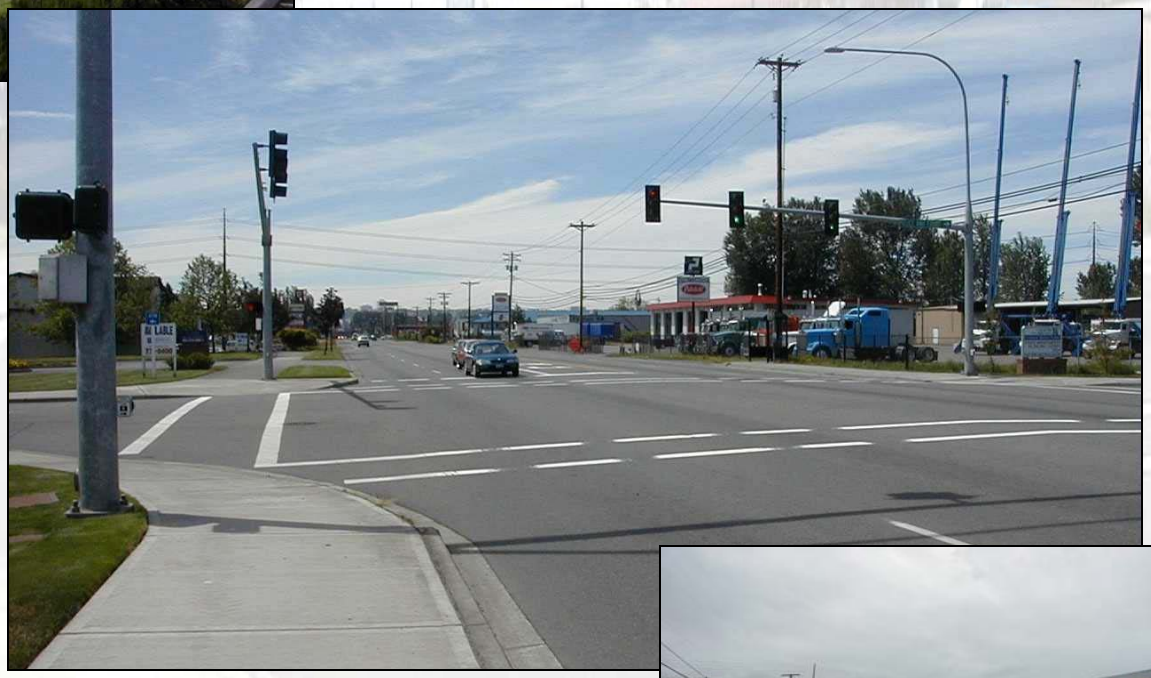
CITY OF FIFE
TRANSPORTATION PLAN



Fife, Washington
December 2002

TRANSPORTATION PLAN

City of Fife, Washington

THE CITY COUNCIL OF THE CITY OF FIFE, PIERCE COUNTY, WASHINGTON ADOPTED THIS TRANSPORTATION PLAN BY ORDINANCE No. 1477 ON DECEMBER 10, 2002.

City Council:	MIKE KELLEY, SR. (MAYOR) WALT FIETZ BARRY JOHNSON KORY EDWARDS JOE ROZENSKI MARDENE PATTON KIM ROSCOE
City Manager:	WILLIAM J. MALINEN
Public Works Director: RUSS BLOUNT, P.E.	Community Development Director: STEVE WORTHINGTON

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

INTRODUCTION

The importance of transportation to Fife can hardly be overstated. Mobility of people, goods, and services is a critical component of the quality of life in the city and of the economic environment for business. The availability and character of transportation choices profoundly impact residents, visitors, employees, and employers alike. Access to social, educational, medical, residential, employment, service, recreational, consumer, emergency response, civic, and business functions of life are all interdependent with transportation.

Projections indicate that Fife will grow in population and develop a substantially expanded business base over the next several decades. Fife's proximity to the Port of Tacoma and the operation of major highway facilities within the city present both challenges and opportunities. Transportation decisions will play a crucial role in how future growth is to be accommodated, and concurrently how both community values and a positive business environment are to be enhanced. It is with these understandings that this transportation plan has been prepared.

This *Transportation Plan of the city of Fife, Washington* updates the Transportation Element of the *1995 Fife Comprehensive Plan*. The plan examines multimodal transportation issues as they exist in the city today, predicts probable transportation concerns to be generated by local and regional growth over the next twenty years, and then analyzes strategies for transportation improvement and makes recommendations of solutions for funding and implementation.

The Transportation Element, and likewise this transportation plan that updates it, depends on comprehensive plan Land Use Element assumptions regarding future land use patterns. Knowing the patterns of future development helps to determine future transportation needs and options. Conversely, the availability of safe and convenient transportation facilities is a positive factor in decisions pertaining to development location. Other elements of the comprehensive plan are closely linked to transportation. For example, housing densities described in the Housing Element help determine whether transit systems are feasible. Identification of areas to be developed for trails and parks described in the Land Use Element help determine future needs for transportation access. Plans and constraints for utilities and facilities described in the Utilities and Capital Facilities elements help to ascertain transportation improvement demands. The nature of a comprehensive plan is that it should be internally consistent across elements. This transportation plan aims for such consistency, as well as demonstration of cooperation in contributing to county and state planning goals and meeting requirements.

The close relationship between land use and the supporting transportation infrastructure is central to the success of planning under the Growth Management Act (GMA). The GMA specifically requires the following topics to be addressed as part of a transportation element:

- Land use assumptions used in estimating travel demand;
- An inventory of existing transportation facilities and services;
- Level of Service (LOS) standards to gauge the performance of the system;
- Identification of actions and requirements needed to bring existing facilities and services up to standard;
- Forecasts of future traffic based on the land use plan;
- Identification of improvements and programs needed to address current and future transportation system deficiencies, including Transportation Demand Management (TDM) strategies;
- A realistic, multi-year financing plan that achieves concurrency with the adopted LOS standards and the land use element; and
- An explanation of intergovernmental coordination and regional consistency.

This plan is focused on projects that are under the jurisdiction of Fife. However, projects of other jurisdictions impact the city of Fife and affect the transportation plan. In particular, future projects by the Port of Tacoma, the Washington State Department of Transportation (WSDOT), Pierce County, and Union Pacific (UP) Railroad will have impacts that need to be evaluated and accommodated by the city of Fife.

Traffic growth is related to development within Fife and the surrounding area. The traffic growth estimates are tied to estimates of growth in dwelling units and employment in the vicinity. Dwelling unit and employment estimates are used as input to the traffic forecasting models that are used to estimate future year traffic volumes. The magnitude of growth in traffic, in turn, results in transportation facility needs. Projects will be required to meet future traffic demands.

This update of the Transportation Element has been accomplished through evaluations of a series of alternative transportation improvements. Improvements focus on the arterial and collector street system under the jurisdiction of the city of Fife. The identification of transportation needs and projects will be limited to within the city limits, although known projects planned by other jurisdictions are recognized as elements of an overall regional plan. The study area and existing street network used for the Transportation Element update are shown in **Figure 1**.

TRANSPORTATION PLANNING PROCESS

The process used in analyzing the transportation system follows a traditional sequence of steps that recognizes the integral relationship between land use and transportation.

1. The land use and employment forecasts were prepared as part of the Land Use Element;

2. Land use forecasts are then translated to PM peak hour traffic volumes, which are the highest hourly volumes.

3. Traffic volumes are assigned to the road network.

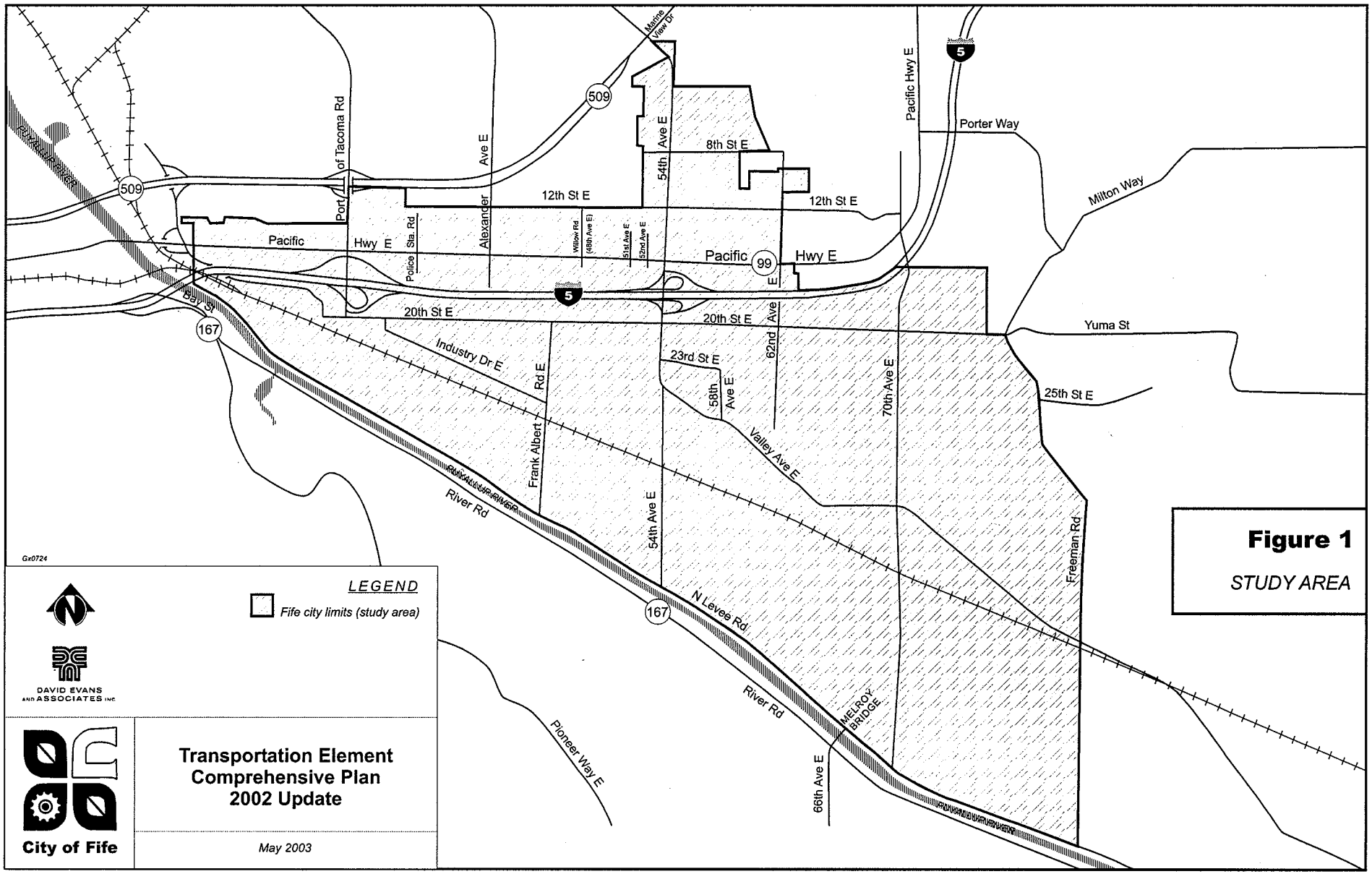
4. Traffic volumes are examined in relation to the road capacities and level of service is estimated to define transportation system deficiencies and improvement needs.

5. Growth associated with through traffic and traffic within the Interim Urban Growth Area (IUGA) is estimated for arterial streets that provide convenient routes through or around the edges of the city.

6. Locally generated traffic volumes and through traffic volumes are combined to reflect the long-range forecast for traffic volumes.

7. To ensure consistency, the resulting plan is compared to statewide GMA goals and Pierce County's countywide planning policies.

The process also relies on the ongoing involvement of the public. For this plan, the public involvement process included on-line access to information via the city's web site, meetings with key business leaders and other stakeholders, and a public survey mailed to residents through the city's newsletter, in addition to the more traditional public meetings. The survey was also available by request in Spanish. A summary of the survey results can be found in **Appendix A**.


Marine View Dr
509
Port of Tacoma Rd
Ave E
54th Ave E
8th St E
Pacific Hwy E
5
Porter Way
Milton Way
12th St E
Alexander
Pacific Hwy E
Sta. Rd
Police
Willow Rd (48th Ave E)
51st Ave E.
52nd Ave E
99
Bay St
167
20th St E
Yuma St
Industry Dr E
Rd E
23rd St E
62nd Ave E
58th Ave E
70th Ave E
25th St E
Frank Albert
Valley Ave E
River Rd
54th Ave E
Freeman Rd
N Levee Rd
MELROY BRIDGE
Pioneer Way E
66th Ave E
Gx0724
LEGEND
Fife city limits (study area)
DAVID EVANS AND ASSOCIATES INC
City of Fife
Transportation Element
Comprehensive Plan
2002 Update
May 2003
Figure 1
STUDY AREA

EXISTING CONDITIONS

Existing transportation data was assembled from the city of Fife and through field studies and reconnaissance. This data is presented in the following paragraphs to form a basis for development of the transportation plan.

Existing Land Use

Fife is generally developed in an industrial and commercial pattern, with relatively small areas of residential development. There are large areas of undeveloped land within the city limits. Most of the larger parcels of vacant land are located in the southern part of the city, south of the Union Pacific Railroad and in the eastern portion, east of 70th Avenue East. The large parcels of vacant land are mostly zoned for commercial or industrial use. New development will generate new traffic, so a system of arterials and collector streets with adequate capacity must be planned to support development levels in the comprehensive plan.

Future traffic volumes on roads and streets in the study area were estimated by using a travel forecasting model. The Fife model was prepared from the Pierce County travel forecasting model. For the study area, the Pierce County model was revised to provide more detail in terms of the size of Traffic Analysis Zones (TAZs), the coded street network and land use. TAZs are relatively small areas within the city, used to allocate land use data, such as dwelling units and employees.

The travel forecasting model translates new development into additional travel demand, primarily based on the number of new dwelling units and employees. Thus, specific numbers of dwelling units and employees were assembled during the calibration of the travel forecasting model. The area covered by TAZs for modeling was somewhat larger than the Fife city limits. The city limits include a population of approximately 5,000 persons and a work force of some 12,000 persons. The model area, being somewhat larger than the city limits, includes slightly more population and employment.

The transportation modeling process is summarized in the project technical report entitled *Fife Transportation Plan – Travel Forecasting Model.* This report is included as **Appendix B**. Currently, the Fife model area includes 3,417 dwelling units and a work force of some 14,220 employees. **Table 1** summarizes the breakdown of employment into several categories. As shown in Table 1, the largest numbers of employees are in the wholesale trade, communications and utilities, and the manufacturing category.

Table 1. 1999 Study Area Employment [(1) (2)]

Type of Employment	Number of Employees
Retail	2,730
Finance, Insurance, Real Estate Services	2,800
Manufacturing	3,670
Wholesale Trade, Communications, Utilities	4,620
Government	160
Education	240
Total	**14,220**

(1) The area for modeling is somewhat larger than the Fife city limits

(2) Appendix B, Travel Forecasting Model, describes the methodology used to develop this employment data

Existing Transportation System

The existing transportation data for the transportation system in Fife is presented in the following paragraphs to form a basis for development of the transportation plan.

Arterial Street Classification

All streets and highways in Fife are classified according to intended function. The function ranges from providing access, such as local neighborhood streets, to providing capacity to move large volumes of traffic over relatively long distances, such as freeways. Functional classifications serve both functions (access and traffic) to varying degrees.

Existing arterial street functional classification is shown on **Figure 2**. The classification system used by the city of Fife is described below.

Freeway: The function of a freeway is to carry large volumes of traffic over relatively long distances. Access to freeways is controlled and permitted only at interchange points. Currently two freeways provide service to Fife: Interstate 5 (I-5) and State Route (SR) 509. Currently, two I-5 interchanges serve the city of Fife at 54th Avenue East and Port of Tacoma Road. SR 509, which is currently being developed as a freeway is located just outside the north city limits of Fife. The primary evaluation for freeways is performed at the interchange areas.

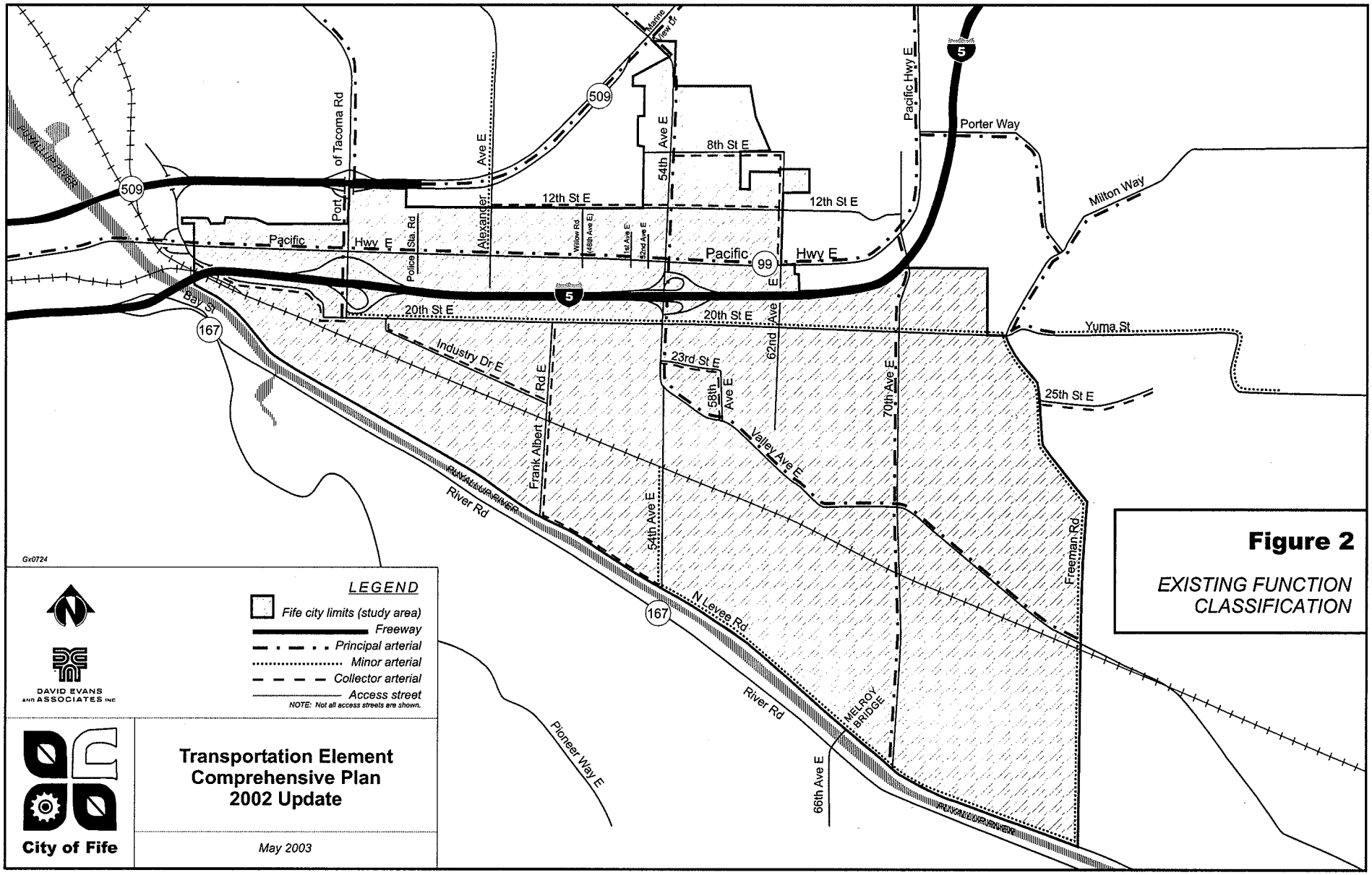
Principal Arterial: The function of a principal arterial is to move large volumes of traffic to and from major traffic generators and destinations, such as central business districts, and from community to community. A principal arterial also serves to collect and distribute traffic from freeways to local arterials. Principal arterials are two to six lane facilities.

Minor Arterial: Minor arterials function to distribute traffic from higher classification arterials to lesser arterials. They serve secondary destinations and traffic generators such as schools, business centers, or residential areas. They also move traffic from neighborhood to neighborhood within the community. Minor arterials are typically two to four lanes.

Collector Arterial: The function of a collector arterial is to collect and distribute traffic from arterials to local access streets, or directly to and from smaller neighborhood trip generators or destinations. They are almost always two or three lane facilities.

Access Streets: All other streets are classified as Access Streets. The intended function of these streets is limited to providing access to adjacent property. Almost all access streets are two lane facilities.

This transportation plan will evaluate, to some degree, all of the streets except Access Streets. Not all access streets are shown on Figure 2.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8th St E
12th St E
12th St E
Pacific Hwy E
Porter Way
Milton Way
Pacific Hwy E
Police Sta. Rd
Willow Rd (48th Ave E)
31st Ave E
32nd Ave E
Pacific Hwy E
99
5
Bay St
167
20th St E
20th St E
62nd Ave E
Yuma St
Industry Dr E
23rd St E
58th Ave E
70th Ave E
25th St E
Frank Albert Rd E
Valley Ave E
River Rd
54th Ave E
N Levee Rd
Freeman Rd
River Rd
MELROY BRIDGE
Pioneer Way E
66th Ave E
Gx0724
LEGEND
Fife city limits (study area)
Freeway
Principal arterial
Minor arterial
Collector arterial
Access street
NOTE: Not all access streets are shown.
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City of Fife
Transportation Element
Comprehensive Plan
2002 Update
May 2003
Figure 2
EXISTING FUNCTION CLASSIFICATION

Intersection Volumes

Traffic counts made in 1999, 2000, and 2001, for the PM peak hour, were assembled from the city of Fife. Where additional traffic data was required, new (2002) PM peak hour traffic counts were collected. The traffic count data included the number of vehicles making each turning movement at each of several key study intersections. This data, along with street geometrics and type of traffic control, were used to evaluate the current level of service being provided by the street system in Fife.

Intersection Level of Service

Level of Service (LOS) is a way of measuring the ability of traffic to flow smoothly through an intersection, or along a stretch of road. LOS is determined by measuring the average amount of delay when a vehicle goes through an intersection. Measurement usually takes place during the busiest time of the day – rush hour or "peak hour." The measurement results in assigning a letter grade to the intersection, with LOS A being best and LOS F being worst. The city of Fife has adopted LOS D as the standard for all city streets. This LOS is advisory only for state and interstate highway interchanges.

Intersection LOS was calculated for several key intersections on the arterial street system. The calculations were made using a simulation program called Synchro, and are based on the *2000 Highway Capacity Manual*. At LOS A, drivers experience little delay and intersections operate under free-flow conditions. Levels of Service B through D represent increasing amounts of delay and increasing numbers of vehicles that may have to wait through more than one red signal. At LOS E, the intersection is approaching capacity and is processing the maximum number of vehicles possible. Additionally, long backups and queues of vehicles occur, and many vehicles wait through more than one red signal. Level of Service F results from volumes in excess of capacity and is characterized by jammed conditions. The excess volume results in stop and go traffic conditions with heavy congestion and delay.

Level of Service (LOS) Delay Thresholds

LOS	Unsignalized Intersection	Signalized Intersection
A	0-10 seconds	0-10 seconds
B	10 to 15	10 to 20
C	15 to 25	20 to 35
D	25 to 35	35 to 55
E	35 to 50	55 to 80
F	>50.0	>80.0

Note: Shaded area does not meet city of Fife LOS standard.

