APPENDIX F

Implementation Strategy Technical Memorandum

Woodland
Transportation Infrastructure
Strategic Plan

Implementation Strategy Technical Memorandum

Prepared for

Cowlitz-Wahkiakum Council of Governments
Administration Annex
207 N. 4th Avenue
Kelso, WA 98626

Prepared by

Parametrix
700 NE Multnomah, Suite 1000
Portland, OR 97232-4110
503-233-2400
www.parametrix.com

In Association with:

Normandeau Associates
Vancouver, WA

Economic and Financial Analysis
Vancouver, WA

August, 2008 | 274-2398-006

CITATION

Parametrix. 2008. Implementation Strategy Technical Memorandum.
Prepared by Parametrix, Portland, Oregon. August, 2008.

TABLE OF CONTENTS

1. INTRODUCTION 1-1
1.1 PURPOSE AND CONTEXT OF THIS REPORT 1-1
1.2 REPORT CONTENT AND ORGANIZATION 1-1

2. PLAN DEVELOPMENT 2-1
2.1 NEED FOR IMPROVEMENTS 2-1
2.1.1 Existing Needs and Deficiencies 2-1
2.1.2 Needs and Deficiencies Associated with Community Growth 2-2
2.1.3 Development and Evaluation of Improvement Options 2-3
2.2 DESCRIPTION OF PLAN RECOMMENDATIONS 2-3
2.2.1 I-5 and Dike Road 2-4
2.2.2 Scott Avenue Crossing 2-5
2.2.3 I-5 and SR 503 2-8
2.2.4 SR 503 2-10
2.2.5 Other improvements 2-12
2.3 HIGHLIGHTS OF THE PLANNING PROCESS 2-13
2.3.1 Public Participation, Outreach and Informational Activities 2-13
2.3.2 Plan Vision and Desired Outcomes 2-14
2.3.3 Summary of Public Input about Needs and Deficiencies 2-15

3. CAPITAL IMPROVEMENTS PROGRAM 3-1
3.1 RECOMMENDED SHORT-TERM PRIORITIES 3-1
3.2 RECOMMENDED MID-TERM PRIORITIES 3-2
3.3 RECOMMENDED LONG-TERM PRIORITIES 3-2
3.4 OTHER IMPROVEMENTS 3-2

4. FUNDING STRATEGY 4-1
4.1 INTRODUCTION 4-1
4.2 OVERVIEW OF FUNDING CRITERIA 4-1
4.3 FUNDING SOURCES 4-2
4.3.1 Federal Funding 4-2
4.3.2 State Funding 4-2
4.3.3 Regional Funding 4-5
4.3.4 Local Funding 4-5

5. IMPLEMENTATION STRATEGY 5-1
5.1 OVERVIEW OF PROJECT IMPLEMENTATION TIMELINE 5-1
5.2 ACTION PLAN 5-2
5.2.1 Year One Activities 5-2
5.2.2 Year Two Activities 5-7

TABLE OF CONTENTS (CONTINUED)

5.2.3 Year Three Activities 5-8
5.2.4 Outlying Year Activities 5-8
5.3 POSSIBLE TDB FORMATION 5-8
5.4 ON-GOING PUBLIC INFORMATION AND INVOLVEMENT 5-11
5.4.1 Public Information, Input and Education about Priority Projects and Funding Needs 5-11
5.4.2 Build Broad Support and Coalitions 5-12
5.4.3 On-going Public Involvement Approach 5-13
5.5 CONTINGENCY PLANS IF PROJECTS NOT FUNDED WHEN ANTICIPATED 5-14
5.5.1 Re-assessment of Successes and Items to be Pursued 5-14
5.5.2 Maintenance of Public Support 5-15

APPENDICES

APPENDIX A Project Cost Estimates

TABLE OF CONTENTS (CONTINUED)

LIST OF TABLES

Table 3-1. Woodland Transportation Infrastructure Strategic Plan, Improvement Recommendations 3-3

Table 4-1 General Obligation Bonding Limits 4-6

LIST OF FIGURES

Figure 3-1. Overview of Improvement Recommendations 3-6

Figure 3-2. I-5/Dike Road Interchange, Recommended Improvement 3-7

Figure 3-3. I-5/SR 503 Interchange, Recommended Improvement 3-8

Figure 3-4a. Scott Avenue Crossing, Recommended Improvement 3-9

Figure 3-4b. Scott Avenue Crossing, Recommended Improvement 3-10

Figure 3-4c. Scott Avenue Crossing, Recommended Improvement 3-11

Figure 3-4d. Scott Avenue Crossing, Recommended Improvement 3-12

Figure 3-5. Scott Avenue/N. Pekin Road Intersection, Recommended Improvement .. 3-13

Figure 3-6. SR 503, Recommended Improvements at Goerig and Scott 3-14

Figure 3-7a. SR 503, Scott to Evergreen Recommended Improvement 3-15

Figure 3-7b. SR 503, Scott to Evergreen Recommended Improvement 3-16

Figure 3-7c. SF 503, Scott to Evergreen Recommended Improvement 3-17

Figure 3-8a. SR 503, Interim Improvement 3-18

Figure 3-8b. SR 503, Interim Improvement 3-19

ACRONYMS

CERB	Community Economic Revitalization Board
CIP	Capital Improvements Program
CTED	Department of Community, Trade and Economic Development
CWCOG	Cowlitz-Wahkiakum Council of Governments
EDA	(US) Economic Development Administration
FHWA	Federal Highway Administration
FMSIB	Freight Mobility Strategic Investment Board
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GO	General Obligation (bond)
HCM	Highway Capacity Manual
HUD	(US) Department of Housing and Urban Development
LID	Local Improvement District
MVMT	Million Vehicle Miles of Travel
PWB	Public Works Board
SR	State Route
SWRTC	Southwest Regional Transportation Council
TIB	Transportation Improvement Board
TIF	Transportation Impact Fee
TSP	Transportation System Plan
TISP	(Woodland) Transportation Infrastructure Strategic Plan
UGA	Urban Growth Area
WSDOT	Washington State Department of Transportation

1. INTRODUCTION

1.1 PURPOSE AND CONTEXT OF THIS REPORT

The primary purpose of the Woodland Transportation Infrastructure Strategic Plan is to build upon the foundation provided by the Woodland Transportation Plan by identifying improvement recommendations for the I-5 interchanges, and refining other appropriate improvement recommendations, particularly to serve the Woodland Industrial/Port area. This study has been developed using a collaborative process and culminates in the strategic infrastructure plan described in this report. This Implementation Plan is intended to address growing freeway and community traffic demand, increased arterial system connectivity, and enhanced and safer access to growing industrial and residential portions of the city, with special emphasis along SR 503.

