's attraction probability. Table 8 contains the trip attractions and productions.



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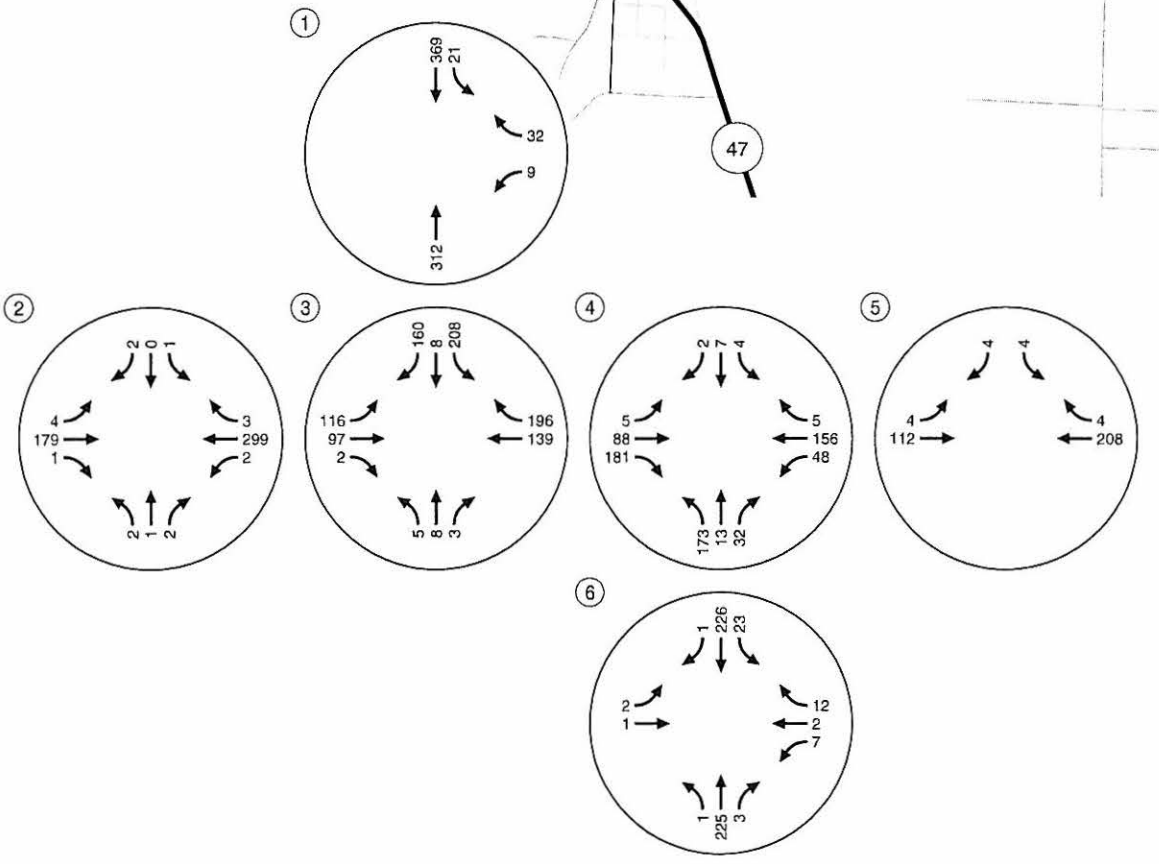

2007 EXISTING TRAFFIC VOLUMES
PM PEAK HOUR
CARLTON, OREGON

FIGURE **3**

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Table 8 Trip Attractions and Productions

TAZ	1	2	3	4	5	6	Total
Total New Trips[1]	140	103	122	30	79	116	590
Trip Attractions[1]	78	64	59	19	41	65	326
Attraction Probability[2]	0.240	0.195	0.182	0.059	0.125	0.199	1.0
Trip Productions[1]	62	39	63	11	39	51	264
Production Probability[3]	0.233	0.146	0.238	0.042	0.146	0.195	1.0

1 – TAZ new trip volumes calculated in Table 6.

2 – Attraction Probability = (TAZ Trip Attractions) / (Total Trip Attractions)

3 – Production Probability = (TAZ Trip Productions) / (Total Trip Productions)

Tables 9 and 10 contain the External-Internal and Internal-External trip distributions, respectively.

Table 9 External-Internal Trip Distribution

External Station	New E-I Trips[1]	TAZ 1[2]	TAZ 2	TAZ 3	TAZ 4	TAZ 5	TAZ 6
N Yamhill/ W Madison	44	10	9	8	3	5	9
S Pine/ W Polk	42	10	8	8	2	5	8
W Main/ Scott	29	7	6	5	2	4	6
E Main/ N 4th	52	13	10	9	3	7	10

1 – New External-Internal Trips recorded from "Enter" row of Table 7

2 – TAZ External-Internal Trips = (New E-I Trips) * (TAZ Attraction Probability)

Table 10 Internal-External Trip Distribution

External Station	New I-E Trips[1]	TAZ 1[2]	TAZ 2	TAZ 3	TAZ 4	TAZ 5	TAZ 6
N Yamhill/ W Madison	61	14	9	15	3	9	12
S Pine/ W Polk	35	8	5	8	1	5	7
W Main/ Scott	43	10	6	10	2	6	8
E Main/ N 4th	22	5	3	5	1	3	4

1 – New Internal-External Trips recorded from "Exit" row of Table 7

2 – TAZ Internal-External Trips = (New I-E Trips) * (TAZ Production Probability)

Internal-Internal Trips

The remaining new trips were then distributed among the TAZs within Carlton. Table 11 identifies the internal trip attraction and production probabilities.

Table 11 Internal Trip Attraction and Production Probabilities

TAZ	1	2	3	4	5	6	Total
Total Internal-Internal[1]	62	46	54	14	35	52	263
Internal Attractions[2]	38	31	29	9	20	32	159
Attraction Probability[3]	0.240	0.195	0.182	0.059	0.125	0.199	1.0
Internal Productions[4]	24	15	25	4	15	20	103
Production Probability[5]	0.233	0.146	0.238	0.042	0.146	0.195	1.0

1 – Total Internal-Internal = (Total New Trips) – (Sum of External-Internal Trips + Sum of Internal-External Trips)

2 – Internal Attractions = (TAZ Trip Attractions) – (Sum of External-Internal Trips)

3 – Attraction Probability = (TAZ Internal Attractions) / (Total Internal Attractions)

4 – Internal Productions = (TAZ Trip Productions) – (Sum of Internal-External Trips)

5 – Production Probability = (TAZ Internal Productions) / (Total Internal Productions)

The matrix in Table 12 illustrates the distribution of internal trip attractions between and among TAZs, and Table 13 illustrates the distribution for trip productions.

Table 12 Internal Trip Attraction Distribution

Zone	I-I Attraction	TAZ 1	TAZ 2	TAZ 3	TAZ 4	TAZ 5	TAZ 6
1	38	9	7	7	2	5	8
2	31	7	6	6	2	4	6
3	29	7	6	5	2	4	6
4	9	2	2	2	1	1	2
5	20	5	4	4	1	3	4
6	32	8	6	6	2	4	6

Table 13 Internal Trip Production Distribution

Zone	I-I Production	TAZ 1	TAZ 2	TAZ 3	TAZ 4	TAZ 5	TAZ 6
1	24	6	4	6	1	4	5
2	15	4	2	4	1	2	3
3	25	6	4	6	1	4	5
4	4	1	1	1	0	1	1
5	15	4	2	4	1	2	3
6	20	5	3	5	1	3	4

Finally, these trips were distributed to the network according to their productions and attractions, as illustrated in Figure 4. *Attachment "C" illustrates the trip assignment for external and TAZ-generated trips.*

CONFIRMATION

It is requested that ODOT staff confirm the following assumptions:

1. Seasonal Adjustment Factor
2. Background Growth Rate
3. External-External and External-Internal trip percentage calculations.

It is requested that City and MWVCOG staff confirm the following assumptions:

4. Employment and Housing Growth
5. TAZs and Growth Assignment

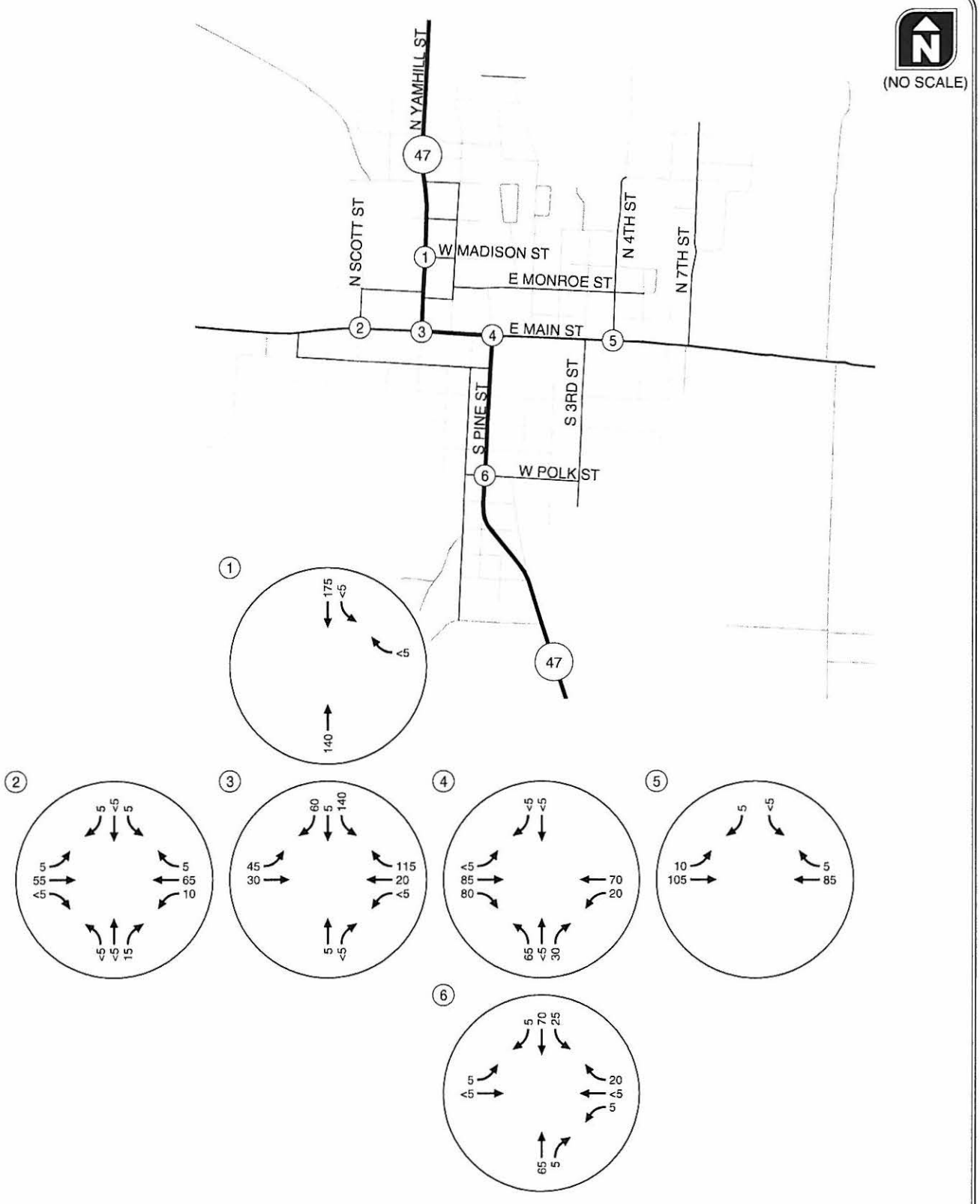
We trust this memorandum provides adequate documentation of the proposed modeling next steps. If you have any questions, please call us at (503) 228-5230.

ATTACHMENTS

A. Trip Generation Calculations

B. External-External Trip Calculations

C. 2030 Traffic Assignment



2030 NEW TRAFFIC VOLUMES
PM PEAK HOUR
CARLTON, OREGON

FIGURE 4

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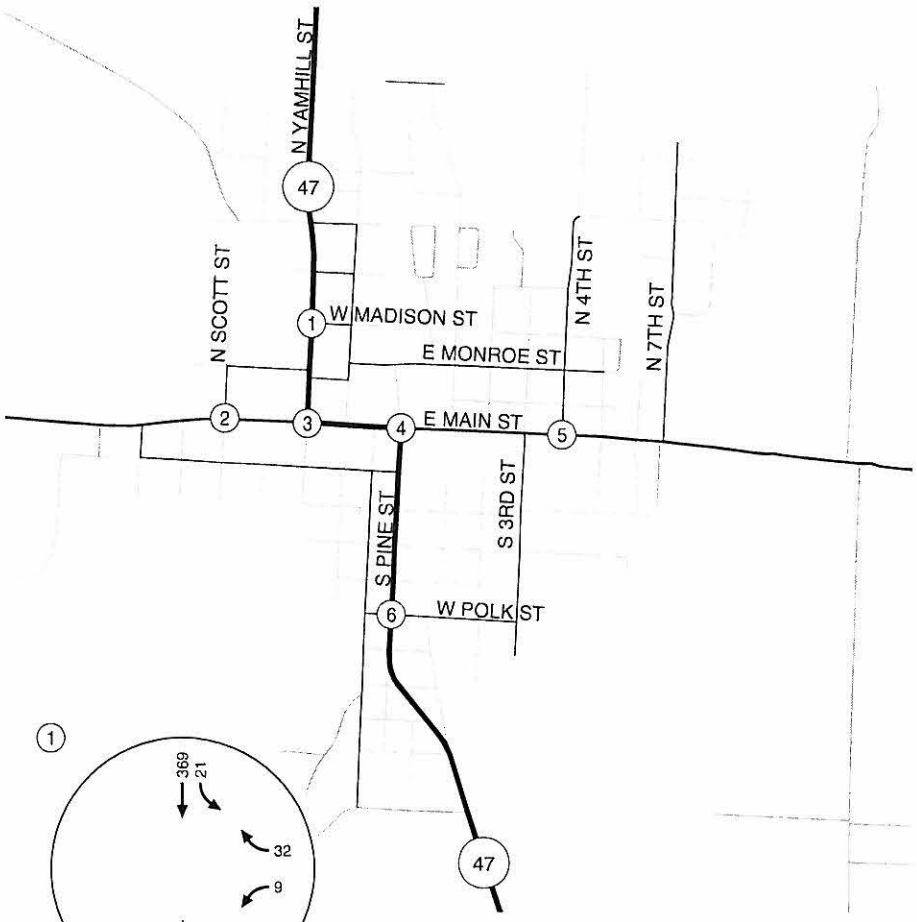
Attachment A
Trip Generation
Calculations

Carlton Trip Generation Estimates
Anticipated Housing and Employment Growth

Trip Generation					PM Peak Hour		
TAZ	Land Use	ITE Code	Size	Daily Trips	Total	In	Out
1	Single Family	210	15	144	15	10	6
	Multifamily	220	0	0	0	0	0
	Agriculture	818	5	117	2	1	1
	Construction	812	30	964	83	52	32
	Manufacturing	140	70	149	25	11	14
	Trade/Transportation	150	24	93	14	5	9
	Retail Trade	814	0	0	0	0	0
	Finance/Insurance	814	0	0	0	0	0
	Services and Real Estate	814	0	0	0	0	0
	Public Sector	730	0	0	0	0	0
Total				**1467**	**140**	**78**	**62**
2	Single Family	210	85	813	86	54	32
	Multifamily	220	15	101	9	6	3
	Agriculture	818	15	351	7	4	4
	Construction	812	0	0	0	0	0
	Manufacturing	140	0	0	0	0	0
	Trade/Transportation	150	0	0	0	0	0
	Retail Trade	814	0	0	0	0	0
	Finance/Insurance	814	0	0	0	0	0
	Services and Real Estate	814	0	0	0	0	0
	Public Sector	730	0	0	0	0	0
Total				**1265**	**102**	**64**	**39**
3	Single Family	210	20	191	20	13	7
	Multifamily	220	5	34	3	2	1
	Agriculture	818	39	913	18	9	9
	Construction	812	0	0	0	0	0
	Manufacturing	140	0	0	0	0	0
	Trade/Transportation	150	0	0	0	0	0
	Retail Trade	814	4	89	9	4	5
	Finance/Insurance	814	3	67	7	3	4
	Services and Real Estate	814	29	648	65	29	36
	Public Sector	730	0	0	0	0	0
Total				**1943**	**122**	**59**	**63**
4	Single Family	210	30	287	30	19	11
	Multifamily	220	0	0	0	0	0
	Agriculture	818	0	0	0	0	0
	Construction	812	0	0	0	0	0
	Manufacturing	140	0	0	0	0	0
	Trade/Transportation	150	0	0	0	0	0
	Retail Trade	814	0	0	0	0	0
	Finance/Insurance	814	0	0	0	0	0
	Services and Real Estate	814	0	0	0	0	0
	Public Sector	730	0	0	0	0	0
Total				**287**	**30**	**19**	**11**
5	Single Family	210	14	134	14	9	5
	Multifamily	220	0	0	0	0	0
	Agriculture	818	14	328	7	3	3
	Construction	812	0	0	0	0	0
	Manufacturing	140	0	0	0	0	0
	Trade/Transportation	150	0	0	0	0	0
	Retail Trade	814	4	89	9	4	5
	Finance/Insurance	814	3	67	7	3	4
	Services and Real Estate	814	15	335	34	15	19
	Public Sector	730	5	60	10	7	2
Total				**1013**	**79**	**41**	**39**
6	Single Family	210	38	364	38	24	14
	Multifamily	220	46	309	29	19	10
	Agriculture	818	15	351	7	4	4
	Construction	812	0	0	0	0	0
	Manufacturing	140	0	0	0	0	0
	Trade/Transportation	150	0	0	0	0	0
	Retail Trade	814	4	89	9	4	5
	Finance/Insurance	814	0	0	0	0	0
	Services and Real Estate	814	15	335	34	15	19
	Public Sector	730	0	0	0	0	0
Total				**1449**	**116**	**65**	**51**
Sum				7423	590	326	264

Attachment B
External-External Trip
Calculations



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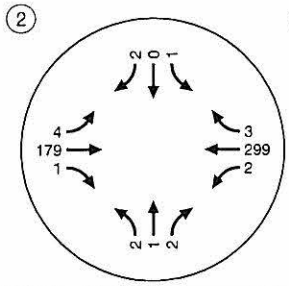
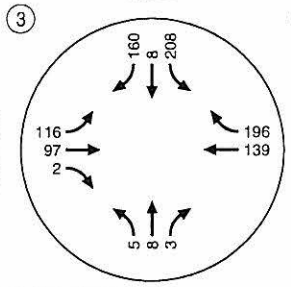
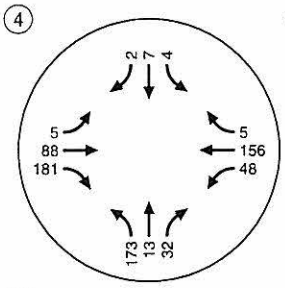
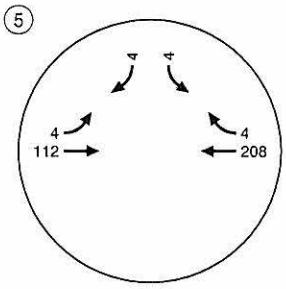
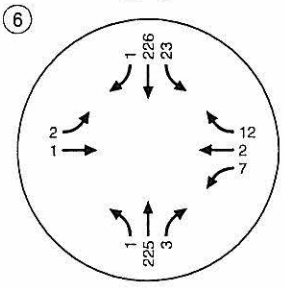