Existing intersection LOS at the key study intersections is summarized in **Table 2**. **Figure 3** shows the intersection LOS for the key study intersections. The analysis does not fully take into account closely-spaced signalized intersections (300 feet or less). Thus, where signalized intersections operating at LOS D or worse and are closely spaced, the LOS may be worse than indicated by the evaluation tool being used. An alternative LOS methodology for closely-spaced signalized intersections was used in this planning study to evaluate two intersections as if they were a single location.

There are a number of locations in Fife with complex closely-spaced intersections. At these locations, the LOS would be identified as the lower LOS of the two intersections. Thus, for the 54th Avenue East intersections with SR 99 and the westbound I-5 ramps, the 2002 LOS would be D at both intersections. Also, at the Port of Tacoma Road intersections with SR 99 and the westbound I-5 ramp, the LOS would be LOS D at both locations.

As shown in Table 2, the signalized intersection of Valley Avenue East/70th Avenue East operates at LOS F. All of the other signalized intersections included in the study currently operate at LOS D or better during the PM peak hour. However, because of the close spacing of some of the intersections, severe congestion does occur. The signals at the I-5 westbound ramps at 54th Avenue East and Port of Tacoma Road are both near intersections of these same streets with Pacific Highway. The queues of vehicles extend from one intersection into the second intersection. These queues then result in delay at other intersection approaches. Heavy truck volumes and slower acceleration of trucks also contribute to severe congestion levels on many streets in Fife.

Table 2 also indicates that there are four unsignalized intersections (listed below) that currently operate at LOS F and one additional unsignalized intersection that operates at LOS E. The intersections at LOS F and LOS E are listed below.

LOS F

- I-5 Eastbound/54th Avenue East
- 20th Street East/Port of Tacoma Road
- 20th Street East/62nd Avenue East
- Valley Avenue East/Freeman Road East

LOS E

- 23rd Street East/54th Avenue East

In addition to the above intersections, the unsignalized intersection of North Levee Road/Melroy Bridge also operates at LOS F during some peak hours. This LOS is due to the queues of vehicles that back up from the signalized intersection of SR 167/66th Avenue East. During peak hours, these queues of vehicles reach across the Melroy Bridge to North Levee Road, making it impossible for vehicles to turn from North Levee Road onto the bridge without having delays that are at LOS F levels.

The LOS E/F operations at unsignalized intersections apply to only selected approaches or turning movements, usually those that must stop and wait for gaps in through traffic. Thus, the overall intersection operation may appear to be good, while individual movements have delays of 50 or more seconds per vehicle (LOS F). It is important to recognize that, in some cases, the number of vehicles affected by the large delays is relatively small, while the major intersection flows have low delay values.

Roadway Segment Level of Service

Level of service on major roadway segments between major intersections was also evaluated. For this analysis, the PM peak hour volume/capacity (V/C) ratio was used as the analysis tool. Level of service thresholds for roadway segments are listed below.

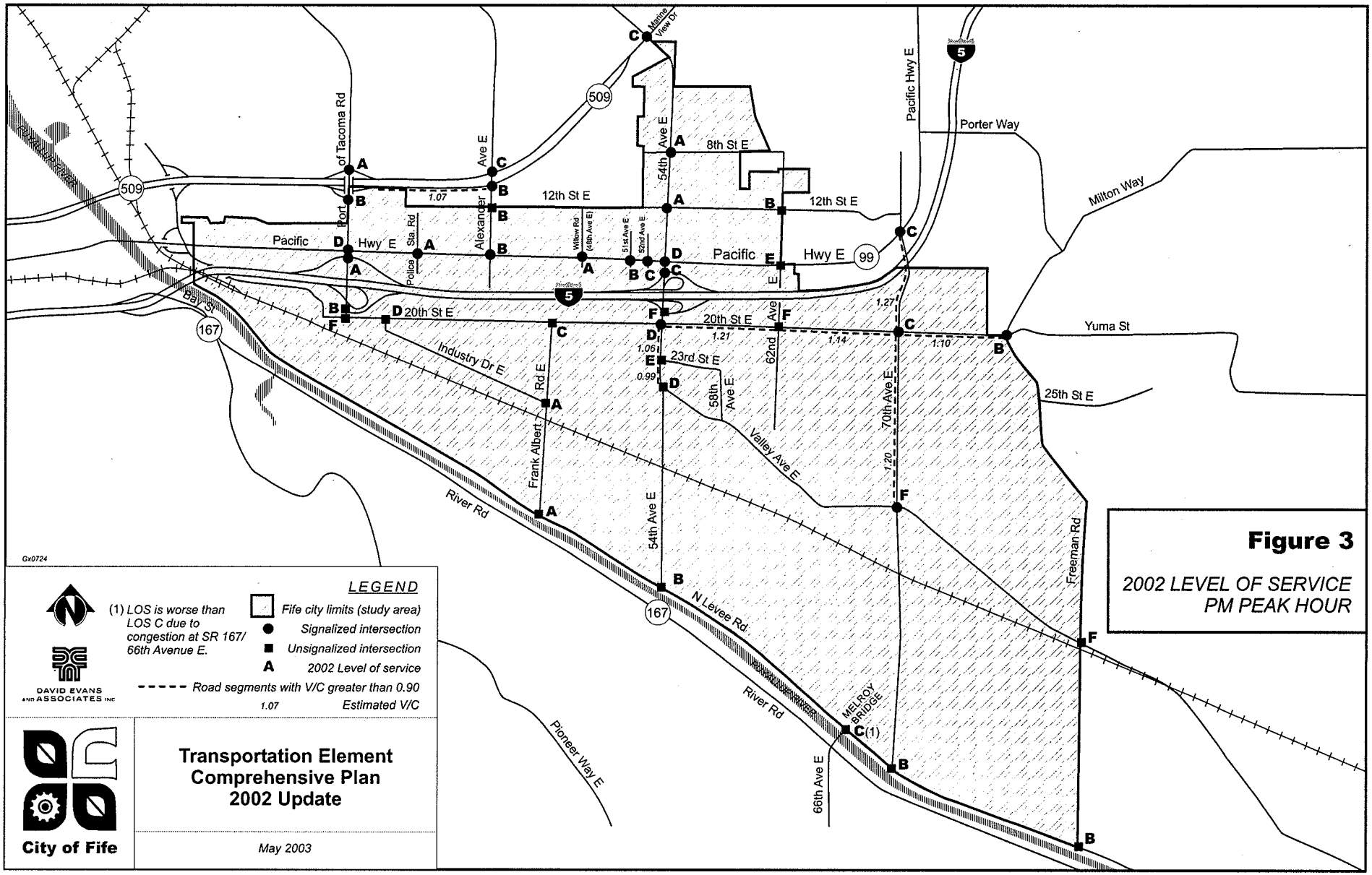
- Segments with V/C ratios that are acceptable - less than 0.90 (LOS D or better)
- Segments with V/C ratios approaching capacity - between 0.90 and 1.00 (LOS E)
- Segments with V/C ratios over capacity - greater than 1.00 (LOS F)

Major roadway segments with V/C ratios of 0.90 or greater are identified on Figure 3. These indicate locations with LOS E or LOS F. As shown, the highest V/C ratios are on 20th Street East, east of 54th Avenue East and on 70th Avenue East, between SR 99 and Valley Avenue East. There are also high V/C ratios on 54th Avenue East, between 20th Street East and Valley Avenue East.

Table 2. Existing Intersection Level of Service

Intersection	LOS [1]	Delay [2]	Maximum V/C [3]	Lane Group [4]
Signalized Intersections				
SR 509 Westbound/Port of Tacoma Road	A	5.1	0.31	Westbound-Right
SR 509 Eastbound/Port of Tacoma Road	B	12.3	0.60	Westbound-All
SR 509 Westbound/Alexander Avenue East	C	24.7	0.92	Westbound-Through/Right
SR 509 Eastbound/Alexander Avenue East	B	16.2	0.88	Eastbound-Through/Right
SR 509/Taylor Way	C	31.8	0.94	Eastbound-Through/Right
8th Street East/54th Avenue East	A	6.6	0.42	Eastbound-All
12th Street East/54th Avenue East	A	4.3	0.41	Eastbound-Through/Right
Pacific Hwy/Port of Tacoma Road	D	35.6	1.07	Westbound-Left
Pacific Hwy/Police Station Entrance	A	5.0	0.42	Northbound-Left
Pacific Hwy/Alexander Avenue East	B	18.7	0.84	Southbound-Left/Through
Pacific Hwy/Willow Road	A	8.4	0.49	Northbound-Left
Pacific Hwy/51st Avenue East	B	15.9	0.90	Southbound-Left/Through
Pacific Hwy/52nd Avenue East	C	34.8	0.80	Westbound-Left
Pacific Hwy/54th Avenue East	D	41.2	1.12	Southbound-Through/Right
Pacific Hwy/70th Avenue East	C	20.9	0.87	Eastbound-Through/Right
I-5 Westbound/Port of Tacoma Road	D [7]	35.6	1.07	Northbound-Left
I-5 Westbound/54th Avenue East	B [7]	41.2	1.12	Southbound-Through
20th Street East/54th Avenue East	D	51.7	1.05	Southbound-All
20th Street East/70th Avenue East	C	24.0	0.90	Eastbound-Through/Right
20th Street East/Freeman Road East	B	15.9	0.82	Southbound-All
Valley Avenue East/70th Avenue East	F	>80.0	1.47	Southbound-All
Unsignalized Intersections [5]				
12th Street East/Alexander Avenue East	B	13.0	0.19	Westbound-All
12th Street East/62nd Avenue East	B	10.9	0.04	Southbound-All
Pacific Hwy/62nd Avenue East	E	42.8	0.06	Northbound-Left
I-5 Eastbound/Port of Tacoma Road	B	12.7	0.45	Eastbound-Right
I-5 Eastbound/54th Avenue East	F	>50.0	1.12	Westbound-Right
20th Street East/Port of Tacoma Road	F	>50.0	1.62	Eastbound-Left
20th Street East/Industry Drive East	D	27.1	0.48	Northbound-Left
20th Street East/Frank Albert Road East	C	22.4	0.18	Northbound-Left
20th Street East/62nd Avenue East	F	>50.0	0.29	Northbound-Left
Industry Drive East/Frank Albert Road East	A	8.2	0.09	Northbound-All
23rd Street East/54th Avenue East	E	44.7	0.06	Westbound-Left
Valley Avenue East/54th Avenue East	D	26.2	0.51	Eastbound-All
Valley Avenue East/Freeman Road East	F	>50.0	1.48	Southbound-All
North Levee Road/Frank Albert Road East	A	9.3	0.10	Southbound-All
North Levee Road/54th Avenue East	B	10.1	0.11	Eastbound-All
North Levee Road/Melroy Bridge	C [6]	14.4	0.53	Westbound-All
North Levee Road/70th Avenue East	B	14.3	0.28	Southbound-Left
North Levee Road/Freeman Road	B	12.5	0.29	Southbound-All

[1] Level of Service: Whole intersection for signalized-Worst lane group for unsignalized
[2] Delay: Average seconds per vehicle: Whole intersection for signalized-Worst lane group for unsignalized
[3] Volume/Capacity for worst lane group (signalized and unsignalized)
[4] Worst lane group
[5] LOS, Delay, and Volume/Capacity for worst lane group for unsignalized locations
[6] LOS is worse than indicated due to effects of congestion at SR 167/66th Avenue East.
[7] Adjusted to match SR 99 intersection LOS.


Port of Tacoma Rd
Alexander Ave E
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LEGEND
Fife city limits (study area)
Signalized intersection
Unsignalized intersection
2002 Level of service
Road segments with V/C greater than 0.90
1.07 Estimated V/C
(1) LOS is worse than LOS C due to congestion at SR 167/ 66th Avenue E.
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Transportation Element
Comprehensive Plan
2002 Update
May 2003
Figure 3
2002 LEVEL OF SERVICE
PM PEAK HOUR

Transit Service

Pierce Transit provides transit service to the city of Fife and to the Port of Tacoma. Two basic routes serve Fife: Route 65, which covers the portion of the city south of I-5 and Route 500, which serves the city north of I-5, but has a route alternative (500A) that travels on 20th Street East through Fife. Both of these routes connect Fife with downtown Tacoma. Two additional routes serve the Port of Tacoma (Routes 60 and 61) and operate on SR 509, just north of the Fife city limits. These latter two routes connect the Port of Tacoma with downtown Tacoma. Generally, bus transit serves a corridor 0.25 miles either side of the route. This is about the upper limit on walking distance. Park-and-ride lots could be developed to enhance service.

Route 500/500A: Within Fife, Route 500 follows Pacific Highway South. Route 500A uses Pacific Highway South from downtown Tacoma to Milwaukee Way, where it follows 20th Drive East to 20th Street East. Route 500A follows 20th Street East to 70th Avenue East. At this point, some Route 500A runs travel southbound on 70th Avenue East, to a turn-around near 70th Avenue/45th Court East. After turning around, route 500A follows 70th Avenue East to Pacific Highway South, where it rejoins the Route 500 route. The Route 500A service to the 70th Avenue East/45th Court East turn-around is only provided on six runs, three in the morning peak, and one each in the early afternoon, afternoon peak, and late evening. Route 500A runs that do not go to the 70th Avenue/45th Court East turn-around return to SR 99 (from 20th Street East) via 70th Avenue East. After leaving Fife, Routes 500 and 500A continue to Federal Way. Service frequency on Route 500 varies from 20 to 30 minutes during the main part of the day. Route 500A provides half-hour service frequencies. Route 500 provides both Saturday and Sunday service. Route 500A does not provide Sunday service.

Routes 60, 61 and 65: Route 60 provides AM peak service from downtown Tacoma to the Port Industrial Yard and PM peak service between the Port Industrial Yard and downtown Tacoma. Five runs leave downtown Tacoma between 5:25 AM and 7:47 AM and four runs leave the Port Industrial Yard between 3:37 PM and 5:11 PM. Route 61 service extends from downtown Tacoma to Dash Point State Park. Near Fife, the frequency of service ranges from 30 minutes to two hours on weekdays between 5:30 AM and 6:20 PM. Route 65 provides peak-hour service between downtown Tacoma and the intersection of SR 509 and Milwaukee Way.

Railroads

The main line of the Union Pacific (UP) Railroad passes through the southern part of Fife, roughly paralleling the Puyallup River. A large switching yard is located south of Industry Drive East. There are existing at-grade rail crossings in Fife at Freeman Road East, 70th Avenue East, and 54th Avenue East. A grade separation structure crosses the tracks at Frank Albert Road. The at-grade crossings cause delays and contribute to accident patterns in the city. These are vital issues, as the railroad passes through an area with several large parcels of undeveloped land. The congestion and traffic safety issues will tend to increase as these areas are developed.

Non-Motorized Systems

The city of Fife's *Comprehensive Parks, Recreation, and Open Space Plan* provides detailed information about the status of non-motorized systems within and adjacent to the city. The 2003-2008 Transportation Improvement Program (TIP) includes one non-motorized project: a bicycle/pedestrian trail between 20th Street East and Valley Avenue East (TIP Priority 20) (Fife Landing Trail Addition). Additional priorities and facilities are described in the non-motorized element of the recommended transportation plan.

Programmed Future Projects

The city of Fife has an adopted six-year Transportation Improvement Program (2003-2008 TIP). Projects included in the TIP have at least partial funding in place and are considered to be very likely to be built during the next six to ten years. These projects, that are primary capacity improvements, are summarized in **Table 3**.

These projects are included in the Future Baseline Network for traffic forecasting, which is further discussed in the following section of this plan. Several of the TIP projects provide improvements that address existing intersection and street segment LOS. Others provide better access and circulation and still others provide continuity of cross-section along a corridor.

Pierce County also has a six-year TIP, with one project that will affect the city of Fife Future Baseline Network. This project is the northerly extension of Canyon Road, from Pioneer Way East, along 52nd Street East to a new Puyallup River bridge that would connect to 70th Avenue East in Fife. Pierce County's project would include a grade separation of the Burlington Northern Santa Fe (BNSF) Railroad. Both the city of Fife and Pierce County intend that this project will be built within the time frame of this transportation plan.

The city of Fife currently plans to close 54th Avenue East at the UP Railroad crossing. Also, the Port of Tacoma plans to close Alexander Avenue, just north of SR 509. All of the future alternative networks have been evaluated with these closures.

FUTURE CONDITIONS

Future Land Use

Current land use patterns and development will generally continue on into the future. South of I-5, there are large areas zoned for industrial use: most of the land west of 54th Avenue East and most of the land east of 64th Avenue East. Residential development is anticipated in the section between 54th Avenue East and 64th Avenue East, south of I-5, and between 54th and 70th Avenues East, south of the UP railroad track (the Autumn Grove development). Between 20th Street East and approximately 12th Street East, the zoning calls for mostly regional commercial development, with some pockets of other types of use. North of 12th Street East, the zoning is mostly for industrial use.

The number of dwelling units included in the traffic model is expected to increase by approximately 99 percent for a total of 6,797 dwelling units. Employment in the model area is expected to increase by nearly 113 percent, between 1999 and 2025. Details of employment growth, by category are shown in **Table 4**. As shown in Table 4, the wholesale trade, communications, utilities and the manufacturing categories will continue to be the largest, in terms of numbers of employees.

The estimated dwelling unit and employment data was used as input to the travel forecasting model. The model translates housing and employment growth into traffic growth for streets included in the various future year street networks.

Table 3. City of Fife 2003-2008 Transportation Improvement Program (TIP) Projects

TIP Priority Number	Project Number[1]	Type of Project	Street	Project Limits	Number of Future Lanes
1	1.0	Intersection	70th Avenue East	At Valley Avenue East	NA
2	1.0	Road	70th Avenue East	20th Street East to Valley Avenue East	5
3	2.0	Road	Valley Avenue East	70th Avenue East to Freeman Road	4
4	14.0	Road	70th Avenue East	20th Street East to SR 99	4
5	5.0	Road	SR 99	Alexander Avenue East to Port of Tacoma Road	5 [3]
6	7.0	Road	62nd Avenue East	Valley Avenue East, north to current road end	3
8	6.0	Road	20th Street East	54th Avenue East to 63rd Avenue East	3
9	15.0	Intersection	20th Street East	At 58th Avenue East	Signal
10	8.0	Intersection	20th Street East	At 62nd Avenue East	Signal
11	16.0	Intersection	SR 99	At 54th Avenue East	NA
12	17.0	Intersection	SR 99	At 62nd Avenue East	NA
13	NA (4)	Road	20th Street East	Port of Tacoma Road to Industry Drive East	3
14	18.0	Road	20th Street East	63rd Avenue East to 70th Avenue East	3
15	4.0	Road	32nd Street East [2]	54th Avenue East to Frank Albert Road	3
16	NA (4)	Road	20th Street East	Industry Drive to Wapato Creek	3
17	20.0	Road	Valley Avenue East	54th Avenue East to Dale Lane	3
18	21.0	Intersection	20th Street East	At Industry Drive	Signal
19	22.0	Intersection	20th Street East	At Port of Tacoma Road	Signal
23	9.0	Road	12th Street East	54th Avenue East to Alexander Avenue East	3
24	10.0	Road	48th Street East	70th Avenue East to Freeman Road	3
25	23.0	Road	70th Avenue East	Valley Avenue East to North Levee Road	5
26	19.0	Road	20th Street East	70th Avenue East to Freeman Road	3
27	24.0	Road	North Levee Road	70th Avenue East to Freeman Road	3
29	26.0	Road	62nd Avenue East	I-5 to 8th Street East	3

(1) Roadway project number for Transportation Element – Corresponds with Figure 5
(2) Approximate location
(3) Complete five-lane facility
(4) The roadway portion of this project is complete

Note: Some TIP priorities (7, 20, 21, 22, and 28) are not shown in Table 3 due to: 1) do not add significant road capacity or 2) are bicycle/pedestrian projects.

Table 4. Estimated 2025 Study Area Employment[1]

Type of Employment	Number of Employees	Percent Increase[2]
Retail	5,232	47.3
Finance, Insurance, Real Estate Services	5,850	69.4
Manufacturing	11,158	179.2
Wholesale Trade, Communications, Utilities	6,895	40.2
Government	476	98.8
Education	638	82.9
Total	**30,249**	**112.7**

[1] The study area for modeling is somewhat larger than the Fife city limits
[2] Increase over 1999 levels

FUTURE BASELINE TRANSPORTATION SYSTEM

Street Network

The street projects included in the city of Fife 2003-2008 Transportation Improvement Plan (TIP), as well as the Pierce County project to extend Canyon Road and the WSDOT project to add high occupancy vehicle (HOV) lanes to I-5 are included in the Future Baseline Network. As the name implies, this network represents traffic conditions that can be expected in 2025 with only the existing transportation facilities plus those that are relatively sure of being funded are built. The Future Baseline Network also includes the closing of 54th Avenue East at the Union Pacific Railroad.

There are several additional projects that are relatively sure of completion by 2025. These projects were included in the Future Baseline Network. These projects are summarized in **Table 5**.

Table 5. Additional Projects Included in the Future Baseline Network

Project Number [1]	Type of Project	Street	Project Limits	Number of Future Lanes
3.0 [2]	Road	54th Avenue East	20th Street East to Valley Avenue East	3
11.0	Road	Canyon Road Extension [3]	Pioneer Way East to North Levee Road (at 70th Avenue East)	5
12.0	Road	A Street East [4]	54th Avenue East to 70th Avenue East	2 to 3
13.0	Road	54th Street East	Street Closure at UPRR	NA
25.0	Road	74th Avenue East	45th Street East to 48th Street East	2 to 3
27.0	Road	Alexander Avenue	Street Closure north of SR 509	NA

[1] Roadway project number for Transportation Element – Corresponds with Figure 5
[2] Currently under construction
[3] Pierce County project
[4] To be constructed as a part of the Autumn Grove Development

Both the city of Fife TIP projects (Table 3) and the additional projects summarized in Table 5 were added to the existing arterial/collector network to form the Future Baseline Network. Estimated future trips have been assigned to the network as the first step in the development of a future street plan for the city. Because the Canyon Road Extension (see Table 5) will include a new bridge over the Puyallup River, the existing Melroy Bridge will not be a major roadway link in the future. The Future Baseline Network projects are shown on **Figure 4**.

Railroads

The UP Railroad has long-range plans to expand the switch yard and extend the yard lead track to the east. The expansion of the facility will impact the grade crossings and may ultimately drive the need for additional grade separation structures.

Intersection Level of Service

Intersection Levels of Service were calculated for the Future Baseline Network, using the same methodology as for the existing intersection LOS. The resulting LOS is summarized in **Table 6** and on **Figure 5**. The alternative methodology used to evaluate existing LOS for closely-spaced signalized intersections was also used to identify LOS for the Future Baseline Network. Thus, the LOS for the combination of intersections on 54th Avenue East and Port of Tacoma Road at SR 99 and the westbound I-5 ramps are LOS F at all four intersections.

As shown in Table 6, four signalized intersections along Pacific Highway would operate at LOS F under the Future Baseline Network, as listed below.

- Port of Tacoma Road
- 52nd Avenue East
- 54th Avenue East
- 70th Avenue East

Three additional intersections would operate at LOS F, as listed below.

- 54th Avenue East/20th Street East
- 70th Avenue East/20th Street East
- 70th Avenue East/Valley Avenue East

Two additional signalized intersections would operate at LOS E, as listed below.