1.2 REPORT CONTENT AND ORGANIZATION

This report is divided into five chapters, the first of which is this Introduction.

Chapter 2 provides brief highlights of the development of the *Woodland Transportation Infrastructure Strategic Plan (TISP)* including a description of the process undertaken to identify and evaluate needs, deficiencies, and a wide range of improvement options leading to the identification of specific improvement recommendations. These recommendations are presented in terms of:

- The nature of the problem to be addressed and objectives to be achieved focusing on existing and future community and transportation system needs and deficiencies
- A description of the recommended improvement
- A short assessment of how the improvement will address the identified needs and deficiencies

Chapter 2 also includes a short discussion of the public involvement process that accompanied each study phase.

Chapter 3 presents a prioritized Capital Improvement Program (CIP) including a detailed description of all project elements such as physical components, right-of-way acquisition, impacts on business and access issues to be addressed, environmental permitting, survey refinement needs and issued related to utility coordination, highlights of next steps from a design perspective. Projects are grouped by timing recommended for implementation including:

- A short-term (0 to 5 year) strategic action plan including immediate implementation actions affecting the interchanges, arterial road extensions and other improvements.
- A mid-term (5 to 10 year) action plan
- A long-term (10 to 20 year) action plan

The relationship of these projects to the city's currently adopted *Transportation Plan* (2005) including several other minor projects recommended for implementation to support the major interchange and/or highway-related improvements.

Chapter 4 summarizes a funding strategy to be considered in implementing the Capital Improvement Program. The discussion provides an overview of general funding conditions and forecasts including applicability of various funding sources in relation to the

recommended improvements, and identifies a general approach to funding projects and securing financing from a variety of sources including options for packaging projects to meet specific funding programs. Relationships among project recommendations that could influence funding are also identified.

Chapter 5 provides a overview of the general implementation strategy for the recommended projects. This includes a general timeline of activities leading towards project implementation, a Transportation Infrastructure Action Plan for phased improvements focusing on short, mid, and long-term actions, a discussion of issues associated with potential formation of a Transportation Benefit District, and recommendations for on-going public involvement. Suggestions related to contingency planning have also been identified should funding of specific projects not receive funding as anticipated.

2. PLAN DEVELOPMENT

This section provides a short summary documenting development of the Woodland Transportation Infrastructure Strategic Plan and identifying and describing specific plan recommendations. An overview graphic illustrating the location of major recommendations within the study area is presented in Figure 2-1.

2.1 NEED FOR IMPROVEMENTS

2.1.1 Existing Needs and Deficiencies

Incorporated in 1906, the City of Woodland has recently been experiencing significant growth in both population and employment. Between 1990 and 2004 the city's population grew by over 65 percent or at an annualized rate of 3.7 percent, making it the fastest growing city in the Cowlitz-Wahkiakum area. Some of this population growth has been attracted by the 32 percent increase in local jobs (1994 to 2004). Other factors influencing growth include the city's convenient location between two growing metropolitan areas (Longview/Kelso and Portland/Vancouver), lower housing costs, and small town atmosphere which have combined to make Woodland an attractive home for commuters. The city's employment includes a strong base in retail, service and industrial sectors.

Consistent with the growth in both population and employment, traffic volumes on major streets in Woodland have also grown over the past five to ten years (ranging from 2 to 4 percent per year in the eastern and northwestern portions of city). This growth has affected existing traffic operations and accident experience within the City and presents challenges to be addressed by the community to ensure that adequate transportation resources are available to support future growth expectations. In summary, existing transportation problems affecting the major street and highway system in Woodland include the following:

- **Congestion.** While the I-5 interchange with SR 503 currently operates at acceptable levels of service, long traffic queues are now being experienced on the northbound off-ramp leading into the city from Clark County and east/west traffic movement through the interchange is constrained by the close proximity of the existing signalized intersections. Operational failures are presently occurring for side street traffic at the unsignalized intersections of SR 503 (Lewis River Road) at N Goerig Street, SR 503 at E Scott Avenue. and Buckeye Street at Goerig Street.
- **Safety** A more significant existing problem on major streets in the city is the high accident experience, particularly along sections of SR 503 (Goerig Street to Gun Club Road) and at the intersections of the state highway with Insel Road. SR 503 in the eastern portion of the city has been identified as a High Accident Corridor by WSDOT between N. Goerig Street to the north City limits. This highway segment experiences a relatively high number rear end collisions resulting from frequent turning movements and limited sight distance in a number of locations. Existing accident experience has lead to many of the improvement recommendations in the city's Transportation Plan which involve widening of SR 503 to provide for center turn lanes and other improvements. Additionally, concern was raised during the public process for the ability of heavy trucks to accelerate up the northbound on-ramp to I-5 from Dike Road.
- **Connectivity** Contributing to the existing safety and congestion problems within the City is the lack of east/west roadway connections which force all local traffic crossing I-5 to travel through the existing interchanges. This creates significant delay

for persons traveling from home on the predominately residential east side to school and shop on the west side. Traffic queues in excess of one-quarter mile have been observed along Pacific Avenue traveling towards SR 503.