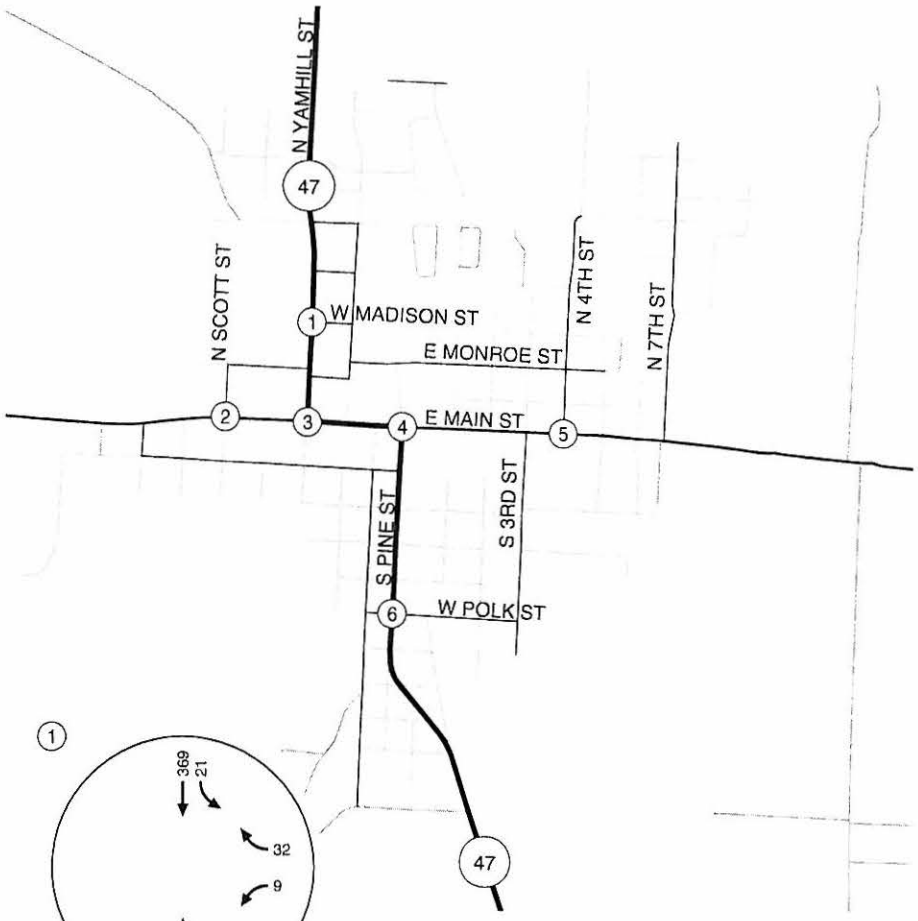




ENTER:	N YAMHILL/W MADISON	
EXIT:	S PINE / W POLK	W MAIN / SCOTT
	390	390
	-21	-21
	-160	-8
	-8	-208
	-5	-3
	-88	-2
	-1	
	-23	
	84	148
TOTAL E-E	232	

2007 EXTERNAL-EXTERNAL TRIP CALCULATIONS
ENTER GATE: N YAMHILL ST/W MADISON ST
CARLTON, OREGON

FIGURE **B-1**



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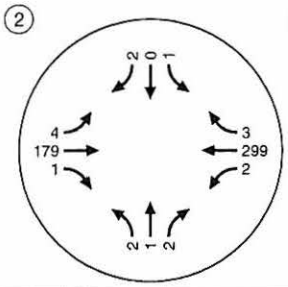
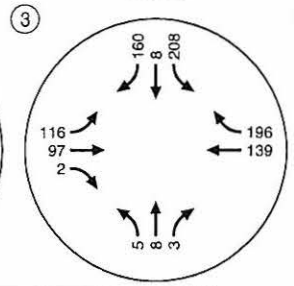
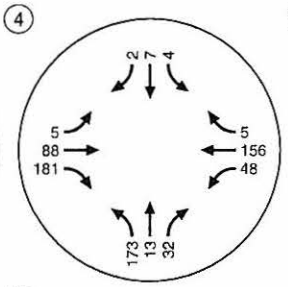
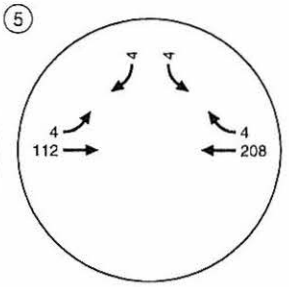
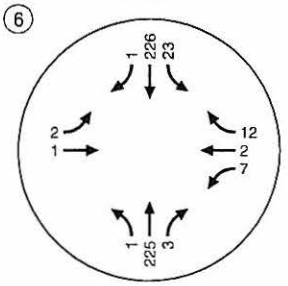






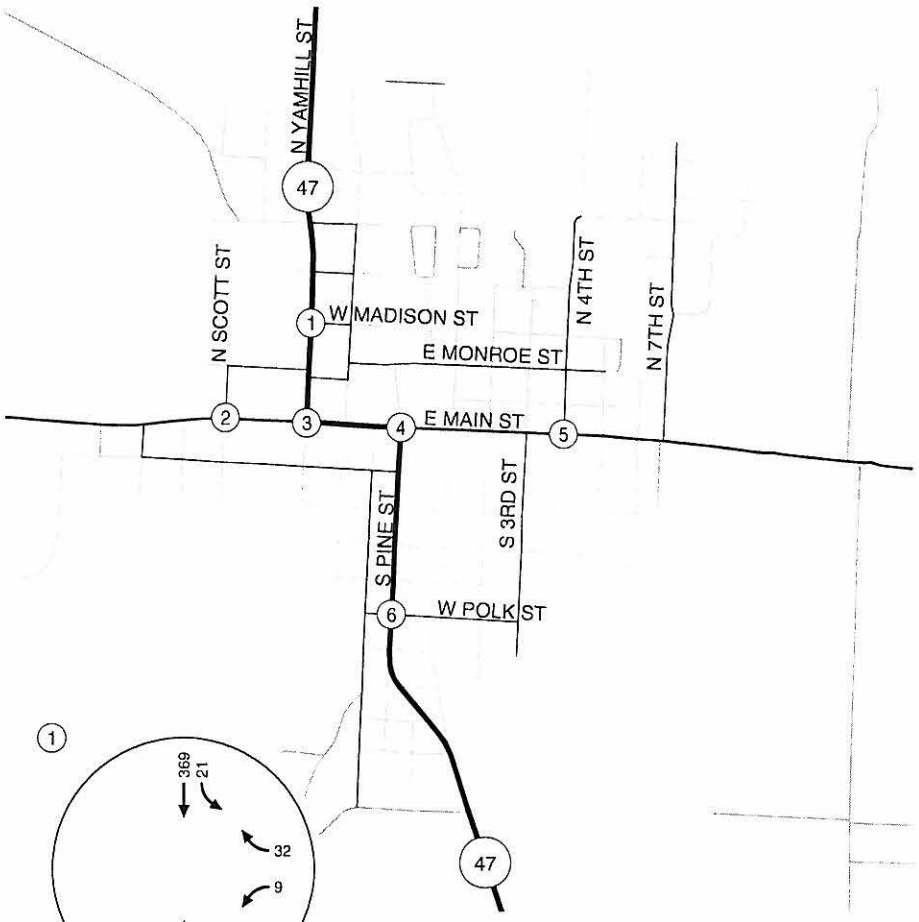




ENTER:	S PINE / W POLK	
EXIT:	N YAMHILL / W MADISON	E MAIN / N 4TH
	229	229
	-1	-1
	-3	-3
	-13	-173
	-32	-13
	-139	-4
	41	35
TOTAL E-E	76	

2007 EXTERNAL-EXTERNAL TRIP CALCULATIONS
ENTER GATE: S PINE/W POLK
CARLTON, OREGON

FIGURE **B-2**



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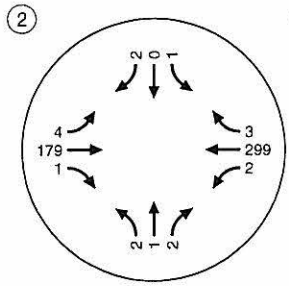
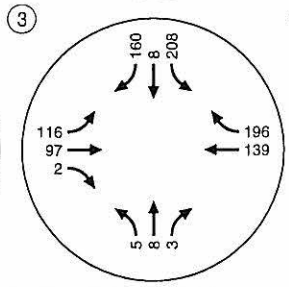
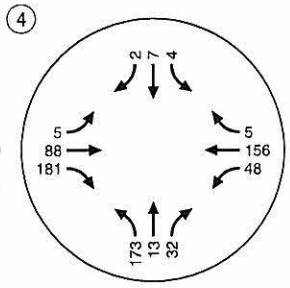
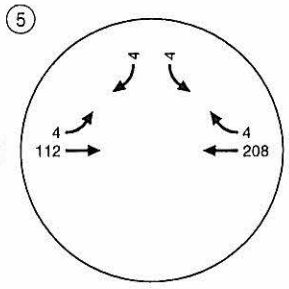
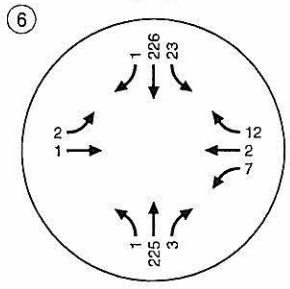










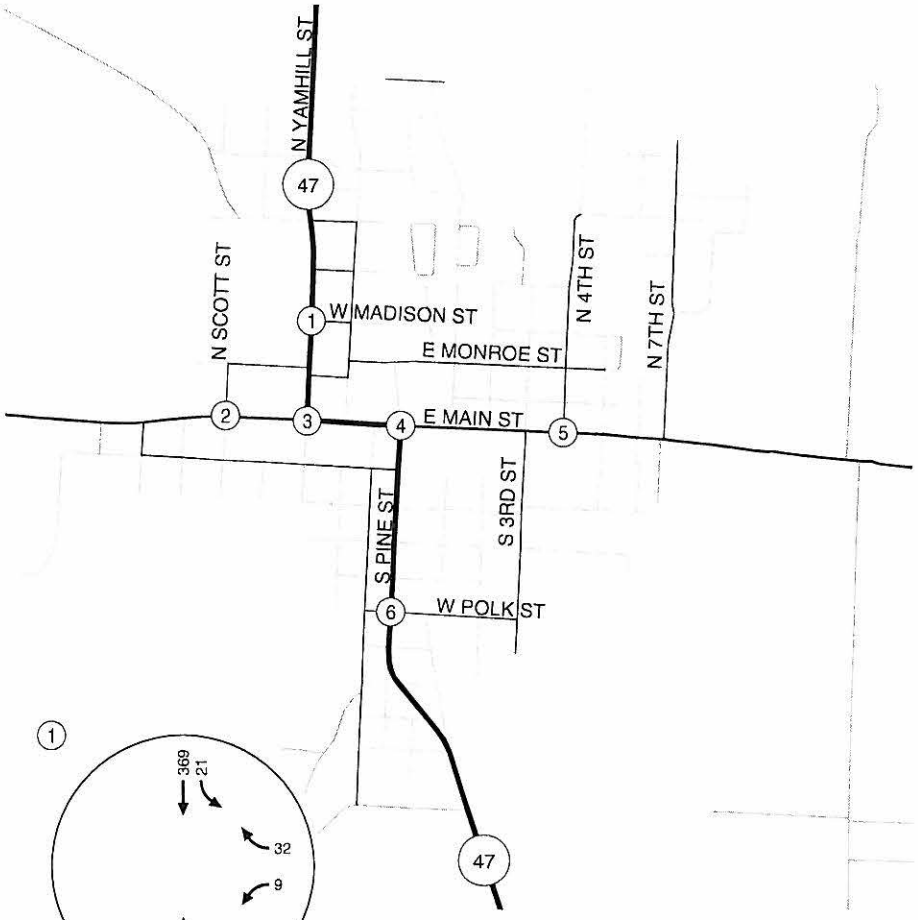
ENTER:	N YAMHILL/W MADISON
EXIT:	N YAMHILL / W MADISON
	184
	-4
	-1
	-97
	-2
	80
TOTAL E-E	80

2007 EXTERNAL-EXTERNAL TRIP CALCULATIONS
ENTER GATE: W MAIN/SCOTT
CARLTON, OREGON

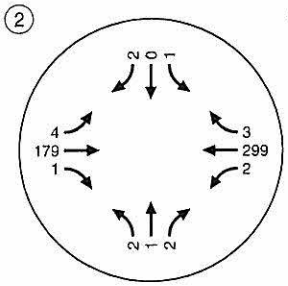
FIGURE **B-3**

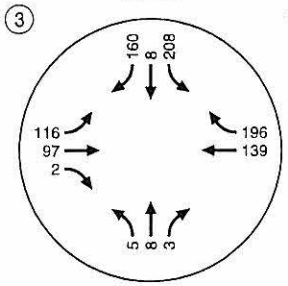
KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

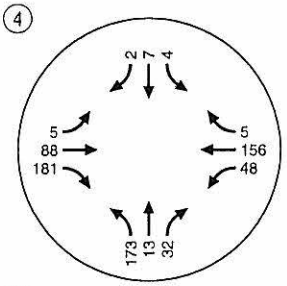
H:\profile\9086 - City of Carlton TSP Update\dwgs\figs\9086Fig1.dwg Jun 09, 2008 - 4:03pm - csemler Layout Tab: AssumptionsFigB3

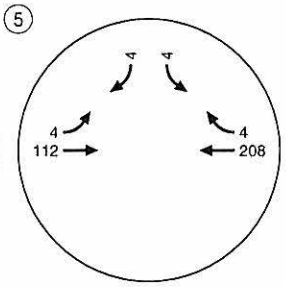


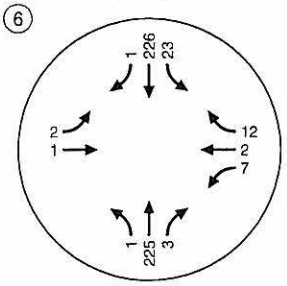
(NO SCALE)











ENTER:	N YAMHILL/W MADISON
EXIT:	S PINE / W POLK
	212
	-4
	-5
	-156
	-1
	-23
	23
TOTAL E-E	23

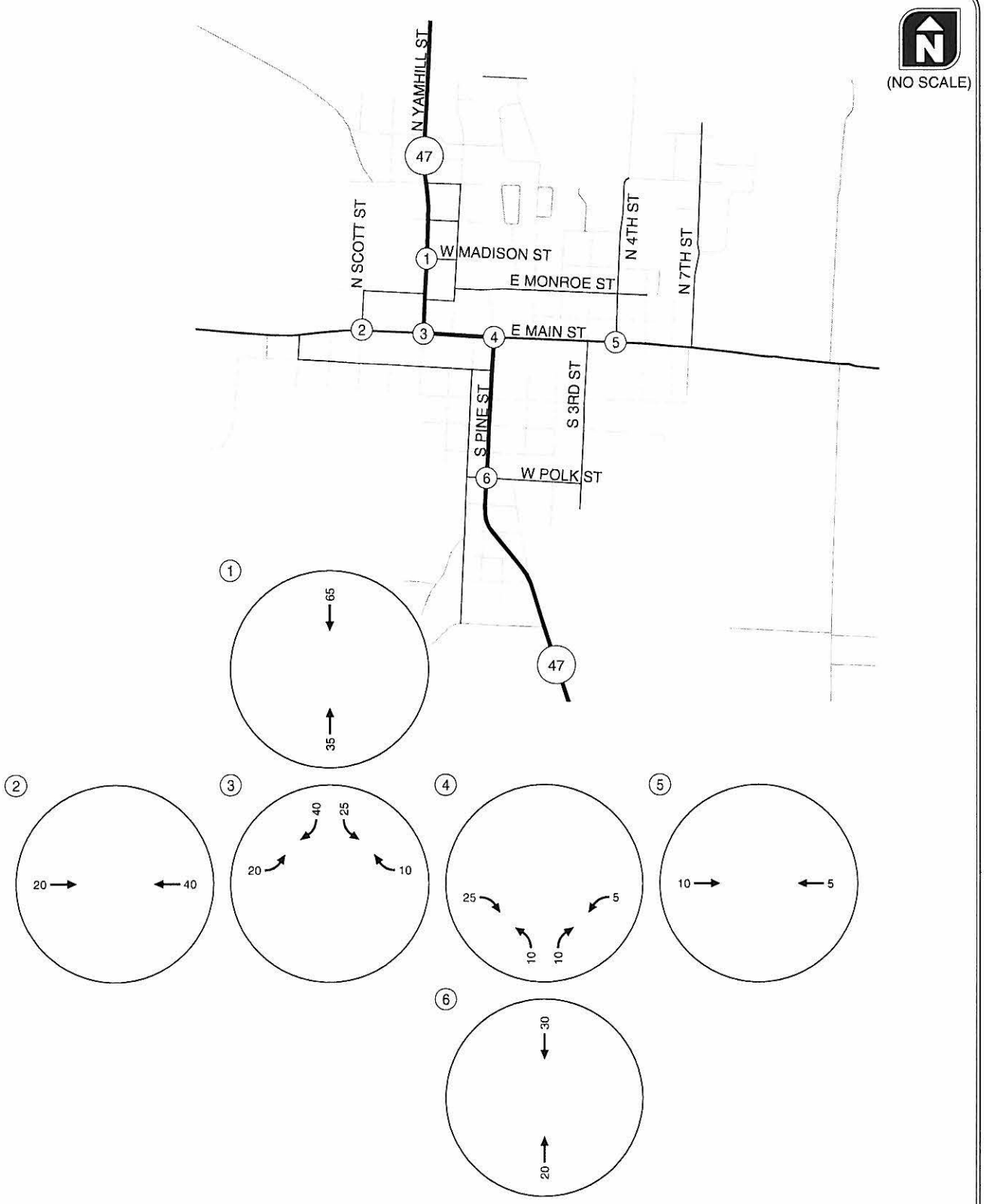
2007 EXTERNAL-EXTERNAL TRIP CALCULATIONS
ENTER GATE: E MAIN/N 4TH
CARLTON, OREGON

FIGURE **B-4**

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

H:\proj\file\9086 - City of Carlton TSP Update\dwgs\figs\9086Fig1.dwg Jun 09, 2008 - 4:03pm - csemler Layout Tab: AssumptionsFigB4