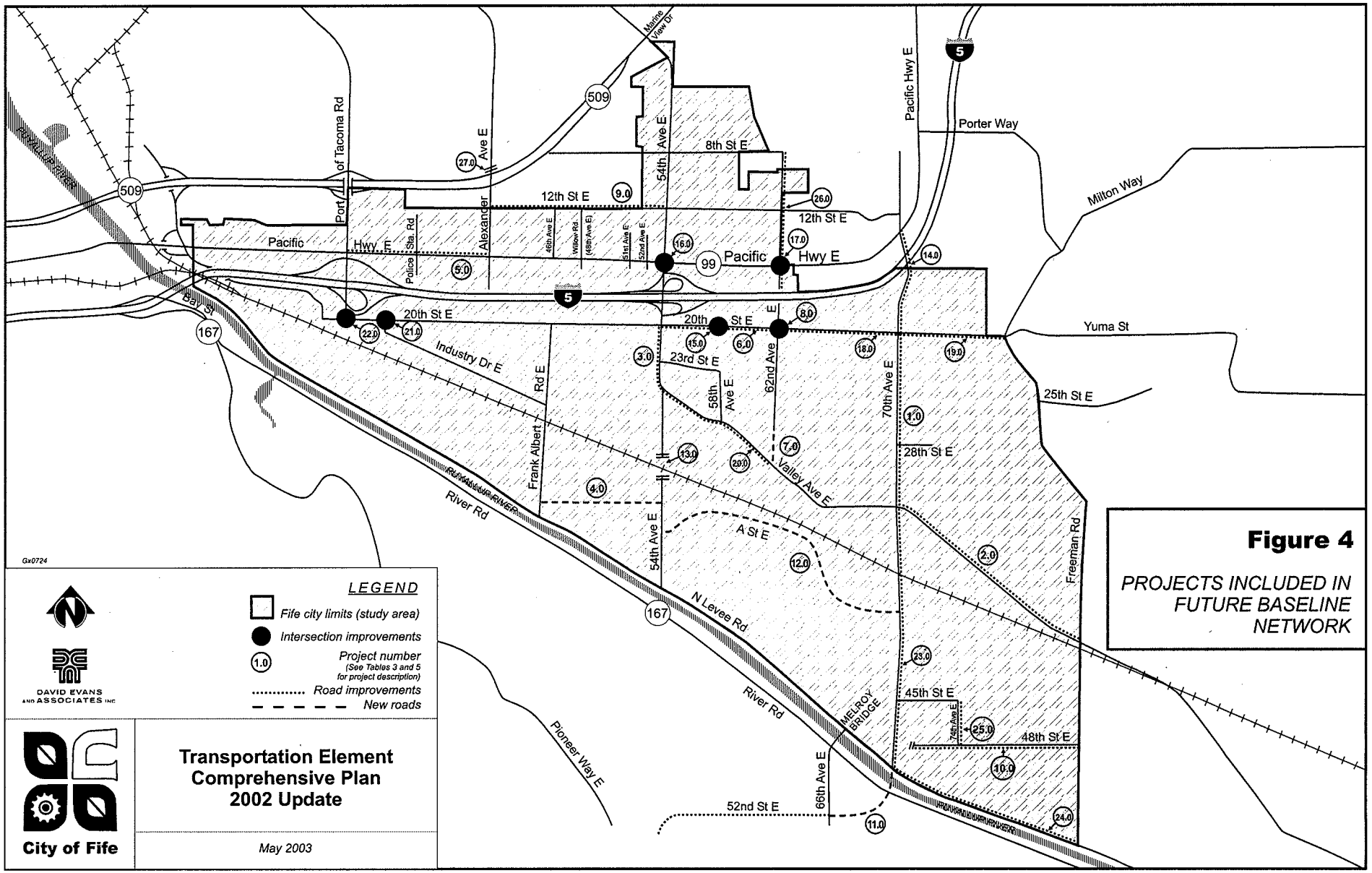
- SR 509 Westbound/Port of Tacoma Road
- SR 509/54th Avenue East

The two intersections of I-5 Westbound ramps at both 54th Avenue East and Port of Tacoma Road appear to have good operations (LOS B and C). In reality, the LOS between these two intersections and the signalized intersections at SR 99 will likely be LOS F, the same as the intersections of SR 99/54th Avenue East and SR 99/Port of Tacoma Road with the close spacing of the intersections. Without major reconstruction of the freeway interchanges, it will be difficult to improve the LOS in these areas. The best way to address these LOS issues is to divert some of the traffic out of the area. Studies show that the extension of SR 167 diverts traffic from these areas. The SR 167 extension is not included in the Future Baseline Network, but is included in the Future Alternative Networks.

Table 6 also identifies five unsignalized intersections that would operate at LOS F, under the Future Baseline Network, as listed below. One unsignalized intersection of I-5 Eastbound/Port of Tacoma Road would operate at LOS E under the Future Baseline Network.

- Pacific Highway/62nd Avenue East
- I-5 Eastbound/54th Avenue East
- 20th Street East/Frank Albert Road
- 23rd Street East/54th Avenue East
- Valley Avenue East/Freeman Road
- North Levee Road/Freeman Road

The information in Table 6 indicates that several intersections are projected to operate at LOS F in 2025. This is not surprising because the roadway improvements envisioned for the Future Baseline Network only include projects that will be built in the next six years (by 2008). The main purpose of evaluating the Future Baseline Network is to identify additional roadway and intersection projects that will be needed for the period after 2008. These are called future deficiencies. Future deficiencies will be directly addressed through an analysis of potential projects. Others will be addressed by the extension of SR 167 from Puyallup to SR 509.


Marine View Dr
Pacific Hwy E
Porter Way
Milton Way
Yuma St
25th St E
28th St E
45th St E
48th St E
8th St E
12th St E
20th St E
23rd St E
Port of Tacoma Rd
Alexander Ave E
54th Ave E
58th Ave E
62nd Ave E
70th Ave E
74th Ave E
Pacific Hwy E
Sta Rd
Police
46th Ave E
Willow Rd (48th Ave E)
51st Ave E
52nd Ave E
Industry Dr E
Frank Albert Rd E
Valley Ave E
A St E
River Rd
N Levee Rd
Freeman Rd
MELROY BRIDGE
Pioneer Way E
66th Ave E
52nd St E
Bay St
509
167
5
99
Gx0724
LEGEND
Fife city limits (study area)
Intersection improvements
Project number
(See Tables 3 and 5 for project description)
Road improvements
New roads
DAVID EVANS AND ASSOCIATES INC
City of Fife
Transportation Element
Comprehensive Plan
2002 Update
May 2003
Figure 4
PROJECTS INCLUDED IN FUTURE BASELINE NETWORK

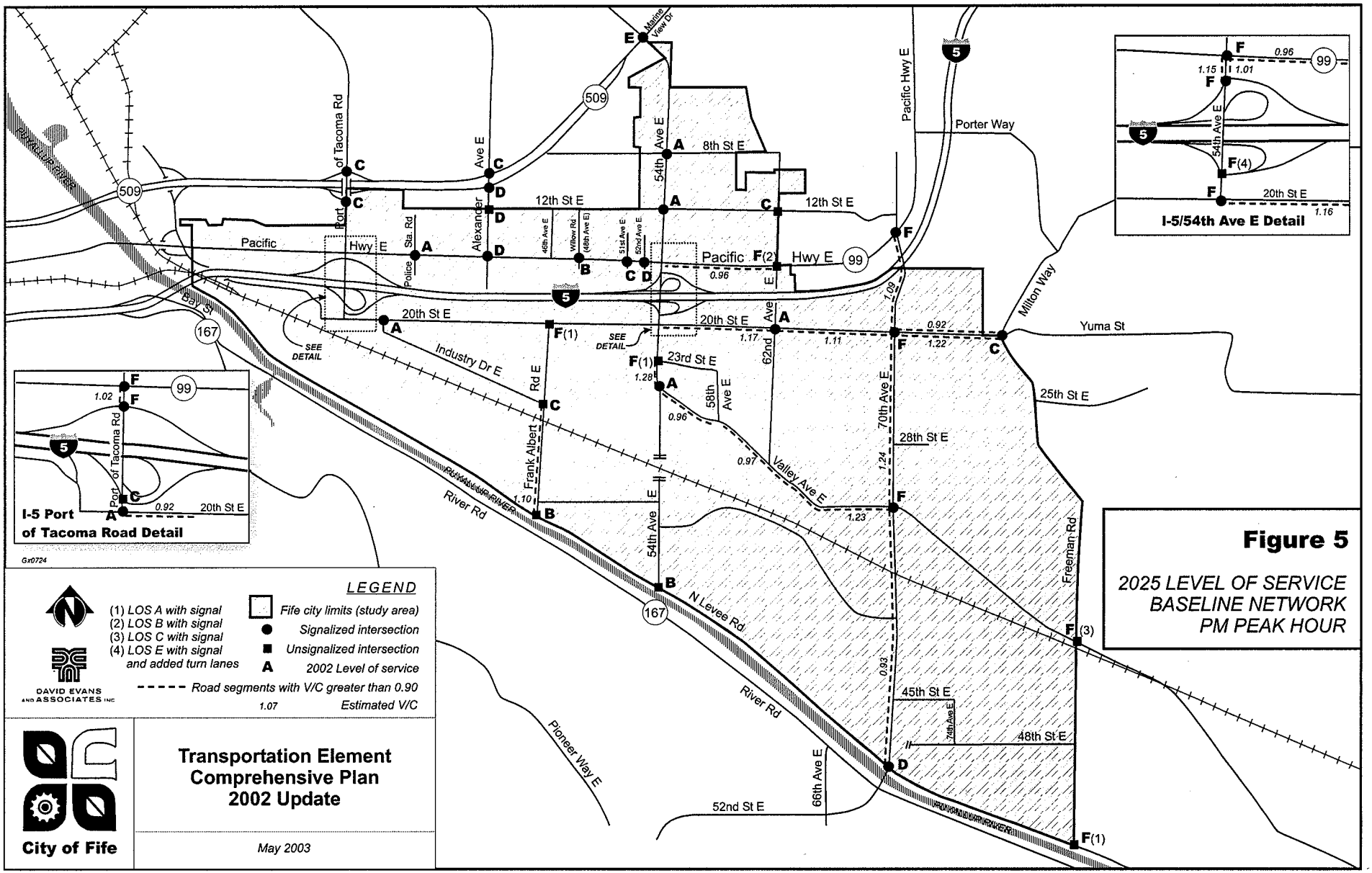


Figure 5
2025 LEVEL OF SERVICE
BASELINE NETWORK
PM PEAK HOUR
LEGEND
(1) LOS A with signal
(2) LOS B with signal
(3) LOS C with signal
(4) LOS E with signal and added turn lanes
Fife city limits (study area)
Signalized intersection
Unsignalized intersection
A 2002 Level of service
Road segments with V/C greater than 0.90
1.07 Estimated V/C
DAVID EVANS AND ASSOCIATES INC
City of Fife
Transportation Element
Comprehensive Plan
2002 Update
May 2003
I-5 Port of Tacoma Road Detail
I-5/54th Ave E Detail
Gx0724
Pacific Hwy E
Porter Way
Milton Way
Yuma St
25th St E
28th St E
45th St E
48th St E
52nd St E
8th St E
12th St E
20th St E
23rd St E
Pacific Hwy E
Industry Dr E
River Rd
N Levee Rd
Valley Ave E
Freeman Rd
Pioneer Way E
Frank Albert Rd E
54th Ave E
58th Ave E
62nd Ave E
66th Ave E
70th Ave E
Port of Tacoma Rd
Alexander Ave E
Marine View Dr
Police Sta. Rd
Bay St
SEE DETAIL

Table 6. Future Baseline Network – Intersection Level of Service

Intersection	LOS [1]	Delay [2]	Maximum V/C [3]	Lane Group [4]
Signalized Intersections				
SR 509 Westbound/Port of Tacoma Road	E	69.1	1.50	Northbound-Left
SR 509 Eastbound/Port of Tacoma Road	C	23.1	0.81	Westbound-All
SR 509 Westbound/Alexander Avenue East	C	26.2	0.94	Westbound-Through
SR 509 Eastbound/Alexander Avenue East	D	48.7	1.09	Eastbound-Through/Right
SR 509/Taylor Way	E	58.5	1.08	Southbound-Left
8th Street East/54th Avenue East	A	8.0	0.50	Eastbound-All
12th Street East/54th Avenue East	A	5.3	0.59	Eastbound-Through/Right
Pacific Hwy/Port of Tacoma Road	F	>80.0	1.86	Westbound-Left
Pacific Hwy/Police Station Entrance	A	4.5	0.44	Westbound-Through/Right
Pacific Hwy/Alexander Avenue East	D	35.2	0.96	Westbound-Through/Right
Pacific Hwy/Willow Road	B	10.2	0.59	Eastbound-Through
Pacific Hwy/51st Avenue East	C	23.4	1.04	Southbound-Left/Through
Pacific Hwy/52nd Avenue East	D	40.0	1.03	Eastbound-Through/Right
Pacific Hwy/54th Avenue East	F	>80.0	2.00	Westbound-Left
Pacific Hwy/70th Avenue East	F	>80.0	>2.00	Northbound-All
I-5 Westbound/Port of Tacoma Road	F [6]	>80.0	1.86	Northbound-Left
I-5 Westbound/54th Avenue East	F [6]	>80.0	2.00	Westbound-Left
20th Street East/Port of Tacoma Road	A	7.5	0.73	Westbound-Right
20th Street East/Industry Drive East	A	7.0	0.72	Westbound-Through
20th Street East/54th Avenue East	F	>80.0	1.30	Westbound-Left/Through
20th Street East/62nd Avenue East	A	6.2	0.86	Eastbound-Through/Right
20th Street East/70th Avenue East	F	>80.0	>2.00	Westbound-Left
20th Street East/Freeman Road East	C	32.9	0.95	Eastbound-Left
Valley Avenue East/70th Avenue East	F	>80.0	1.32	Southbound-Through/Right
Valley Avenue East/54th Avenue East	A	4.0	0.62	Southbound-Through
North Levee Road/70th Avenue East	D	41.6	1.28	Westbound-Left & Northbound-Left
Unsignalized Intersections [5]				
12th Street East/Alexander Avenue East	D	28.4	0.12	Westbound-Left
12th Street East/62nd Avenue East	C	16.9	0.09	Southbound-Left
Pacific Hwy/62nd Avenue East	F	>50.0	>2.00	Northbound-All
I-5 Eastbound/Port of Tacoma Road	C	18.5	0.63	Eastbound-Right
I-5 Eastbound/54th Avenue East	F	>50.0	>2.00	Eastbound-Right
20th Street East/Frank Albert Road East	F	>50.0	0.60	Northbound-Left
Industry Drive East/Frank Albert Road East	C	16.3	0.56	Northbound-Left/Through
23rd Street East/54th Avenue East	F	>50.0	0.71	Eastbound-All
Valley Avenue East/Freeman Road East	F	>50.0	>2.00	Northbound-Left/Through and Southbound-All
North Levee Road/Frank Albert Road East	B	11.2	0.33	Southbound-All
North Levee Road/54th Avenue East	B	10.0	0.06	Southbound-All
North Levee Road/Freeman Road	F	>50.0	1.23	Southbound-All

[1] Level of Service: Whole intersection for signalized-Worst lane group for unsignalized
[2] Delay: Average seconds per vehicle: Whole intersection for signalized-Worst lane group for unsignalized
[3] Volume/Capacity for worst lane group (signalized and unsignalized)
[4] Worst lane group
[5] LOS, Delay, and Volume/Capacity for worst lane group for unsignalized locations
[6] Adjusted to match SR 99 intersection LOS

Roadway Segment Level of Service

Roadway segment LOS is presented for information and analysis.

Level of Service on major roadway segments between major intersections was also identified for analysis and information. Roadway segment LOS is not used to assess roadway impacts in the city of Fife. For this analysis, the volume/capacity (V/C) ratio was used, as summarized below.

- Segments with V/C ratios that are acceptable - less than 0.90 (LOS D or better)
- Segments with V/C ratios approaching capacity - between 0.90 and 1.00 (LOS E)
- Segments with V/C ratios over capacity - greater than 1.00 (LOS F)

Major roadway segments with V/C ratios of 0.90 or greater are identified on Figure 5. As shown, the highest V/C ratios are on the two streets listed below.

- 20th Street East, east of 54th Avenue East
- Valley Avenue East, between 54th and 70th Avenues East

Other locations with high V/C ratios are listed below.

- 70th Avenue East, between SR 99 and 20th Street East
- 54th Avenue East, between SR 99 and the I-5 ramps

Valley Avenue East will also have high V/C ratios under the Future Baseline Network. One reason for this is the closure of 54th Avenue East at the UP Railroad.

FUTURE ALTERNATIVE NETWORK ONE (FAN-1)

Two alternative networks were developed and tested prior to development of project recommendations. The purpose of the future alternative networks is to test additional road facilities that will help to meet the future traffic demand. The results of assigning 2025 forecast trips to the Future Baseline Network show that there will be several locations where severe congestion will occur.

Street Network

One project in this network that should have the greatest improvement in LOS is the extension of SR 167 from Puyallup to SR 509, through the eastern part of the city. As currently planned by WSDOT, this facility would have a full access interchange at Valley Avenue East (between 70th Avenue East and Freeman Road) and partial-access interchanges at 54th Avenue East (just south of SR 509) and I-5. SR 167 would tie into SR 509 between 54th Avenue East (Taylor Way) and Alexander Avenue East. The SR-167 project is critical to Fife's future, due to the need to move traffic through Fife. It is included in FAN-1 rather than the Future Baseline Network because the development of this project is outside the city's control. Whether or not the SR 167 extension is built will depend on WSDOT priorities and funding levels.

Another FAN-1 network project that results in a benefit to traffic circulation in Fife is a new overpass of I-5 that would tie Frank Albert Road at 20th Street East to 46th Avenue East at SR 99. This project will allow better circulation across I-5 for those motorists that do not wish to use I-5. This frees up capacity at the existing I-5 interchanges at 54th Avenue East and Port of Tacoma Road. Projects included in FAN-1 are summarized in **Table 7** and are shown on **Figure 6**. Traffic forecasts were then prepared by adding these projects to the Future Baseline Network and running the transportation forecasting model.

Table 7. Projects Included in the Future Alternative Network One

Project Number[1]	Type of Project	Street	Project Limits	Number of Future Lanes
28.0	Freeway	SR 167	I-5 to SR 509	4-6 (plus HOV)
29.0	Freeway	SR 167	Meridian Avenue (Puyallup) to I-5	4-6 (plus HOV)
30.0	Road Widen	North Levee Road	70th Avenue East to Frank Albert Road	3
31.0	Road	Frank Albert Road	20th Street East to SR 99 (over I-5)	4 to 5
32.0	Road Improvement	46th Avenue East	SR 99 to 12th Street East	3
33.0	Road	46th Avenue East	12th Street East to 8th Street East	3
34.0	Road Widen	8th Street East	46th Avenue East to 54th Avenue East	3
35.0	Road Widen	8th Street East	54th Avenue East to 62nd Avenue East	3
36.0	Road	52nd Avenue East	12th Street to current street end	3
37.0	Road Improvement	59th Avenue East	SR 99 to 12th Street East	2
38.0	Intersection	Port of Tacoma Road/SR 99	Add southbound right turn lane (to SR 99 or I-5) and second westbound to southbound left turn lane	NA
39.0	Access Road	23rd Street East/74th Avenue East	70th Avenue East to Valley Avenue East	3
40.0	Access Road	25th/26th Street East	70th Avenue East to Freeman Road (under SR 167)	3
41.0	Access Road	78th Avenue East	26th Street East to 34th Street East	3
42.0	Access Road	34th Street East	78th Avenue East to Freeman Road	3
43.0	Access Road	45th/46th Street East	Current street end (east of 70th Avenue East) to Freeman Road (under SR 167)	3
44.0	Interchange	I-5/54th Avenue East	Extend eastbound to northbound off-ramp to make a direct connection with 20th Street East. Grade separate new ramp and existing eastbound on-ramp.	1 on-ramp 2 at 20th Street East
45.0	Road Widen	12th Street East	54th Avenue East to 62nd Avenue East	3
46.0	Grade Separation	70th Avenue East	Grade separation at railroad	5

[1] Roadway project number for Transportation Element – Corresponds to Figure 7

Intersection Level of Service

Intersection levels of service were calculated from the traffic forecasts generated with Future Alternative Network One (FAN-1), using the same basic methodology as for the existing and future baseline intersection LOS. The software tool SIDRA was used to evaluate the two roundabouts, proposed by WSDOT as a part of the SR 167 extension. The LOS program Synchro was allowed to optimize traffic signal timing in order to improve intersection LOS. The resulting LOS is summarized in **Table 8** and on **Figure 7**.

As shown in Table 8, only one signalized intersection is estimated to operate at LOS F, with the FAN-1 network: the intersection of Valley Avenue and 70th Avenue East. However, three additional intersections are estimated to operate at LOS E, and are listed below.

- SR 99/Port of Tacoma Road
- SR 99/54th Avenue East
- SR 99/70th Avenue East

The LOS at the intersection of SR 99/70th Street could be improved to LOS D by adding a second westbound (SR 99) to southbound (70th Avenue East) left turn lane. This mitigation should be suggested to WSDOT for the SR 167 extension project.

The LOS at the intersection of Valley Avenue/70th Avenue East could be improved to LOS D operation by adding intersection approach lanes to better match the altered future volumes due to the SR 167 interchange on Valley Avenue, a short distance to the east of 70th Avenue East. A second westbound to southbound left turn lane is needed to achieve a future LOS D. Other potential mitigation includes an added northbound right turn lane and an added eastbound right turn lane.

It is improbable that additional improvements to the two signalized intersections on SR 99 at Port of Tacoma Road and at 54th Avenue East can be found to improve the LOS at these locations to LOS D, especially with the close spacing of the intersections to I-5 ramps. It is possible that major interchange revisions could mitigate these LOS issues.

A total of four unsignalized intersections are projected to operate at LOS F, with the FAN-1 network, as listed below.

- SR 99/62nd Avenue East
- 20th Street East/Frank Albert Road
- Valley Avenue/Freeman Road
- North Levee Road/Freeman Road

The intersection of the I-5 northbound off-ramp at 54th Avenue East would operate at LOS E. The two roundabouts, on 20th Street East at 69th and 70th Avenues East would operate at LOS B, assuming the two-lane facilities shown on current WSDOT SR 167 extension plans. All five of the unsignalized intersections that would operate at LOS E or F can be improved, with respect to intersection LOS, by the installation of traffic signals. The resulting LOS would be LOS C or better in all cases.

Roadway Segment Level of Service

Major roadway segments with V/C ratios of 0.90 or greater are identified on Figure 7. As shown, the highest V/C ratios are on the roadway segments listed below. Other locations shown on Figure 7 have V/C ratios between 0.91 and 0.97.