- **Truck traffic** There is a significant volume of truck traffic in the industrial sections of city (including the Port of Woodland) and on other streets resulting from logging and quarry operations outside of the urban growth area. In the northwestern portion of the city, truck traffic comprises more than 20 percent of existing volumes, with significant levels also occurring in the southwestern portion of the city and as much as 5 percent of the traffic stream along SR 503. This level of truck traffic can have a major effect on traffic movement and on the development and consideration of improvement alternatives.
- **Railroad Crossings** Several east/west streets on the west side of Woodland are impacted by the existing at-grade crossings of the BNSF railroad. Of particular significance are Davidson Avenue west of 5th Street and W Scott Avenue east of N Pekin Road. As the level of train traffic increases the connectivity of the local street network will be important to provide travel route alternatives.
- **Roadway Design Issues** – The existing street and highway system in Woodland is challenged by several deficiencies in current roadway design including:
    - Sight distance impairment at two locations along SR 503, approaching the N Goerig Street intersection from the south, and approaching the E Scott Avenue intersection also from the south.
    - Many segments of SR 503 do not currently meet WSDOT standards for access management resulting in frequent turning movements and associated delay and safety problems.
    - Physical constraints around the Dike Road interchange related to rail, and short spacing between some major intersections (such as SR 503 from the I-5 ramps to CC Street, including Atlantic Avenue).
    - Confusion at the intersection of SR 503 with the I-5 northbound off-ramp/Atlantic Avenue as some travelers have been observed treating Atlantic Avenue as a one-way street (e.g., for northbound traffic), rather than an existing two-way street.
- **Pedestrian and Bicycle Facilities –** The existing pedestrian system currently has large gaps, particularly along SR 503 and N Pekin Road
- **Emergency Response** – Concern has been raised about the negative effect of railroad blockage of Scott Avenue and Davidson Avenue on emergency response to northwestern Woodland.

2.1.2 Needs and Deficiencies Associated with Community Growth

Significant growth in traffic congestion is anticipated in the Woodland study area by the planning horizon year of 2025, at which point the community is expected to add approximately 4,100 more residents in comparison with 2007 estimates (approximately 80 percent increase over current levels). Additionally, Woodland employment is forecasted to more than double by 2025. A significant share of this employment growth is expected to occur in the northwest portion of the city anticipated associated with the Port of Woodland's industrial properties and other activity. Employment growth in this subarea is expected in increase by 148 percent and is highly dependent on good access to/from I-5.

Along with this growth, it is anticipated that traffic volumes will grow substantially and that many intersection in the study area will operate with unacceptably long delays. Failing intersections would include:

- I-5 southbound ramps/Pacific Avenue at SR 503
- I-5 northbound ramps/Atlantic Avenue at SR 503
- SR 503 at CC Street
- SR 503 at Goerig Street (both westerly and easterly intersections)
- SR 503 at E. Scott Avenue
- I-5 southbound ramps at Dike Road
- I-5 northbound ramps at Dike Road
- Old Pacific Highway at Green Mountain Road
- Old Pacific Highway at E. Scott Avenue
- Davidson Avenue at 5th Street
- Buckeye Street at Goerig Street

Within the vicinity of the I-5 interchange at SR 503 signalized traffic operations are affected by vehicles spilling back from one intersection to another. Traffic queues are expected to be lengthy and impact the entire interchange area from approximately Buckeye Street on the west to beyond CC Street on the east.

For unsignalized intersections, traffic operational failures affect primarily the stop-controlled side streets where long delays and lengthy queues would be experienced. Traffic queues on the I-5 off-ramps to Dike Road are expected to exceed 700 feet on the southbound ramp and to be nearly 500 feet in length on the northbound ramp.

2.1.3 Development and Evaluation of Improvement Options

The development of improvement options focused addressing the major transportation system issues within the City of Woodland including: existing and future congestion problems at the I-5 interchanges, the lack of east/west connectivity within the city for non-freeway traffic, lack of east/west accessibility over the BNSF mainline railroad, and safety issues along SR 503 in the eastern portion of the city.

A phased analysis process was undertaken which developed and evaluated a wide range of improvement options. The initial phase focused on brainstorming potential improvements which were screened against a series of evaluation criteria developed through the technical and public involvement process. The result of this screening was identification of a "short list" of feasible improvement options for which a more detailed evaluation and conceptual design process was conducted. The development and evaluation of improvement options is documented in detail in the *Evaluation of Alternatives Technical Memorandum*, dated July 2008. This evaluation has lead to the identification of a series of improvement recommendations that are discussed in detail below and in Chapter 3.

2.2 DESCRIPTION OF PLAN RECOMMENDATIONS

The discussion of plan recommendations has been divided into five sub-sections consistent with the general location of major improvement recommendations. These include the I-5/Dike Road interchange area, the Scott Avenue crossing of I-5 and the Burlington Northern Railroad, the I-5/SR 503 interchange area, SR 503 from Goerig Street to Evergreen Lane, and other assorted improvements as identified through this planning process and are recognized in

the City's 2005 *Transportation Plan*. At each location, the discussion focuses on the problem to be solved, an overview of the recommended solution, and a quick summary of the benefits associated with the improvement.

2.2.1 I-5 and Dike Road

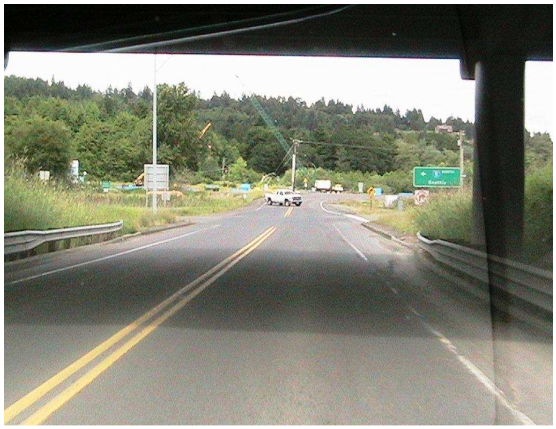
What is the Problem to be Solved?