Attachment C
2030 Traffic
Assignment

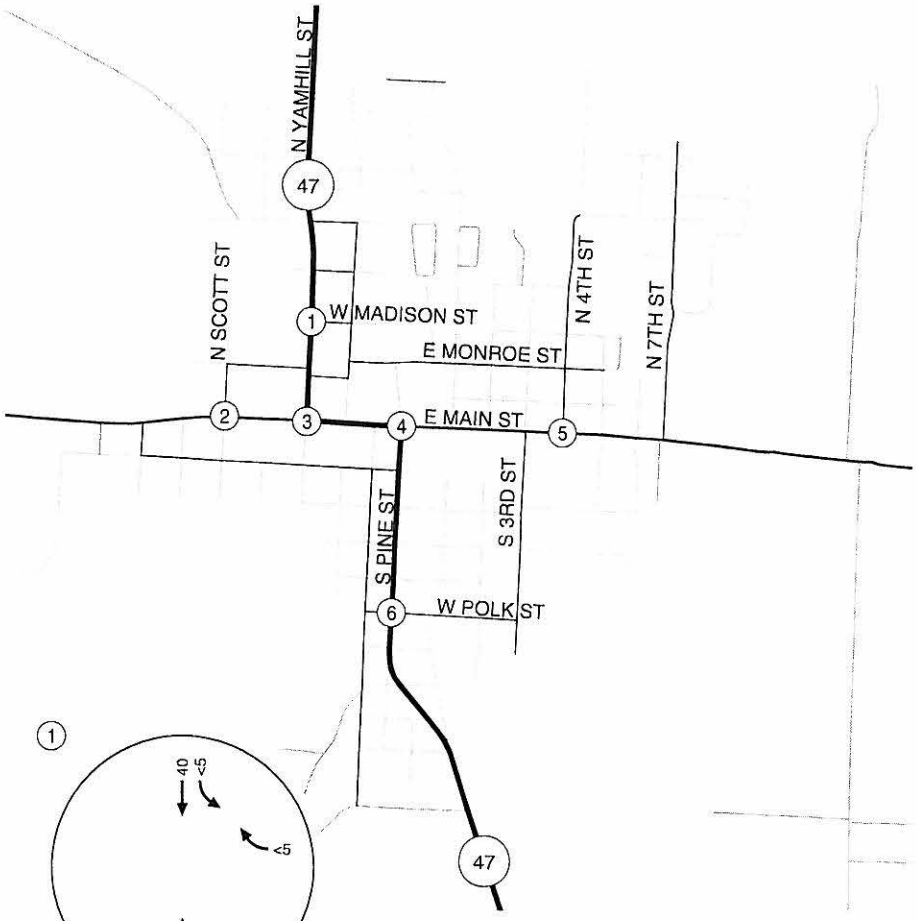


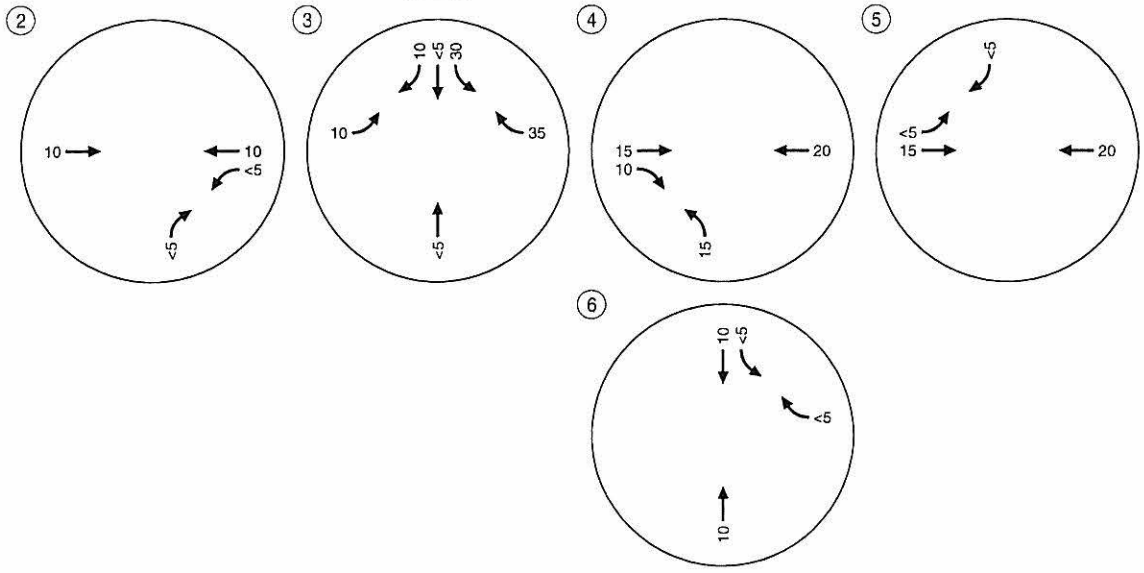
2030 NEW EXTERNAL-EXTERNAL TRAFFIC VOLUMES
PM PEAK HOUR
CARLTON, OREGON

FIGURE **C-1**

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

H:\projfile\9086 - City of Carlton TSP Update\dwgs\figs\9086Fig1.dwg Jun 14, 2008 - 4:00pm - csemler Layout Tab: AssumptionsFigC1



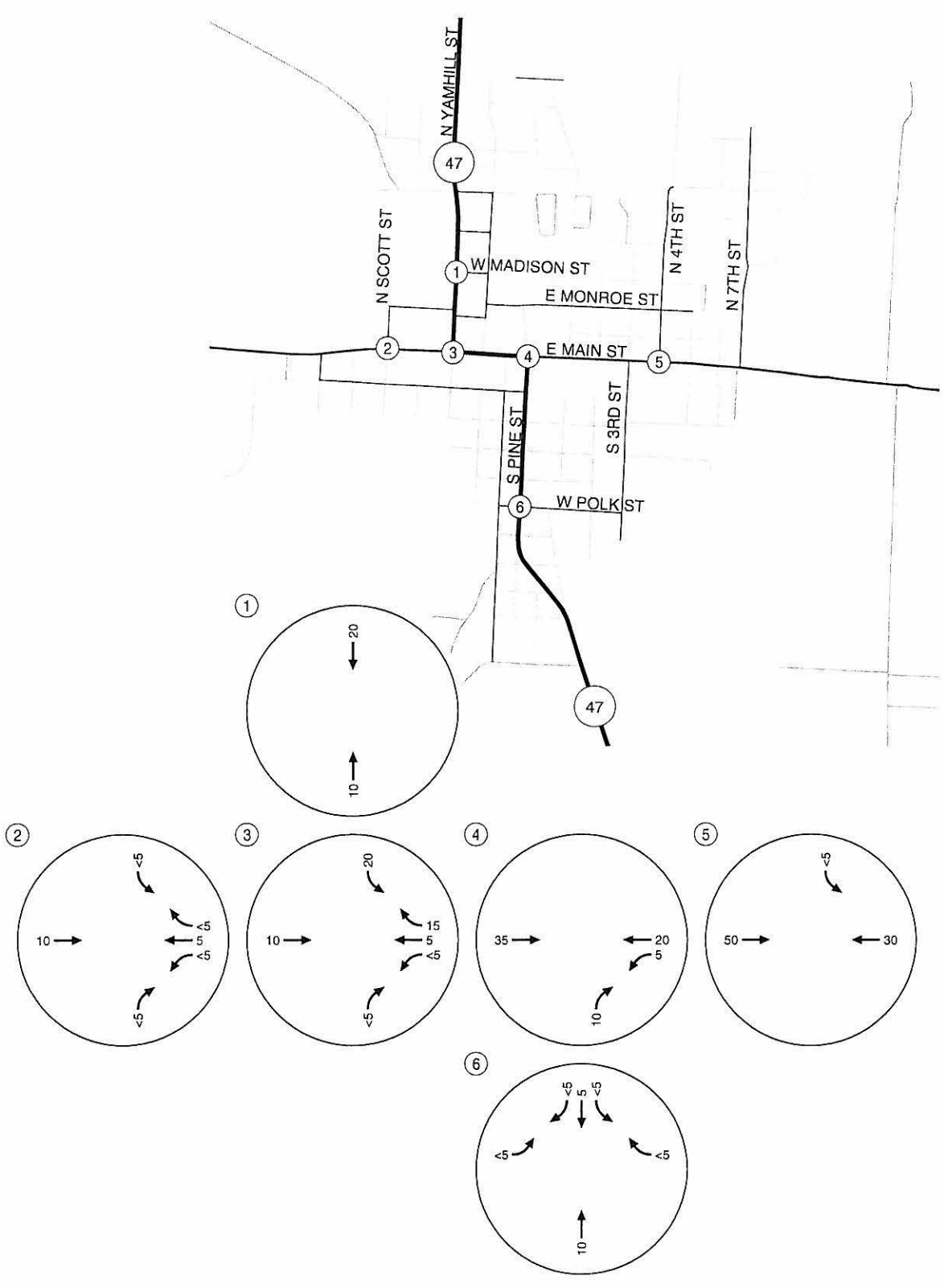


GENERATED TRAFFIC VOLUMES
TAZ 1
CARLTON, OREGON

FIGURE **C-2**

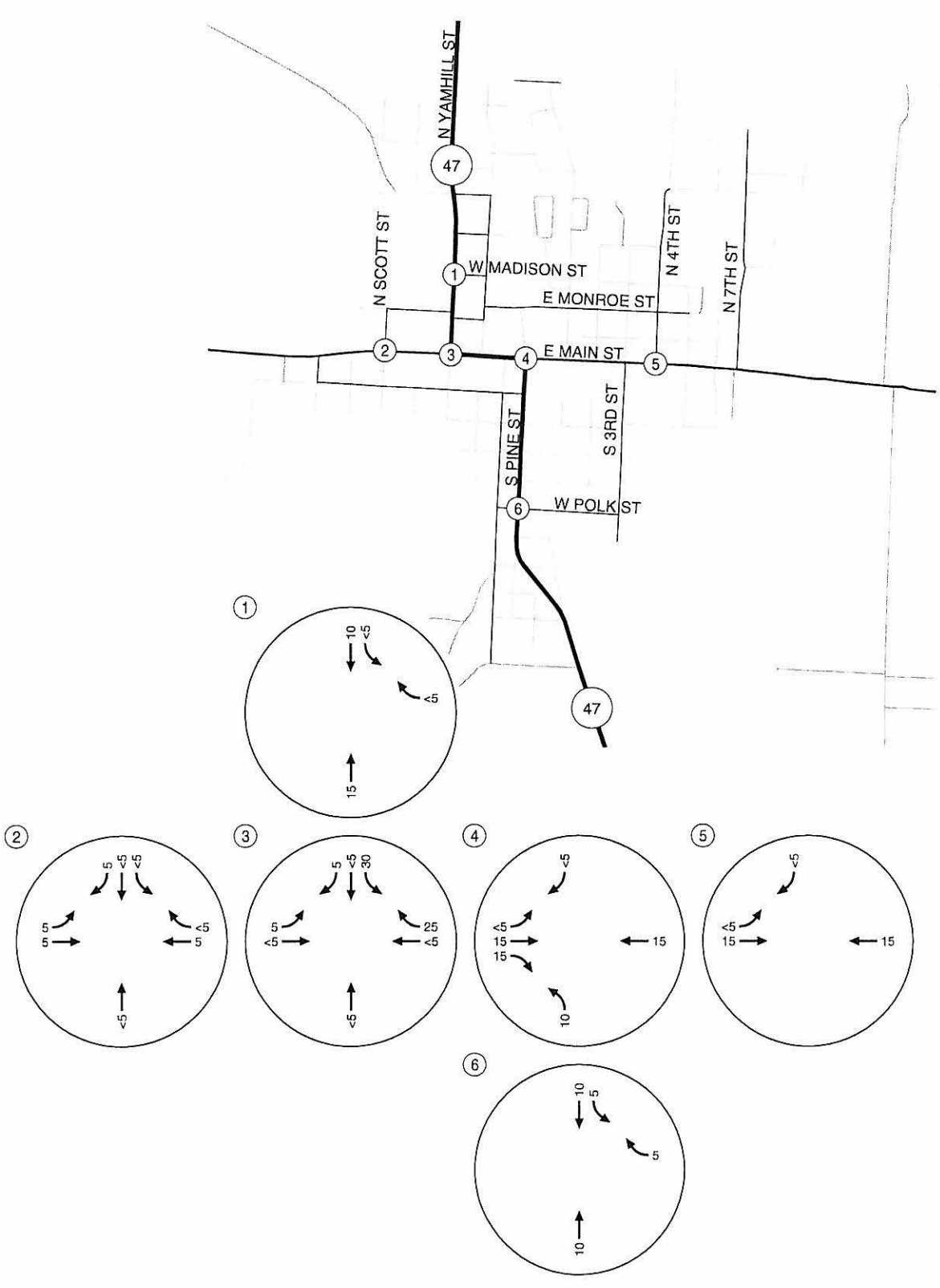
KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

H:\projfile\9086 - City of Carlton TSP Update\dwgs\figs\9086Fig1.dwg Jun 09, 2008 - 4:04pm - csemler Layout Tab: AssumptionsFigC2



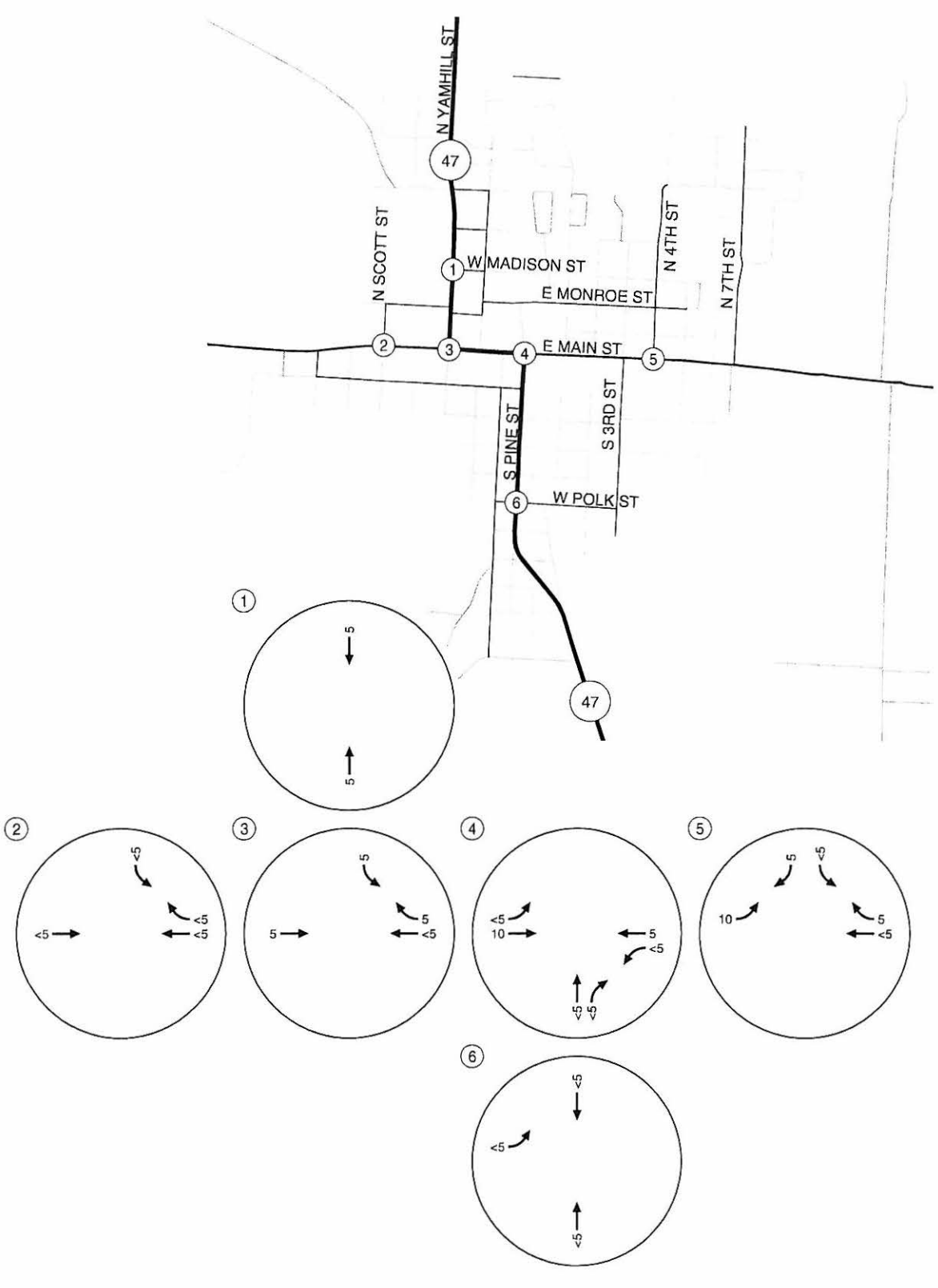
GENERATED TRAFFIC VOLUMES
TAZ 2
CARLTON, OREGON