- 20th Street East, between 54th Avenue East and 69th Avenue East
- 54th Avenue East, between SR 99 and the I-5 ramps
- Port of Tacoma Road, between SR 99 and the I-5 ramps

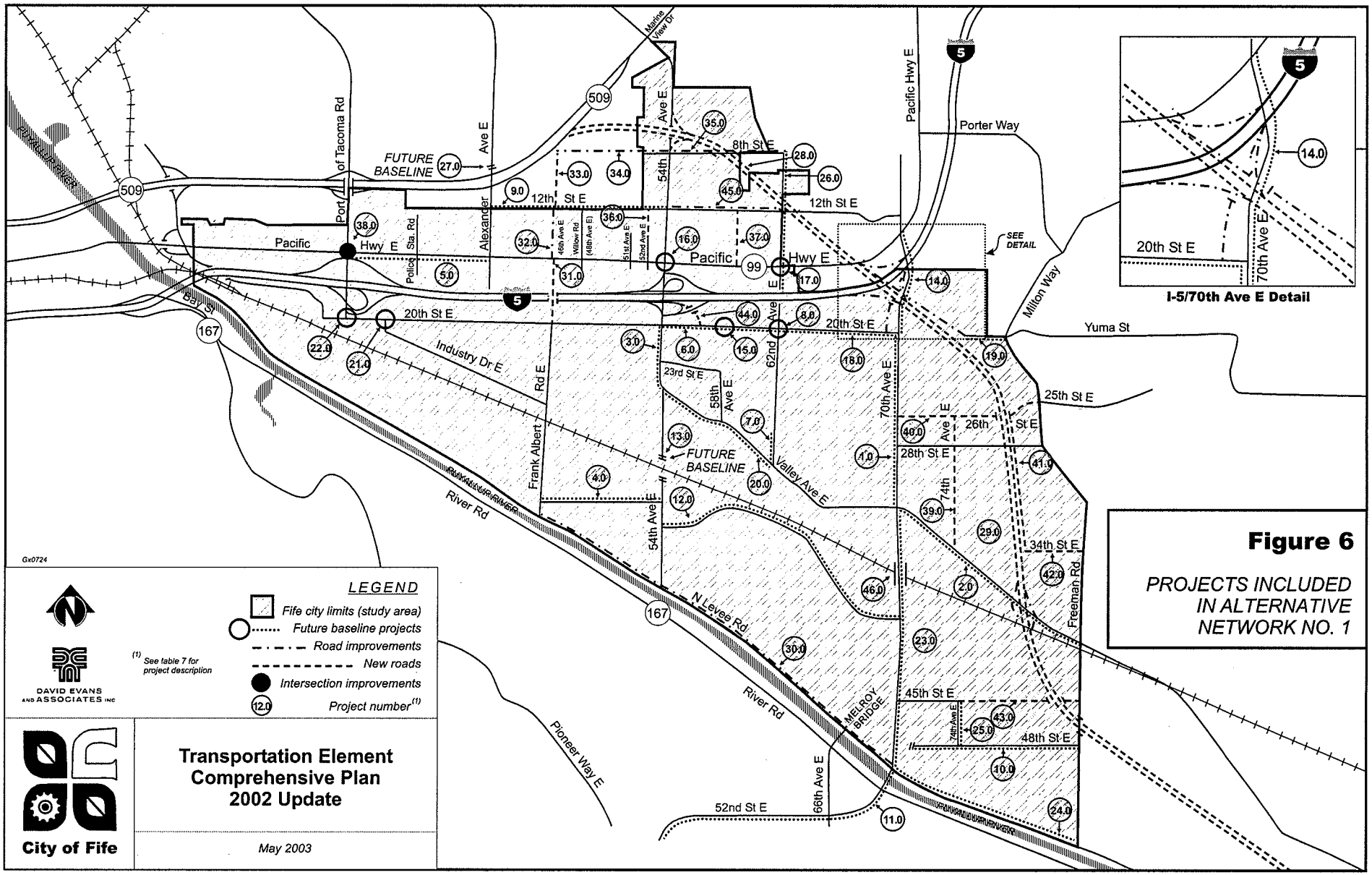
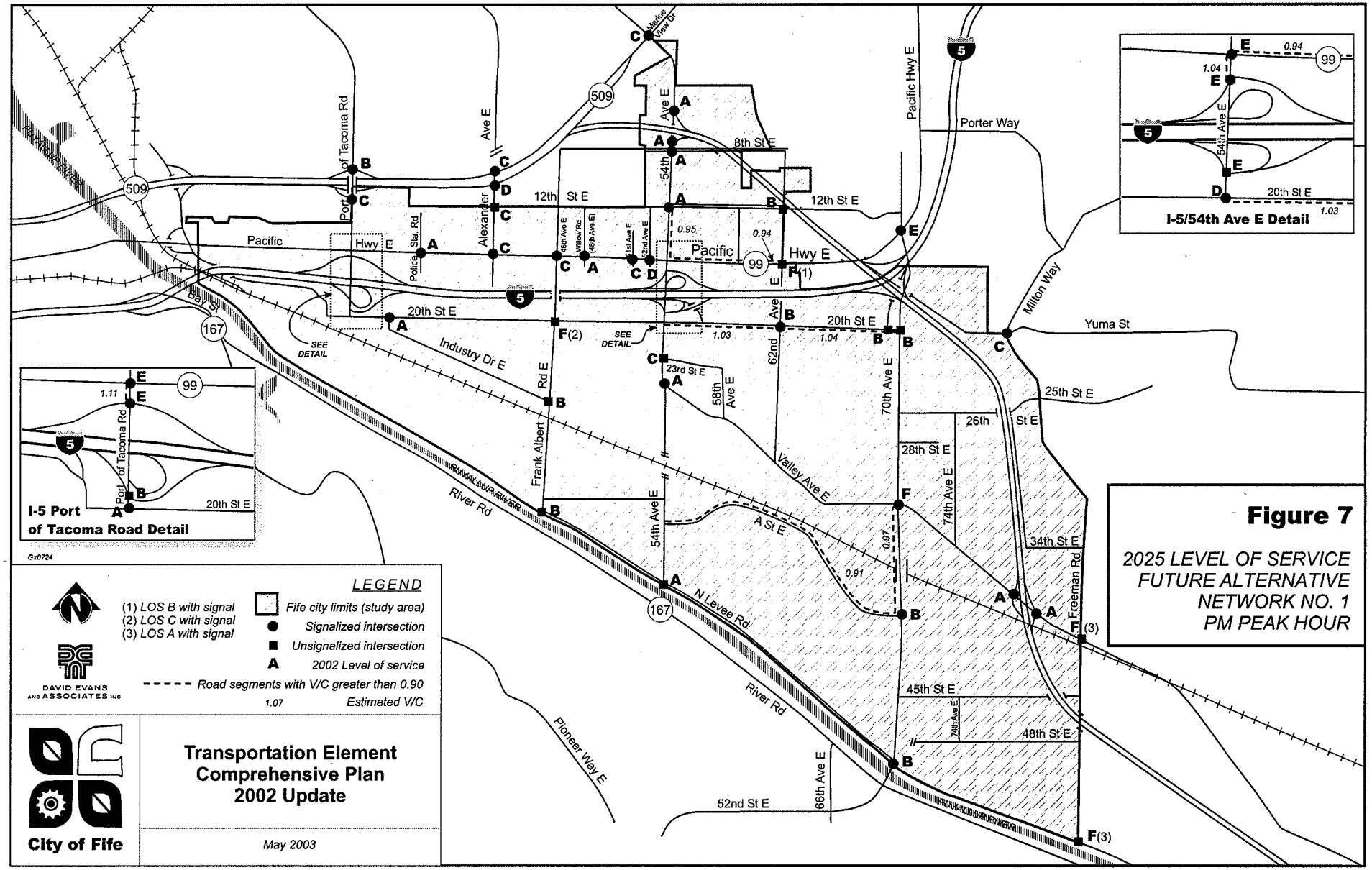

Gx0724
LEGEND
Fife city limits (study area)
Future baseline projects
Road improvements
New roads
Intersection improvements
Project number(1)
(1) See table 7 for project description
DAVID EVANS AND ASSOCIATES INC
City of Fife
Transportation Element
Comprehensive Plan
2002 Update
May 2003
Figure 6
PROJECTS INCLUDED IN ALTERNATIVE NETWORK NO. 1
I-5/70th Ave E Detail
SEE DETAIL
FUTURE BASELINE
Pacific Hwy E
Porter Way
Milton Way
Yuma St
20th St E
12th St E
8th St E
25th St E
26th St E
28th St E
34th St E
45th St E
48th St E
Industry Dr E
Frank Albert Rd E
Valley Ave E
River Rd
N Levee Rd
Pioneer Way E
52nd St E
MELROY BRIDGE
Freeman Rd
Port of Tacoma Rd
Alexander Ave E
54th Ave E
58th Ave E
62nd Ave E
66th Ave E
70th Ave E
74th Ave E
Bay St
Pacific Hwy E
Hwy 99
Marine View Dr
509
167
5

Table 8. Future Alternative One Network – Intersection Level of Service

Intersection	LOS [1]	Delay [2]	Maximum V/C [3]	Lane Group [4]
Signalized Intersections				
SR 509 Westbound/Port of Tacoma Road	B	10.7	0.85	Westbound-Left/Through
SR 509 Eastbound/Port of Tacoma Road	C	32.6	1.20	Northbound-Left
SR 509 Westbound/Alexander Avenue East	C	25.4	1.00	Westbound-Through
SR 509 Eastbound/Alexander Avenue East	D	35.1	1.01	Eastbound-Through/Right
SR 509/Taylor Way	C	27.3	0.86	Southbound-Through/Right
54th Avenue East/SR 167 Westbound	A	8.0	0.73	Westbound-Right
54th Avenue East/SR 167 Eastbound	A	6.2	0.83	Southbound-Left
8th Street East/54th Avenue East	A	7.3	0.55	Northbound Through/Right
12th Street East/54th Avenue East	A	6.0	0.46	Eastbound-Through/Right and Westbound Through/Right
Pacific Hwy/Port of Tacoma Road	E	73.1	1.29	Westbound-Left
Pacific Hwy/Police Station Entrance	A	4.6	0.42	Westbound-Through/Right
Pacific Hwy/Alexander Avenue East	C	23.2	0.83	Westbound-Through/Right
Pacific Hwy/Frank Albert Road	C	28.9	0.91	Eastbound-Through/Right
Pacific Hwy/Willow Road	A	9.4	0.41	Northbound-Left
Pacific Hwy/51st Avenue East	C	25.9	0.95	Southbound-Left/Through
Pacific Hwy/52nd Avenue East	D	52.0	1.04	Westbound-Left
Pacific Hwy/54th Avenue East	E	66.8	1.21	Westbound-Left
Pacific Hwy/70th Avenue East	E	64.6	1.26	Westbound-Left
I-5 Westbound/Port of Tacoma Road	E [7]	73.1	1.29	Northbound-Left
I-5 Westbound/54th Avenue East	E [7]	16.8	1.21	Westbound-Right
20th Street East/Port of Tacoma Road	A	5.6	0.52	Westbound-Right
20th Street East/Industry Drive East	A	5.6	0.53	Eastbound-Through
20th Street East/54th Avenue East	D	38.2	0.99	Westbound-Left/Through
20th Street East/62nd Avenue East	B	16.2	0.95	Eastbound-Through/Right
20th Street East/Freeman Road East	C	24.4	0.89	Southbound-All
Valley Avenue East/70th Avenue East	F	89.3	1.18	Westbound-Left
Valley Avenue East/SR 167 Southbound	A	10.0	0.94	Southbound-Right
Valley Avenue East/SR 167 Northbound	A	5.2	0.60	Northbound-Right
Valley Avenue East/54th Avenue East	A	3.7	0.31	Northbound-All
70th Avenue East/A Street East	B	19.2	0.94	Southbound-Through/Right
North Levee Road/70th Avenue East	B	15.9	0.80	Westbound-Left
Unsignalized Intersections [5]				
12th Street East/Alexander Avenue East	C	18.6	0.08	Westbound-Left
12th Street East/62nd Avenue East	B	14.1	0.05	Northbound-Left
Pacific Hwy/62nd Avenue East	F	>50.0	>2.00	Southbound-Left
I-5 Eastbound/Port of Tacoma Road	B	11.7	0.41	Eastbound-Right
I-5 Eastbound/54th Avenue East	E	42.6	0.95	Eastbound-Right
20th Street East/Frank Albert Road East	F	>50.0	>2.00	Southbound-All
20th Street East/69th Avenue East [6]	B	18.7	0.49	Westbound-All
20th Street East/70th Avenue East [6]	B	19.8	0.56	Eastbound-All
Industry Drive East/Frank Albert Road East	B	11.2	0.36	Northbound-All
23rd Street East/54th Avenue East	C	22.9	0.05	Westbound-Left
Valley Avenue East/Freeman Road East	F	>50.0	>2.00	Northbound-Left/Through
North Levee Road/Frank Albert Road East	B	10.1	0.19	Southbound-All
North Levee Road/54th Avenue East	A	9.2	0.05	Southbound-All
North Levee Road/Freeman Road	F	>50.0	0.92	Southbound-All

[1] Level of Service: Whole intersection for signalized-Worst lane group for unsignalized
[2] Delay: Average seconds per vehicle: Whole intersection for signalized-Worst lane group for unsignalized
[3] Volume/Capacity for worst lane group (signalized and unsignalized)
[4] Worst lane group
[5] LOS, Delay, and Volume/Capacity for worst lane group for unsignalized locations
[6] Roundabout
[7] Adjusted to match SR 99 intersection LOS


Marine View Dr
Port of Tacoma Rd
Ave E
509
Alexander
12th St E
Pacific Hwy E
Porter Way
8th St E
54th
Sta. Rd
Police
Pacific
Hwy E
99
5
Milton Way
Yuma St
20th St E
Industry Dr E
SEE DETAIL
F(2)
1.03
1.04
62nd Ave E
70th Ave E
25th St E
26th St E
23rd St E
58th Ave E
Frank Albert Rd E
Valley Ave E
28th St E
74th Ave E
River Rd
54th Ave E
A St E
0.97
0.91
34th St E
Freeman Rd
F(3)
167
N Levee Rd
45th St E
48th St E
Pioneer Way E
52nd St E
66th Ave E
Gx0724
I-5/54th Ave E Detail
1.04
0.94
1.03
I-5 Port of Tacoma Road Detail
1.11
LEGEND
(1) LOS B with signal
(2) LOS C with signal
(3) LOS A with signal
Fife city limits (study area)
Signalized intersection
Unsignalized intersection
2002 Level of service
Road segments with V/C greater than 0.90
1.07 Estimated V/C
DAVID EVANS AND ASSOCIATES INC
City of Fife
Transportation Element
Comprehensive Plan
2002 Update
May 2003
Figure 7
2025 LEVEL OF SERVICE
FUTURE ALTERNATIVE
NETWORK NO. 1
PM PEAK HOUR

FAN-1 Overview

The FAN-1 network addresses many of the needs identified in the evaluation of the Future Baseline Network. The extension of SR 167 from Puyallup to SR 509, near the Port of Tacoma, will reduce the traffic demand on several Fife streets including 70th Avenue East, Valley Avenue East, 54th Avenue East, and SR 99. The FAN-1 network reduces the number of intersections operating at LOS F to only one and improves the LOS at other key intersections, such as SR 99/54th Avenue East and SR 99/Port of Tacoma Road. With additional mitigation, SR 99/70th Avenue East and Valley Avenue East/70th Avenue East could be improved to LOS D.

The model shows that some of the traffic using the new Frank Albert Road over-crossing of I-5 is diverted from the northbound to westbound on-ramp to I-5 at 54th Avenue East. This traffic then enters I-5 westbound at the Port of Tacoma Road interchange.

Levels of Service E and F were identified at several unsignalized intersections under the FAN-1 network. The LOS at these locations could be improved to LOS C or better by the installation of traffic signals.

Overall, the FAN-1 network addresses most of the LOS issues in the city of Fife. The segment-based LOS analysis indicates that there would be V/C ratios greater than 1.0 (LOS F) on portions of 20th Street East. Most of this facility is planned as a three-lane facility in the FAN-1 network. A four-lane facility on 20th Street East will be provided between 69th Avenue East and Freeman Road, as a part of the SR 167 project. Four lanes on other portions of 20th Street East would improve the LOS; but because of current and future development along this street it may not be possible to widen to four lanes.

Additional projects for FAN-1 that would improve locations with LOS E or F are listed below.

- A second westbound to southbound left turn lane at 70th Avenue East/SR 99
- A second westbound to southbound left turn lane at 70th Avenue East/Valley Avenue East
- Widening of 20th Street East to four lanes, between 54th Avenue East and 69th Avenue East
- New traffic signals at:
  - SR 99/62nd Avenue East
  - 20th Street East/Frank Albert Road
  - Valley Avenue East/Freeman Road East
  - North Levee Road/Freeman Road East
  - I-5 Eastbound/54th Avenue East

FUTURE ALTERNATIVE NETWORK TWO (FAN-2)

Street Network

Future Alternative Network Two (FAN-2) was developed to evaluate future conditions if the SR 167 extension from Puyallup to Fife is not built. FAN-2 will also yield valuable information on traffic operations for the time period from the present to the time SR 167 is built, which could be 15 years or more.

The projects included in this network that will have the most impact on reducing congestion (and LOS problems) are listed below.

- The southerly extension of Port of Tacoma Road, over the UP Railroad and over the Puyallup River to an intersection with Waller Road at its intersection with SR 167

- A new principal arterial, extending from the Port of Tacoma Road extension to Frank Albert Road, with a continuation along North Levee Road to Freeman road
- A new over-crossing of I-5 along the 62nd Avenue East alignment. This over-crossing is an alternative to the over-crossing of I-5, along the Frank Albert Road alignment, also included in FAN-1.

Projects included in FAN-2 are summarized in **Table 9** and are shown on **Figure 8**. Many of the FAN-2 projects are also included in the FAN-1 network. These projects were added to the Future Baseline Network and coded into the travel forecasting model. Traffic forecasts were generated based on the FAN-2 street network. Employment and dwelling units are the same as the Future Baseline Network and FAN-1 network.

Intersection Level of Service

Intersection levels of service were calculated using traffic forecasts from Future Alternative Network Two (FAN-2). The LOS program Synchro was allowed to optimize traffic signal timing to improve intersection LOS. The resulting intersection LOS is summarized in **Table 10** and on **Figure 9**.

As shown in Table 10, six signalized intersections are projected to operate at LOS F, with the FAN-2 network, and are listed below.

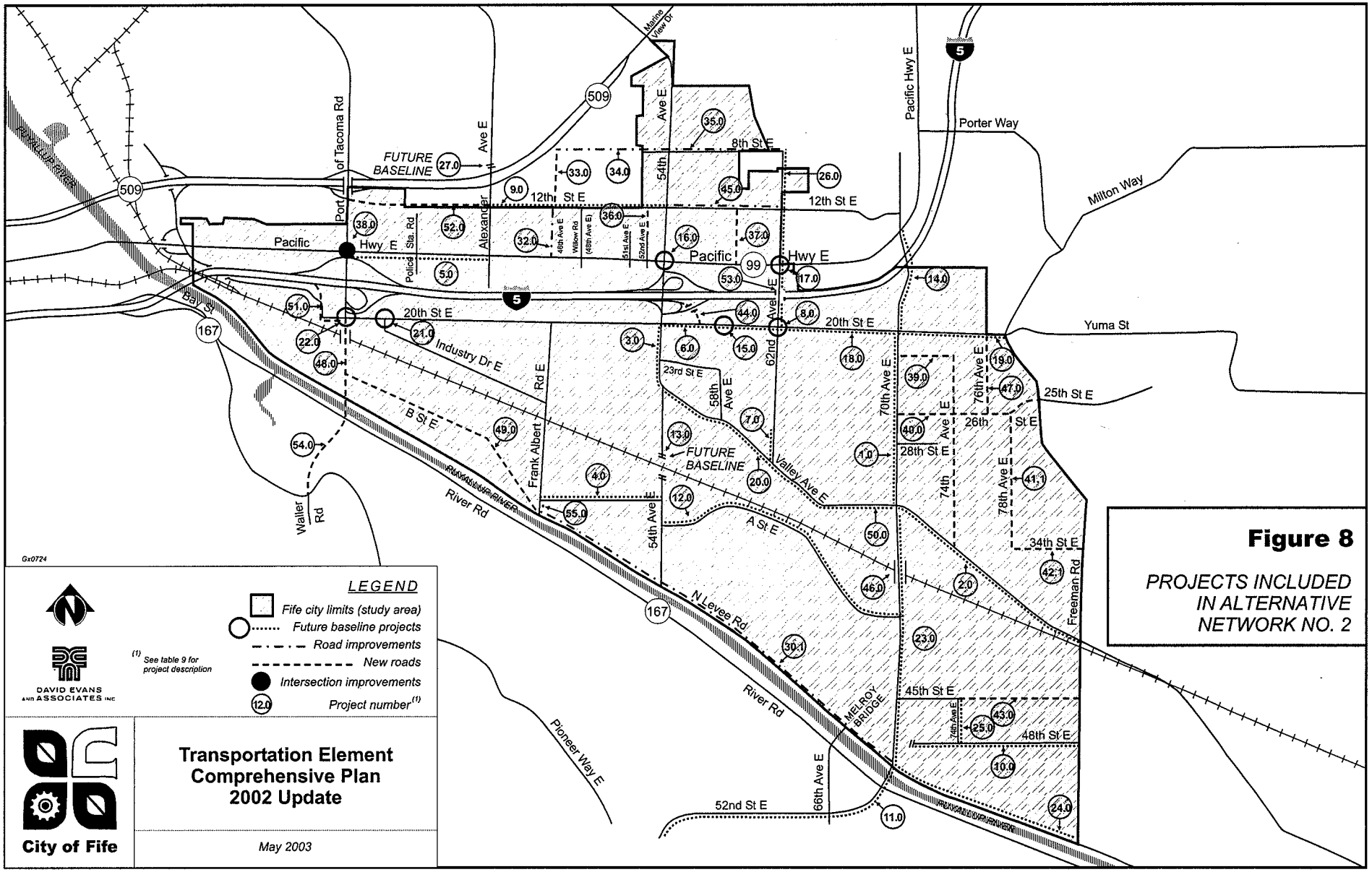
- SR 509 Westbound Ramps
- SR 99/Port of Tacoma Road
- SR 99/54th Avenue East
- I-5 Westbound/Port of Tacoma Road
- 20th Street East/70th Avenue East
- Valley Avenue East/70th Avenue East

Three additional signalized intersections are projected to operate at LOS E, and are listed below.

- SR 99/70th Avenue East
- 20th Street East/54th Avenue East
- 20th Street East/62nd Avenue East

Table 9. Projects Included in the Future Alternative Network Two

Project Number[1)]	Type of Project	Street	Project Limits	Number of Future Lanes
30.1	Road Widen	North Levee Road	70th Avenue East to Frank Albert Road	3
32.0	Road Improvement	46th Avenue East	SR 99 to 12th Street East	3
33.0	Road	46th Avenue East	12th Street East to 8th Street East	3
34.0	Road Widen	8th Street East	46th Avenue East to 54th Avenue East	3
35.0	Road Widen	8th Street East	54th Avenue East to 62nd Avenue East	3
36.0	Road	52nd Avenue East	12th Street to current street end	3
37.0	Road Improvement	59th Avenue East	SR 99 to 12th Street East	2
38.0	Intersection	Port of Tacoma Road/ SR 99	Add southbound right turn lane (to SR 99 or I-5) and second westbound to southbound left turn lane	NA
39.0	Access Road	23rd Street East/74th Avenue East	70th Avenue East to Valley Avenue East	3
40.0	Access Road	25th/26th Street East	70th Avenue East to Freeman Road (under SR 167)	3
41.1	Access Road	78th Avenue East	26th Street East to 34th Street East	3
42.1	Access Road	34th Street East	78th Avenue East to Freeman Road	3
43.0	Access Road	45th/46th Street East	Current street end (east of 70th Avenue East) to Freeman Road (under SR 167)	3
44.0	Interchange	I-5/54th Avenue East	Extend eastbound to northbound off-ramp to make a direct connection with 20th Street East. Grade separate new ramp and existing eastbound on-ramp	1 on-ramp 2 at 20th Street East
45.0	Road Widen	12th Street East	54th Avenue East to 62nd Avenue East	3
46.0	Grade Separation	70th Avenue East	Grade separation at railroad	5
47.0	Access Road	76th Avenue East	20th Street East to 26th Street East	3
48.0	Road	Port of Tacoma Road	20th Street East to North Levee Road	4 to 5
49.0	Road	B Street East	Port of Tacoma Road to Frank Albert Road	4 to 5
50.0	Road Widen	Valley Avenue East	Dale Lane East to 70th Avenue East	3
51.0	Interchange	I-5/Port of Tacoma Road	New eastbound off-ramp connected to 20th Street Drive East/Improve 20th Street East and 20th Street Drive East	Ramp: 1 to 2 Streets: 3
52.0	Road	12th Street East	Port of Tacoma Road to Alexander Avenue	3
53.0	Road	62nd Avenue East	20th Street East to SR 99 (Over I-5)	4 to 5
54.0	Road	Port of Tacoma Road	Extend south from North Levee Road, over the Puyallup River to the intersection of Waller Road/Pioneer Way East	4 to 5
55.0	Road Widen	Frank Albert Road	B Street East to North Levee Road	4 to 5


Gx0724
LEGEND
Fife city limits (study area)
Future baseline projects
Road improvements
New roads
Intersection improvements
Project number(1)
(1) See table 9 for project description
DAVID EVANS AND ASSOCIATES INC
City of Fife
Transportation Element
Comprehensive Plan
2002 Update
May 2003
Figure 8
PROJECTS INCLUDED IN ALTERNATIVE NETWORK NO. 2
Pacific Hwy E
Porter Way
Milton Way
Yuma St
25th St E
26th St E
28th St E
34th St E
45th St E
48th St E
12th St E
8th St E
20th St E
23rd St E
Industry Dr E
B St E
A St E
Valley Ave E
River Rd
N Levee Rd
Pioneer Way E
52nd St E
Freeman Rd
MELROY BRIDGE
Waller Rd
Frank Albert Rd E
Port of Tacoma Rd
Alexander Ave E
54th Ave E
58th Ave E
62nd Ave E
66th Ave E
70th Ave E
74th Ave E
76th Ave E
78th Ave E
Marine View Dr
Bay St
Pacific Hwy E
Hwy 99
FUTURE BASELINE
509
167
5

The LOS analysis revealed that several of the intersections listed above could be improved with changes to the assumed project. Modifications to the FAN-2 projects are presented below.