Consistent with the growth in both population and employment, traffic volumes on major streets in Woodland have also grown over the past five to ten years (ranging from 2 to 4 percent per year in the eastern and northwestern portions of city). This growth has also affected the I-5 interchanges at Dike Access Road which has seen an increase in traffic largely associated with business expansion in the Port of Woodland and other adjacent industrial areas. There is a significant volume of truck traffic in this area comprising more than 20 percent of existing volumes in some locations. Much of the truck traffic chooses to use the I-5/Dike Road interchange in preference to the interchange at SR 503, due to the long delays and traffic queues on SR 503. Some safety concerns have been identified related to the ability of heavy trucks to accelerate up the northbound on-ramp to I-5 from Dike Road.

Significant growth in traffic congestion is anticipated in the I-5/Dike Road interchange area, resulting in unacceptably long delays at the intersections of Dike Road with the I-5 northbound and southbound ramps which are presently have stop signs to control traffic leaving the freeway. Traffic queues on the I-5 off-ramps to Dike Road are expected to exceed 700 feet on the southbound ramp and to be nearly 500 feet in length on the northbound ramp. Signal warrants would be met at both of these intersections based on future traffic volumes.

In addition to existing and future traffic operational and safety problems at this interchange, concern has also been expressed about the lack of bicycle and pedestrian facilities through the interchange area. Bicycle facilities are largely unavailable in the broader study area with the exception of frequently narrow roadway shoulders. Further, the I-5/Dike Road interchange area has a history of seasonal flooding, much of which is related to runoff from the nearby hillside to the north and east of the interchange.

What is the Recommended Solution?



Physical constraints around the Dike Road interchange significantly limit the range of improvement options that could be successfully implemented without major reconstruction of the interchange. Dike Road currently provides a single lane in each direction under I-5 and the BNSF mainline with inadequate shoulders to safely accommodate bicycles and pedestrians Additionally, to successfully implement signalized improvements at this interchange, channelization must be provided to accommodate left turns onto the freeway from Dike Road. This would necessitate reconstruction of the I-5 northbound overcrossing and the BNSF mainline bridge to accommodate the added roadway width need for the left turn lanes.

Based on the analysis of a wide range of improvement alternatives, it was determined that the optimal treatment of traffic movement through the I-5/Dike Road interchange area would

include development of three single lane roundabouts – two at the interchange and one at the intersection of Dike Road and Schurman Way.

This project is illustrated in Figure 3-2 and would include:

- Retaining the existing roadway cross-section between the northbound and southbound ramps with development of two teardrop single lane roundabouts to serve for ramp termini intersections. These roundabouts are currently in design as mitigation for an approved Wal-Mart development along Dike Road to the west of the interchange. The roundabouts will be designed to accommodate a very large and specialized low-bed truck as the design vehicle.
- Development of a single lane roundabout at the intersection of Dike Road with Schurman Way. A roundabout is recommended at this intersection in preference to a traffic signal due to proximity of the intersection to the I-5 interchange roundabouts. Signalization of this intersection could conflict with safe and effective operation of the roundabouts. The Dike Road/Schurman Way roundabout should also be designed to accommodate design vehicle trucks while integrating features to keep down travel speeds for all other vehicles. This improvement could also accommodate full-way access to/from the proposed Wal-Mart parking lot on the north side of the intersection. Some right-of-way acquisition will be necessary to implement this project. Consideration should be give to acquiring this right-of-way through the development review process as adjacent parcels develop.
- The existing Dike Road flooding problem should be addressed through continued coordination between WSDOT and the local Diking District to develop solutions that do not require the reconstruction or raising of the existing Dike Road profile.

What Does the Improvement Accomplish?

The development of single lane roundabouts at the I-5/Dike Road interchange would provide sufficient traffic capacity to accommodate not only traffic forecast for the 2025 planning horizon year based on the City's existing Comprehensive Land Use Plan, but would offer substantial additional capacity to accommodate traffic growth beyond the planning horizon.

Provision of adequate roadway capacity at this location benefits employees of the Port of Woodland's industrial properties, as well as other industrial users on the west side of the city. Additionally, should the Woodland School District move ahead with plans to relocate the community high school to a site on Dike Road west of I-5, these improvements could reduce existing congestion within the community and improve safety associated with school-related traffic. Pedestrian and bicycle facilities could be developed along much of Dike Road except where physically constrained under the freeway and railroad.

2.2.2 Scott Avenue Crossing

What is the Problem to be Solved?

Contributing to the existing safety and congestion problems within the City is the lack of east/west roadway connections which force all local traffic crossing I-5 to travel through the existing interchanges (e.g., along Dike Road or SR 503). This creates significant delay for persons traveling from home on the predominately residential east side to school, work or shop on the west side. Traffic queues in excess of one-quarter mile have been observed along Pacific Avenue traveling towards SR 503 as a result of this disconnectivity.

While the lack of east/west connectivity exacerbates existing and projected traffic congestion problems along Dike Road and SR 503, east/west travel in Woodland is also impacted by the

existing at-grade crossings of the BNSF mainline. This mainline dual track alignment provides one of the more important rail connections for the west coast, extending from California to Vancouver, British Columbia. In addition to BNSF, Union Pacific (UP) also uses the system for freight hauling along the west coast while Amtrak uses the BNSF mainline for its passenger train operations Based on train counts obtained from WSDOT for 2006,[1] approximately 49 trains per day pass through Woodland in both directions. Ten of these daily trains carry passengers and the remaining trains carry freight. Train speeds through Woodland are 60 MPH for freight and 79 MPH for passenger trains. Given an average length of 700 feet for passenger trains, approximately 6 seconds would be required to clear one of the at-grade crossing in addition to the time required for gates to go down and come up. An average 7,000 foot freight train would pass through a crossing in 1 minute and 20 seconds.