FIGURE **C-3**



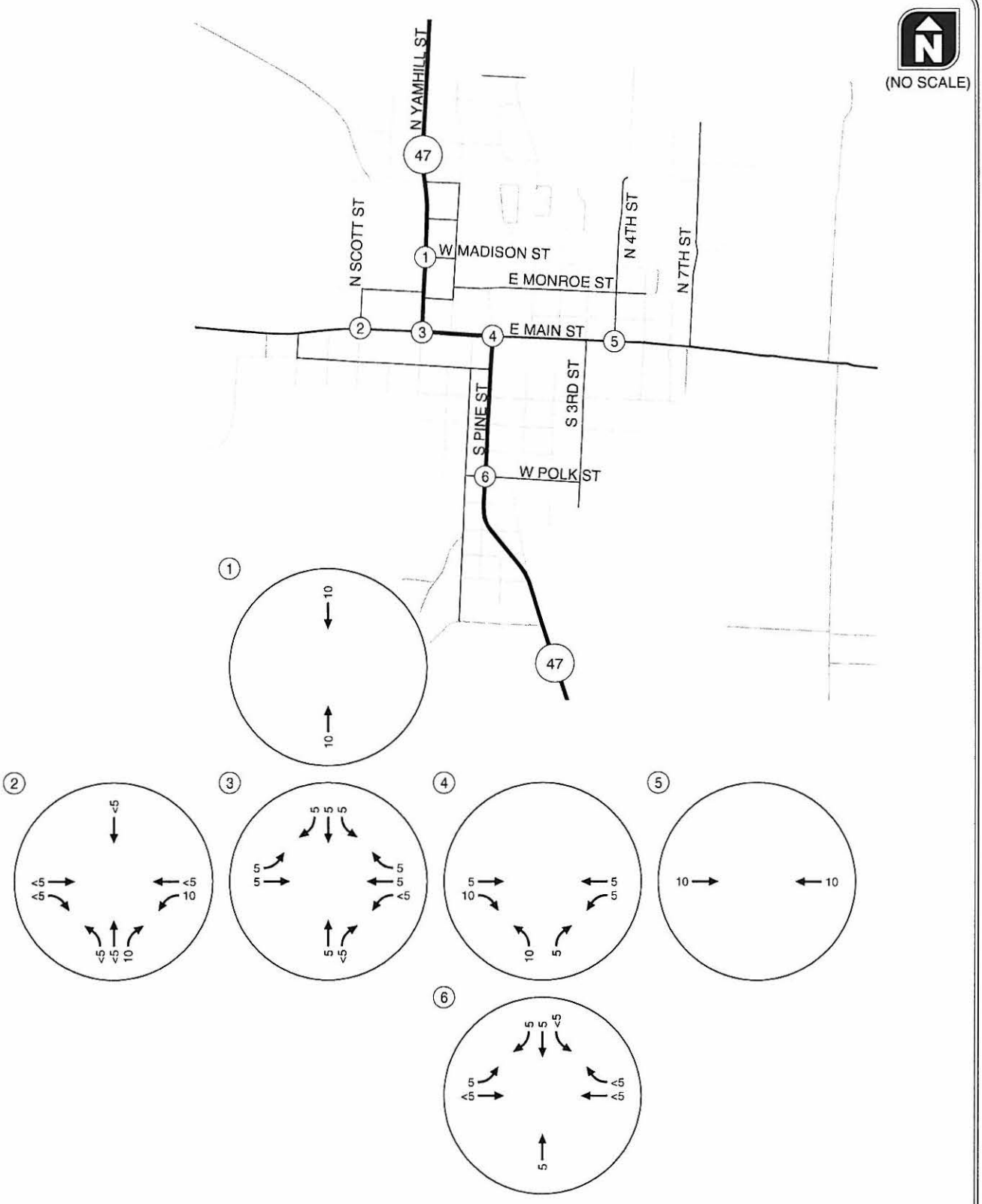
GENERATED TRAFFIC VOLUMES
TAZ 3
CARLTON, OREGON

FIGURE **C-4**



GENERATED TRAFFIC VOLUMES
TAZ 4
CARLTON, OREGON

FIGURE **C-5**

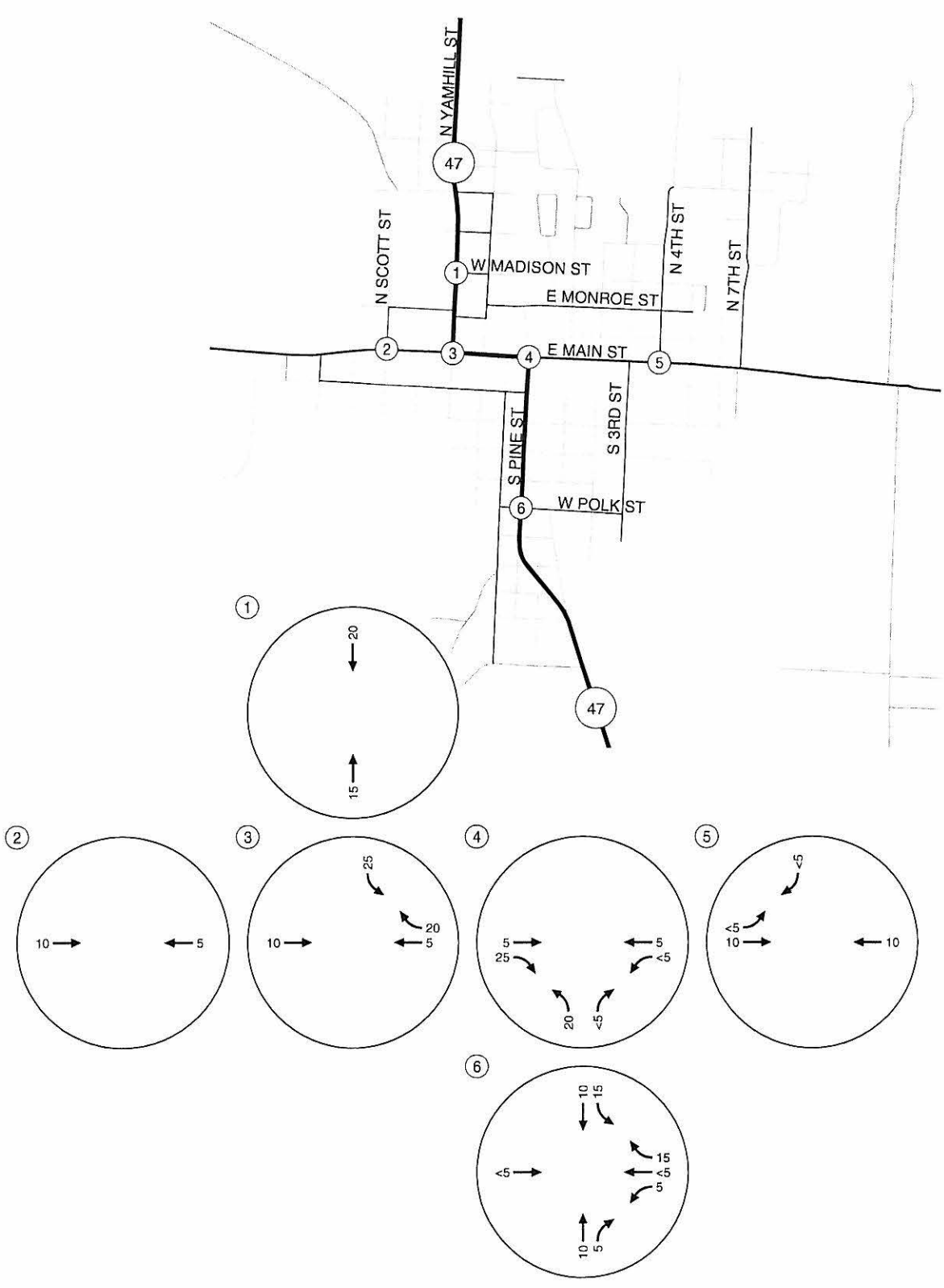


GENERATED TRAFFIC VOLUMES
TAZ 5
CARLTON, OREGON

FIGURE **C-6**

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

H:\projfile\9086 - City of Carlton TSP Update\dwgs\figs\9086Fig1.dwg Jun 09, 2008 - 4:04pm - csemler Layout Tab: AssumptionsFigC6



GENERATED TRAFFIC VOLUMES
TAZ 6
CARLTON, OREGON

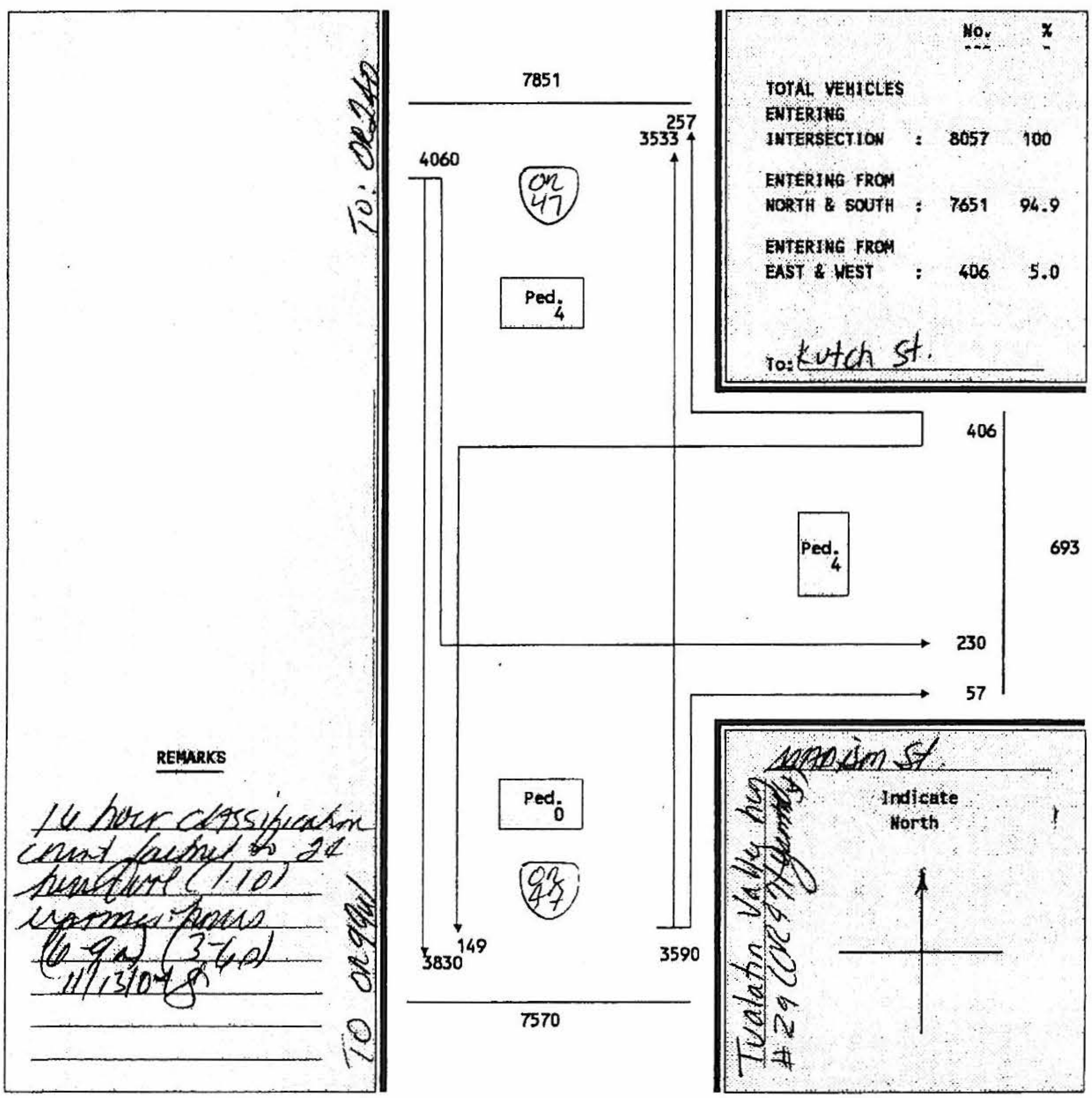
FIGURE **C-7**

TRANSPORTATION DEVELOPMENT BRANCH
TRANSPORTATION SYSTEM MONITORING UNIT
VEHICULAR VOLUME

DATE : Oct. 1/2, 2007
DAY WEEK : Mon./Tues.
ACT COUNT: 16
HRS COUNT: 6AM - 10PM
PED COUNT: 16
HRS COUNT: 6AM - 10PM
WEATHER : clear

CITY or COUNTY : Carlton
INTERSECTION OF: Tualatin Valley Hwy #29(OR47/Yamhill St.) @ Madison St.

MILE POST: 37.72
CLASSIFICATION : All vehicles



DGM_3606

N Yamhill / W Madison

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL	TOTAL	Hourly Total
06:00-06:15A		34	0	1		0	0	61					96	
06:15-06:30A		40	5	1		1	2	69					118	
06:30-06:45A		45	1	3		1	0	103					153	
06:45-07:00A		57	3	2		1	0	73					136	503
07:00-07:15A		61	0	3		2	0	61					127	534
07:15-07:30A		53	3	3		0	0	68					127	543
07:30-07:45A		71	2	4		1	0	83					161	551
07:45-08:00A		81	4	3		0	1	77					166	581
08:00-08:15A		98	4	2		0	1	50					155	609
08:15-08:30A		68	3	3		1	1	47					123	605
08:30-08:45A		41	6	2		0	0	42					91	535
08:45-09:00A		47	2	2		1	1	47					100	469
09:00-10:00A		191	8	16		5	2	158					380	380
10:00-11:00A		211	16	21		20	8	156					432	432
11:00-12:00P		204	11	15		16	13	169					428	428
12:00-01:00P		195	15	14		8	6	181					419	419
01:00-02:00P		213	10	11		9	5	202					450	450
02:00-03:00P		240	16	17		14	3	242					532	532
03:00-03:15P		66	10	6		6	1	53					142	
03:15-03:30P		89	5	5		4	1	78					182	
03:30-03:45P		88	7	2		3	0	62					162	
03:45-04:00P		105	1	4		4	0	57					171	657
04:00-04:15P		79	7	3		5	1	72					167	682
04:15-04:30P		88	2	7		0	1	77					175	675
04:30-04:45P		77	5	10		3	1	55					151	664
04:45-05:00P		100	7	11		3	1	88					210	703
05:00-05:15P		89	1	9		0	0	68					167	703
05:15-05:30P		80	3	8		4	0	69					164	692
05:30-05:45P		91	9	3		2	0	79					184	725
05:45-06:00P		70	3	7		2	0	67					149	664
06:00-07:00P		200	10	23		6	1	224					464	464
07:00-08:00P		136	18	7		10	1	119					291	291
08:00-09:00P		114	11	5		2	1	97					230	230
09:00-10:00P		60	1	1		1	0	58					121	121
Peak Hour Total		360	20	31		9	1	304						
Heavy Veh		2.5%	0.0%	3.2%		0.0%	0.0%	2.3%						
Peak Hour Factor	0.86													

TRANSPORTATION DEVELOPMENT BRANCH

TRANSPORTATION SYSTEM MONITORING UNIT

VEHICULAR VOLUME

DATE : Oct 2/3, 2007

DAY WEEK : Tues./Wed.

ACT COUNT: 16

HRS COUNT: 6AM - 10PM

PED COUNT: 16

HRS COUNT: 6AM - 10PM

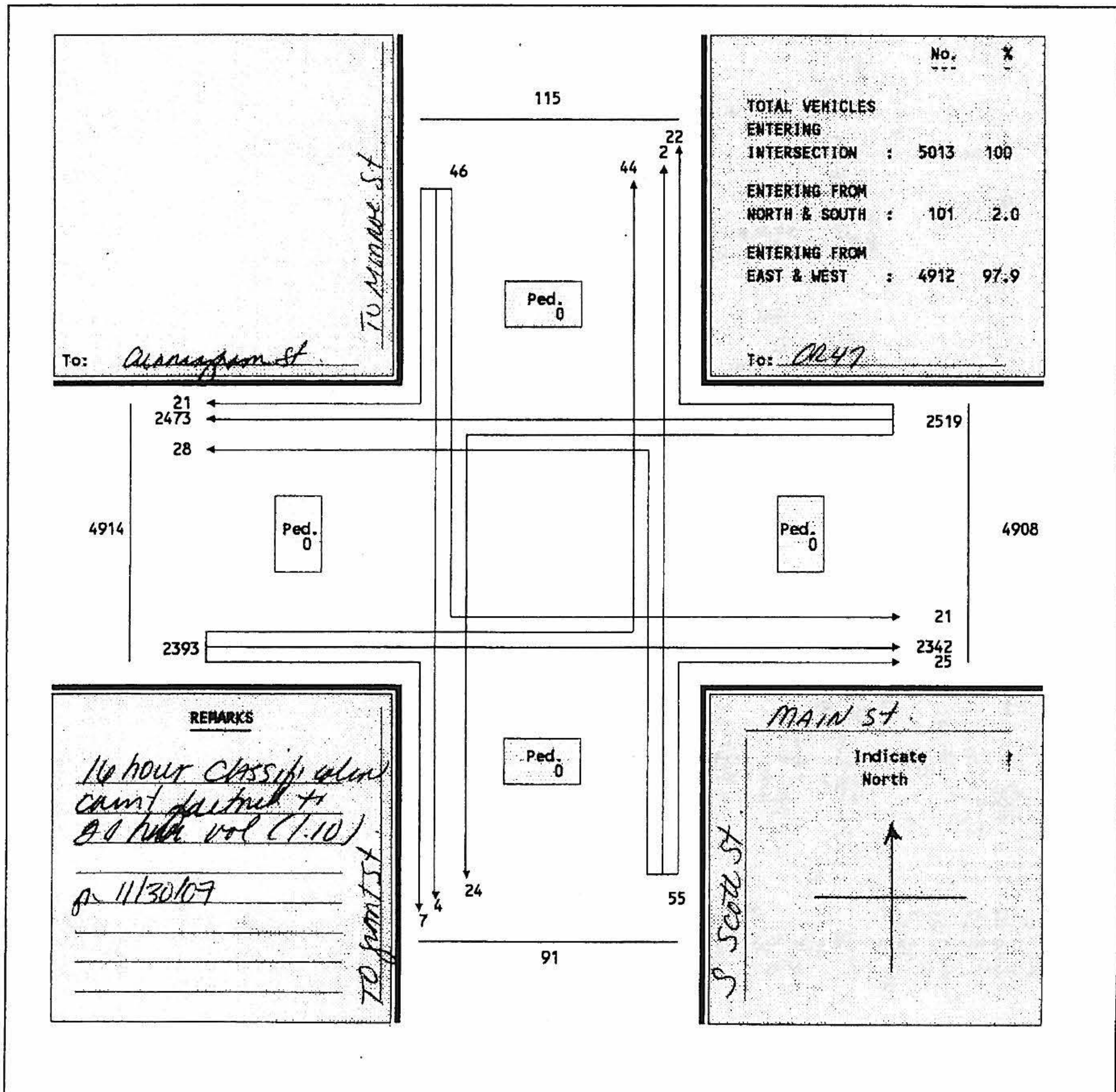
WEATHER : clear

CITY or COUNTY : Carlton

INTERSECTION OF: Main St. @ S Scott St.

MILE POST: n/a

CLASSIFICATION : All vehicles



DGM_3609

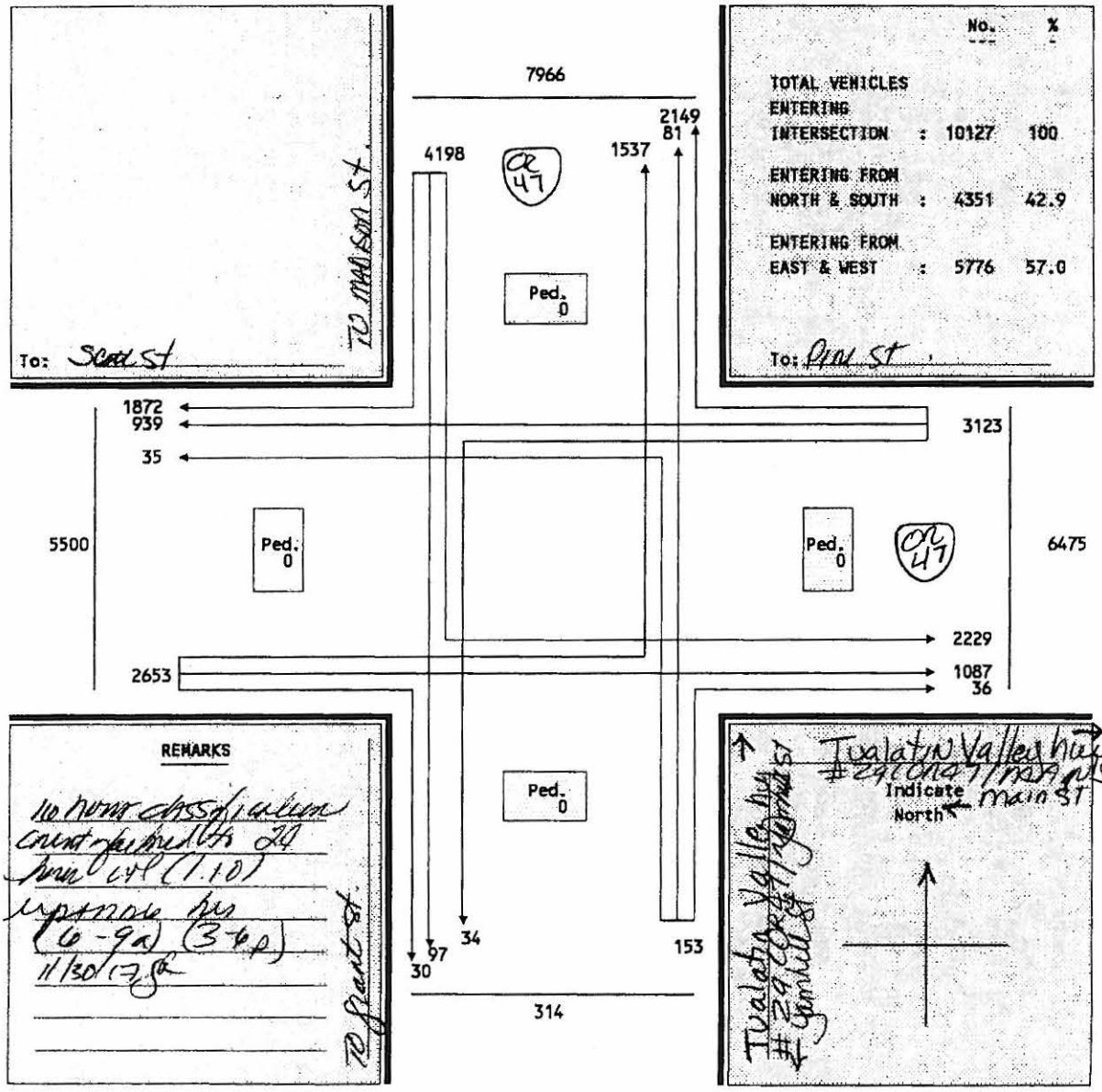
W Main / Scott

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL	TOTAL
06:00-07:00A	0	1	1	1	92	0	1	0	0	0	210	0	306
07:00-08:00A	0	0	0	1	155	0	0	0	1	0	229	6	392
08:00-09:00A	2	0	3	2	113	0	1	0	1	0	135	3	260
09:00-10:00A	0	1	2	1	135	2	2	0	4	0	119	1	267
10:00-11:00A	1	0	2	2	120	1	2	0	1	1	127	3	260
11:00-12:00P	3	2	1	1	131	0	4	1	3	1	137	2	286
12:00-01:00P	1	0	0	2	122	1	0	0	4	1	134	2	267
01:00-02:00P	1	0	1	3	138	4	2	0	2	0	111	4	266
02:00-03:00P	2	0	2	2	127	2	3	0	1	0	136	6	281
03:00-04:00P	2	0	3	0	208	2	1	0	1	1	160	5	383
04:00-05:00P	4	0	0	2	271	3	2	0	3	0	171	2	458
05:00-06:00P	2	0	1	3	277	2	2	1	2	1	145	4	440
06:00-07:00P	0	0	0	0	165	3	1	0	2	1	131	2	305
07:00-08:00P	1	0	2	0	79	0	1	0	0	0	80	0	163
08:00-09:00P	0	0	1	0	65	1	1	0	0	0	55	0	123
09:00-10:00P	0	0	0	0	50	1	0	0	0	0	49	0	100
Peak Hour Total	2	0	1	3	277	2	2	1	2	1	145	4	
Heavy Vehicle	0.0%		0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%	0.0%	

TRANSPORTATION DEVELOPMENT BRANCH
TRANSPORTATION SYSTEM MONITORING UNIT
VEHICULAR VOLUME

DATE : Oct. 1/2, 2007
DAY WEEK : Mon./Tues.
ACT COUNT: 16
HRS COUNT: 6AM - 10PM
PED COUNT: 16
HRS COUNT: 6AM - 10PM
WEATHER : clear