- SR 509 westbound ramps/Port of Tacoma Road: Add second northbound to westbound left turn lane, improving operations to LOS C.
- SR 99/70th Avenue East: Add second westbound to southbound left turn lane and an eastbound to southbound right turn lane, improving operations to LOS D. Present this improvement to WSDOT as SR 167 mitigation.
- 20th Street East/70th Avenue East: Add an eastbound to southbound right turn lane or make 20th Street East four lanes, improving operations to LOS E.
- Valley Avenue East/70th Avenue East: Add an eastbound to southbound right turn lane, improving operations to LOS E.
- 20th Street East/54th Avenue East: Add one westbound approach lane, making three lanes, one each for left turn, right turn, and through movements, improving operations to LOS D.

It is improbable that additional improvements to the two signalized intersections on SR 99 at Port of Tacoma Road and at 54th Avenue East can achieve LOS D or better, especially with the close spacing of the intersections to I-5 ramps. It is possible that major interchange revisions could mitigate these LOS issues.

A total of seven unsignalized intersections are projected to operate at LOS F, with the FAN-2 network, as listed below.

- 12th Street East/Alexander Avenue
- Valley Avenue East/62nd Avenue East
- SR 99/62nd Avenue East
- I-5 Eastbound Ramps/54th Avenue East
- 23rd Street East/54th Avenue East
- Valley Avenue/Freeman Road
- North Levee Road/Freeman Road

The intersection of 20th Street East/Frank Albert Road is an unsignalized intersection that operates at LOS E.

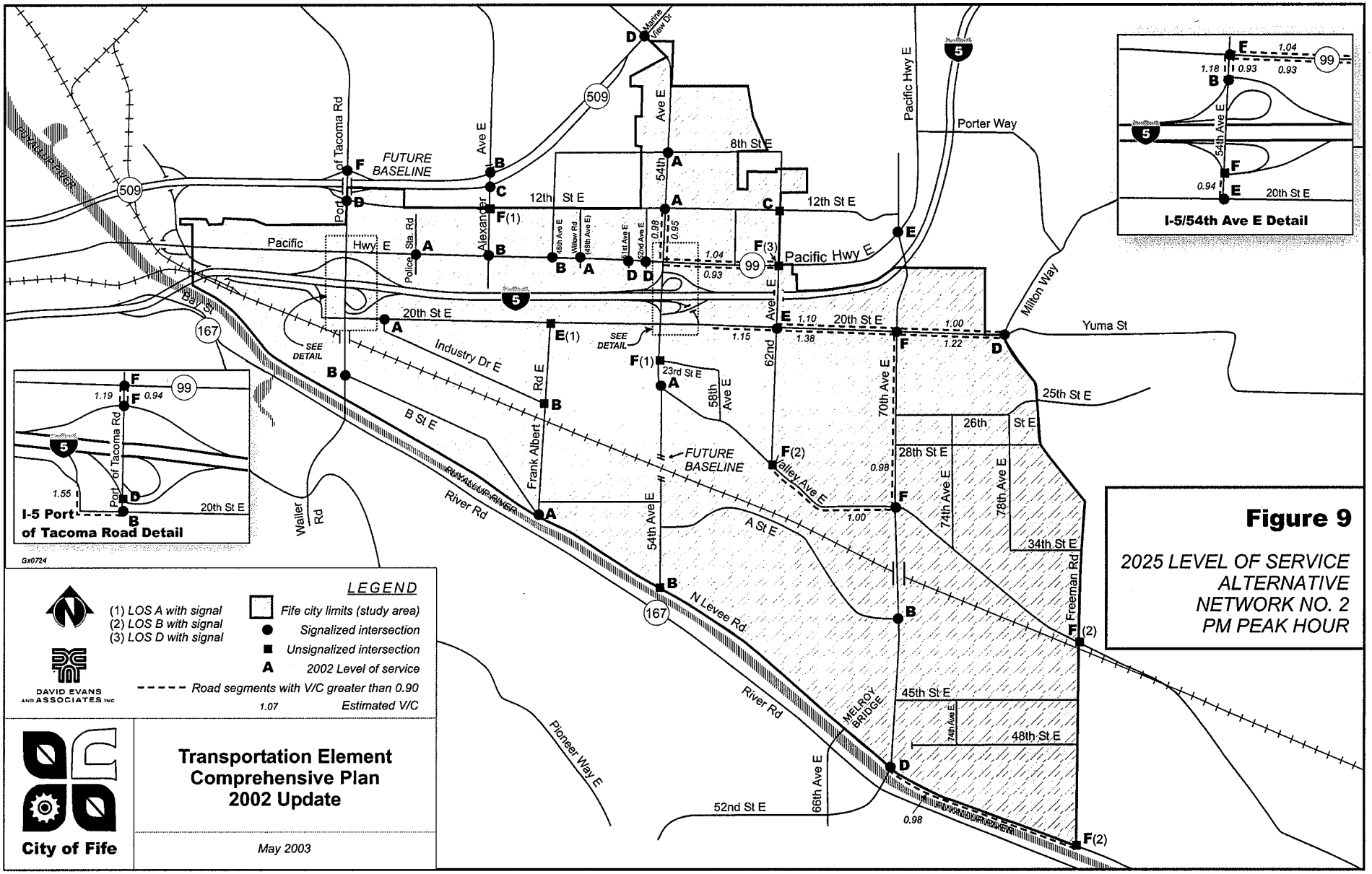
The level of service at the following unsignalized intersections could be improved to LOS B or better by the installation of traffic signals.

- 20th Street/Frank Albert Road
- Valley Avenue East/Freeman Road
- North Levee Road/Freeman Road
- 12th Street East/Alexander Avenue East
- 54th Avenue East/23rd Street East
- Valley Avenue East/62nd Avenue East

Table 10. Future Alternative Network-2 – Intersection Level of Service

Intersection	LOS [1]	Delay [2]	Maximum V/C [3]	Lane Group [4]
Signalized Intersections				
SR 509 Westbound/Port of Tacoma Road	F	>80.0	1.86	Northbound-Left
SR 509 Eastbound/Port of Tacoma Road	D	43.9	1.09	Southbound-Through
SR 509 Westbound/Alexander Avenue East	B	11.5	0.82	Westbound-Through
SR 509 Eastbound/Alexander Avenue East	C	24.2	0.96	Eastbound-Through/Right
SR 509/Taylor Way	D	41.5	1.04	Southbound-Left
8th Street East/54th Avenue East	A	5.9	0.37	Northbound-Through/Right
12th Street East/54th Avenue East	A	4.6	0.45	Eastbound-Through/Right
Pacific Hwy/Port of Tacoma Road	F	>80.0	1.46	Westbound-Left
Pacific Hwy/Police Station Entrance	A	5.6	0.35	Northbound-Left
Pacific Hwy/Alexander Avenue East	B	17.5	0.92	Southbound-Left/Through
Pacific Hwy/46th Avenue East	B	12.4	0.76	Eastbound-Left
Pacific Hwy/Willow Road	A	8.5	0.41	Northbound-Left
Pacific Hwy/51st Avenue East	D	44.1	0.99	Westbound-Left
Pacific Hwy/52nd Avenue East	D	42.1	1.04	Westbound-Left
Pacific Hwy/54th Avenue East	F	>80.0	>2.00	Westbound-Left
Pacific Hwy/70th Avenue East	E	74.9	1.29	Westbound-Left
I-5 Westbound/Port of Tacoma Road	F [6]	>80.0	1.46	Northbound-Left
I-5 Westbound/54th Avenue East	F [6]	>80.0	>2.00	Westbound-Right
20th Street East/Port of Tacoma Road	B	20.0	0.96	Eastbound-Through/Right
20th Street East/Industry Drive East	A	6.8	0.59	Westbound-Through
20th Street East/54th Avenue East	E	61.9	1.10	Westbound-Left/Through
20th Street East/62nd Avenue East	E	64.0	1.08	Westbound-Through/Right
20th Street East/70th Avenue East	F	>80.0	1.47	Westbound-Left
20th Street East/Freeman Road East	D	38.5	1.01	Eastbound-Left
Valley Avenue East/70th Avenue East	F	>80.0	1.15	Southbound-Through/Right
Valley Avenue East/54th Avenue East	A	3.6	0.45	Southbound-Through
Port of Tacoma Road/B Street East	B	11.5	0.78	Southbound-Left
70th Avenue East/A Street East	B	17.3	0.91	Southbound-Through/Right
North Levee Road/Frank Albert Road East	A	8.4	0.60	Southbound-All
North Levee Road/70th Avenue East	D	54.5	1.42	Westbound-Left
Unsignalized Intersections [5]				
12th Street East/Alexander Avenue East	F	>50.0	0.64	Eastbound-Through/Right
12th Street East/62nd Avenue East	C	16.8	0.09	Southbound-Left
Pacific Hwy/62nd Avenue East	F	>50.0	>2.00	Southbound-All & Northbound-All
I-5 Eastbound/Port of Tacoma Road	D	28.3	0.57	Westbound-Right
I-5 Eastbound/54th Avenue East	F	>50.0	1.51	Eastbound-Right
20th Street East/Frank Albert Road East	E	39.8	0.73	Northbound-All
Industry Drive East/Frank Albert Road East	B	10.6	0.39	Southbound-Through
23rd Street East/54th Avenue East	F	>50.0	0.46	Eastbound-All
Valley Avenue East/62nd Avenue East	F	>50.0	1.95	Southbound-Left
Valley Avenue East/Freeman Road East	F	>50.0	>2.00	Southbound-All
North Levee Road/54th Avenue East	B	11.8	0.08	Southbound-All
North Levee Road/Freeman Road	F	>50.0	>2.00	Southbound-All

[1] Level of Service: Whole intersection for signalized-Worst lane group for unsignalized
[2] Delay: Average seconds per vehicle: Whole intersection for signalized-Worst lane group for unsignalized
[3] Volume/Capacity for worst lane group (signalized and unsignalized)
[4] Worst lane group
[5] LOS, Delay, and Volume/Capacity for worst lane group for unsignalized locations
[6] Adjusted to match SR 99 intersection LOS


I-5/54th Ave E Detail
I-5 Port of Tacoma Road Detail
Figure 9
2025 LEVEL OF SERVICE
ALTERNATIVE
NETWORK NO. 2
PM PEAK HOUR
LEGEND
(1) LOS A with signal
(2) LOS B with signal
(3) LOS D with signal
Fife city limits (study area)
Signalized intersection
Unsignalized intersection
A 2002 Level of service
Road segments with V/C greater than 0.90
1.07 Estimated V/C
DAVID EVANS AND ASSOCIATES INC
City of Fife
Transportation Element
Comprehensive Plan
2002 Update
May 2003
FUTURE BASELINE
Pacific Hwy E
Porter Way
Yuma St
25th St E
26th St E
28th St E
34th St E
45th St E
48th St E
20th St E
12th St E
8th St E
23rd St E
Industry Dr E
B St E
A St E
N Levee Rd
River Rd
Pioneer Way E
52nd St E
Frank Albert Rd E
Valley Ave E
Waller Rd
Port of Tacoma Rd
Alexander Ave E
54th Ave E
58th Ave E
62nd Ave E
66th Ave E
70th Ave E
74th Ave E
78th Ave E
Freeman Rd
Milton Way
Marine View Dr
Bay St
Sta. Rd
Police
Willow Rd
MELROY BRIDGE
509
167
5
99

Two additional unsignalized intersections could be improved with the installation of traffic signals and additional traffic lanes, as presented below.

- SR 99/62nd Avenue East: Install signal and add a second northbound left turn lane and eastbound and westbound left turn lanes, improving operations to LOS D.
- I-5 Eastbound/54th Avenue East: Install signal and add a second eastbound right turn lane, improving operations to LOS B.

Roadway Segment Level of Service

Roadway segments with V/C ratios of 0.90 or greater are presented in Figure 9. The highest V/C ratios are listed below.

- 20th Street East, east of 58th Avenue East
- 54th Avenue East, between 12th Street East and the I-5 ramps
- 20th Drive East and 20th Street East, west of Port of Tacoma Road
- Valley Avenue East, between 62nd and 70th Avenues East
- Port of Tacoma Road, between SR 99 and the I-5 ramps

The segment-based LOS could be improved with modifications to the assumed projects. LOS improvements for roadway segments generally require additional traffic lanes. The analysis revealed that the following two project modifications would reduce congestion.

- 20th Street East, east of 58th Avenue East: Widen 20th Street East to four lanes between 58th Avenue East and 69th Avenue East
- Add a second eastbound lane on 20th Drive East and 20th Street East, between the new I-5 off-ramp and Port of Tacoma Road

FAN-2 Overview

The FAN-2 network does not address future LOS issues as well as the FAN-1 network. With the FAN-2 network, more intersections and street segments will have LOS E and F conditions. However, there may be project modifications at some locations to improve conditions with FAN-2.

The FAN-2 network reduces traffic demand (compared with the baseline network) on 70th Avenue East, Valley Avenue East, Industrial Drive and some parts of SR 99 and 20th Street East. These reductions are primarily due to the 62nd Avenue East over-crossing of I-5, the extension of Port of Tacoma Road south from 20th Street East over the Puyallup River; and the extension and widening of North Levee Road. Traffic demand increases on North Levee Road and on portions of SR 99 and 20th Street East.

Some of the reduction in traffic demand on 70th Avenue East is due to the new I-5 over-crossing at 62nd Avenue East. However, this diversion negatively affects both 20th Avenue East and Valley Avenue East, between 62nd and 70th Avenues East.

Project modifications were suggested for several intersections and roadway segments that were identified as having LOS E or F operations in 2025. However, in most cases, the modifications would not provide enough improvement in LOS to achieve the results of the FAN-1 network that included the SR 167 extension.

As with the FAN-1 network, many of the LOS issues identified under the Future Baseline Network would be adequately addressed. The addition of intersection turn lanes and the widening of 20th Street East to four lanes between 54th Avenue East and Freeman Road would provide additional improvement in traffic operations.

From the current analysis, the extension of Port of Tacoma Road over the Puyallup River to Waller Road does not appear to provide much benefit to the city of Fife. Model results indicate that traffic would be diverted from Grandview Avenue in Pierce County to the new Port of Tacoma Road extension, bringing additional traffic through Fife. The following section further discusses this issue.

Additional Analysis of Future Alternative Network Two

Two additional runs of the travel forecasting model were made for FAN-2. These runs were made with a single change to the FAN-2 network and then forecasting 2025 travel volumes. Comparisons were made between the forecast volumes for the original and revised FAN-2 networks with a new model runs. Additional intersection LOS analysis was conducted for intersections that were forecast to have significant changes in forecast volumes. The two additional model runs are discussed below.

Run 1 – Add Interchange at I-5/70th Avenue East

The impact of this interchange is primarily in the area bound by SR 99, 20th Street East, 54th Avenue East, and 70th Avenue East. The I-5 ramps at 54th Avenue East are also significantly impacted.

Listed below are streets that would have significantly lower volumes with the interchange than without it. A reduction in volume is shown in parentheses.

- SR 99, eastbound: 54th to 70th Avenue East (-345 to -395 vehicles per hour)
- 20th Street East, westbound: 54th to 62nd Avenue East (-90 vehicles per hour)
- 20th Street East, eastbound: 54th to 62nd Avenue East (-215 vehicles per hour)
- 62nd Avenue East, northbound: 20th Street East to SR 99 (-145 vehicles per hour)
- 70th Avenue East, southbound: SR 99 to new interchange (-535 vehicles per hour)
- I-5 ramps at 54th Avenue East (-30 to -290 vehicles per hour)

Listed below are street segments that would have significantly higher volumes with the interchange than without it. An increase in volume shown in parentheses.

- SR 99, westbound: 62nd to 70th Avenue East (+265 vehicles per hour)
- 70th Avenue, northbound: 20th Street East to new interchange (+300 vehicles per hour)
- 70th Avenue East, northbound: new interchange to SR 99 (+390 vehicles per hour)
- 70th Avenue East, northbound: Valley Avenue East to 20th Street East (+115 vehicles per hour)
- 20th Street, eastbound: 62nd to 70th Avenue East (+135 vehicles per hour)
- 62nd Avenue, southbound: SR 99 to Valley Avenue East (+70 to +215 vehicles per hour)

Generally, the new interchange at I-5/70th Avenue East would reduce traffic going to the 54th Avenue East interchange and shift traffic to SR 99 and 20th Street. This diversion would provide improved traffic operations at the congested I-5/54th Avenue East interchange.

The most effective improvement to intersection operation is at the intersection of SR 99/70th Avenue East, where the LOS would be improved from LOS F to LOS D. The greatest reduction in intersection operations would be at the intersection of 20th Street East/62nd Avenue East, where the LOS would be degraded from LOS C to LOS E. At this latter location, the LOS could be improved to meet the city standard of LOS D by adding a westbound to northbound right turn lane. At other intersections, the LOS letter designation would remain the same as without the interchange but there would be some improvement in the LOS along 54th Avenue East, between SR 99 and 20th Street East.

Run 2 – Delete Port of Tacoma Road Extension across Puyallup River

The impact of removing this link across the Puyallup River occurs primarily along Port of Tacoma Road and the extension south of 20th Street East, at the Port of Tacoma Road/I-5 interchange and along new B

Street/North Levee Road to 70th Avenue East. This deleted link also results in higher traffic volumes along Grandview Avenue, which is outside the Fife study area.

Listed below are streets that would have significantly lower volumes without the link across the river than with the link. A reduction in volume is shown in parentheses.

- Port of Tacoma Road Extension, southbound: 20th Street East to B Street East (-560 vehicles per hour)
- Port of Tacoma Road Extension, northbound: 20th Street East to B Street East (-200 vehicles per hour)
- I-5/Port of Tacoma Road ramps: (up to -135 vehicles per hour)

Listed below are streets that would have significantly higher volumes without the link across the river than with the link. An increase in volume is shown in parentheses.

- New B Street and North Levee Road, eastbound: Port of Tacoma Road to 70th Avenue East (+150 to +170 vehicles per hour)
- New B Street and North Levee Road, westbound: Port of Tacoma Road to 70th Avenue East (+40 to +50 vehicles per hour)

If the link across the river is deleted, the interchange at I-5/Port of Tacoma Road would operate at a better level of service. However, the increase in volume on B Street East/North Levee Road would increase until it approaches the capacity of a three-lane roadway.

The intersection LOS at both of the I-5 ramps to/from Port of Tacoma Road would show improvement without the link across the river. The LOS would remain the same at other intersections, except at the intersection of North Levee Road/70th Avenue East, the LOS would be somewhat worse than with the link across the river.

RECOMMENDED TRANSPORTATION PLAN

Fife's Transportation Plan contains a detailed package of improvements for the street network. The arterial system in Fife is critical to the movement of people and goods, and the local economy. It is inextricably linked to the I-5 freeway and the future extension of SR 167, as a freeway segment, connecting to I-5 in Fife.

The Non-Motorized element of the plan reviews the well developed trail system and trail system plan in Fife. It then identifies how the trail system will connect to the street network and to the significant regional trails.

A concurrency program is recommended based on the analysis presented in this transportation plan. The concurrency program will formalize the way that Fife reviews projects, evaluates impacts and addresses future capacity needs for the street system. The concurrency program ensures that Fife's transportation plan meets the requirement to provide adequate transportation system capacity with new development, consistent with the Growth Management Act.

And finally, a small but important recommendation, are the traffic calming procedures presented following the presentation of the concurrency program. Traffic calming is the application of design features to slow traffic on local streets. Traffic calming serves to protect the quality of life in residential areas as traffic volumes grow on the arterial streets.

Street Network

The development of this transportation plan began with preliminary recommendations based on the evaluation of three future networks: Baseline, FAN-1, and FAN-2. The traffic forecast model was not re-run for the recommended plan. Thus, there are no final evaluations for LOS and delay specific to the combination of recommended projects. However, since the recommended plan includes most FAN-1 projects, some FAN-2 projects, and the suggested project modifications from the network evaluations, it should provide 2025 traffic operations that are better than the FAN-1 network. The recommended plan will meet future-year concurrency standards (see concurrency section).

The recommended plan is based on the assumption that the extension of SR 167 from Puyallup to SR 509 in the vicinity of the Port of Tacoma will be built. If this very important facility is not built, the recommended transportation plan would need to be revised, and may have a very different structure.

The recommended transportation plan was developed in three stages, as identified below.