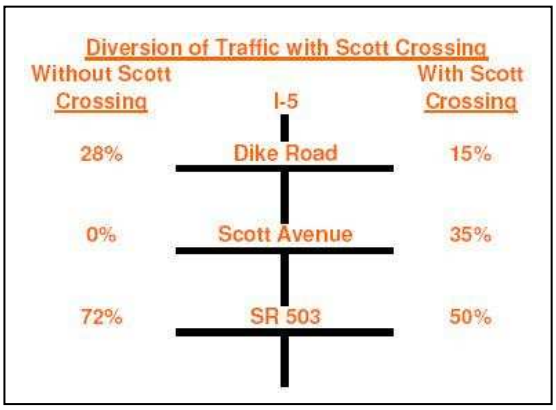
The current at-grade crossing on W. Scott Avenue is one of only three crossings in the city and is controlled by gates and flashing railroad signals. The other crossings include Davidson Street (which is also at-grade) and Dike Road (which is grade-separated). Most east/west traffic in the city use the Davidson Street and W Scott Avenue crossings and experience frequent delays impacting truck and traffic operations for the Port of Woodland and it's industrial tenants.

Concern has been raised about the negative effect of railroad blockage of Scott Avenue and Davidson Avenue on emergency response to northwestern Woodland. This issue is expected to become more severe should a new high school be built near Dike Road. Further, there is concern that congestion delays also impact emergency response times, particularly in relation to the location of the current and future police/fire stations.

What is the Recommended Solution?

Several options were evaluated to add east/west connectivity across I-5 and the BNSF mainline tracks. Generally, these options followed the alignment of Scott Avenue, Port Way and Heritage Street.

The Scott Avenue Crossing was identified as the most effective option for providing east/west street connectivity. This option could be expected to divert the highest levels of traffic from the Dike Road and SR 503 interchange areas of any crossing option, thus providing the greatest level of relief for existing and projected future congestion problems at these locations. The distribution of 2025 PM peak hour traffic among the various east/west streets that cross I-5 is illustrated in the figure below. On the left-hand side is the expected distribution of total traffic crossing I-5 using Dike Road and SR 503. On the right-hand side is the expected distribution of traffic including the Scott Avenue crossing.



This project is illustrated in Figure 3-4a through 4d and would include:

[1] Frederickson, Kirk, Washington State Department of Transportation, Rail Project Manager, e-mail, October 2, 2007.

- Improving Scott Avenue to provide two through lanes with left turn channelization at key intersections from I-5 to the west and a continuous left turn lane to the east of I-5. Traffic signals would be provided at the intersections with the I-5 northbound on-ramp and the I-5 southbound off-ramp. Bicycle lanes and improved pedestrian facilities would be provided, as well as accommodation for stormwater management. Additionally, the project would provide the opportunity to consolidate and channelized property access.

- Scott Avenue would remain at grade under I-5, with the freeway being raised to provide adequate clearance. Today the freeway is approximately six feet higher than the Scott Avenue approaches on either side and this differential would advantage the proposed freeway raising. The recommendation to raise I-5 was based primarily on the finding that by maintaining the existing street grade for Scott Avenue, property acquisition and access impacts could be minimized. This option is also expected to be less costly than the option of carrying Scott Avenue over I-5.

- The recommended Scott Avenue Crossing option would also include raising this street over the existing BNSF mainline tracks to the west of and paralleling I-5. An undercrossing option was considered but rejected due to the existing high water table which could cause periodic flooding of the undercrossing. Raising of the railroad over Scott Avenue was also considered but rejected due to the high cost involved in railroad trackage temporary relocation and new trackage construction.

- The railroad overcrossing improvement would sever the existing connection between Scott Avenue and N Pekin Road, and several options for replacement of this function were considered. The preferred option would involve extending N Pekin Road northward under Scott Avenue to connect with the existing Port Way cul-de-sac, and thus to Schurman Way.

- At the east end of the project area, the intersection of Scott Avenue with Old Pacific Highway would be improved to add signals and realign the easterly leg (Scott Avenue) to make a 90-degree connection with Old Pacific Highway. Channelization would include the addition of an eastbound left turn lane, a southbound right urn lane and a westbound right turn lane.

- Many additional improvements to the local circulation system were identified in the City's 2005 Transportation Plan and/or suggested through the public involvement process. Because there are many unknowns about specific land development proposals and localized access and circulation issues, these minor improvements could not be addressed in the context of this study which focuses on major improvement needs. Accordingly, it is recommended that a local circulation plan be prepared for the area west of I-5 that would generally be served by the Scott Avenue crossing to solidify improvement recommendations that support and complement this major improvement.

What Does the Improvement Accomplish?

The Scott Avenue crossing project offers significant benefits in terms of traffic diversion and congestion relief to both Dike Road and SR 503 in the vicinity of I-5. The anticipated traffic diversion buys a much longer life for the single lane roundabouts proposed along Dike Road and would result in a much less costly project to address existing and future congestion on SR 503. Such a project would be consistent with the context of the project area and community goals to retain the small town feel and character of the area.

The Scott Avenue crossing project would also provide better separation of local and freeway traffic, help to preserve the downtown, provide a second truck access route to/from I-5 north and the industrial area on the west side of the freeway, would provide better school access should the high school be located to the Dike Road site, and would provide better emergency access and community connectivity.

2.2.3 I-5 and SR 503

What is the Problem to be Solved?

The increase in traffic volumes in the City of Woodland over the past five to ten years has resulted in a growing congestion problem at the interchange of I-5 and SR 503. This interchange serves as the major access portal for the City from the regional and statewide transportation system and is heavily used by commuter, shoppers, trucks, and visitors to the Mt. St. Helens and Lewis River recreational areas.

The I-5 interchange with SR 503 currently experiences extensive traffic queuing due to the closely spaced intersections between the southbound on-ramp to I-5 and CC Street. Traffic operations analysis indicates that traffic backups on the I-5 exit ramp for northbound PM peak hour vehicles are approximately 500 feet in length. On occasion, traffic backups have been observed extending nearly to the freeway mainline. At the intersection of SR 503 with Pacific Avenue and the southbound ramp, southbound traffic backups have been observed extending one quarter mile or more during peak travel periods, and few options for traffic diversion exist. In addition to the close spacing of intersections through the interchange area, concern has been expressed about frequently observed driver confusion at the intersection of SR 503 with the I-5 northbound off-ramp/Atlantic Avenue. At this location, some travelers have been observed treating Atlantic Avenue as a one-way street (e.g., for northbound traffic), rather than an existing two-way street.