CITY or COUNTY : Carlton
INTERSECTION OF: Tualatin Valley Hwy #29(OR47/Yamhill St.) @ Tualatin Valley Hwy #29(OR47/Main St.)
MILE POST: 37.87
CLASSIFICATION : All vehicles



DGM_3608

Yamhill / W Main

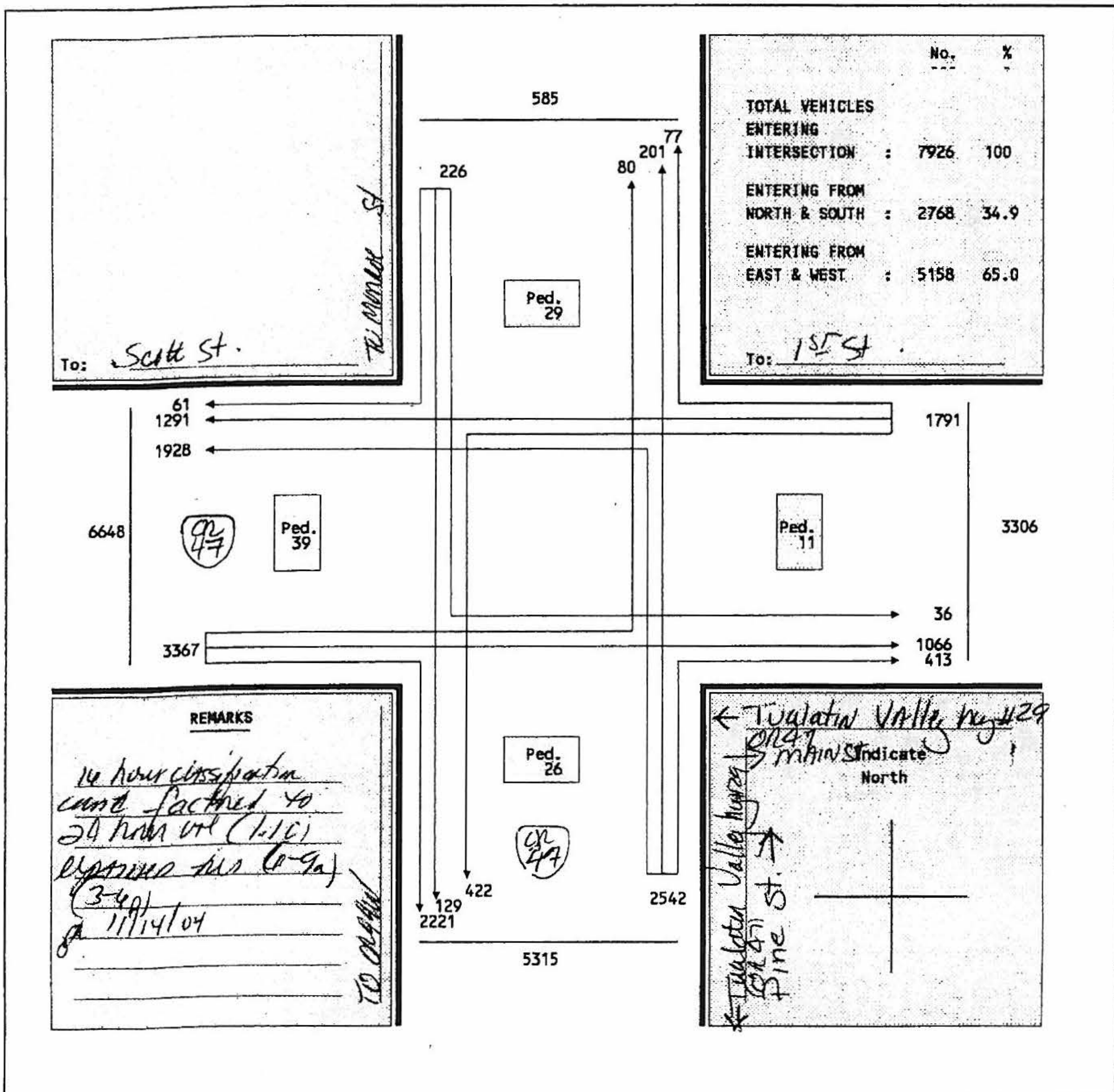
	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL	TOTAL	Hourly Total
06:00-06:15A	18	0	21	26	1	0	0	0	0	0	11	25	102	
06:15-06:30A	22	1	20	35	3	0	0	0	0	0	7	33	121	
06:30-06:45A	22	0	27	43	7	0	0	0	0	0	18	65	182	
06:45-07:00A	20	0	42	26	9	0	0	0	0	1	13	45	156	561
07:00-07:15A	33	1	34	28	14	0	1	0	1	0	19	30	161	620
07:15-07:30A	29	0	27	20	6	0	2	2	1	0	15	45	147	646
07:30-07:45A	33	1	41	25	6	0	1	1	0	0	24	42	174	638
07:45-08:00A	28	3	57	52	17	1	0	4	0	1	18	39	220	702
08:00-08:15A	74	0	61	27	10	0	0	0	1	0	25	26	224	765
08:15-08:30A	36	0	36	31	11	0	1	3	0	0	21	17	156	774
08:30-08:45A	24	0	21	22	10	1	0	0	0	2	15	22	117	717
08:45-09:00A	21	0	28	20	17	0	2	2	0	3	16	26	135	632
09:00-10:00A	95	5	104	82	49	1	6	6	3	0	67	90	508	508
10:00-11:00A	90	8	137	101	44	2	0	4	2	2	72	64	526	526
11:00-12:00P	89	9	131	117	58	2	4	8	2	2	62	67	551	551
12:00-01:00P	86	6	124	128	39	2	4	3	3	3	70	74	542	542
01:00-02:00P	99	9	130	140	53	2	0	9	0	0	57	67	566	566
02:00-03:00P	121	3	132	154	55	3	2	2	0	3	79	105	659	659
03:00-03:15P	24	1	58	36	27	0	0	2	0	1	23	18	190	
03:15-03:30P	43	6	41	51	23	1	0	1	0	0	21	26	213	
03:30-03:45P	53	1	44	37	18	0	1	3	1	0	21	22	201	
03:45-04:00P	52	2	52	43	29	0	0	0	0	1	17	21	217	821
04:00-04:15P	43	1	47	36	30	2	0	0	0	0	14	29	202	833
04:15-04:30P	38	1	55	52	18	0	0	0	0	0	28	30	222	842
04:30-04:45P	42	4	28	42	20	0	0	4	0	1	23	22	186	827
04:45-05:00P	42	2	63	52	51	0	0	3	0	0	24	30	267	877
05:00-05:15P	35	1	45	45	32	0	0	1	1	0	21	27	208	883
05:15-05:30P	33	2	49	43	27	0	1	0	3	1	24	29	212	873
05:30-05:45P	46	3	46	51	26	0	2	4	1	1	26	27	233	920
05:45-06:00P	39	0	36	49	26	1	0	1	0	0	9	16	177	830
06:00-07:00P	111	7	99	152	63	4	1	3	6	1	45	87	579	579
07:00-08:00P	61	6	83	82	24	4	2	6	0	2	48	62	380	380
08:00-09:00P	66	4	71	64	11	2	2	2	6	1	16	38	283	283
09:00-10:00P	34	1	36	42	20	3	1	0	1	1	19	31	189	189
Peak Hour Total	156	8	203	191	136		3	8	5	2	95	113		
Heavy Veh	0.0%	0.0%	3.9%	1.6%	0.0%		0.0%	0.0%	0.0%	0.0%	2.1%	2.7%		
Peak Hour Factor	0.86													

TRANSPORTATION DEVELOPMENT BRANCH
TRANSPORTATION SYSTEM MONITORING UNIT
VEHICULAR VOLUME

DATE : Oct. 3/4, 2007
DAY WEEK : Wed./Thurs.
ACT COUNT: 16
HRS COUNT: 6AM - 10PM
PED COUNT: 16
HRS COUNT: 6AM - 10PM
WEATHER : clear

CITY or COUNTY : Carlton
INTERSECTION OF: Tualatin Valley Hwy #29(OR47/Main St.) @
Tualatin Valley Hwy #27(OR47/Pine St.)

MILE POST: 37.99
CLASSIFICATION : All vehicles



DGM_3607

Pine / Main

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL	TOTAL	Hourly Total
06:00-06:15A	0	1	0	0	3	2	6	2	16	19	11	1	61	
06:15-06:30A	1	1	0	0	9	4	7	0	26	24	11	0	83	
06:30-06:45A	2	2	0	0	9	2	4	2	26	26	15	0	88	
06:45-07:00A	1	0	0	0	11	8	4	0	23	25	16	1	89	321
07:00-07:15A	1	0	2	3	18	5	4	1	30	33	13	5	115	375
07:15-07:30A	1	1	1	0	10	7	7	0	20	25	23	2	97	389
07:30-07:45A	0	5	1	2	27	6	4	1	23	42	30	2	143	444
07:45-08:00A	0	2	1	2	27	8	9	2	18	38	20	1	128	483
08:00-08:15A	2	1	0	1	27	4	1	4	23	56	21	0	140	508
08:15-08:30A	0	3	1	0	27	4	5	2	23	24	17	1	107	518
08:30-08:45A	0	1	0	2	19	6	6	2	22	40	16	1	115	490
08:45-09:00A	1	1	0	1	14	7	2	3	27	27	15	2	100	462
09:00-10:00A	2	9	5	1	50	22	21	8	86	118	55	2	379	379
10:00-11:00A	9	5	2	4	54	21	18	9	88	151	73	9	443	443
11:00-12:00P	6	5	3	8	56	28	20	9	121	150	54	2	462	462
12:00-01:00P	8	12	5	7	74	18	31	18	120	143	63	7	506	506
01:00-02:00P	6	12	1	6	79	23	31	12	123	133	58	4	488	488
02:00-03:00P	3	10	2	8	66	23	24	13	146	129	67	5	496	496
03:00-03:15P	0	7	0	1	19	10	10	7	45	39	32	0	170	
03:15-03:30P	0	1	0	5	38	12	10	7	44	27	20	2	166	
03:30-03:45P	1	4	1	0	26	12	13	4	40	68	28	0	197	
03:45-04:00P	0	4	1	2	32	12	6	7	41	57	17	2	181	714
04:00-04:15P	0	2	0	0	34	11	9	6	35	41	21	1	160	704
04:15-04:30P	2	4	0	0	34	9	10	6	39	54	19	2	179	717
04:30-04:45P	0	0	0	1	33	12	9	4	37	49	21	1	167	687
04:45-05:00P	2	3	1	1	42	12	6	4	38	45	24	3	181	687
05:00-05:15P	0	1	3	1	40	16	8	3	45	42	11	1	171	698
05:15-05:30P	0	3	0	2	34	7	9	3	48	43	25	1	175	694
05:30-05:45P	0	0	0	1	36	12	8	3	38	47	26	0	171	698
05:45-06:00P	0	0	1	2	26	2	11	5	38	33	11	1	130	647
06:00-07:00P	2	4	1	6	107	31	24	18	118	126	48	5	490	490
07:00-08:00P	2	5	0	2	46	12	18	9	92	71	44	5	306	306
08:00-09:00P	1	5	1	0	28	11	12	7	59	33	26	1	184	184
09:00-10:00P	2	3	0	1	19	5	8	2	35	41	18	3	137	137
Peak Hour Total	2	7	4	5	152	47	31	13	169	177	86	5		
Heavy Veh	0.0%	0.0%	0.0%	0.0%	2.6%	4.3%	3.2%	0.0%	1.2%	10.2%	3.5%	0.0%		
Peak Hour Factor	0.96													

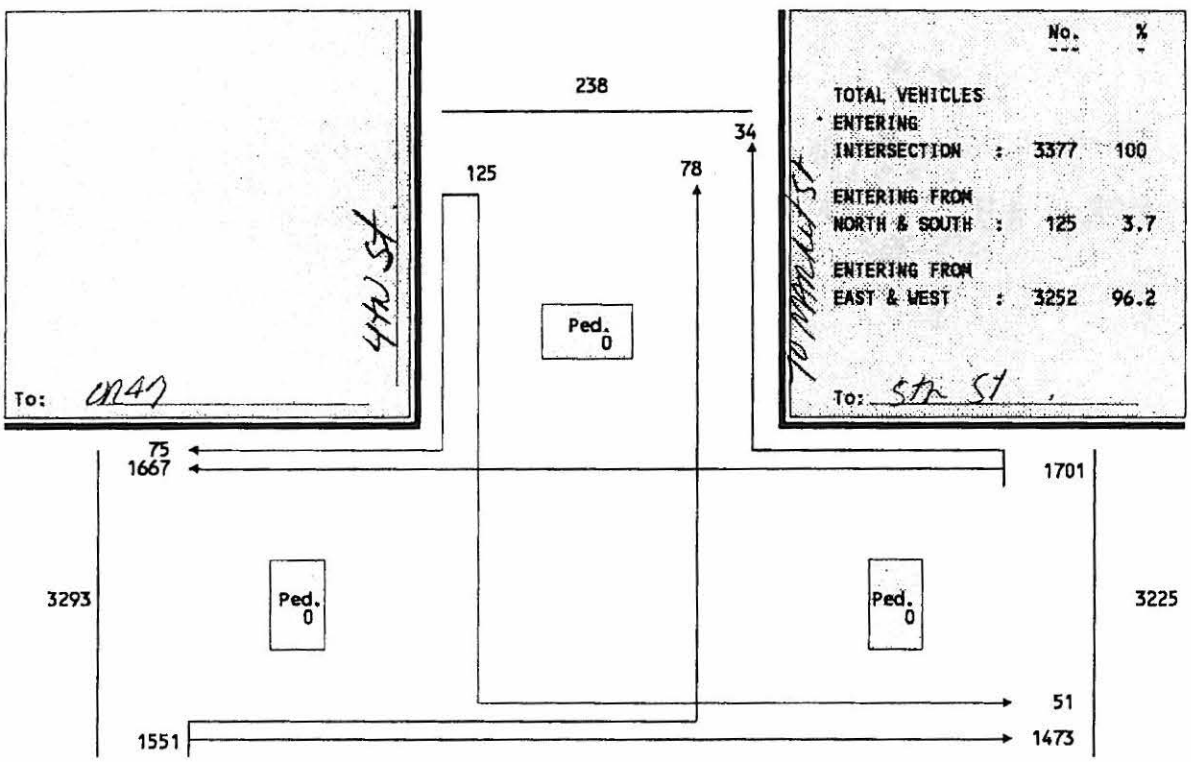
Appendix D
Traffic Counts

TRANSPORTATION DEVELOPMENT BRANCH
TRANSPORTATION SYSTEM MONITORING UNIT
VEHICULAR VOLUME

DATE : Oct. 3/4, 2007
DAY WEEK : Wed./Thurs.
ACT COUNT: 16
HRS COUNT: 6AM - 10PM
PED COUNT: 16
HRS COUNT: 6AM - 10PM
WEATHER : clear

CITY or COUNTY : Carlton
INTERSECTION OF: Main St. @ 4th St.

MILE POST: n/a
CLASSIFICATION : All vehicles



REMARKS MAIN St

16 hour classification count factored to 24 hour vol (1.10) expanded hrs to 9 ... 3-lip
[illegible] 11/30/07

Indicate North

DGM_3610

√ P.

Main / 4th

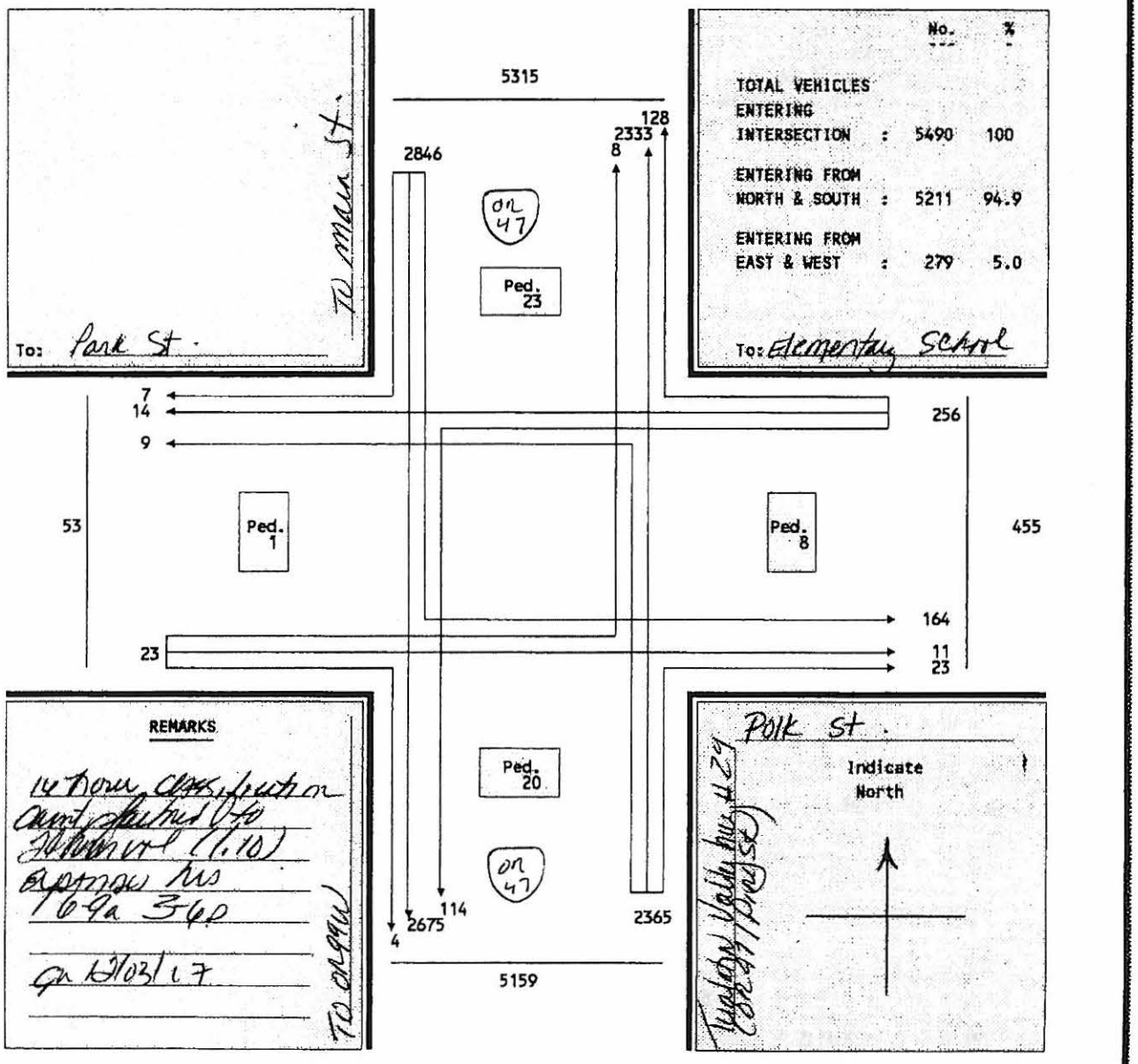
	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL	TOTAL	Hourly Total
06:00-06:15A	1		0	1	10						28	0	40	
06:15-06:30A	1		4	0	9						24	0	38	
06:30-06:45A	2		0	1	10						26	0	39	
06:45-07:00A	1		0	0	11						31	0	43	160
07:00-07:15A	2		3	0	12						23	1	41	161
07:15-07:30A	0		2	0	24						26	1	53	176
07:30-07:45A	3		2	1	30						33	0	69	206
07:45-08:00A	0		0	0	20						24	0	44	207
08:00-08:15A	5		0	0	23						28	1	57	223
08:15-08:30A	0		2	0	25						24	0	51	221
08:30-08:45A	0		0	0	21						17	0	38	190
08:45-09:00A	0		1	1	13						19	0	34	180
09:00-10:00A	5		2	0	73						64	2	146	146
10:00-11:00A	3		3	2	71						64	2	145	145
11:00-12:00P	5		2	1	75						83	8	174	174
12:00-01:00P	4		2	3	95						85	2	191	191
01:00-02:00P	4		3	0	82						92	7	188	188
02:00-03:00P	8		3	3	109						99	5	227	227
03:00-03:15P	2		1	1	26						33	2	65	
03:15-03:30P	0		0	3	39						31	5	78	
03:30-03:45P	2		0	0	28						36	1	67	
03:45-04:00P	2		0	1	55						38	2	98	308
04:00-04:15P	2		2	1	43						23	7	78	321
04:15-04:30P	3		0	0	47						28	0	78	321
04:30-04:45P	1		1	0	67						26	2	97	351
04:45-05:00P	1		0	0	65						23	0	89	342
05:00-05:15P	0		2	0	40						29	1	72	336
05:15-05:30P	2		0	1	53						29	1	86	344
05:30-05:45P	1		2	3	45						28	2	81	328
05:45-06:00P	1		0	0	43						26	4	74	313
06:00-07:00P	4		4	6	120						65	8	207	207
07:00-08:00P	0		1	1	49						57	3	111	111
08:00-09:00P	2		2	1	45						48	2	100	100
09:00-10:00P	1		2	0	37						29	2	71	71
Peak Hour Total	4		4	4	203						109	4		
Heavy Veh	0.0%		0.0%	0.0%	1.0%						0.9%	0.0%		
Peak Hour Factor	0.92													

TRANSPORTATION DEVELOPMENT BRANCH
TRANSPORTATION SYSTEM MONITORING UNIT
VEHICULAR VOLUME

DATE : Oct. 1/2, 2007
DAY WEEK : Mon./Tues.
ACT COUNT: 16
HRS COUNT: 6AM - 10PM
PED COUNT: 16
HRS COUNT: 6AM - 10PM
WEATHER : clear

CITY or COUNTY : Carlton
INTERSECTION OF: Tualatin VAlley Hwy #29(OR47/Pine St.) @ Polk St.