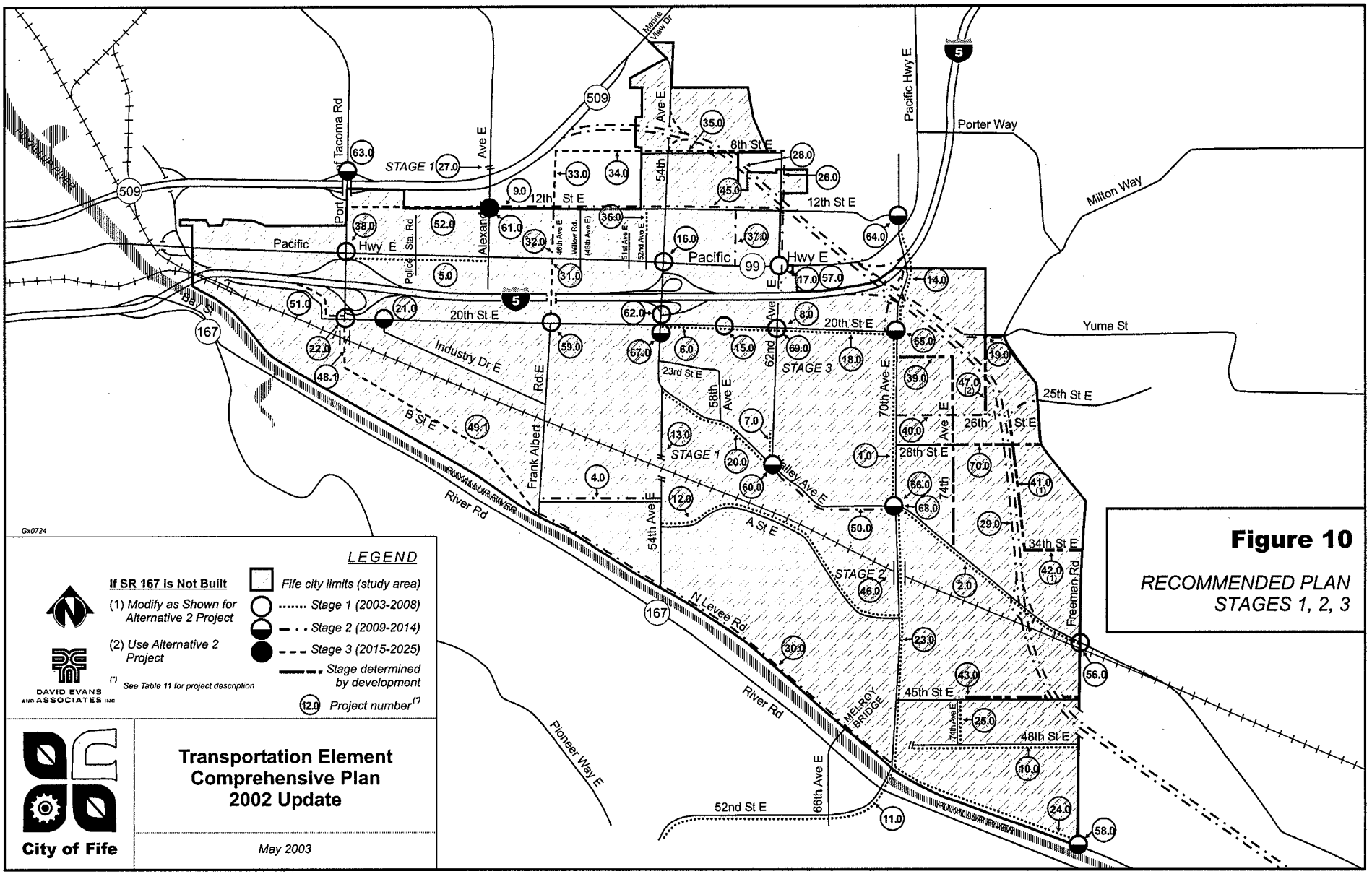
- Stage 1: 2003 to 2008
- Stage 2: 2009 to 2014
- Stage 3: 2015 to 2025

Figure 10 shows recommended transportation plan projects. **Figures 10A**, **10B**, and **10C**, illustrate the staging for the recommended plan. **Table 11** lists the recommended projects. Many of the projects in the current Transportation Improvement Program (TIP) for 2003 to 2008 are included in Stage 1. There are also some projects in Stage 1 that are not included in the TIP. Access roads in the recommended plan are dependent on when the relatively vacant land develops.

Projects included in Stages 2 and 3 were selected as projects that have lower V/C ratios, as indicated by the evaluations of the Future Baseline Network, FAN-1, and FAN-2. These projects may also move up or down in priority, based on how the city develops.

Truck volumes were included throughout the analysis of existing and future street capacity and LOS. The research branch of WSDOT commissioned a thorough study of truck volume and freight volumes on state highways throughout Washington. Truck movement from origin to destination (i.e., city-to-city movement and county-to-county movement) was also documented. The King County Origin Destination Study is in **Appendix D**, and the Pierce County Origin and Destination is in **Appendix E**.

The recommended transportation plan also includes an update to the functional classification of streets. The adopted functional classification is presented in **Figure 11**. Standard street cross-sections are included with the transportation plan as a companion to the adopted functional classification (Figure 11). Street improvement projects should be developed consistent with the street cross-section standards as presented in **Appendix F**. Appendix F also shows the unique cross-section requirement for the North Levee Road joint trail/road widening project.


Gx0724
LEGEND
If SR 167 is Not Built
(1) Modify as Shown for Alternative 2 Project
(2) Use Alternative 2 Project
(*) See Table 11 for project description
Fife city limits (study area)
Stage 1 (2003-2008)
Stage 2 (2009-2014)
Stage 3 (2015-2025)
Stage determined by development
(12.0) Project number(*)
DAVID EVANS AND ASSOCIATES INC
City of Fife
Transportation Element
Comprehensive Plan
2002 Update
May 2003
Figure 10
RECOMMENDED PLAN
STAGES 1, 2, 3
Pacific Hwy E
Porter Way
Milton Way
Yuma St
25th St E
26th St E
28th St E
34th St E
45th St E
48th St E
52nd St E
20th St E
12th St E
8th St E
Pacific Hwy E
Industry Dr E
River Rd
N Levee Rd
Pioneer Way E
Frank Albert Rd E
54th Ave E
58th Ave E
62nd Ave E
66th Ave E
70th Ave E
74th Ave E
Freeman Rd
Valley Ave E
A St E
B St E
23rd St E
STAGE 1
STAGE 2
STAGE 3
MELROY BRIDGE
509
167
5
99

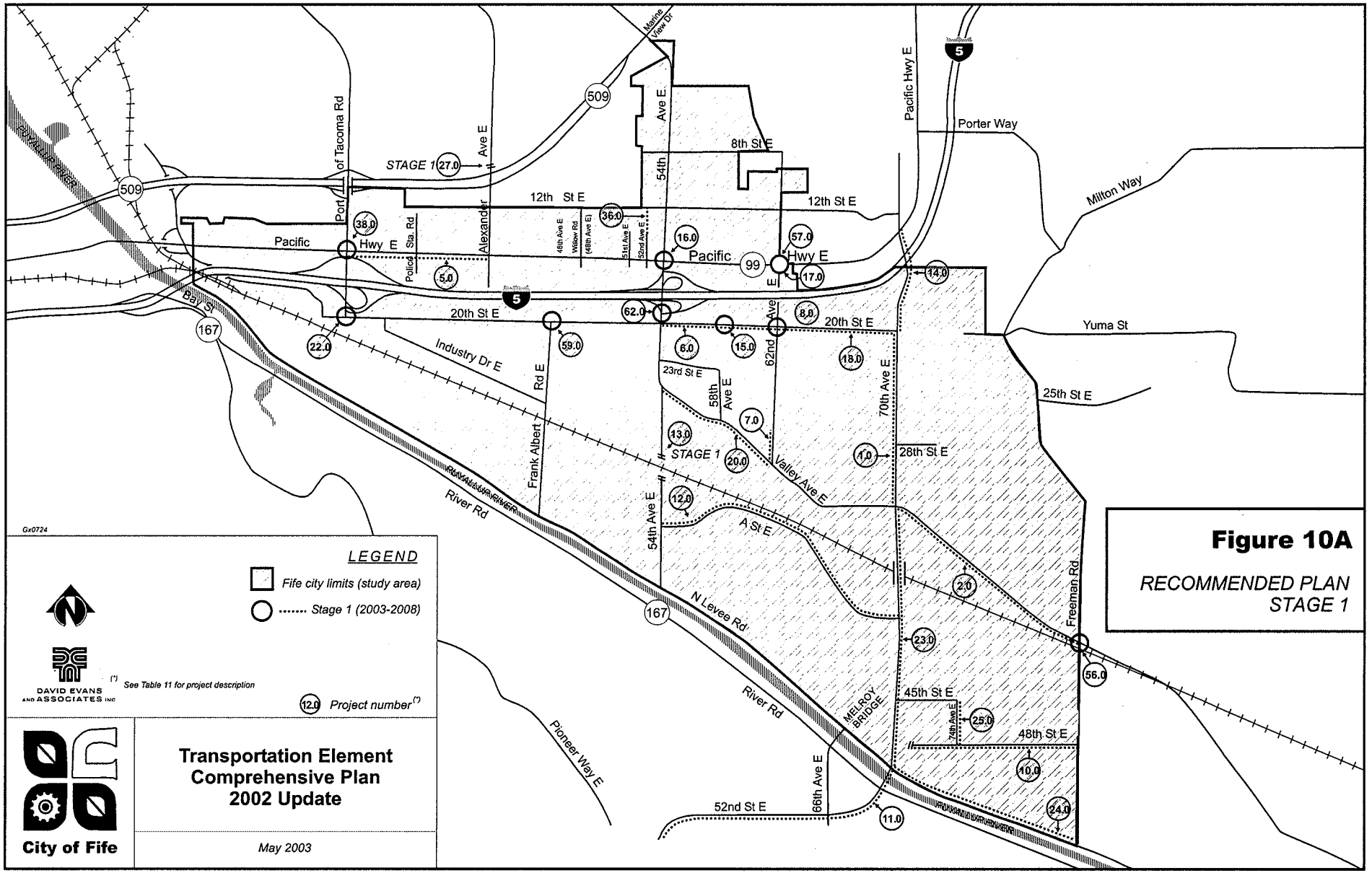
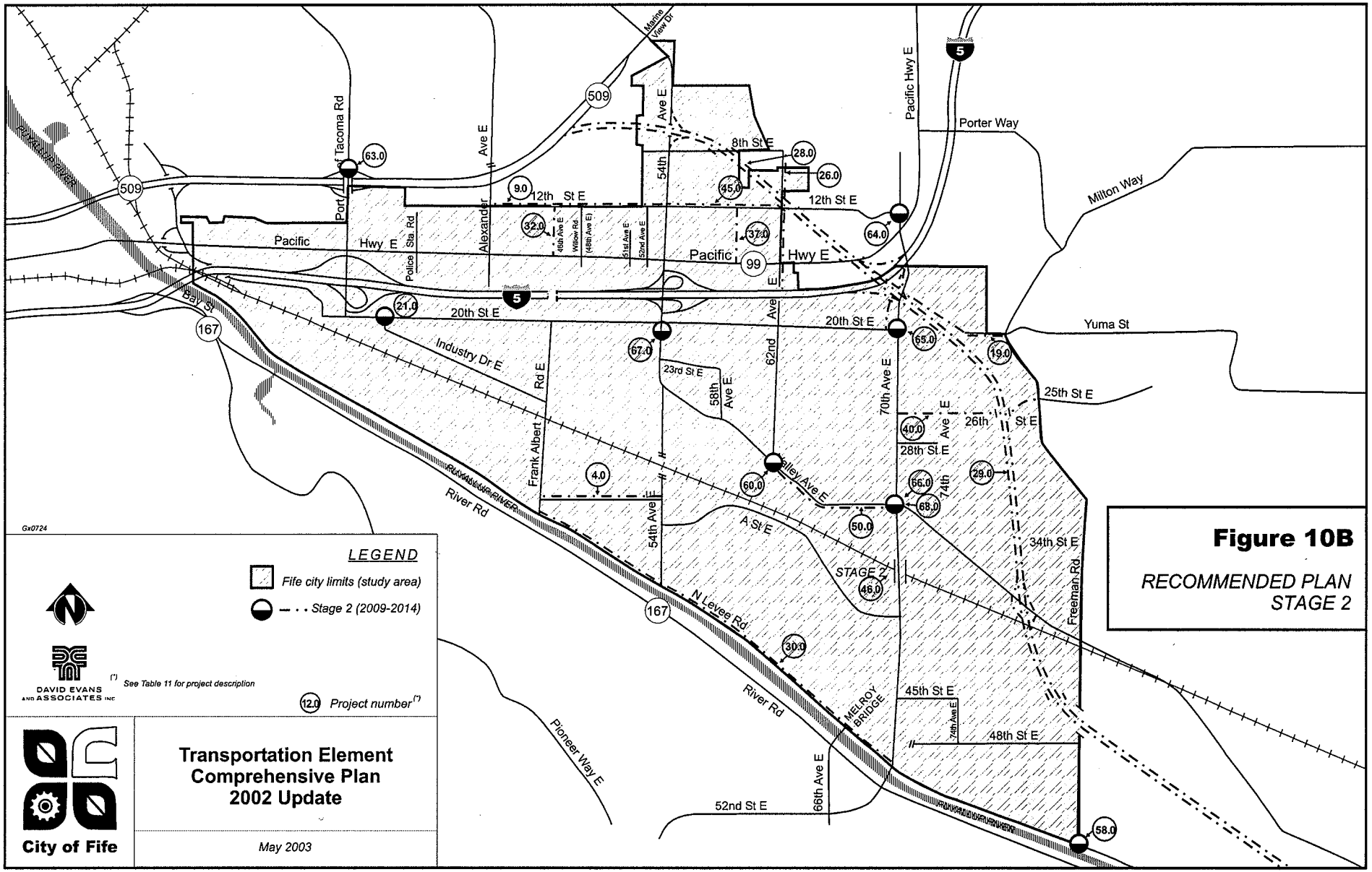


Figure 10A
RECOMMENDED PLAN
STAGE 1
LEGEND
Fife city limits (study area)
Stage 1 (2003-2008)
(*) See Table 11 for project description
12.0 Project number(*)
DAVID EVANS AND ASSOCIATES INC
City of Fife
Transportation Element
Comprehensive Plan
2002 Update
May 2003
Gx0724
Pacific Hwy E
Porter Way
Milton Way
Yuma St
25th St E
28th St E
20th St E
12th St E
8th St E
45th St E
48th St E
52nd St E
Pacific Hwy E
Port of Tacoma Rd
Alexander Ave E
54th Ave E
Marine View Dr
Sta. Rd
Police
48th Ave E
Willow Rd (48th Ave E)
51st Ave E
52nd Ave E
62nd Ave E
58th Ave E
70th Ave E
74th Ave E
Frank Albert Rd E
Industry Dr E
23rd St E
Valley Ave E
A St E
54th Ave E
66th Ave E
Freeman Rd
MELROY BRIDGE
Bay St
River Rd
N Levee Rd
Pioneer Way E
STAGE 1
Pacific Hwy E
Hwy E
509
167
99
5
38.0
5.0
36.0
16.0
57.0
17.0
14.0
62.0
8.0
22.0
59.0
6.0
15.0
18.0
13.0
20.0
7.0
1.0
12.0
2.0
23.0
56.0
25.0
10.0
24.0
11.0
27.0


Gx0724
LEGEND
Fife city limits (study area)
Stage 2 (2009-2014)
DAVID EVANS AND ASSOCIATES INC
(*) See Table 11 for project description
12.0 Project number(*)
City of Fife
Transportation Element
Comprehensive Plan
2002 Update
May 2003
Figure 10B
RECOMMENDED PLAN
STAGE 2
Pacific Hwy E
Porter Way
Milton Way
Yuma St
25th St E
20th St E
12th St E
8th St E
Pacific Hwy E
Port of Tacoma Rd
Alexander Ave E
54th Ave E
Marine View Dr
Police Sta. Rd
45th Ave E
Willow Rd (48th Ave E)
51st Ave E
52nd Ave E
Bay St
Industry Dr E
Frank Albert Rd E
58th Ave E
62nd Ave E
70th Ave E
74th Ave E
26th St E
28th St E
23rd St E
Alley Ave E
A St E
River Rd
N Levee Rd
STAGE 2
34th St E
Freeman Rd
45th St E
48th St E
MELROY BRIDGE
74th Ave E
66th Ave E
52nd St E
Pioneer Way E
509
167
5
99
63.0
9.0
32.0
21.0
67.0
4.0
60.0
50.0
46.0
30.0
58.0
28.0
26.0
45.0
37.0
64.0
55.0
19.0
40.0
29.0
66.0
68.0

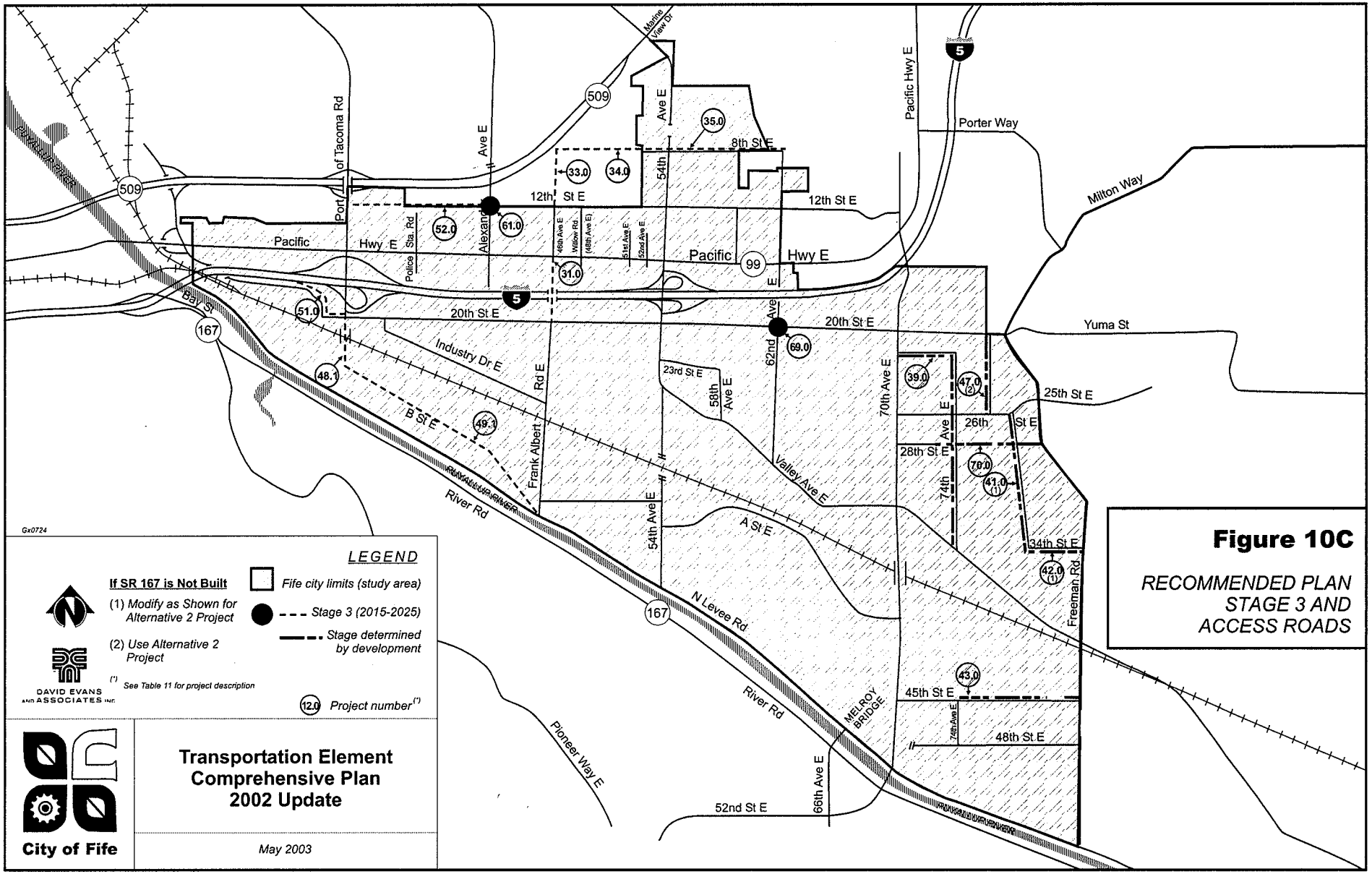


Figure 10C
RECOMMENDED PLAN
STAGE 3 AND
ACCESS ROADS
LEGEND
If SR 167 is Not Built
(1) Modify as Shown for Alternative 2 Project
(2) Use Alternative 2 Project
(*) See Table 11 for project description
Fife city limits (study area)
Stage 3 (2015-2025)
Stage determined by development
(12.0) Project number(*)
DAVID EVANS AND ASSOCIATES INC
City of Fife
Transportation Element
Comprehensive Plan
2002 Update
May 2003
Gx0724
Pacific Hwy E
Porter Way
Milton Way
Yuma St
Pacific Hwy E
12th St E
20th St E
8th St E
25th St E
26th St E
28th St E
34th St E
45th St E
48th St E
52nd St E
Port of Tacoma Rd
Alexander Ave E
54th Ave E
62nd Ave E
70th Ave E
74th Ave E
Frank Albert Rd E
Industry Dr E
Valley Ave E
A St E
B St E
23rd St E
River Rd
N Levee Rd
Pioneer Way E
Freeman Rd
MELROY BRIDGE
Bay St
Marine View Dr
Sta. Rd
Police
46th Ave E
Willow Rd
(48th Ave E)
51st Ave E
52nd Ave E
509
167
5
99
35.0
34.0
33.0
52.0
61.0
31.0
51.0
48.1
49.1
69.0
39.0
47.0 (2)
70.0
41.0 (1)
42.0 (1)
43.0

Table 11. Recommended Projects by Stage

Project No.[1]	Type of Project	Street	Project Limits	Number of Future Lanes	Lead Responsibility	
					city of Fife	Others
Stage 1 – 2003 to 2008						
1.0	Road	70th Avenue East	20th Street East to Valley Avenue East	5	X	
2.0	Road	Valley Avenue East	70th Avenue East to Freeman Road	4	X	
5.0	Road	SR 99	Alexander Avenue East to Port of Tacoma Road	5	X	
6.0	Road	20th Street East	54th Avenue East to 63rd Avenue East	3	X	
7.0	Road	62nd Avenue East	Valley Avenue East, north to current road end	3	X	
8.0	Intersection	20th Street East	At 62nd Avenue East	Signal	X	
10.0	Road	48th Street East	70th Avenue East to Freeman Road	3	X	
11.0	Road	Canyon Road Extension	Pioneer Way East to North Levee Road (at 70th Avenue East)	5		X
12.0	Road	A Street East	54th Avenue East to 70th Avenue East	2 to 3 [4]		X
13.0	Road	54th Avenue East	Street Closure at UPRR	NA	X	
14.0	Road	70th Avenue East	20th Street East to SR 99	4		X
15.0	Intersection	20th Street East	At 58th Avenue East	Signal		X
16.0	Intersection	SR 99	At 54th Avenue East	Turn Lanes	X	
17.0	Intersection	SR 99	At 62nd Avenue East	Turn Lanes	X	
18.0	Road	20th Street East	63rd Avenue East to 70th Avenue East	3	X	
20.0	Road	Valley Avenue East	54th Avenue East to Dale Lane	3	X	
22.0	Intersection	20th Street East	At Port of Tacoma Road	Signal	X	
23.0	Road	70th Avenue East	Valley Avenue East to North Levee Road	5	X	
24.0	Road	North Levee Road	70th Avenue East to Freeman Road	3	X	
25.0	Road	74th Avenue East	45th Street East to 48th Street East	3	X	
27.0	Road	Alexander Avenue East	Street Closure North of SR 509	NA		X
36.0	Road	52nd Avenue East	12th Street to current street end	3	X	
38.0	Intersection	SR 99	At Port of Tacoma Road	Turn Lanes	X	
56.0	Intersection	Valley Avenue East	At Freeman Road	Signal	X	
57.0	Intersection	SR 99	At 62nd Avenue East	Signal	X	
59.0	Intersection	20th Street East	At Frank Albert Road	Signal	X	
62.0	Intersection	I-5 Eastbound	At 54th Avenue East	Signal & Turn Lane		X
Stage 2 – 2009 to 2014						
4.0	Road	32nd Street East (1)	54th Avenue East to Frank Albert Road	3	X	
9.0	Road	12th Street East	54th Avenue East to Alexander Avenue East	3	X	
19.0	Road	20th Street East	70th Avenue East to Freeman Road	3	X	
21.0	Intersection	20th Street East	At Industry Drive	Signal	X	
26.0	Road	62nd Avenue East	I-5 to 8th Street East	3	X	
28.0	Freeway	SR 167	I-5 to SR 509	4-6 (plus HOV)		X
29.0	Freeway	SR 167	Meridian Avenue (Puyallup) to I-5	4-6 (plus HOV)		X