It is anticipated that traffic volumes will grow substantially and that many intersection in the study area will operate with unacceptably long delays. All intersections in the vicinity of the I-5/SR 503 interchange would fail including:

- I-5 southbound ramps/Pacific Avenue at SR 503
- I-5 northbound ramps/Atlantic Avenue at SR 503
- SR 503 at CC Street
- Buckeye Street at Goerig Street

Within the vicinity of the I-5 interchange at SR 503 signalized traffic operations are affected by vehicles spilling back from one intersection to another. Traffic queues are expected to be lengthy and impact the entire interchange area from approximately Buckeye Street on the west to beyond CC Street on the east. Northbound traffic exiting I-5 at SR 503 is expected to back up approximately 1,300 feet during the PM peak hour which would interfere with mainline traffic movement, potentially creating a safety concern for through-moving, high speed traffic.

There is a significant volume of truck traffic along SR 503 as the interchange provides primary access to I-5 from industrial destinations in the southwestern portion of the city as well as from the logging and quarry operations to the east outside of the urban growth area. As much as 5 percent of the traffic stream along SR 503 is comprised of trucks which can have a major effect on traffic operations. In addition to increase in general vehicle traffic, major increases in truck traffic are also anticipated, much of which will be focused on travel to/from I-5. This truck traffic will be generated by local industrial development, by quarries east of the Lewis River in Clark County, and by local retail and service businesses, particularly along Pacific and Atlantic Avenues between SR 503 and Scott Avenue.

What is the Recommended Solution?

A wide variety of options were considered to address existing and potential future traffic congestion problems at the I-5/SR 503 interchange. The options included: major widening of SR 503 with added through and turn lane capacity through the interchange, development of multi-lane roundabouts, and creation of a one-way couplet system. Each of these options involved development of a large improvement that would not meet the study objective of retaining the small town character of the community. Most also involved major expense, right-of-way acquisition and property access impacts.

Accordingly, consideration was given to developing a smaller improvement that relied on the diversion of traffic away from the I-5/SR 503 interchange to Scott Avenue to be served by the overcrossing improvement project. This option would be less expensive and disruptive than the other interchange options considered and was recommended contingent on development of the Scott Avenue crossing improvement.

This improvement is illustrated in Figure 3-3 and would include the following:

- Retain the existing four-lane cross-section on SR 503 under I-5 with improvements focused primarily on the eastern intersections.
- Add separate dual left turn lanes on the northbound I-5 off ramps and a free right turn lane that accesses an added eastbound through lane. This added eastbound through lane would continue to east of the intersection with A Street. Provide a southbound left turn lane on Atlantic Avenue and a westbound right turn lane.
- Relocate existing CC Street intersection with SR 503 eastward to align with existing A Street intersection. Some access modifications and property acquisition will be necessary to accomplish this improvement. Consideration should be given to accommodating large trucks traveling to/from Clark County over the Lewis River Bridge. This consideration will require a slight flattening of the curve on the southeast corner of the intersection of CC Street with the new A Street extension to accommodate northbound turning vehicles within a single travel lane. The newly expanded intersection of SR 503 and A Street should be signalized.
- Signalize the intersection of Buckeye and Goerig Streets.

What Does the Improvement Accomplish?

This improvement would provide adequate capacity to serve future traffic volumes at the I-5/SR 503 interchange assuming that the Scott Avenue crossing is also put in place within the long-range planning horizon. Depending on the distribution of future residential development in the City's pending Comprehensive Plan update, some traffic backup problems may be experienced with this recommendation. Accordingly, upon completion of the land use planning processes, consideration should be given to refining this recommendation. The potential benefits and likely cost savings associated with developing multi-lane roundabouts at this interchange could be one further option considered as these improvements could likely be built without affecting the existing cross-section of SR 503 under I-5.

2.2.4 SR 503

What is the Problem to be Solved?

Generally, most intersections along SR 503 east of the interchange area to the city limits are currently operating at an acceptable level of service D or better with two exceptions. These include: the intersection of SR 503 (Lewis River Road) at N Goerig Street, and SR 503 (Lewis River Road) at E Scott Avenue. The former is currently operating at LOS E for the stop sign controlled movement on Goerig Street during the PM peak hour. The latter is currently operating at LOS F during the same time period for the Scott Avenue approach. Both intersections are expected to drop to LOS F by the 2025 planning horizon year.

A more significant existing problem is the high accident experience, particularly along the portion of SR 503 from Goerig Street to Gun Club Road, and at the intersections of the state highway with Insel Road. During the five-year period from 2002 to 2006 (the most recent data available) no fatal accidents were reported, and, in general, 60 percent of the accidents along the SR 503 corridor from the I-5 ramps to Salmon Street were rear-end collisions. A majority of the accidents, 90 percent, occurred during the daylight hours with about 50 percent during the PM peak period. Many of these accidents are occurring at intersections and driveway access points, a situation that is indicative of the effects of congestion and frequent turning movements.

There are many design deficiencies along SR 503 in the study area including:

- Impaired sight distance at three locations; approaching the N Goerig Street intersection from the south, approaching the E Scott Avenue intersection also from the south, and on the curve between Fir Street and Evergreen Lane. Additionally, the skewed angle of Goerig Street at its intersection with SR 503 makes it difficult to view traffic traveling westbound on SR 503.

- Many segments of SR 503 do not currently meet WSDOT standards for access management. This can result in increased safety concerns as motorists stopping for on-coming traffic are rear-ended by those coming up from behind them. Frequent access points can also significantly reduce the capacity of a street or highway corridor to carry growing traffic volumes.