MILE POST: 38.24
CLASSIFICATION : All vehicles



	No.	%
TOTAL VEHICLES ENTERING INTERSECTION :	5490	100
ENTERING FROM NORTH & SOUTH :	5211	94.9
ENTERING FROM EAST & WEST :	279	5.0

To: Elementary School

REMARKS

14 hour classification count started 07:00 and ended (1:10) approx hrs 69a 36p

On 10/03/17

To airport

DGM_3611

Pine / Polk

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL	TOTAL	Hourly Total
06:00-06:15A	0	23	0	0	0	2	0	22	0	0	0	1	48	
06:15-06:30A	0	24	0	3	0	2	0	28	0	0	0	1	58	
06:30-06:45A	0	31	0	1	0	0	0	39	0	0	0	0	71	
06:45-07:00A	0	48	2	0	0	2	0	27	0	0	0	0	79	256
07:00-07:15A	0	37	2	0	0	1	0	28	0	0	0	0	68	276
07:15-07:30A	0	31	3	0	1	3	1	24	0	0	1	0	64	282
07:30-07:45A	0	44	5	2	0	5	1	29	0	0	1	0	87	298
07:45-08:00A	0	42	6	5	0	4	1	29	0	1	0	0	88	307
08:00-08:15A	0	48	13	5	2	4	2	25	0	0	0	0	99	338
08:15-08:30A	0	38	4	5	0	4	1	20	0	0	0	0	72	346
08:30-08:45A	0	29	0	1	0	0	1	27	0	0	0	0	58	317
08:45-09:00A	0	43	0	1	0	2	0	26	0	0	0	0	72	301
09:00-10:00A	0	189	4	6	1	4	0	107	0	0	0	0	311	311
10:00-11:00A	2	186	10	7	0	3	1	136	0	0	2	1	348	348
11:00-12:00P	1	163	6	6	1	4	1	148	1	0	0	0	331	331
12:00-01:00P	0	166	11	6	2	7	1	154	1	0	3	0	351	351
01:00-02:00P	0	165	9	6	1	11	0	155	1	0	0	0	348	348
02:00-03:00P	0	172	13	4	0	0	2	172	0	0	0	0	363	363
03:00-03:15P	0	44	11	12	1	6	0	48	0	1	0	0	123	
03:15-03:30P	0	49	7	9	1	3	0	40	0	0	1	0	110	
03:30-03:45P	0	72	1	3	0	1	0	48	1	0	0	0	126	
03:45-04:00P	0	65	1	2	0	1	0	46	0	0	1	0	116	475
04:00-04:15P	1	64	4	0	0	2	0	50	0	0	0	0	121	473
04:15-04:30P	0	59	3	2	0	1	0	55	0	0	0	0	120	483
04:30-04:45P	0	48	1	1	0	4	0	55	1	1	0	0	111	468
04:45-05:00P	0	58	5	3	0	1	1	56	1	0	0	1	126	478
05:00-05:15P	0	56	4	5	0	4	1	55	0	0	0	1	126	483
05:15-05:30P	1	60	7	1	1	0	0	52	0	0	0	0	122	485
05:30-05:45P	0	46	6	3	1	2	1	56	0	0	1	0	116	490
05:45-06:00P	0	43	2	5	1	7	1	49	1	0	0	1	110	474
06:00-07:00P	0	114	4	6	0	8	3	115	1	0	0	1	252	252
07:00-08:00P	1	82	5	6	0	5	1	103	0	1	0	0	204	204
08:00-09:00P	0	59	0	0	0	1	0	52	0	0	0	0	112	112
09:00-10:00P	0	34	0	0	0	0	1	45	0	0	0	0	80	80
Peak Hour Total	1	220	22	12	2	7	3	219	1		1	2		
Heavy Veh	0.0%	4.5%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	0.0%		0.0%	0.0%		
Peak Hour Factor	0.97													

Appendix E
2007 Existing Conditions
Traffic Analysis
Worksheets

Kittelson & Associates, Inc -- Project #9086
Carlton Transportation System Plan Update -- Carlton, Oregon
2008 Existing Traffic Conditions -- PM Peak Hour

Scenario Report

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

Kittelson & Associates, Inc -- Project #9086
Carlton Transportation System Plan Update -- Carlton, Oregon
2008 Existing Traffic Conditions -- PM Peak Hour

Turning Movement Report

Volume	Northbound			Southbound			Eastbound			Westbound			Total
Type	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Volume
#1 N Yamhill St/W Madison St													
Base	0	312	0	21	369	0	0	0	0	9	0	32	743
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	312	0	21	369	0	0	0	0	9	0	32	743
#2 S Scott St/W Main St													
Base	2	1	2	1	0	2	4	179	1	2	299	3	496
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2	1	2	1	0	2	4	179	1	2	299	3	496
#3 Yamhill St/W Main St													
Base	5	8	3	208	8	160	116	97	2	0	139	196	942
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	5	8	3	208	8	160	116	97	2	0	139	196	942
#4 S Pine St/W Main St													
Base	173	13	32	4	7	2	5	88	181	48	156	5	714
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	173	13	32	4	7	2	5	88	181	48	156	5	714
#5 N 4th St/E Main St													
Base	0	0	0	4	0	4	4	112	0	0	208	4	336
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	4	0	4	4	112	0	0	208	4	336
#6 S Pine St/W Polk St													
Base	1	225	3	23	226	1	2	1	0	7	2	12	503
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	225	3	23	226	1	2	1	0	7	2	12	503

Kittelson & Associates, Inc -- Project #9086
Carlton Transportation System Plan Update -- Carlton, Oregon
2008 Existing Traffic Conditions -- 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 N Yamhill St/W Madison St	B	12.1	0.000	B	12.1	0.000	+ 0.000 D/V
# 2 S Scott St/W Main St	B	11.8	0.000	B	11.8	0.000	+ 0.000 D/V
# 3 Yamhill St/W Main St	F	277.4	0.000	F	277.4	0.000	+ 0.000 D/V
# 4 S Pine St/W Main St	C	17.6	0.000	C	17.6	0.000	+ 0.000 D/V
# 5 N 4th St/E Main St	B	10.1	0.000	B	10.1	0.000	+ 0.000 D/V
# 6 S Pine St/W Polk St	B	13.1	0.000	B	13.1	0.000	+ 0.000 D/V

Kittelson & Associates, Inc -- Project #9086
Carlton Transportation System Plan Update -- Carlton, Oregon
2008 Existing Traffic Conditions -- PM Peak Hour

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

Intersection #1 N Yamhill St/W Madison St

Average Delay (sec/veh): 0.9 Worst Case Level Of Service: B[12.1]

Street Name:	N Yamhill St						W Madison St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1	0	0	0 1	0	0	0 0	0	0	0 0	1!	0 0
Volume Module: >> Count Date: 1 Oct 2007 << 4:45 to 5:45 p.m.												
Base Vol:	0	312	0	21	369	0	0	0	0	9	0	32
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	312	0	21	369	0	0	0	0	9	0	32
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
PHF Volume:	0	361	0	24	428	0	0	0	0	10	0	37
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	361	0	24	428	0	0	0	0	10	0	37
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	362	xxxx	xxxxx	xxxx	xxxx	xxxxx	839	839	362
Potent Cap.:	xxxx	xxxx	xxxxx	1207	xxxx	xxxxx	xxxx	xxxx	xxxxx	339	304	687
Move Cap.:	xxxx	xxxx	xxxxx	1206	xxxx	xxxxx	xxxx	xxxx	xxxxx	333	298	686
Volume/Cap:	xxxx	xxxx	xxxx	0.02	xxxx	xxxx	xxxx	xxxx	xxxx	0.03	0.00	0.05
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	8.0	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	557	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.3	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	12.1	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			12.1		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc -- Project #9086
Carlton Transportation System Plan Update -- Carlton, Oregon
2008 Existing Traffic Conditions -- PM Peak Hour

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

Intersection #1 N Yamhill St/W Madison St

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
HevVeh:	0%	0%	0%	0%
Grade:	0%	0%	0%	0%
Peds/Hour:	0	0	0	1
Pedestrian Walk Speed: 4.00 feet/sec				
LaneWidth:	12 feet	12 feet	12 feet	12 feet
Time Period: 0.25 hour				

Kittelson & Associates, Inc -- Project #9086
Carlton Transportation System Plan Update -- Carlton, Oregon
2008 Existing Traffic Conditions -- PM Peak Hour

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

Intersection #2 S Scott St/W Main St

Average Delay (sec/veh): 0.3 Worst Case Level Of Service: B[11.8]

Street Name:	S Scott St						W Main St					
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 0 1! 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 2 Oct 2007 << 4:45 to 5:45 p.m.												
Base Vol:	2	1	2	1	0	2	4	179	1	2	299	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	2	1	2	1	0	2	4	179	1	2	299	3
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
PHF Volume:	2	1	2	1	0	2	5	208	1	2	348	3
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	2	1	2	1	0	2	5	208	1	2	348	3
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:	573	574	209	574	573	349	351	xxxx	xxxxx	209	xxxx	xxxxx
Potent Cap.:	433	432	837	433	433	698	1219	xxxx	xxxxx	1374	xxxx	xxxxx
Move Cap.:	430	430	837	429	430	698	1219	xxxx	xxxxx	1374	xxxx	xxxxx
Volume/Cap:	0.01	0.00	0.00	0.00	0.00	0.00	0.00	xxxx	xxxx	0.00	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx	7.6	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	534	xxxxx	xxxx	577	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.0	xxxxx	xxxxx	0.0	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	11.8	xxxxx	xxxxx	11.3	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	B	*	*	B	*	*	*	*	*	*	*
ApproachDel:		11.8			11.3			xxxxxx			xxxxxx	
ApproachLOS:		B			B			*			*	

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc -- Project #9086
Carlton Transportation System Plan Update -- Carlton, Oregon
2008 Existing Traffic Conditions -- PM Peak Hour

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

Intersection #2 S Scott St/W Main St

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
HevVeh:	0%	0%	0%	0%
Grade:	0%	0%	0%	0%
Peds/Hour:	0	0	0	0
Pedestrian Walk Speed: 4.00 feet/sec				
LaneWidth:	12 feet	12 feet	12 feet	12 feet
Time Period: 0.25 hour				

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2008 Existing Traffic Conditions -- PM Peak Hour

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

Intersection #5 N 4th St/E Main St

Average Delay (sec/veh): 0.3 Worst Case Level Of Service: B[10.1]

Street Name:	N 4th St						E Main St					
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: >> Count Date: 3 Oct 2007 << 4:45 to 5:45 p.m.												
Base Vol:	0	0	0	4	0	4	4	112	0	0	208	4
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	4	0	4	4	112	0	0	208	4
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	0	0	0	4	0	4	4	122	0	0	226	4
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	4	0	4	4	122	0	0	226	4
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	358	358	228	230	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	644	571	816	1350	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	643	570	816	1350	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.01	0.00	0.01	0.00	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.7	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	719	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	0.0	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	10.1	xxxxx	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	B	*	A	*	*	*	*	*
ApproachDel:	xxxxxx			10.1			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

Note: Queue reported is the number of cars per lane.

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2008 Existing Traffic Conditions -- PM Peak Hour

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

Intersection #5 N 4th St/E Main St

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
HevVeh:	0%	0%	0%	0%
Grade:	0%	0%	0%	0%
Peds/Hour:	0	0	0	0
Pedestrian Walk Speed: 4.00 feet/sec				
LaneWidth:	12 feet	12 feet	12 feet	12 feet
Time Period: 0.25 hour				

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

Intersection #6 S Pine St/W Polk St

Average Delay (sec/veh): 0.9 Worst Case Level Of Service: B[13.1]

Street Name:	S Pine St						W Polk St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 1 0 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 1 Oct 2007 << 4:45 to 5:45 p.m.												
Base Vol:	1	225	3	23	226	1	2	1	0	7	2	12
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	225	3	23	226	1	2	1	0	7	2	12
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
PHF Volume:	1	231	3	24	232	1	2	1	0	7	2	12
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	1	231	3	24	232	1	2	1	0	7	2	12
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	xxxxx	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	233	xxxx	xxxxx	236	xxxx	xxxxx	529	518	xxxxx	517	517	240
Potent Cap.:	1346	xxxx	xxxxx	1344	xxxx	xxxxx	464	465	xxxxx	472	465	804
Move Cap.:	1346	xxxx	xxxxx	1342	xxxx	xxxxx	446	456	xxxxx	464	456	799
Volume/Cap:	0.00	xxxx	xxxx	0.02	xxxx	xxxx	0.00	0.00	xxxx	0.02	0.00	0.02
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.7	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	449	xxxx	xxxxx	xxxx	609	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	0.1	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	13.1	xxxx	xxxxx	xxxxx	11.1	xxxxx
Shared LOS:	*	*	*	*	*	*	B	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			13.1			11.1		
ApproachLOS:	*			*			B			B		

Note: Queue reported is the number of cars per lane.

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2008 Existing Traffic Conditions -- PM Peak Hour

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

Intersection #6 S Pine St/W Polk St

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
HevVeh:	0%	0%	0%	0%
Grade:	0%	0%	0%	0%
Peds/Hour:	0	6	0	1
LaneWidth:	12 feet	12 feet	12 feet	12 feet

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

SIDRA INTERSECTION

Output Tables

N Yamhill/W Main

Enter subtitle

Run Information

* Basic Parameters:
  Intersection Type: Unsignalised - Two-Way Stop Control
  Driving on the right-hand side of the road
  Input data specified in Metric units
  Model Defaults: Standard Right
  Peak Flow Period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes.
  Delay definition: Control delay
  Geometric delay included
  SIDRA Standard Delay model used
  SIDRA Standard Queue model used
  Level of Service based on: Delay (HCM method)
  Queue definition: Back of queue, 95th Percentile

Table B.1 - Movement Definitions and Flow Rates (Origin-Destination)

N Yamhill/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor
South: S Yamhill							
	East	3	Right	3	0	1.00	0.86
	North	2	Thru	9	0	1.00	0.86
	West	1	Left	6	0	1.00	0.86
East: W Main							
	South	4	Left	1	0	1.00	0.86
	North	6	Right	224	4	1.00	0.86
	West	5	Thru	162	0	1.00	0.86
North: N Yamhill							
	South	8	Thru	9	0	1.00	0.86
	East	7	Left	232	9	1.00	0.86
	West	9	Right	186	0	1.00	0.86
West: W Main							
	South	12	Right	2	0	1.00	0.86
	East	11	Thru	110	2	1.00	0.86

```
          North        10   Left    131     4    1.00     0.86
-------------------------------------------------------------
Unit Time for Volumes =  60 minutes
Peak Flow Period =  30 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor
```

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)

```
N Yamhill/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

-----------------------------------------------
  Mov          Left       Through       Right
  ID        ---------    ---------    ---------
             LV    HV     LV    HV     LV    HV
-----------------------------------------------
Demand flows in veh/hour as used by the program
South: S Yamhill
    1 L       6     0      0     0      0     0
    2 T       0     0      9     0      0     0
    3 R       0     0      0     0      3     0
-----------------------------------------------
East: W Main
    4 L       1     0      0     0      0     0
    5 T       0     0    162     0      0     0
    6 R       0     0      0     0    224     4
-----------------------------------------------
North: N Yamhill
    7 L     232     9      0     0      0     0
    8 T       0     0      9     0      0     0
    9 R       0     0      0     0    186     0
-----------------------------------------------
West: W Main
   10 L     131     4      0     0      0     0
   11 T       0     0    110     2      0     0
   12 R       0     0      0     0      2     0
-----------------------------------------------
Unit Time for Volumes =  60 minutes
Peak Flow Period =  30 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor
```

Table B.2B - Flow Rates (Total Vehicles and Percent Heavy)

```
N Yamhill/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

-------------------------------------------------
  Mov          Left         Through        Right
  ID        ----------    ----------    ----------
            Total  %HV    Total  %HV    Total  %HV
-------------------------------------------------
Demand flows in veh/hour as used by the program
South: S Yamhill
```

1 L	6	0.0	0	0.0	0	0.0
2 T	0	0.0	9	0.0	0	0.0
3 R	0	0.0	0	0.0	3	0.0
East: W Main						
4 L	1	0.0	0	0.0	0	0.0
5 T	0	0.0	162	0.0	0	0.0
6 R	0	0.0	0	0.0	228	1.8
North: N Yamhill						
7 L	241	3.7	0	0.0	0	0.0
8 T	0	0.0	9	0.0	0	0.0
9 R	0	0.0	0	0.0	186	0.0
West: W Main						
10 L	135	3.0	0	0.0	0	0.0
11 T	0	0.0	112	1.8	0	0.0
12 R	0	0.0	0	0.0	2	0.0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 30 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table S.2 - Movement Capacity Parameters

N Yamhill/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Mov ID	Demand Flow (veh/h)	HV (%)	Opposing Movement Flow (veh/h)	HV (%)	Adjust. Flow (pcu/h)	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
South: S Yamhill										
1 L	6	0.0	471+	0.4	471	135	0.80	1700	100	0.044
2 T	9	0.0	744+	2.0	744	202	0.80	1696	100	0.045
3 R	3	0.0	354+	3.1	354	67	0.80	1687	100	0.045
East: W Main										
4 L	1	0.0	379	2.9	379	3	0.80	140	100	0.333
5 T	162	0.0	345	1.2	345	413	0.80	104	100	0.392*
6 R	228	1.8	0			582	0.80	104	100	0.392*
North: N Yamhill										
7 L	241	3.7	0			935	0.80	210	100	0.258
8 T	9	0.0	0			35	0.80	211	100	0.257
9 R	186	0.0	0			721	0.80	210	100	0.258
West: W Main										
10 L	135	3.0	655	2.0	655	396	0.80	135	100	0.341
11 T	112	1.8	263	3.4	263	329	0.80	135	100	0.340
12 R	2	0.0	10	0.0	10	6	0.80	140	100	0.333

\+ Percentage of exiting flow included in total opposing flow

Table S.3 - Intersection Parameters

N Yamhill/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Intersection Level of Service	=	NA
Worst movement Level of Service	=	C
Average intersection delay (s/pers)	=	12.0
Largest average movement delay (s)	=	17.6
Largest back of queue, 95% (m)	=	34
Performance Index	=	21.23
Degree of saturation (highest)	=	0.392
Practical Spare Capacity (lowest)	=	104 %
Effective intersection capacity, (veh/h)	=	2789
Total vehicle flow (veh/h)	=	1094
Total person flow (pers/h)	=	1641
Total vehicle delay (veh-h/h)	=	3.64
Total person delay (pers-h/h)	=	5.46
Total effective vehicle stops (veh/h)	=	763
Total effective person stops (pers/h)	=	1145
Total vehicle travel (veh-km/h)	=	658.7
Total cost ($/h)	=	509.18
Total fuel (L/h)	=	79.6
Total CO2 (kg/h)	=	199.19

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections. See Table S.15 or Movement Displays for individual movement LOS values.