Table 11. Recommended Projects by Stage (continued)

Project No.[1]	Type of Project	Street	Project Limits	Number of Future Lanes	Lead Responsibility	
30.0	Road Widen	North Levee Road	70th Avenue East to Frank Albert Road	3	X	
32.0	Road Improvement	46th Avenue East	SR 99 to 12th Street East	2 to 3	X	
37.0	Road Improvement	59th Avenue East	SR 99 to 12th Street East	2	X	
40.0	Access Road	25th/26th Street East	70th Avenue East to Freeman Road (under SR 167)	3		X
45.0	Road Widen	12th Street East	54th Avenue East to 62nd Avenue East	3	X	
46.0	Grade Separation	70th Avenue East	Grade separation at railroad	5	X	
50.0	Road Widen	Valley Avenue East	Dale Lane East to 70th Avenue East	3	X	
58.0	Intersection	North Levee Road	At Freeman Road	Signal	X	
60.0	Intersection	Valley Avenue East	At 62nd Avenue East	Signal	X	
63.0	Intersection	SR 509 Westbound	At Port of Tacoma Road	Turn Lane		X
64.0	Intersection	SR 99	At 70th Avenue East	Turn Lanes		X
65.0 [1]	Intersection	20th Street East	At 70th Avenue East	Turn Lane	X	
66.0 [2]	Intersection	70th Avenue East	At Valley Avenue East	Turn Lanes	X	
67.0 [1]	Intersection	20th Street East	At 54th Avenue East	Turn Lane	X	
68.0 [1]	Intersection	70th Avenue East	At Valley Avenue East	Turn Lanes	X	
Stage 3 – 2015 to 2025						
31.0 [5]	Road	Frank Albert Road	20th Street East to SR 99 (over I-5)	4 to 5	X	
33.0	Road	46th Avenue East	12th Street East to 8th Street East	3	X	
34.0	Road Widen	8th Street East	46th Avenue East to 54th Avenue East	3	X	
35.0	Road Widen	8th Street East	54th Avenue East to 62nd Avenue East	3	X	
48.1	Road	Port of Tacoma Road	20th Street East to B Street East over UPRR	3	X	
49.1	Road	B Street East	Port of Tacoma Road to Frank Albert Road (at North Levee Road)	3	X	
51.0	Interchange	I-5/Port of Tacoma Road	New eastbound off-ramp connected to 20th Street Drive East/Improve 20th Street East and 20th Street Drive East	Ramp: 1 to 2 Streets: 3		X
52.0	Road	12th Street East	Port of Tacoma Road to Alexander Avenue	3	X	
61.0	Intersection	Alexander Avenue East	At 12th Street East	Signal	X	
69.0 [3]	Intersection	20th Street East	At 62nd Avenue East	Turn Lane	X	
Stage Determined by Time of Land Development						
39.0	Access Road	23rd Street East/74th Avenue East	70th Avenue East to Valley Avenue East	3		X
41.0	Access Road	78th Avenue East	26th Street East to 34th Street East	3		X
42.0	Access Road	34th Street East	78th Avenue East to Freeman Road	3		X
43.0	Access Road	45th/46th Street East	Current street end (east of 70th Avenue East) to Freeman Road (under SR 167)	3		X
47.0	Access Road	75th Avenue East	20th Street East to 26th Street East	3		X
70.0	Access Road	28th Street East	73rd Avenue East to Freeman Road	3		X

[1] If SR 167 not built
[2] If SR 167 is built
[3] If 62nd Avenue East overpass is built
[4] Three lanes at 70th Avenue East
[5] Without SR 167, 62nd Avenue East may be best location for crossing

Non-Motorized Facilities

The non-motorized (pedestrian and bicycle) element of this transportation plan is a network of on-street and off-street facilities, with local and regional connections. The city of Fife, *Comprehensive Parks, Recreation, and Open Space Plan* (Parks Plan) includes detailed plans for the local trail system and trail requirements, as well as pedestrian and bicycle facility plans for the street system. Sidewalks are required on all streets by policy and ordinance. Bicycle facilities for on-road touring routes are identified as a paved bike trail, bike lane, or a shared curb lane on arterials identified in Section 9.8 of the Parks Plan. The non-motorized discussed in this transportation plan will focus on connectivity to the regional trail system and connectivity to destinations such as schools, parks and major employers.

The off-street non-motorized network that is evolving in Fife presents a unique opportunity. Major new industrial developments are providing recreational trails that can be, or are linked to a regional network of trails. The Puyallup River, Wapato Creek, and Hylebos Creek have trails planned or under development. Each of these trails can be connected to a network in Fife, and to a regional network of regional trails in Pierce and King counties.

Regional Trails for Pedestrians and Bicycle Transportation

Figure 12 shows Fife's existing and planned trail system with on-road bicycle touring routes. A class 1, 2, or 3 bike lane is required for all on-road bicycle touring routes. A copy of the facility classifications is provided in Appendix F to support bike lane requirements as presented for the standard street cross-sections in Appendix F.

Fife is at the crossroads of two regional trails – the Bay to Mountain Trail and Interurban Trail. Connections to these two trails, provides connectivity for Fife residents to the regional trails in Pierce and King counties. In addition, connecting these two trails through the city of Fife complements the development of a trail system in Fife and ties together these two significant regional trails. A description of each is provided below.

Interurban Trail – This is a north-south trail in King County, beginning at I-405 in Tukwila. The Interurban Trail is paved with soft shoulders and accommodates all non-motorized modes of transportation. Currently it ends near 70th Avenue East in Fife. The city of Fife plans to connect the Interurban Trail, which ends at the north side of Fife, to the Bay to Mountain Trail on the north side of the Puyallup River. This connection provides a significant link of two major regional trails. It is recommended that the future SR 167 alignment include an off-street regional trail facility to provide trail continuity from the Interurban Trail to the Bay to Mountain Trail. In the near term, Freeman Road and/or 70th Avenue East will be designed with a bike lane to provide this key link.

Bay to Mountain Trail – This trail is planned from Commencement Bay to the base of Mount Rainier. It follows the Puyallup River on the north levee through the city of Fife along the Puyallup River. There are two pieces significant to completing this trail with connections through Fife. The first is the Pierce County Trail along the Puyallup River (North Levee Road Trail), for which the design has been 90 percent complete. The second is from 54th Avenue East to the North Levee Road Trail that will connect this trail to the Autumn Grove Trail, and the trail system within Fife. This is a project of the Puyallup Tribe. These are significant projects, which complete a trail system along the Puyallup River and connect to the regional trail system.

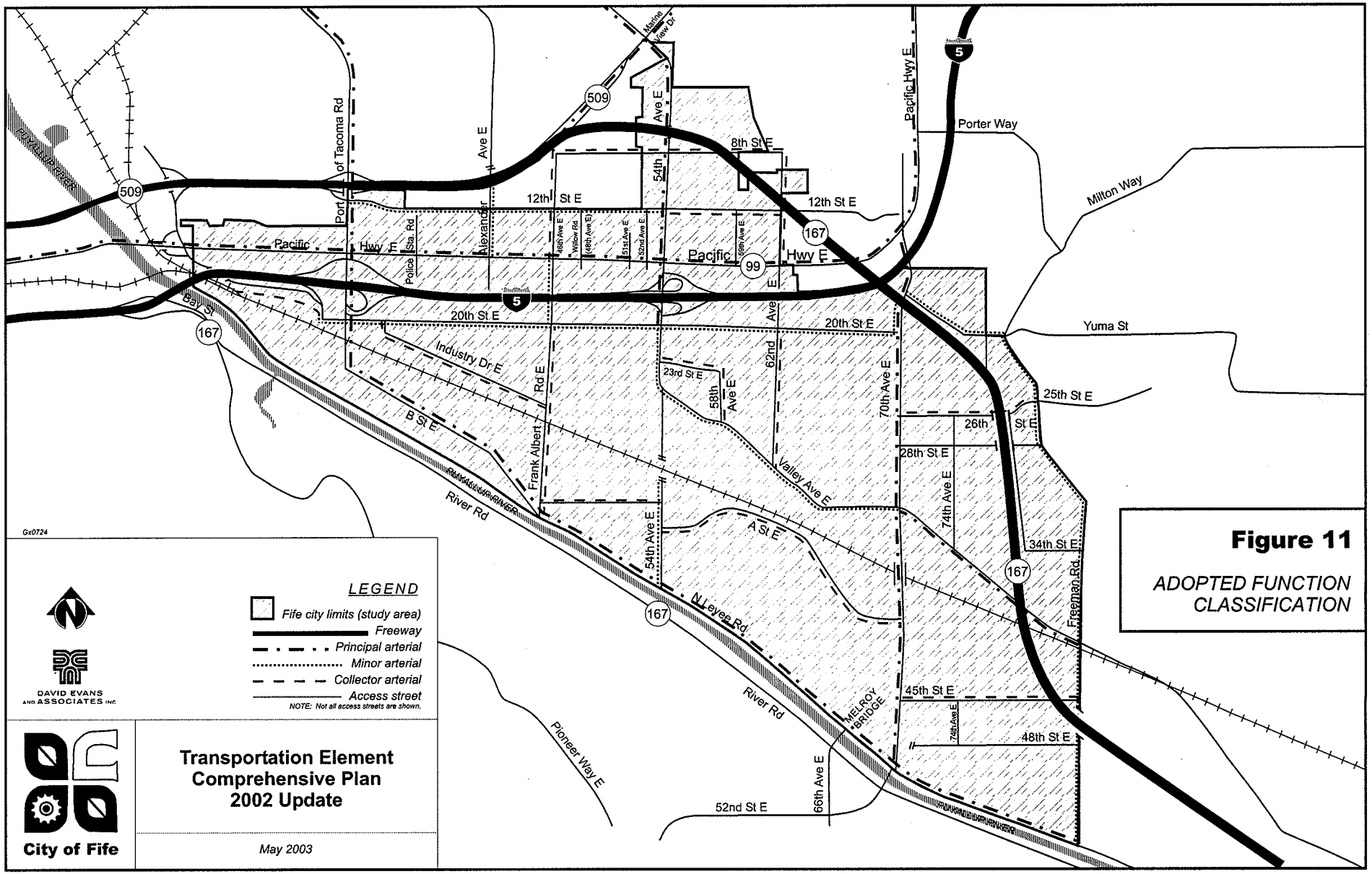


Figure 11
ADOPTED FUNCTION CLASSIFICATION
LEGEND
Fife city limits (study area)
Freeway
Principal arterial
Minor arterial
Collector arterial
Access street
NOTE: Not all access streets are shown.
DAVID EVANS AND ASSOCIATES INC
City of Fife
Transportation Element
Comprehensive Plan
2002 Update
May 2003
Gx0724
Pacific Hwy E
Porter Way
Milton Way
Yuma St
25th St E
26th St E
28th St E
34th St E
45th St E
48th St E
12th St E
8th St E
20th St E
23rd St E
52nd St E
Industry Dr E
B St E
A St E
Valley Ave E
River Rd
N Levee Rd
Pioneer Way E
Frank Albert Rd E
54th Ave E
58th Ave E
62nd Ave E
66th Ave E
70th Ave E
74th Ave E
Freeman Rd
MELROY BRIDGE
Port of Tacoma Rd
Alexander Rd
Pacific Hwy E
Bay St
Marine View Dr
509
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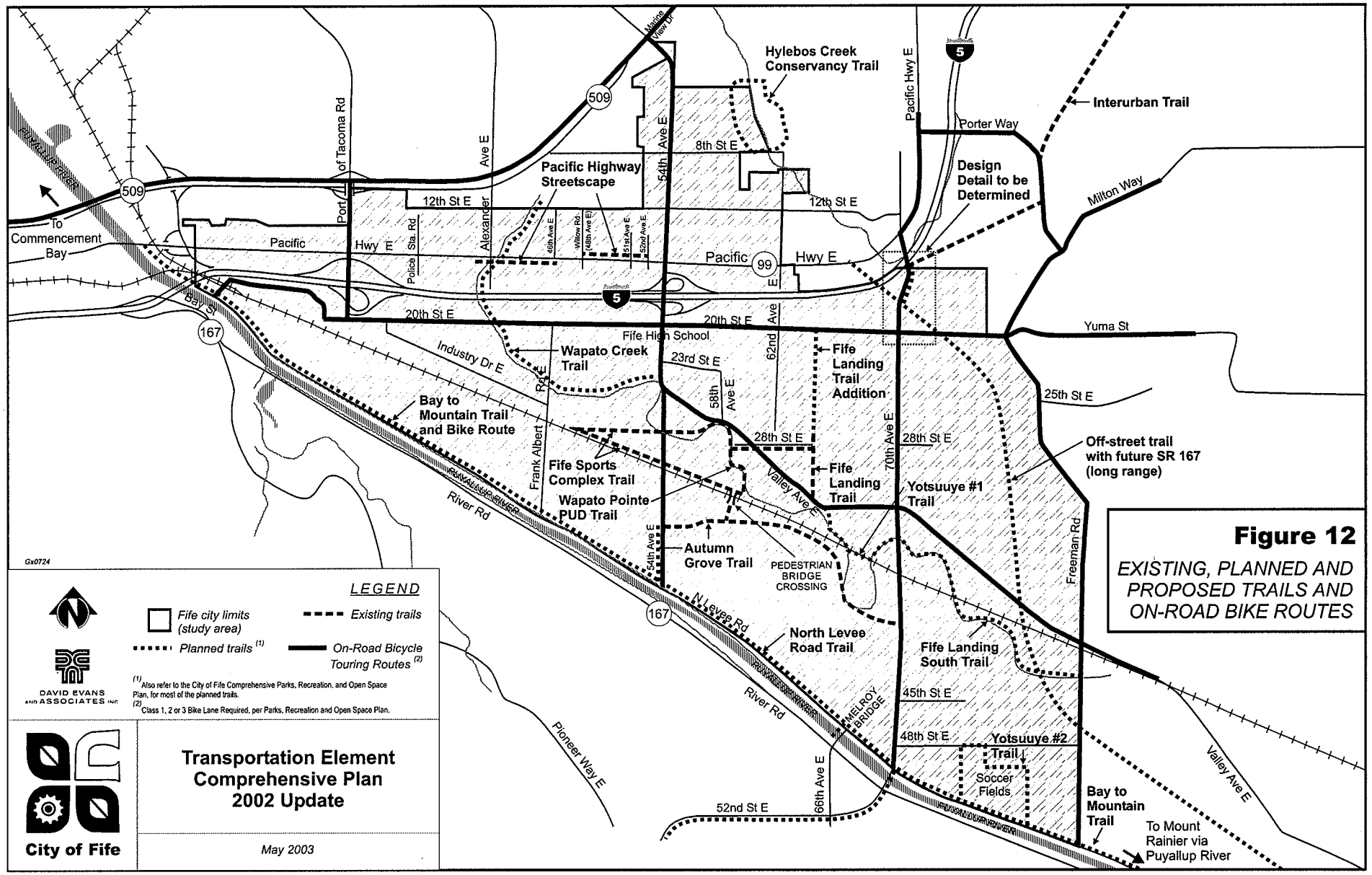
167
99


Hylebos Creek Conservancy Trail
Interurban Trail
Pacific Highway Streetscape
Design Detail to be Determined
Wapato Creek Trail
Fife Landing Trail Addition
Bay to Mountain Trail and Bike Route
Fife Sports Complex Trail
Wapato Pointe PUD Trail
Fife Landing Trail
Yotsuuye #1 Trail
Off-street trail with future SR 167 (long range)
Autumn Grove Trail
PEDESTRIAN BRIDGE CROSSING
North Levee Road Trail
Fife Landing South Trail
Yotsuuye #2 Trail
Soccer Fields
Bay to Mountain Trail
To Mount Rainier via Puyallup River
Fife High School
To Commencement Bay
Pacific Hwy E
Porter Way
Milton Way
Yuma St
Industry Dr E
River Rd
N Levee Rd
Pioneer Way E
Valley Ave E
Freeman Rd
MELROY BRIDGE
8th St E
12th St E
20th St E
23rd St E
25th St E
28th St E
45th St E
48th St E
52nd St E
54th Ave E
58th Ave E
62nd Ave E
66th Ave E
70th Ave E
Frank Albert Rd
Port of Tacoma Rd
Alexander Ave E
Police Sta. Rd
Bay St
Marine View Dr
509
167
5
99
Gx0724
LEGEND
Fife city limits (study area)
Existing trails
Planned trails (1)
On-Road Bicycle Touring Routes (2)
(1) Also refer to the City of Fife Comprehensive Parks, Recreation, and Open Space Plan, for most of the planned trails.
(2) Class 1, 2 or 3 Bike Lane Required, per Parks, Recreation and Open Space Plan.
DAVID EVANS AND ASSOCIATES INC
City of Fife
Transportation Element
Comprehensive Plan
2002 Update
May 2003
Figure 12
EXISTING, PLANNED AND PROPOSED TRAILS AND ON-ROAD BIKE ROUTES

Regional to Local Trail Network

The Interurban and Bay to Mountain Trails can be joined by completing a combination of on-street and off-street facilities on the eastern side of Fife. Connecting the trails is also possible by completing on-street facilities on 70th Avenue East, 20th Street East and Valley Avenue (Parks Plan Section 9.8, *On-Road Bicycle Touring Routes*).

Additionally, planned off-street facilities necessary to connect the trails include the Fife Landing Trail addition, Yotsuuye #1 Trail, Autumn Grove Trail, the bridge across the railroad tracks connecting the planned Autumn Grove Trail, and the new bridge connecting 70th Avenue East to 52nd Street East and Canyon Road. Each of these planned off-street facilities is described below.

Melroy Bridge – Regional trails on both sides of the river are currently connected by the Melroy Bridge. A new street connection will be provided by the 52nd Street East to 70th Avenue East project. This new bridge provides an opportunity to use the Melroy Bridge as an exclusive pedestrian and bicycle bridge.

Fife Landing Trail Addition – This trail will be a class 1 asphalt trail extension north from the existing Fife Landing Trail to 20th Street East. It will have a connection with 62nd Avenue Northeast right-of-way (2003-2008 TIP Priority 20).

Yotsuuye #1 Trail – This trail will be a class 3 bark surface trail to be developed around the perimeter of the Yotsuuye #1-Brookfield Farm site through the barn and activity areas, athletic fields, and along Wapato Creek.

Trail (unnamed) – A trail will be located on Puyallup tribal land connecting the Autumn Grove Trail at 54th Avenue in a southeasterly direction to the North Levee Road Trail.

Autumn Grove Trail – This will be a 1.0 mile long concrete and asphalt trail corridor to be developed through Autumn Grove Planned Residential Development between 54th Avenue and 70th Avenue.

Pedestrian Bridge Crossing – The pedestrian over-crossing east of 54th Avenue, over the railroad tracks is a benefit to the regional system. The over-crossing will connect the existing Autumn Grove Trail and to the proposed Dacca Sports Complex. In addition, these trails will provide connectivity between the Interurban and Bay to Mountain trails.

Local Trails and Community Connections

Local trails in Fife provide opportunity for enhanced connectivity to the regional trail system, as well as non-motorized transportation access to local destinations including major employers, parks, sports fields and schools. Currently, trail facilities in Fife include Fife Junior High/Sports Park, Pacific Highway Streetscape, Fife Landing Trail, Wapato Pointe Planned Unit Development (PUD) Trail, Puyallup River Levee Trail, and the Autumn Grove Planned Residential Development (PRD) Trail. Each of these existing trail facilities is described below.

Fife Junior High/Sports Park – This class 1 asphalt trail extends around the perimeter and between major activity areas of the park and junior high school complex.

Pacific Highway Streetscape – This is a class 1 concrete walkway with street trees, lighting, signage, and other amenities on the north side of Pacific Highway in front of Fife Business Park, and on the south side east of Alexander Avenue.

Fife Landing Trail – This is a class 1 asphalt trail from Fife Landing Business Park on the north side of Valley Avenue then north to the end of 28th Street.

Wapato Pointe PUD Trail – This is a class 3 soft surface trail along the south side of Wapato Creek from Wapato Pointe PUD.

Autumn Grove Trail – This is a 1.0 mile long concrete and asphalt trail corridor to be developed through Autumn Grove Planned Residential Development between 54th Avenue East and 70th Avenue East.

Additional planned trail facilities in Fife include the Yotsuuye #2 Trail and the Hylebos Creek Conservancy Trail. Each of these planned trail facilities is described below.

Yotsuuye #2 Trail – This will be a class 3 soft surface trail developed around the perimeter of the acquired Yotsuuye #2 site located next to North Levee Road. The trail will also extend through the activity areas next to the athletic fields.

Hylebos Creek Conservancy Trail – This will be a perimeter trail extending around the Hylebos Creek Conservancy pending acquisition of the Jordan site adjoining the current Milgard site.

TRAFFIC CONCURRENCY PROGRAM

Concurrency is a requirement of the Growth Management Act (GMA) that says capital facilities must be in place consistent with development so that adequate capital facilities are available when the impacts of development occur. Adequacy is defined by level of service standards for intersections and streets. When the level of service falls below the standard, concurrency has not been met. Adequate facilities must be provided at the time of development, or up to six years after occupancy and use (if financial commitments are made for facilities that are needed but not in place when a permit is issued). Typically, level of service is improved by increasing the street or intersection capacity. The signal timing may also be adjusted and/or turning lanes added. Other options include reducing the amount of traffic generated by a development through Transportation Demand Management (TDM) programs that encourage walking, biking, carpools, vanpools and transit use. Traffic concurrency programs in Puyallup, Milton, Tacoma, and Pierce County were reviewed to assure that a program in Fife would not be in conflict with neighboring jurisdictions. Other traffic concurrency programs in the state of Washington were also reviewed to identify potential methodologies for Fife. Following is a brief summary of the programs being used in neighboring jurisdictions.

Puyallup

The concurrency program is established by four areas in the city. The program is based on the V/C ratios of all arterials and collector roadways (major streets). For each area, ratios of total volume to total capacity on major streets are calculated for existing volumes, 2010 estimated volumes, and 2020 estimated volumes. Generally, there is a single volume and capacity value for each street; however, in some cases streets are divided into more than one segment.

Milton

The concurrency program is based on level of service on both major street segments and at intersections of major streets. The concurrency system is set up to maintain LOS D or better on both the street segments and at major intersections. A "Traffic Mitigation Impact Fee" has been established, based on projected 2012 transportation needs. The fee is based on the number of PM peak hour trips generated.

Tacoma

The concurrency program is based on three tiers of arterials and collector streets: designated arterial corridors; Port of Tacoma area arterials; and all other arterials and collectors in the transportation network. Each tier sets a volume to capacity ratio, related to a LOS level. For arterial corridors, the LOS criteria is LOS E (V/C = 0.99 or better). For the Port of Tacoma area arterials and all other arterials, the criteria is LOS D (V/C = 0.89 or better). For all three tiers, concurrency is met if 85 percent of the total lane-miles is below the V/C threshold. The category of "all other arterials" is assessed by aggregating these facilities by area. Nine total areas have been established.

Pierce County

Pierce County's transportation concurrency program is currently being revised. The current screenline-based system will be replaced by a system that measures concurrency by considering arterial and collector street segments.

Development of Traffic Concurrency Program

The purpose of this section is to explore a potential concurrency program relative to the traffic forecasts of the Future Baseline Network, and the FAN-1 and FAN-2 networks. A comparative analysis provides the information needed to select an appropriate concurrency program. Following identification of a program, a concurrency ordinance would be prepared.

Current policy of the city of Fife is to maintain LOS D operations or better. The State Environmental Policy Act (SEPA) process is used to identify traffic impacts and to assess mitigation projects or payments from developers.