- There are limited pedestrian and bicycle facilities, largely confined to very narrow shoulders, adjacent to this posted 35 mph facility.
- East of Evergreen Lane to Neimi Road, recent collision experience is more varied with approximately 40 percent of collisions between 2002 and 2006 involving rear end or tuning collisions. 27 percent involved fixed objects and 14 percent involve non-domestic animals. The remaining 19 percent involve overturned vehicles, head on collisions, sideswipes and other undefined collisions. An average of 16 collisions per year occurred in the highway segment from Salmon Street to Neimi Road which includes the access to the Woodland Intermediate School. A collision rate of 2.16 per Million Vehicle Miles of Travel (MVMT) was calculated which is higher than the statewide average of 1.62 for similar highways around the state.

What is the Recommended Solution?

Existing accident experience along SR 503 in the study area was recognized in the City's 2005 Transportation Plan which recommended roadway widening to provide for center turn lanes and other improvements. Analysis of traffic operations along SR 503 on the east side of the City indicate that traffic signal warrants would be met at the intersections of SR 503 with both Scott Avenue and Goerig Street, while left turn warrants (using WSDOT methodology) would be met at the intersections with Hillshire Drive, Insel Road, Gun Club Road, Fir Avenue, and Evergreen Lane

Recommended improvements along SR 503 in the study area are illustrated in Figure 3-6, Figures 3-7a through 3-7c and Figures 3-8a and 3-8b. These improvements would include the following:

- Due to the nature of the existing traffic operational and safety problems along SR 503, the provision of a separated left turn lane for intersections and driveways was recommended from east of Scott Avenue to Evergreen Lane. This option would also include provision of sidewalks and bike lanes for the same area. The recommended cross-section would include two 12-foot through lanes, a 14-foot center turn lane, two 5-foot bike lanes, and two 4-foot planter strips and 6-foot sidewalks on each side. Total required right-of-way would be 68 to 70 feet. Adequate right-of-way for this improvement currently exists in some, but not all, locations. Right-of-way acquisition would be needed to construct the full widening improvement. See Figures 3-7a through 3-7c for illustrations of the full improvement recommendation.
- The intersections of SR 503 with Goerig Street and Scott Avenue were also evaluated and improvements recommended. These improvements would include a left turn lane and signal at Scott Avenue, and installation of a median to restrict turns to right-in/right-out at Goerig Street. This latter intersection could also be signalized if warrants are met in the future. Right-of-way acquisition would be needed to built the recommended improvement at the intersection of SR 503 and Scott Avenue (see Figure 3-6).
- An interim improvement was identified to provide a continuous left turn lane between Hillshire Drive and Gun Club Road. This improvement could be constructed using funds currently available to the City within existing right-of-way. The improvement includes two 12-foot travel lanes, a 14-foot center turn lane, and two 4-foot shoulders for use by bicyclists and pedestrians. Stormwater runoff would be collected in newly constructed open ditches and swales within the existing right-of-way. These improvements would also seek to utilize the existing stormwater system to the extent possible. These ditches and swales, whether new or existing, would be designed and/or modified to meet federal and state regulations relating to the

treatment of stormwater for both quality and quantity. See Figures 3-8a and 3-8b for illustrations of the interim improvements.

- As indicated by the brief summary of traffic safety east of Evergreen Lane to Neimi Road, there is no predominate pattern of traffic collisions that support continuation of a two-way left turn lane further east along SR 503. Due to the number of collisions experienced with fixed objects, consideration should be given to further evaluating and addressing roadside obstacles. Land development and changes to existing patterns and/or magnitude of highway access should be monitored periodically to determine if further safety improvements should be developed and implemented.

What Does the Improvement Accomplish?

The recommended improvements provide the necessary roadway capacity to accommodate expected growth in traffic volumes along the SR 503 corridor, while also addressing a significant existing safety problem. The improvement benefits both motorists and non-motorized system users through the provision of bicycle and pedestrian facilities.

2.2.5 Other improvements

What are the Problems to be Solved?

With the growth in traffic volumes expected to occur within the planning period, it is anticipated that many intersection in the study area will operate with unacceptably long delays. Failing intersections would include:

- Old Pacific Highway at Green Mountain Road
- Old Pacific Highway at E. Scott Avenue
- Davidson Avenue at 5th Street

Traffic signal warrants would be met at each location.

What are the Recommended Solutions?

To address existing and/or future congestion problems at the identified locations, the following improvements are recommended:

- Old Pacific Highway at Green Mountain Road – add southbound left turn lane and signalize intersection.
- Old Pacific Highway at Scott Avenue – add southbound left turn lane, signalize and reconfigure to provide 90-degree intersection on E. Scott Avenue leg.
- Davidson Avenue at 5th Street – restrict on-street parking to add westbound left turn lane and signalize intersection.

What Do the Improvements Accomplish?

These improvements would provide adequate capacity to safely accommodate future community and traffic volume growth. Additionally, the recommended improvement at the intersection of Scott Avenue with Old Pacific Highway would correct the badly skewed easterly leg (Scott Avenue), thus offering an improved east/west travel route from the east side of the city to west via the new Scott Avenue crossing.

2.3 HIGHLIGHTS OF THE PLANNING PROCESS

2.3.1 Public Participation, Outreach and Informational Activities

The overall objective of the public involvement effort for the Woodland Transportation Infrastructure Strategic Plan was simple, but fundamental: **educate, inform** and **involve**. This effort was focused on ensuring that stakeholders, agencies and residents became and remained actively engaged in the planning process, such that the resulting physical recommendations and implementation strategy would be fully "owned" by the community. Accordingly, the guiding principles for gaining this ownership that governed all public participation, outreach and informational activities included:

- Building trust and consensus
- Employing a vision and outcomes-based approach
- Carrying out an effective and interactive stakeholder and public involvement program
- Integrating consideration of transportation, land use and livability issues
- Developing and considering alternative scenarios through a transparent process that examines trade-offs
- Considering implementation at the very beginning and throughout the project, and delivering of an incremental implementation program to ensure achievement of the plan's recommendations.