Table S.5 - Movement Performance

Mov ID		Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue 95% Back (vehs)	(m)	Perf. Index	Aver. Speed (km/h)
South: S Yamhill										
1	L	0.03	0.04	17.4	0.59	0.92	0.2	1	0.14	41.3
2	T	0.04	0.06	17.1	0.59	0.98	0.2	1	0.21	41.6
3	R	0.01	0.02	17.6	0.59	0.78	0.2	1	0.07	41.3
East: W Main										
4	L	0.00	0.01	15.7	0.70	0.95	4.9	34	0.02	42.9
5	T	0.70	1.04	15.5	0.70	0.99	4.9	34	3.87	43.2
6	R	0.85	1.28	13.5	0.70	0.20	4.9	34	4.32	43.8
North: N Yamhill										
7	L	0.58	0.86	8.6	0.00	0.70	0.0	0	3.93	48.6
8	T	0.00	0.00	0.0	0.00	0.00	0.0	0	0.09	60.0
9	R	0.42	0.63	8.2	0.00	0.67	0.0	0	2.99	49.0
West: W Main										
10	L	0.55	0.82	14.6	0.47	1.02	2.3	16	3.06	43.6
11	T	0.45	0.67	14.3	0.47	0.95	2.3	16	2.49	43.9
12	R	0.01	0.01	14.6	0.47	0.69	2.3	16	0.04	43.6

Table S.6 - Intersection Performance

N Yamhill/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
South: S Yamhill									
18	0.045	0.09	0.13	17.3	0.59	0.93	1	0.42	41.5
East: W Main									
391	0.392	1.55	2.33	14.3	0.70	0.53	34	8.22	43.5
North: N Yamhill									
436	0.258	1.00	1.50	8.2	0.00	0.67	0	7.00	48.9
West: W Main									
249	0.341	1.00	1.50	14.5	0.47	0.99	16	5.59	43.7
ALL VEHICLES:									
1094	0.392	3.64	5.46	12.0	0.37	0.70	34	21.23	45.6
INTERSECTION (persons):									
1641	0.392		5.46	12.0	0.37	0.70		21.23	45.6

Queue values in this table are 95% back of queue (metres).

Table S.7 - Lane Performance

N Yamhill/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Lane No.	Dem Flow (veh /h)	Cap (veh /h)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Queue 95% Back (vehs)	Queue 95% Back (m)	Lane Length (m)
South: S Yamhill								
1 LTR	18	404	0.045	17.3	0.93	0.2	1.4	500.0
East: W Main								
1 LTR	391	997	0.392	14.3	0.53	4.9	34.4	500.0
North: N Yamhill								
1 LTR	436	1691	0.258	8.2	0.67	0.0	0.0	500.0
West: W Main								
1 LTR	249	731	0.341	14.5	0.99	2.3	16.3	500.0

Table S.8 - Lane Flow and Capacity Information

N Yamhill/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Lane No.	Dem Flow (veh/h) Lef	Thru	Rig	Tot	Min Cap (veh /h)	Tot Cap (veh /h)	Deg. Satn x	Lane Util %
South: S Yamhill								
1 LTR	6	9	3	18	18	404	0.045	100
East: W Main								
1 LTR	1	162	228	391	391	997	0.392	100
North: N Yamhill								
1 LTR	241	9	186	436	436	1691	0.258	100
West: W Main								
1 LTR	135	112	2	249	60	731	0.341	100

The capacity value for priority and continuous movements is obtained by adjusting the basic saturation flow for heavy vehicle and turning vehicle effects. Saturation flow scale applies if specified.

Table S.10 - Movement Capacity and Performance Summary

N Yamhill/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Mov ID	Mov Typ	Dem Flow (veh /h)	Total Cap. (veh /h)	Lane Util (%)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	95% Back of Queue (veh)	Perf. Index
South: S Yamhill									
1	L	6	135	100	0.044	17.4	0.92	0.2	0.14
2	T	9	202	100	0.045	17.1	0.98	0.2	0.21
3	R	3	67	100	0.045	17.6	0.78	0.2	0.07
East: W Main									
4	L	1	3	100	0.333	15.7	0.95	4.9	0.02
5	T	162	413	100	0.392*	15.5	0.99	4.9	3.87
6	R	228	582	100	0.392*	13.5	0.20	4.9	4.32
North: N Yamhill									
7	L	241	935	100	0.258	8.6	0.70	0.0	3.93
8	T	9	35	100	0.257	0.0	0.00	0.0	0.09
9	R	186	721	100	0.258	8.2	0.67	0.0	2.99
West: W Main									
10	L	135	396	100	0.341	14.6	1.02	2.3	3.06
11	T	112	329	100	0.340	14.3	0.95	2.3	2.49
12	R	2	6	100	0.333	14.6	0.69	2.3	0.04

* Maximum degree of saturation

Table S.12A - Fuel Consumption, Emissions and Cost (TOTAL)

N Yamhill/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Mov ID		Fuel Total L/h	Cost Total $/h	HC Total kg/h	CO Total kg/h	NOX Total kg/h	CO2 Total kg/h
South: S Yamhill							
1	L	0.4	2.98	0.002	0.09	0.003	1.1
2	T	0.6	4.44	0.003	0.13	0.004	1.6
3	R	0.2	1.50	0.001	0.04	0.001	0.5
		1.3	8.91	0.006	0.27	0.008	3.2
East: W Main							
4	L	0.1	0.48	0.000	0.02	0.000	0.2
5	T	11.6	77.67	0.051	2.43	0.070	29.0
6	R	16.7	109.67	0.072	3.49	0.102	41.9
		28.4	187.81	0.123	5.93	0.172	71.0
North: N Yamhill							
7	L	18.1	108.30	0.075	3.85	0.113	45.4
8	T	0.4	2.99	0.001	0.03	0.002	1.0
9	R	12.4	80.12	0.053	2.54	0.075	30.9
		30.9	191.41	0.130	6.42	0.189	77.3
West: W Main							
10	L	10.4	65.97	0.045	2.23	0.064	26.1
11	T	8.5	54.10	0.036	1.79	0.052	21.2
12	R	0.1	0.96	0.001	0.03	0.001	0.4
		19.0	121.04	0.081	4.05	0.117	47.6
INTERSECTION:		79.6	509.18	0.341	16.67	0.486	199.2

PARAMETERS USED IN COST CALCULATIONS

Pump price of fuel ($/L)	=	1.200
Fuel resource cost factor	=	0.50
Ratio of running cost to fuel cost	=	3.0
Average income ($/h)	=	28.00
Time value factor	=	0.60
Light vehicle mass (1000 kg)	=	1.4
Heavy vehicle mass (1000 kg)	=	11.0
Light vehicle idle fuel rate (L/h)	=	1.350
Heavy vehicle idle fuel rate (L/h)	=	2.000

Table S.12B - Fuel Consumption, Emissions and Cost (RATE)

N Yamhill/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Mov ID		Fuel Rate L/100km	Cost Rate $/km	HC Rate g/km	CO Rate g/km	NOX Rate g/km	CO2 Rate g/km
South: S Yamhill							
1	L	12.1	0.83	0.536	25.18	0.720	301.3
2	T	12.0	0.82	0.529	24.77	0.716	299.5
3	R	12.0	0.83	0.528	24.66	0.713	299.3
		12.0	0.82	0.531	24.89	0.717	300.1
East: W Main							
4	L	12.0	0.80	0.533	25.42	0.723	299.8
5	T	11.9	0.80	0.524	24.95	0.718	297.6
6	R	12.1	0.80	0.523	25.30	0.738	303.9
		12.0	0.80	0.523	25.16	0.730	301.3
North: N Yamhill							
7	L	12.5	0.75	0.520	26.62	0.778	313.7
8	T	7.1	0.55	0.245	5.13	0.323	177.8
9	R	11.0	0.71	0.474	22.58	0.665	275.0
		11.8	0.73	0.495	24.45	0.720	294.3
West: W Main							
10	L	12.9	0.81	0.550	27.45	0.789	321.8
11	T	12.6	0.80	0.539	26.63	0.771	314.9
12	R	12.1	0.80	0.534	25.98	0.738	302.0
		12.7	0.81	0.545	27.07	0.781	318.5
INTERSECTION:		12.1	0.77	0.517	25.30	0.737	302.4

Table S.14 - Summary of Input and Output Data

N Yamhill/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)
South: S Yamhill												
1 LTR	6	9	3	18	0				0.045	17.3	1	500
	6	9	3	18	0				0.045	17.3	1	
East: W Main												
1 LTR	1	162	228	391	1				0.392	14.3	34	500
	1	162	228	391	1				0.392	14.3	34	
North: N Yamhill												
1 LTR	241	9	186	436	2				0.258	8.2	0	500
	241	9	186	436	2				0.258	8.2		

West: W Main										
1 LTR	135	112	2	249	2		0.341	14.5	16	500
	135	112	2	249	2		0.341	14.5	16	

ALL VEHICLES	Total Flow	% HV	Max X	Aver. Delay	Max Queue
	1094	2	0.392	12.0	34

Peak flow period = 30 minutes.

Queue values in this table are 95% back of queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

Table S.15 - Capacity and Level of Service

N Yamhill/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Mov ID	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue 95% Back (vehs)	(m)
South: S Yamhill								
1	L	6	135	0.044	17.4	C	0.2	1
2	T	9	202	0.045	17.1	C	0.2	1
3	R	3	67	0.045	17.6	C	0.2	1
East: W Main								
4	L	1	3	0.333	15.7	C	4.9	34
5	T	162	413	0.392*	15.5	C	4.9	34
6	R	228	582	0.392*	13.5	B	4.9	34
North: N Yamhill								
7	L	241	935	0.258	8.6	A	0.0	0
8	T	9	35	0.257	0.0	A	0.0	0
9	R	186	721	0.258	8.2	A	0.0	0
West: W Main								
10	L	135	396	0.341	14.6	B	2.3	16
11	T	112	329	0.340	14.3	B	2.3	16
12	R	2	6	0.333	14.6	B	2.3	16
ALL VEHICLES:		1094		0.392	12.0	NA	4.9	34

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the SIDRA Output Guide or the Output section of the on-line help.

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections.

* Maximum v/c ratio, or critical green periods
" Movement Level of service has been determined using adjacent lane v/c ratio rather than short lane v/c ratio (v/c=1.0)

Table D.0 - Geometric Delay Data

N Yamhill/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

From Approach	To Approach	Turn	Negn Radius (m)	Negn Speed (km/h)	Negn Dist. (m)	Appr. Dist. (m)	Downstream (m)	Distance User Spec?
South: S Yamhill								
	East	Right	10.0	20.2	15.7	500	104	No
	North	Thru	S	20.0	10.0	500	101	No
	West	Left	6.6	17.2	10.4	500	101	No
East: W Main								
	South	Left	6.6	17.2	10.4	500	101	No
	North	Right	10.0	20.2	15.7	500	106	No
	West	Thru	S	20.0	10.0	500	101	No
North: N Yamhill								
	South	Thru	S	60.0	10.0	500	106	No
	East	Left	6.6	17.2	10.4	500	104	No
	West	Right	10.0	20.2	15.7	500	104	No
West: W Main								
	South	Right	10.0	20.2	15.7	500	104	No
	East	Thru	S	20.0	10.0	500	102	No
	North	Left	6.6	17.2	10.4	500	103	No

Downstream distance is distance travelled from the stopline until exit cruise speed is reached (includes negotiation distance). Acceleration distance is weighted for light and heavy vehicles. The same distance applies for both stopped and unstopped vehicles.

Table D.1 - Lane Delays

N Yamhill/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Lane No.	Deg. Satn x	Stop-line Delay (seconds/veh) 1st d1	2nd d2	Total dSL	Acc. Dec. dn	Queuing Total dq	MvUp dqm	Stopd (Idle) di	Geom dig	Control dic
South: S Yamhill										
1 LTR	0.045	6.9	0.0	6.9	1.2	5.8	0.0	5.8	10.4	17.3
East: W Main										
1 LTR	0.392	4.5	0.7	5.2	2.3	3.0	0.3	2.6	9.1	14.3
North: N Yamhill										
1 LTR	0.258	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.2	8.2
West: W Main										
1 LTR	0.341	3.6	0.4	4.0	0.9	3.1	0.5	2.6	10.5	14.5

dn is average stop-start delay for all vehicles queued and unqueued

Table D.2 - Lane Stops

N Yamhill/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Lane No.	Deg. Satn x	-- Effective Stop Rate -- he1	he2	Geom. hig	Overall h	Prop. Queued pq	Queue Move-up Rate hqm
South: S Yamhill							
1 LTR	0.045	0.51	0.00	0.41	0.93	0.586	0.00
East: W Main							
1 LTR	0.392	0.27	0.02	0.24	0.53	0.702	0.12
North: N Yamhill							
1 LTR	0.258	0.00	0.00	0.67	0.67	0.000	0.00
West: W Main							
1 LTR	0.341	0.43	0.03	0.53	0.99	0.467	0.07

hig is the average value for all movements in a shared lane
hqm is average queue move-up rate for all vehicles queued and unqueued

Table D.3A - Lane Queues (veh)

N Yamhill/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (veh) Nb1	Nb2	Nb	Percentile (veh) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: S Yamhill											
1 LTR	0.045	0.0	0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.00
East: W Main											
1 LTR	0.392	0.1	1.3	0.3	1.6	2.8	3.4	3.9	4.9	5.7	0.07
North: N Yamhill											
1 LTR	0.258	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
West: W Main											
1 LTR	0.341	0.1	0.6	0.1	0.7	1.3	1.6	1.8	2.3	2.6	0.03

Values printed in this table are back of queue (vehicles).

Table D.3B - Lane Queues (metres)

N Yamhill/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (metres) Nb1	Nb2	Nb	Percentile (metres) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: S Yamhill											
1 LTR	0.045	0.0	0.5	0.0	0.5	0.9	1.0	1.2	1.4	1.7	0.00
East: W Main											
1 LTR	0.392	0.9	9.1	2.0	11.2	19.8	24.3	27.7	34.4	39.9	0.07
North: N Yamhill											
1 LTR	0.258	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
West: W Main											
1 LTR	0.341	0.4	4.5	0.6	5.2	9.6	11.6	13.2	16.3	18.9	0.03

Values printed in this table are back of queue (metres).

Table D.4 - Movement Speeds (km/h) and Geometric Delay

N Yamhill/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Mov ID	App. Speeds Cruise	Negn	Exit Speeds Negn	Cruise	Queue Move-up 1st Grn	2nd Grn	Av. Section Spd Running	Overall	Geom Delay (sec)
South: S Yamhill									
1 L	60.0	0.0	17.2	60.0			46.5	41.3	10.4
2 T	60.0	0.0	20.0	60.0			46.7	41.6	10.2
3 R	60.0	0.0	20.2	60.0			46.4	41.3	10.7
East: W Main									
4 L	60.0	0.0	17.2	60.0	21.0		45.7	42.9	10.4
5 T	60.0	0.0	20.0	60.0	18.9		46.0	43.2	10.2
6 R	60.0	20.2	20.2	60.0	0.0		46.0	43.8	8.2
North: N Yamhill									
7 L	60.0	17.2	17.2	60.0			48.6	48.6	8.6
8 T	60.0	60.0	60.0	60.0			60.0	60.0	0.0
9 R	60.0	20.2	20.2	60.0			49.0	49.0	8.2
West: W Main									
10 L	60.0	0.0	17.2	60.0	16.5		46.1	43.6	10.6
11 T	60.0	0.0	20.0	60.0	21.5		46.3	43.9	10.4
12 R	60.0	0.0	20.2	60.0	60.0		45.8	43.6	10.7

"Running Speed" is the average speed excluding stopped periods.

Table D.6 - Gap Acceptance Parameters

N Yamhill/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Mov ID	Mov Type	Opng Flow (pcu/h)	Critical Gap Hdwy (s)	Critical Gap Dist (m)	Foll-up Headway (s)	Entry HV Equiv
South: S Yamhill						
1 L	Normal	471+	7.00	39.0	4.00	2.00
2 T	Normal	744+	6.50	34.0	3.50	2.00
3 R	Normal	354+	5.00	25.2	3.00	2.00
East: W Main						
4 L	Normal	379	4.50	24.0	2.50	2.00
5 T	Normal	345	6.50	34.1	3.50	2.00
North: N Yamhill						
No opposed movements on this approach						
West: W Main						
10 L	Normal	655	4.50	24.5	2.50	2.00
11 T	Normal	263	6.50	34.0	3.50	2.00
12 R	Normal	10	4.50	69.1	2.50	2.00

Values in this table are adjusted for heavy vehicles in the entry stream.
\+ Percentage of exiting flow included in total opposing flow

SIDRA SOLUTIONS

Site: N Yamhill/W Main
H:\projfile\9086 - City of Carlton TSP Update\sidra\Courtesy.aap
Processed May 10, 2008 05:09:26PM

A1048, KAI, Large Office
Produced by SIDRA Intersection 3.2.0.1455

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SIDRA INTERSECTION

Output Tables

S Pine/W Main

Enter subtitle

Run Information

```
* Basic Parameters:
  Intersection Type: Unsignalised - Two-Way Stop Control
  Driving on the right-hand side of the road
  Input data specified in Metric units
  Model Defaults: Standard Right
  Peak Flow Period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes.
  Delay definition: Control delay
                    Geometric delay included
  SIDRA Standard Delay model used
  SIDRA Standard Queue model used
  Level of Service based on: Delay (HCM method)
  Queue definition: Back of queue, 95th Percentile
```

Table B.1 - Movement Definitions and Flow Rates (Origin-Destination)

```
S Pine/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection
```

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor
South: S Pine							
	East	3	Right	32	1	1.00	0.96
	North	2	Thru	14	0	1.00	0.96
	West	1	Left	178	2	1.00	0.96
East: W Main							
	South	4	Left	48	2	1.00	0.96
	North	6	Right	5	0	1.00	0.96
	West	5	Thru	158	4	1.00	0.96
North: N Pine							
	South	8	Thru	7	0	1.00	0.96
	East	7	Left	4	0	1.00	0.96
	West	9	Right	2	0	1.00	0.96
West: W Main							
	South	12	Right	169	19	1.00	0.96
	East	11	Thru	88	3	1.00	0.96

```
           North        10   Left      5      0    1.00      0.96
-------------------------------------------------------------------
Unit Time for Volumes =  60 minutes
Peak Flow Period =  30 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor
```

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)

```
S Pine/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

-----------------------------------------------
  Mov          Left       Through       Right
  ID        ---------    ---------    ---------
              LV    HV     LV    HV     LV    HV
-----------------------------------------------
Demand flows in veh/hour as used by the program
South: S Pine
    1 L     178     2      0     0      0     0
    2 T       0     0     14     0      0     0
    3 R       0     0      0     0     32     1
-----------------------------------------------
East: W Main
    4 L      48     2      0     0      0     0
    5 T       0     0    158     4      0     0
    6 R       0     0      0     0      5     0
-----------------------------------------------
North: N Pine
    7 L       4     0      0     0      0     0
    8 T       0     0      7     0      0     0
    9 R       0     0      0     0      2     0
-----------------------------------------------
West: W Main
   10 L       5     0      0     0      0     0
   11 T       0     0     88     3      0     0
   12 R       0     0      0     0    169    19
-----------------------------------------------
Unit Time for Volumes =  60 minutes
Peak Flow Period =  30 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor
```

Table B.2B - Flow Rates (Total Vehicles and Percent Heavy)

```
S Pine/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

-------------------------------------------------
  Mov          Left         Through        Right
  ID        ----------    ----------    ----------
           Total  %HV    Total  %HV    Total  %HV
-------------------------------------------------
Demand flows in veh/hour as used by the program
South: S Pine
```

1 L	180	1.1	0	0.0	0	0.0
2 T	0	0.0	14	0.0	0	0.0
3 R	0	0.0	0	0.0	33	3.0
East: W Main						
4 L	50	4.0	0	0.0	0	0.0
5 T	0	0.0	162	2.5	0	0.0
6 R	0	0.0	0	0.0	5	0.0
North: N Pine						
7 L	4	0.0	0	0.0	0	0.0
8 T	0	0.0	7	0.0	0	0.0
9 R	0	0.0	0	0.0	2	0.0
West: W Main						
10 L	5	0.0	0	0.0	0	0.0
11 T	0	0.0	91	3.3	0	0.0
12 R	0	0.0	0	0.0	188	10.1

Unit Time for Volumes = 60 minutes
Peak Flow Period = 30 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table S.2 - Movement Capacity Parameters

S Pine/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Mov ID	Demand Flow (veh/h)	HV (%)	Opposing Movement Flow (veh/h)	HV (%)	Adjust. Flow (pcu/h)	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
South: S Pine										
1 L	180	1.1	0			1351	0.80	500	100	0.133
2 T	14	0.0	0			105	0.80	500	100	0.133
3 R	33	3.0	0			248	0.80	501	100	0.133
East: W Main										
4 L	50	4.0	484	5.0	486	186	0.80	198	100	0.269*
5 T	162	2.5	208	1.0	208	602	0.80	197	100	0.269*
6 R	5	0.0	19	0.0	19	19	0.80	204	100	0.263
North: N Pine										
7 L	4	0.0	308+	2.6	308	150	0.80	2900	100	0.027
8 T	7	0.0	624+	4.5	625	262	0.80	2894	100	0.027
9 R	2	0.0	345+	1.7	345	75	0.80	2900	100	0.027
West: W Main										
10 L	5	0.0	372	1.6	372	22	0.80	252	100	0.227
11 T	91	3.3	108	2.8	108	405	0.80	256	100	0.225
12 R	188	10.1	0			836	0.80	256	100	0.225

\+ Percentage of exiting flow included in total opposing flow

Table S.3 - Intersection Parameters

S Pine/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Intersection Level of Service	=	NA
Worst movement Level of Service	=	C
Average intersection delay (s/pers)	=	10.4
Largest average movement delay (s)	=	15.7
Largest back of queue, 95% (m)	=	15
Performance Index	=	13.63
Degree of saturation (highest)	=	0.269
Practical Spare Capacity (lowest)	=	197 %
Effective intersection capacity, (veh/h)	=	2754
Total vehicle flow (veh/h)	=	741
Total person flow (pers/h)	=	1112
Total vehicle delay (veh-h/h)	=	2.13
Total person delay (pers-h/h)	=	3.20
Total effective vehicle stops (veh/h)	=	520
Total effective person stops (pers/h)	=	780
Total vehicle travel (veh-km/h)	=	446.0
Total cost ($/h)	=	343.82
Total fuel (L/h)	=	57.1
Total CO2 (kg/h)	=	143.08

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections. See Table S.15 or Movement Displays for individual movement LOS values.

Table S.5 - Movement Performance

Mov ID		Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue 95% Back (vehs)	(m)	Perf. Index	Aver. Speed (km/h)
South: S Pine										
1	L	0.42	0.64	8.5	0.00	0.70	0.0	0	2.93	48.6
2	T	0.00	0.00	0.0	0.00	0.00	0.0	0	0.14	60.0
3	R	0.08	0.11	8.3	0.00	0.67	0.0	0	0.53	49.0
East: W Main										
4	L	0.18	0.27	13.0	0.38	0.96	1.6	12	1.07	45.0
5	T	0.57	0.85	12.6	0.38	0.90	1.6	12	3.39	45.3
6	R	0.02	0.03	12.9	0.38	0.71	1.6	12	0.10	45.0
North: N Pine										
7	L	0.02	0.03	15.4	0.53	0.85	0.1	1	0.09	42.8
8	T	0.03	0.04	15.2	0.53	0.93	0.1	1	0.16	43.1
9	R	0.01	0.01	15.7	0.53	0.79	0.1	1	0.04	42.8
West: W Main										
10	L	0.02	0.02	11.5	0.35	0.93	1.9	15	0.10	46.1
11	T	0.29	0.44	11.5	0.35	0.85	1.9	15	1.83	46.4
12	R	0.50	0.76	9.6	0.35	0.43	1.9	15	3.26	47.4

Table S.6 - Intersection Performance

S Pine/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
South: S Pine									
227	0.133	0.50	0.75	7.9	0.00	0.65	0	3.60	49.2
East: W Main									
217	0.269	0.77	1.15	12.7	0.38	0.91	12	4.55	45.2
North: N Pine									
13	0.027	0.06	0.08	15.4	0.53	0.88	1	0.29	43.0
West: W Main									
284	0.227	0.81	1.22	10.3	0.35	0.57	15	5.19	47.1
ALL VEHICLES:									
741	0.269	2.13	3.20	10.4	0.26	0.70	15	13.63	47.1
INTERSECTION (persons):									
1112	0.269		3.20	10.4	0.26	0.70		13.63	47.1

Queue values in this table are 95% back of queue (metres).

Table S.7 - Lane Performance

S Pine/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Lane No.	Dem Flow (veh /h)	Cap (veh /h)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Queue 95% Back (vehs)	Queue 95% Back (m)	Lane Length (m)
South: S Pine								
1 LTR	227	1703	0.133	7.9	0.65	0.0	0.0	500.0
East: W Main								
1 LTR	217	806	0.269	12.7	0.91	1.6	11.7	500.0
North: N Pine								
1 LTR	13	487	0.027	15.4	0.88	0.1	0.9	500.0
West: W Main								
1 LTR	284	1262	0.225	10.3	0.57	1.9	14.5	500.0

Table S.8 - Lane Flow and Capacity Information

S Pine/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Lane No.	Dem Flow (veh/h) Lef	Thru	Rig	Tot	Min Cap (veh /h)	Tot Cap (veh /h)	Deg. Satn x	Lane Util %
South: S Pine								
1 LTR	180	14	33	227	227	1703	0.133	100
East: W Main								
1 LTR	50	162	5	217	60	806	0.269	100
North: N Pine								
1 LTR	4	7	2	13	13	487	0.027	100
West: W Main								
1 LTR	5	91	188	284	284	1262	0.225	100

The capacity value for priority and continuous movements is obtained by adjusting the basic saturation flow for heavy vehicle and turning vehicle effects. Saturation flow scale applies if specified.

Table S.10 - Movement Capacity and Performance Summary

S Pine/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Mov ID	Mov Typ	Dem Flow (veh /h)	Total Cap. (veh /h)	Lane Util (%)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	95% Back of Queue (veh)	Perf. Index
South: S Pine									
1	L	180	1351	100	0.133	8.5	0.70	0.0	2.93
2	T	14	105	100	0.133	0.0	0.00	0.0	0.14
3	R	33	248	100	0.133	8.3	0.67	0.0	0.53
East: W Main									
4	L	50	186	100	0.269*	13.0	0.96	1.6	1.07
5	T	162	602	100	0.269*	12.6	0.90	1.6	3.39
6	R	5	19	100	0.263	12.9	0.71	1.6	0.10
North: N Pine									
7	L	4	150	100	0.027	15.4	0.85	0.1	0.09
8	T	7	262	100	0.027	15.2	0.93	0.1	0.16
9	R	2	75	100	0.027	15.7	0.79	0.1	0.04
West: W Main									
10	L	5	22	100	0.227	11.5	0.93	1.9	0.10
11	T	91	405	100	0.225	11.5	0.85	1.9	1.83
12	R	188	836	100	0.225	9.6	0.43	1.9	3.26

* Maximum degree of saturation

Table S.12A - Fuel Consumption, Emissions and Cost (TOTAL)

S Pine/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Mov ID	Fuel Total L/h	Cost Total $/h	HC Total kg/h	CO Total kg/h	NOX Total kg/h	CO2 Total kg/h
South: S Pine						
1 L	12.6	78.83	0.054	2.66	0.077	31.5
2 T	0.6	4.65	0.002	0.04	0.003	1.5
3 R	2.4	14.65	0.010	0.50	0.015	6.0
	15.6	98.13	0.066	3.20	0.095	39.0
East: W Main						
4 L	4.0	24.16	0.017	0.86	0.025	10.0
5 T	12.3	76.55	0.052	2.61	0.076	30.7
6 R	0.4	2.33	0.002	0.07	0.002	0.9
	16.6	103.04	0.070	3.54	0.103	41.6
North: N Pine						
7 L	0.3	1.93	0.001	0.06	0.002	0.7
8 T	0.5	3.36	0.002	0.10	0.003	1.2
9 R	0.1	0.97	0.001	0.03	0.001	0.4
	0.9	6.26	0.004	0.19	0.006	2.3
West: W Main						
10 L	0.4	2.28	0.002	0.08	0.002	0.9
11 T	7.0	42.61	0.029	1.50	0.044	17.6
12 R	16.6	91.51	0.064	3.53	0.105	41.7
	24.0	136.40	0.095	5.11	0.151	60.2
INTERSECTION:	57.1	343.82	0.236	12.04	0.354	143.1

PARAMETERS USED IN COST CALCULATIONS

Pump price of fuel ($/L)	=	1.200
Fuel resource cost factor	=	0.50
Ratio of running cost to fuel cost	=	3.0
Average income ($/h)	=	28.00
Time value factor	=	0.60
Light vehicle mass (1000 kg)	=	1.4
Heavy vehicle mass (1000 kg)	=	11.0
Light vehicle idle fuel rate (L/h)	=	1.350
Heavy vehicle idle fuel rate (L/h)	=	2.000

Table S.12B - Fuel Consumption, Emissions and Cost (RATE)

S Pine/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Mov ID		Fuel Rate L/100km	Cost Rate $/km	HC Rate g/km	CO Rate g/km	NOX Rate g/km	CO2 Rate g/km
South: S Pine							
1	L	11.6	0.73	0.500	24.57	0.713	291.0
2	T	7.1	0.55	0.245	5.13	0.323	177.8
3	R	12.0	0.73	0.498	24.93	0.739	301.3
		11.4	0.72	0.484	23.42	0.693	285.4
East: W Main							
4	L	13.3	0.80	0.556	28.61	0.827	332.8
5	T	12.6	0.79	0.535	26.81	0.779	316.0
6	R	11.7	0.77	0.512	24.57	0.709	292.7
		12.8	0.79	0.539	27.18	0.789	319.3
North: N Pine							
7	L	11.9	0.80	0.530	25.14	0.718	298.5
8	T	11.9	0.80	0.522	24.73	0.714	296.6
9	R	11.9	0.80	0.521	24.62	0.712	296.5
		11.9	0.80	0.524	24.84	0.715	297.2
West: W Main							
10	L	11.7	0.76	0.516	25.05	0.715	292.9
11	T	12.9	0.78	0.538	27.53	0.801	322.2
12	R	14.6	0.81	0.566	31.08	0.926	366.8
		14.0	0.80	0.556	29.84	0.883	351.3
INTERSECTION:		12.8	0.77	0.528	27.01	0.794	320.8

Table S.14 - Summary of Input and Output Data

S Pine/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)
South: S Pine												
1 LTR	180	14	33	227	1				0.133	7.9	0	500
	180	14	33	227	1				0.133	7.9		
East: W Main												
1 LTR	50	162	5	217	3				0.269	12.7	12	500
	50	162	5	217	3				0.269	12.7	12	
North: N Pine												
1 LTR	4	7	2	13	0				0.027	15.4	1	500
	4	7	2	13	0				0.027	15.4	1	

West: W Main									
1 LTR	5	91	188	284	8	0.225	10.3	15	500
	5	91	188	284	8	0.225	10.3	15	

ALL VEHICLES	Total Flow	% HV	Max X	Aver. Delay	Max Queue
	741	4	0.269	10.4	15

Peak flow period = 30 minutes.

Queue values in this table are 95% back of queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

Table S.15 - Capacity and Level of Service

S Pine/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Mov ID	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue 95% Back (vehs)	(m)
South: S Pine								
1 L		180	1351	0.133	8.5	A	0.0	0
2 T		14	105	0.133	0.0	A	0.0	0
3 R		33	248	0.133	8.3	A	0.0	0
East: W Main								
4 L		50	186	0.269*	13.0	B	1.6	12
5 T		162	602	0.269*	12.6	B	1.6	12
6 R		5	19	0.263	12.9	B	1.6	12
North: N Pine								
7 L		4	150	0.027	15.4	C	0.1	1
8 T		7	262	0.027	15.2	C	0.1	1
9 R		2	75	0.027	15.7	C	0.1	1
West: W Main								
10 L		5	22	0.227	11.5	B	1.9	15
11 T		91	405	0.225	11.5	B	1.9	15
12 R		188	836	0.225	9.6	A	1.9	15
ALL VEHICLES:		741		0.269	10.4	NA	1.9	15

Level of Service calculations are based on
average control delay including geometric delay (HCM criteria),
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the
SIDRA Output Guide or the Output section of the on-line help.

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections.

* Maximum v/c ratio, or critical green periods
" Movement Level of service has been determined using adjacent lane v/c ratio rather than short lane v/c ratio (v/c=1.0)

Table D.0 - Geometric Delay Data

S Pine/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

From Approach	To Approach	Turn	Negn Radius (m)	Negn Speed (km/h)	Negn Dist. (m)	Appr. Dist. (m)	Downstream (m)	Distance User Spec?
South: S Pine								
	East	Right	10.0	20.2	15.7	500	107	No
	North	Thru	S	60.0	10.0	500	106	No
	West	Left	6.6	17.2	10.4	500	102	No
East: W Main								
	South	Left	6.6	17.2	10.4	500	104	No
	North	Right	10.0	20.2	15.7	500	104	No
	West	Thru	S	20.0	10.0	500	103	No
North: N Pine								
	South	Thru	S	20.0	10.0	500	101	No
	East	Left	6.6	17.2	10.4	500	101	No
	West	Right	10.0	20.2	15.7	500	104	No
West: W Main								
	South	Right	10.0	20.2	15.7	500	113	No
	East	Thru	S	20.0	10.0	500	104	No
	North	Left	6.6	17.2	10.4	500	101	No

Downstream distance is distance travelled from the stopline until exit cruise speed is reached (includes negotiation distance). Acceleration distance is weighted for light and heavy vehicles. The same distance applies for both stopped and unstopped vehicles.

Table D.1 - Lane Delays

S Pine/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Lane No.	Deg. Satn x	Delay (seconds/veh) Stop-line Delay 1st d1	2nd d2	Total dSL	Acc. Dec. dn	Queuing Total dq	MvUp dqm	Stopd (Idle) di	Geom dig	Control dic
South: S Pine										
1 LTR	0.133	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	7.9
East: W Main										
1 LTR	0.269	2.2	0.0	2.2	0.8	1.5	0.0	1.5	10.5	12.7
North: N Pine										
1 LTR	0.027	5.0	0.0	5.0	1.1	3.9	0.0	3.9	10.4	15.4
West: W Main										
1 LTR	0.225	1.1	0.0	1.1	1.2	0.1	0.0	0.1	9.2	10.3

dn is average stop-start delay for all vehicles queued and unqueued

Table D.2 - Lane Stops

S Pine/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Lane No.	Deg. Satn x	-- Effective Stop Rate -- he1	he2	Geom. hig	Overall h	Prop. Queued pq	Queue Move-up Rate hqm
South: S Pine							
1 LTR	0.133	0.00	0.00	0.65	0.65	0.000	0.00
East: W Main							
1 LTR	0.269	0.29	0.00	0.62	0.91	0.381	0.00
North: N Pine							
1 LTR	0.027	0.41	0.00	0.47	0.88	0.529	0.00
West: W Main							
1 LTR	0.225	0.07	0.00	0.50	0.57	0.354	0.00

hig is the average value for all movements in a shared lane
hqm is average queue move-up rate for all vehicles queued and unqueued

Table D.3A - Lane Queues (veh)

S Pine/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (veh) Nb1	Nb2	Nb	Percentile (veh) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: S Pine											
1 LTR	0.133	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
East: W Main											
1 LTR	0.269	0.0	0.5	0.0	0.5	1.0	1.2	1.3	1.6	1.9	0.02
North: N Pine											
1 LTR	0.027	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.00
West: W Main											
1 LTR	0.225	0.0	0.6	0.0	0.6	1.1	1.4	1.6	1.9	2.3	0.03

Values printed in this table are back of queue (vehicles).

Table D.3B - Lane Queues (metres)

S Pine/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (metres) Nb1	Nb2	Nb	Percentile (metres) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: S Pine											
1 LTR	0.133	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
East: W Main											
1 LTR	0.269	0.0	3.7	0.0	3.7	6.9	8.3	9.5	11.7	13.5	0.02
North: N Pine											
1 LTR	0.027	0.0	0.3	0.0	0.3	0.5	0.6	0.7	0.9	1.0	0.00
West: W Main											
1 LTR	0.225	0.0	4.6	0.0	4.6	8.5	10.4	11.8	14.5	16.8	0.03

Values printed in this table are back of queue (metres).

Table D.4 - Movement Speeds (km/h) and Geometric Delay

S Pine/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Mov ID	App. Speeds Cruise	Negn	Exit Speeds Negn	Cruise	Queue Move-up 1st Grn	2nd Grn	Av. Section Spd Running	Overall	Geom Delay (sec)
South: S Pine									
1 L	60.0	17.2	17.2	60.0			48.6	48.6	8.5
2 T	60.0	60.0	60.0	60.0			60.0	60.0	0.0
3 R	60.0	20.2	20.2	60.0			49.0	49.0	8.3
East: W Main									
4 L	60.0	0.0	17.2	60.0			46.5	45.0	10.7
5 T	60.0	0.0	20.0	60.0			46.7	45.3	10.4
6 R	60.0	0.0	20.2	60.0			46.4	45.0	10.7
North: N Pine									
7 L	60.0	0.0	17.2	60.0			46.5	42.8	10.4
8 T	60.0	0.0	20.0	60.0			46.7	43.1	10.2
9 R	60.0	0.0	20.2	60.0			46.4	42.8	10.7
West: W Main									
10 L	60.0	0.0	17.2	60.0			46.5	46.1	10.4
11 T	60.0	0.0	20.0	60.0			46.7	46.4	10.4
12 R	60.0	20.2	20.2	60.0			47.4	47.4	8.6

"Running Speed" is the average speed excluding stopped periods.

Table D.6 - Gap Acceptance Parameters

S Pine/W Main
Enter subtitle
Intersection ID: 0
Stop Sign Controlled Intersection

Mov ID	Mov Type	Opng Flow (pcu/h)	Critical Gap Hdwy (s)	Critical Gap Dist (m)	Foll-up Headway (s)	Entry HV Equiv
South: S Pine						
No opposed movements on this approach						
East: W Main						
4 L	Normal	486	4.50	25.2	2.50	2.00
5 T	Normal	208	6.50	36.2	3.50	2.00
6 R	Normal	19	4.50	60.1	2.50	2.00
North: N Pine						
7 L	Normal	308+	7.00	41.0	4.00	2.00
8 T	Normal	625+	6.50	34.5	3.50	2.00
9 R	Normal	345+	5.00	25.8	3.00	2.00
West: W Main						
10 L	Normal	372	4.50	25.1	2.50	2.00
11 T	Normal	108	6.50	35.5	3.50	2.00

Values in this table are adjusted for heavy vehicles in the entry stream.
\+ Percentage of exiting flow included in total opposing flow

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