The public involvement effort included many tasks which are summarized below:

- A Public Involvement Implementation Plan was prepared at the outset of the study and with the guidance of agency technical staff. This purpose of this plan was to provide guidance for the on-going public involvement effort through project implementation.
- A series of Stakeholder Interviews were conducted early in the planning process for the purpose of providing a basic understanding of the community's key issues, concerns, and opinions regarding the corridor. The interviews focused on identifying existing transportation system issues that could affect the development of the Woodland TSIP, including potential impacts on businesses and residences, project funding options, and locations for potential transportation improvements
- A project Vision and list of Desired Outcomes for the planning process was developed and vetting during early public outreach activities. This vision and outcomes later were used to develop criteria for the evaluation of a range of improvement options.
- A Citizens Advisory Committee was established and met five times through the planning process to provide coordinated public input at a level of detail greater than the public events. CAC members included representatives from local manufacturing industry, a trucking company,, the Woodland Chamber of Commerce, residents and farming interests, the building industry, and the Diking District.
- A variety of public events were conducted including:
    - Three public open houses. The first open house focused on introducing the project and soliciting input from the public on issues, concerns and ideas related to potential improvements. The second open house included

presentation and discussion of preliminary improvement alternatives. The third open house presented improvement recommendations.

  - Three jurisdictional briefings involving local elected representatives. These meetings included a brief presentation covering material similar to each of the public open houses and were held immediately prior to the open houses.
  - Presentations at local community meetings such as the Woodland Chamber of Commerce, the Port of Woodland Board of Commissioners, the Rotary Club, the Woodland School Board, the Cowlitz County Board of Commissioners, and one-on-one briefings for state legislators.

- Effective Communications were maintained throughout the project to ensure that all relevant issues were raised and addressed, and that information disseminated in the community was accurate and timely. Numerous public outreach activities were unmdertaken including: five project-specific newsletter, discussion of project status in the monthly CWCOG newsletter for the duration of the planning project, press releases and public advertisements prior to the public open houses, interviews with local media that formed the basis for news stories about the project, and posting of project materials on the CWCOG website..
- City Council Briefing at the conclusion of the study and prior to adoption of the Woodland TISP's recommendations.
- Development of a Public Involvement Plan for on-going activities to carry through plan implementation stages.

2.3.2 Plan Vision and Desired Outcomes

The project's vision statement was developed to provide overall direction to on-going planning activities by indicating how project success could be measures. The vision reflects community values with respect to both the transportation system and the general "feel" or quality of life within Woodland.

Project Vision

The City of Woodland's transportation system effectively and efficiently moves people and goods while reinforcing the City's small town feel, with improved connections between Woodland's residential neighborhoods, industrial areas, downtown, farms, parks, I-5 and recreational areas.

Desired Outcomes

Desired outcomes provide more specific measures by which project success in achieving the vision can be determined. Based on stakeholder input, CAC discussion and verbal and written input obtained during the first project open house, desired outcomes were identified as follows:

- Provides a plan to manage traffic congestion now and for the future, while maintaining current conditions or improving traffic on the I-5 off-ramps.
- Serves all forms of street travel including autos, trucks, pedestrians, bicyclists and future transit
- Maximizes safety for all users
- Improves local street connections to reduce need to use I-5 Interchanges for local trips

- Accommodates growth consistent with Woodland's adopted Comprehensive Plan
- Can be constructed in phases, is cost-effective and meets state and local requirements
- Provides for property access without degrading safety and the capacity to move traffic
- Enhances emergency vehicle response time and provides emergency evacuation routes
- Improves links to recreational areas for Woodland residents and those from outside community
- Addresses rail crossing issues
- Addresses flooding issues
- Results in a clearly articulated plan that addresses needs, is supported by the community, and can be used by elected leadership to advocate for project priorities and secure funding
- Establishes a partnership among local, county, state, and federal agencies, as well as the private sector to implement plan recommendations.

2.3.3 Summary of Public Input about Needs and Deficiencies

The public comments received focused primarily on recommended transportation improvements and concerns over the existing transportation system. Some of the most often cited comments included:

1. *Take care of SR 503*, either widening or adding turn pockets and improve multi-modal transportation facilities in the corridor. Specific suggestions included, but were not limited to, accommodate turning traffic, improve intersection control particularly at Scott Avenue, provide school bus pullouts, add sidewalks, improve signage to encourage motorists to use Dike Road interchange in preference to SR 503 interchange,
2. Alleviate congestion near I-5 Exits 21 and 22 by providing *an alternate east/west crossing*. Specific comments focused on concerns related to impacts on adjacent properties, need to also provide a grade-separation of the BNSF tracks to make the freeway crossing fully effective, design challenges related to potential flooding, need to maintain local street connections to Scott Avenue regardless of the crossing options ultimately selected, broad discussion of the need for a crossing including improved emergency access and safety, improved access to the grocery store, and ability to attract more shoppers to downtown businesses through reduced congestion along SR 503, need to improve the intersections of Scott Avenue with Old Pacific Highway and Scott Avenue with SR 503,
3. Address delays caused by *railroad crossings*. Options included constructing under or overpasses at crossings including Whalen, Davidson and Scott Avenue.
4. Improve I-5/Dike Road interchange. Suggestions included, but were not limited to, widening the exits and adding more lanes as the current Dike Road cross-section is too narrow, consider a variety of interchange designs, address the huge railroad bottleneck issue especially the need for a third rail track, address the flooding issue, and improve signage to encourage use of this interchange in lieu of the interchange at SR 503.
5. Many other local circulation improvements were identified through the public involvement process including, but not limited o:

- The extension of several local roadways including Downriver Drive, Schurman Way, Robinson Road, Heritage Street, Pinkerton Road, and others.
- Improvements to the intersection of N Pekin Road at Goerig Street which lies in very close proximity to the at-grade crossing of the BNSF tracks on Davidson Avenue.
- Improve the intersection of N Pekin Road with Caples Road where there is an existing speeding problem.
- Construct a new road between Davison and Beechwood in city right-of-way on the east side of the railroad tracks to enhance local circulation in the area between I-5 and the railroad.