After reviewing the programs used in neighboring jurisdictions, a decision was reached that an intersection-based system would best serve Fife's needs for a concurrency program. Under this program, signalized intersections are designated as concurrency program intersections. Intersection delay, based on Synchro analysis is the basis for the estimated delays at intersections. For signalized intersections, the estimated average delay is for all vehicles entering the intersection. The concurrency program would be based on two criteria: 1) the average delay for all intersections in a subarea of the city must be below the value for LOS E (55 seconds for signalized intersections); and 2) a maximum number of intersections in each area could exceed the LOS E delay values stated above (three assumed for testing).

As a test of this program, existing conditions and all three future network LOS values were analyzed. The city was divided into two areas, as north of I-5 and south of I-5. **Table 12** summarizes the results of the analysis for existing conditions.

Table 12. Concurrency Evaluation – Existing Conditions

Area	Signalized Intersections	
	Average Delay	# > 55 Seconds Delay
North of I-5	26.7	0
South of I-5	78.0	1

Based on the above criteria, the area north of I-5 would meet concurrency for existing conditions. However, the area south of I-5 would fail, under the average delay criterion. An example of how to meet the concurrency requirement with an improvement is at 70th Avenue East/Valley Avenue East. This intersection is south of I-5 and exceeds 55 seconds of average delay. The improvement project in the

city's Transportation Improvement Program (TIP) would lower the average delay to less than 55 seconds, and result in meeting concurrency.

Table 13 summarizes the concurrency analysis, for the Future Baseline Network conditions. The Future Baseline Network was described previously in this report. The future year forecasts are for the year 2025.

Table 13. Concurrency Evaluation – Future Baseline Network

Area	Signalized Intersections	
	Average Delay	# > 55 Seconds Delay
North of I-5	93.8	5
South of I-5	60.8	3

Based on the values in Table 13, neither area would meet concurrency standards in 2025. This is not surprising, since this network is loaded with 2025 traffic volumes, and only the additional capacity provided by projects in the current TIP plus several other projects that were assumed to be built by 2025.

Several unsignalized intersections that would operate at LOS F under Future Baseline conditions could be signalized to improve intersection operations. These intersections would be added to the concurrency program. The area south of I-5 would then meet concurrency standards, with an average delay of 53.3 seconds and with three intersections having delays of more than 55 seconds. However, the area north of I-5 still would not meet concurrency.

The concurrency program, based on LOS at signalized intersections was also evaluated using traffic forecasts for the Future Alternative Network 1 (FAN-1) and Future Alternative Network 2 (FAN-2). The results of these analyses are included in **Table 14**.

Table 14. Concurrency Evaluation – Future Alternative Network 1 and Future Alternative Network 2

Area	Signalized Intersections			
	FAN-1 (1)		FAN-2	
	Average Delay	# > 55 Seconds Delay	Average Delay	# > 55 Seconds Delay
North of I-5	39.6	3	67.3	4
South of I-5	27.7	1	45.3	4

(1) Assumes installation of traffic signals at four intersections not included in the Baseline network

As shown in Table 14, both areas would meet the concurrency standard with FAN-1. However, neither area would meet the concurrency standard for FAN-2, because more than three intersections have average delays of more than 55 seconds. Further analysis was done, assuming that the additional improvements to FAN-1 (p.26) and additional improvements to FAN-2 (p.30) would be implemented by 2025. **Table 15** summarizes the results of the concurrency analysis for this scenario. As shown in Table 15, concurrency would be met with either FAN-1 or FAN-2, with additional improvements which include the installation of traffic signals at several intersections.

Table 15. Concurrency Evaluation

Area	Signalized Intersections			
	FAN-1 [1]		FAN-2 [1]	
	Average Delay	# > 55 Second Delay	Average Delay	# > 55 Second Delay
North of I-5	35.1	2	52.5	2
South of I-5	21.6	0	31.5	1

[1] With suggested improvements

Two sensitivity runs were made and described in previous sections of this report for FAN-2. These two runs were made to test the impacts of adding an interchange on I-5 at 70th Avenue East and of deleting the FAN-2 proposed new bridge over the Puyallup River on the extension of Port of Tacoma Road. Analysis of these improvements would result in somewhat better concurrency results. One intersection with average delay of more than 55 seconds would be eliminated in the area north of I-5. This would result in this area meeting the concurrency standard, with respect to the number of intersections with average delay of more than 55 seconds. The area north of I-5 would not meet concurrency due to the overall average delay being higher than 55 seconds. Also, the area south of I-5 would still not meet the standard because more than three intersections have average delays in excess of 55 seconds. If the additional improvements included in the Table 15 analysis are implemented, both networks would meet the concurrency standard.

Non-system signalized intersections that are located to provide access to and from developed areas, such as the ones on Pacific Highway at 51st Avenue East, 52nd Avenue East, and Willows Road would not be designated as program intersections and would not be included in the concurrency analysis. Non-program intersections are those that serve the function of allowing relatively minor street traffic to enter a higher-volume major street by briefly interrupting the major-street flow. Generally, non-program intersections have good level of service (LOS D or better).

Unsignalized intersections were not included in the concurrency analysis. However, unsignalized intersections of two arterial and/or collector streets should be evaluated and actions should be taken to assure acceptable operating conditions. In this regard, approaches or lane groups that are operating at LOS E or F should be evaluated with respect to the number of vehicles that are affected. Mitigating measures should be developed outside the concurrency program. Impacts of developments on these intersections may be evaluated through other means, such as the SEPA process.

Summary of Traffic Concurrency

The area and average delay-based concurrency program allows for some intersections to exceed the LOS D standard. This approach provides flexibility, as there may be intersections where the physical improvements required to meet the LOS D standard cause intolerable impacts to the community. A segment-based methodology would match concurrency systems in surrounding jurisdictions more closely than the intersection-based option, however, the intersection-based program more accurately addresses the needs in Fife. There are no significant coordination issues expected with these two concurrency programs.

The recommended program will require annual traffic counts (turning movements) at program intersections. It is possible to stagger the counts over a longer period of time and update those not counted, based on the traffic growth recorded at other intersections. This would be especially true for streets that are in areas where growth is slow. Several selected intersections should be counted every year to serve as measures for traffic growth. It is recommended that the five intersections listed below be

counted at about the same time every year. The remaining program intersections would be divided into three groups for counts every third year. Counts may also be available from other traffic studies.

- 54th Avenue East/Pacific Highway East
- Port of Tacoma Road/Pacific Highway East
- 54th Avenue East/20th Street East
- 70th Avenue East/Valley Avenue East
- Industry Drive/Frank Albert Road

Traffic Calming

As traffic becomes congested on arterials and collectors, there is a tendency for motorists to use local access streets to bypass congested locations. Often, the magnitude of this traffic, or the speed of the vehicles becomes objectionable to residents and/or businesses. A solution for this issue is termed "traffic calming," and is used to discourage traffic from deviating from arterials and collectors and to reduce excess speeds on local streets.

A procedure has been developed, based on experience in other jurisdictions, for installation of traffic calming features in Fife. The traffic calming procedure is included as **Appendix C** of this report, and is outlined below.

- Determine whether or not traffic calming techniques should be considered.
- An approval process for selecting the traffic calming tool and implementation.
- A matrix of techniques that best address a variety of issues.

TRANSPORTATION FUNDING SOURCES

Introduction and Background

The city of Fife engages in an annual budgeting process to determine its financial resources for achieving community goals described in its comprehensive plan and for accomplishing specific projects adopted by the City Council. The council adopts an annual operating budget for the calendar year and also identifies the specific programs, projects, and funding sources for the next year's capital budget, based on an updated a six-year capital investment program.

The Washington State Growth Management Act of 1990 (GMA) requires the city to prepare a comprehensive plan containing elements addressing land use, housing, transportation, utilities, and capital facilities. As part of the city's first comprehensive plan a detailed capital facilities plan was developed for the 1994-1999 time period. The 1994 Capital Facilities Element (CFE) included an inventory of conditions for existing capital facilities, identified the adequacy of each facility, recommended proposed improvements, and specified the anticipated implementation schedule and available funding sources for those improvements. The CFE is updated annually to address the evolving capital elements needs and priorities of the city.

The CFE is a tool that enables the city to plan for capital improvements and to develop a financial plan with identified funding sources for each project. It provides a basis from which to track project costs and progress against established budgets and targeted completion dates, and also is a mechanism by which the city can determine whether it meets the GMA concurrency test. Concurrency under the GMA requires that public facilities and services needed to support new development and to maintain minimum local level of service standards must be available concurrent with development occupancy or use. Specifically, the GMA defines concurrent with development as "improvements or strategies that are in place at the

time of development, or that show financial commitment is in place to complete the improvements or strategies within six years."

Local Transportation Funding

The city's investments in transportation are made through the Street Fund. The fund receives revenue from a variety of local, state, and federal funding sources. Local transportation funding sources for the 2001 and 2002 budget periods are shown in **Table 16** with projected amounts shown for future years based on current funding practices and potential future levels stated in constant 2002 dollars (not adjusted for general inflation). If any annual funding increases were shown, it would reflect a real increase over and above inflationary impacts. For purposes of this preliminary conceptual analysis, no real increases beyond inflation were assumed.

A primary local revenue source is an allocation of sales and use tax revenue from the current expense fund, the city's fund for most municipal services. For the 2002 budget period, the Street Fund received an allocation of $420,000 or 10.6 percent of the city's sales tax revenue, which was the same allocation budgeted for 2001. Other street fund revenues include the motor vehicle fuel tax and liquor excise taxes that are distributed by the state using a formula that is largely based on each cities' population.

Table 16. City Street Fund by Revenue Source in Constant 2002 Dollars

	2001 Budget	2002 Budget	2003-2012 Forecast	Average Annual in Current $
Sales Tax	$420,000	$420,000	$4,200,000	$420,000
Overload Permits		100		
Investment Interest Earned	20,000	51,000	360,000	36,000
Sale of General Fixed Assets		200,000		
Local Vehicle License Fee		30,000	150,000	15,000
Motor Vehicle Fuel Tax	113,832	103,245	1,090,000	109,000
Liquor Excise Tax	16,626	15,665	160,000	16,000
Interfund Loan –Sewer	1,120,000			
Transfer in – Growth Management	100,000		500,000	50,000
Transfer in – Impact Mitigation	480,007		1,000,000	100,000
Transfer in – Current Expense Fund	950,000	980,000	7,750,000	775,000
Total Local Funding Sources	**3,220,465**	**1,800,010**	**15,210,000**	**1,521,000**
Less: Operating and Maintenance Expenses	(609,073)	(503,295)	(5,560,000)	(556,000)
Net Local Funds Available for Transp. Capital Projects	**2,611,392**	**1,296,715**	**9,650,000**	**965,000**

Source: city of Fife, Berk & Associates, Inc., 2002

The city occasionally borrows or receives transfers from other city funds to increase the street fund balance and meet transportation needs. Revenues from the Growth Management Fund also contribute to the Street Fund. These revenues generally come from real estate excise tax collections ($120,000 budgeted for 2002) which are targeted for capital improvements to streets and park acquisition. The Impact Mitigation Fund receives fees from new development to specifically mitigate growth-related impacts on street, water, sewer, and park facilities. This fund also holds dedicated funds for future improvements until they are needed. The city conservatively budgeted no fees from impact mitigation in its 2002 budget, only interest earnings of $25,000 on its fund balance. Other cities also don't budget for this item due to the uncertainty of timing of the receipt of funds. The city has budgeted almost $1 million in transfers from the Current Expense Fund to the City Street Fund the last two years, to fund needed projects and operating and maintenance expenses.

A projection of potential future revenues was developed in constant 2002 dollars based, in most cases, on an average of the two most recent budget years. The analysis assumes that the sale of assets is not an ongoing source of revenue. To be conservative, it assumed that funding from the Current Expense Fund to the City Street Fund continues at $1 million next year, but is reduced by $50,000 each year over the next ten years. This reflects the likely increased funding constraints imposed by Initiative 747 that will limit growth in property taxes and thus may result in some funding challenges in general municipal services. The reliance on transfers from the Current Expense fund could diminish if other funding sources such as impact mitigation fees grow sufficiently to meet funding needs. Impact Mitigation fees are one of the few transportation funding sources that the city has some direct control over in that it controls the types of fees it charges and the rates it charges for those fees.

Section 17.08 of Fife's City Code provides for mitigating adverse impacts to traffic congestion, streets, other adverse environmental impacts from development. The code provides that if the there is a significant adverse impact to peak hour level of service, either the development proposal needs to be modified, the number of traffic lanes need to be increased and the cost paid by the development, or at the city's option the city pays the development's pro rata share of the cost of the street system improvement subject to certain conditions. Section 17.08.070 provides for Latecomers Fees for those who have not shared in their pro rate share of costs for development improvements from which latecomers benefit. Section 20.10.060 of the code also provides for imposing impact fees for single-family/duplex residential subdivisions and for new multifamily and nonresidential development and is collected at the time of building permit application. Section 20.10 of the city code authorizes impact fees to be imposed on new development in order to ensure that adequate facilities are available to serve new growth and development. In addition, under Section 20.15 of the code, the city imposes school impact fees of $2,005 per single family residence unit and $1,249 per multifamily unit. Section 13.12.030 also requires developers to pay certain consulting engineer and inspection fees associated with certain water and sewer utility improvements.

The city conservatively budgeted no fees from impact mitigation in its 2002 budget, only interest earnings of $25,000 on its existing fund balance. A conceptual indication of the potential revenue stream that might be realized from impact mitigation fees can be gauged by looking at other cities situated near Fife, ideally with similar types of mitigation impact fees and developer agreements in place. However, the fee structures can vary significantly by each city and also vary by each development or developer. In order to estimate a revenue potential for Fife beyond a conceptual level, a more detailed analysis needs to be performed considering terms negotiated with developers for recent developments, a forecast of future development and building permits increases, and the types of development and magnitudes of impacts they would have on the city. For this conceptual exercise, the analysis is limited to comparing impact mitigation fee revenue from other nearby cities to provide a general indication of what Fife might realize.

Table 17. Comparison of Impact Mitigation Fee Revenues for Selected Cities

	Fife	Enumclaw	Tukwila	Federal Way
Population	4,784	11,1116	17,181	83,259
Number of Commuters	2,357	4,843	8,656	41,259
Number of Housing Structures Built 1999 - March 2000	24	70	75	288
Median Value All Housing Units	$149,900	$160,000	$150,100	$171,700
Impact & Mitigation Fees Collected	$0 in 2001 $290,000 in 2000	$65,000 in 2001 $64,000 in 2000	$1.1 mil. in 2001 $1.9 mil. in 2000	$0.8 mil. in 2001 $1.3 mil. in 2000

Source: U.S. Census 2000 and Berk & Associates, Inc., 2002

Table 17 shows that the city of Federal Way received $0.8 million and $1.3 million in impact mitigation fees, respectively, in 2001 and 2000. Federal Way forecasted $1.2 million annually in its long-range plan with $1 million of the amount toward transportation and $0.2 million towards parks. The city of Renton earned $1.1 million in impact fees in 2001 and $1.95 million in 2000, which it allocated to transportation, fire, and parks. The city of Enumclaw, which is closest in size to Fife of the three comparison cities shown, brought in about $65,000 in impact mitigation fees in 2000 and 2001 and earned $83,000 in 2000. The city of Fife received $290,000 in fees in 2000, but earned no fees in 2001 due to slow down in development activity. The City of Tukwila earned more revenue from these fees in 2000 than Federal Way did from its impact mitigation fees, but had only about 25 percent of the level of new housing unit development compared to Federal Way in the same period. Even at a conceptual level, it is difficult to develop a reasonable estimate for what the city of Fife might earn from impact mitigation fees given the variability in the data and differences between cities and between developments within the same city regarding what fees will be assessed. However, given the limited available information, a very conservative estimate for the city of Fife appears to be in the $100,000 or more range annually, unless development in the City increases dramatically or fees are adjusted. The estimated future annual revenue from impact mitigation fees is conservatively estimated at $100,000 in Table 16. In reality, the developments and income stream are quite variable because developments with large impacts generate more income in certain years than in other years where there may be less development and less impacts.

State and Federal Funds

Generally, Washington has two primary categories of revenue to fund transportation: gas tax and vehicle licenses, permits and fees. Until November 1999, the State of Washington also had the motor vehicle excise tax (MVET). With the passage of Initiative 695 (I-695), the MVET was abolished and $1.9 billion in statewide transportation funding was eliminated. Although much of I-695 was declared unconstitutional, the elimination of the MVET was already statutorily affirmed by the Legislature.

The 18th Amendment to the Washington State Constitution dedicates motor vehicle fuel tax proceeds to highway purposes. For the 1999-2001 biennium, gas tax revenue totaled $1.4 billion. The revenue generated from the gas tax is distributed across the transportation system. The "state" share, which is about half of total revenues, supports WSDOT highway programs, as well as activities for a number of other state agencies that are defined as highway purposes. Of this distribution, WSDOT activities that are funded include, among other things, highway construction, maintenance, administration, and the debt service on highway construction bonds. A nearly equal amount is distributed directly to cities, counties, and other agencies for roadway programs. The remainder pays for ferry operations and capital improvements (the ferry system is considered a highway purpose under the amendment). In the 2001-2003 biennium, each penny of gas tax is expected to yield approximately $64 million. Cities currently receive about 2.46 cents or 10.7 percent from each 23 cent gallon tax.

The other major state revenue source, motor vehicle licenses, permits and fees (LPF) totaled $571 million in the 1999-2001 biennium. Similar to the gas tax distribution, roughly half of LPF revenues go to the Motor Vehicle Fund that supports highway and state road construction.

In addition to state taxes and fees, the state receives federal grants for transportation through the Transportation Equity Act for the 21st Century (TEA-21), passed by Congress in 1998 and supporting highway and transit programs for federal fiscal years 1998-2003. This act was renewed in federal fiscal year 2002. TEA-21 has six major highway programs and four transit programs, all of which provide funding to states for state highway projects, or as a pass-through to regional and local agencies for regional projects. Traditionally, state road and highway projects are funded from all these sources.

The city of Fife, like most local governments in Washington State, try to leverage their limited local funding by securing state and federal grants. Currently the city has budgeted $310,000 in state and federal grant funding in 2001 in the Street Fund plus an additional $308,000 grant from the Puyallup Tribe. In 2002, the city budgeted $1.21 million from state and federal sources. Funds from other governments reflect budgeted contributions from other jurisdictions related to roadway improvements that benefit Fife and the broader region or other governmental jurisdictions. In 2002, $1.03 million in State Arterial Improvement Program (AIP) funds is budgeted for the 54th Avenue East project from 20th Street East to Valley Avenue. Also, $181,000 in federal Surface Transportation Program (STP) funds is budgeted for 2002 for the Pacific Highway East Project from Alexander Road to Port of Tacoma Road. The city's Public Works Department aggressively pursues state and federal grants and participates in coordination committees at the county and state level to gain support for its projects.

The city has also received a 3 percent loan for $288,838 payable over 20 years from the State's Public Works Trust Fund to pay for street improvements to Pacific Highway East from 54th Avenue East to Willows. Additional funding for this project came from Urban Arterial Funds from the State of Washington, federal matching dollars and the city's arterial street funds. An annual payment of $17,500 is paid from the city street fund to retire this debt.

Federal Programs

The **Surface Transportation Program (STP)** program is regionally administered and eligible projects include roads, transit, bicycle, and pedestrian facilities, car and vanpool facilities, and marine and airport access. Within STP, funds are set aside for enhancements, roadway hazards, railway crossings, and flexible funding for a variety of uses.

Under the **Statewide Competitive Allocation Program**, eligible projects intensely compete for funding. Eligible projects include those associated with economic development, public/private partnerships and innovative projects.

State Programs

The Transportation Improvement Board (TIB) is an independent agency founded in 1988 that distributes funds through the **Urban Arterial Trust Account (UATA)** and the **Transportation Improvement Account (TIA)**. Competition for funding is fierce and projects are ranked based on specific criteria. The UATA funds city and urban county road and street projects to reduce congestion, improve safety, and address geometric and structural problems. The TIA funds projects to alleviate congestion resulting from economic development and population growth.

The Washington State Department of Community Development administers the **Public Works Trust Fund**, a low interest revolving fund, that is available for infrastructure projects that address maintenance and safety needs, as well as projects that are related to economic development.

Table 18 summarizes current grant funding opportunities under these programs based on recent conversations with State administrators of these programs. An estimated share of the fund receipts is calculated for Fife based on a concept that over time each community will get its "fair share" of state and federal funds. For planning purposes, the "fair share" is assumed to be the city's share of the statewide or county population, depending on the program. Based on the State's 2001 population estimates updated as of February 2002, Fife's population of 4,820 is only .08 percent of the statewide population and .68 percent of Pierce County's population.

Clearly these funding levels are relatively insignificant over a multi-year program. In order to increase these potential grant shares to Fife beyond what it would get on a per capita basis, arguments would need to be made that some of the projects in Fife have regional significance or are significantly affected by regional traffic patterns and thus would require a greater funding contribution from these programs beyond the city's fair share. However, because of the small size of the community and the relative competition for limited sources of funds, any strategy that would target grant sources needs to carefully evaluated and based on specific project requirements.

Table 18. Summary of State and Federal Grant Sources

Grant Source	Estimated Available Funds	Estimated Fife's Share of Funds
State Transportation Improvement Board (TIB)		
Urban Arterial Trust Account (state)	$30 million per year statewide	$25,000 per year $0.25 million 2003-2012
Transportation Improvement Account (state)	$30 million per year statewide	$25,000 per year $0.25 million 2003-2012
Department of Community Development (state)		
Public Works Trust Fund (low interest revolving loan fund) (state)	Currently oversubscribed	
Federal - ISTEA		
Surface Transportation Program (STP) (federal, regionally administered)	$4.4 million in 2003 and $6.4 million in 2004 to Pierce County	$30,000 in 2003 $43,000 in 2004 $0.475 million 2002-2012
statewide Competitive Allocation (federal, state administered)	$1 million in 2003 statewide, under review for 2004	$1000 in 2003 $10,000 2003-2012

Source: Berk & Associates, Inc. 2002

Potential for New Funding in the Future

WSDOT is in the process of updating the Washington Transportation Plan (WTP), an overview of the current conditions and issues facing our transportation system. The plan identifies the state's transportation investment needs for the next 20 years. The plan represents a statewide policy and inventory of potential investments in transportation. The plan identifies over $100 billion in needed improvements for the next 20 years, with current revenues expected to cover less than one-third of those needs. The combination of increased travel demand on the system and a revenue shortfall means that our transportation crisis has reached a critical juncture and is a top priority of state government.

The state's transportation system has been in crisis for several years as inadequate capital investment in the system has faced increasing demand for transportation facilities and services. Significant transportation system needs (roads, bridges, highway safety, ferries, rehabilitation, transit, rail and rural transportation) are competing within an extremely constrained environment for limited funding, partly due to voter-approved constraints on tax sources, such as Initiative 695.

Many efforts to examine and offer solutions to this crisis exist. At the same time the ruling on Initiative 695 was issued, the Governor's Blue Ribbon Commission on Transportation (BRCT) Revenue Committee found that both the funding structure and the level of revenue generated by the transportation system are increasingly inadequate to meet the State's mobility needs. The BRCT also found that remaining revenue sources (gas tax, licenses, permits and fees, and transportation bonds) are categorical

in ways that limit their use (in terms of the kinds of transportation uses to which each can be applied, which type of jurisdiction can use them, and in terms of available resources).

The BRCT Revenue Committee found that "restrictions built into the various fund sources make the system inflexible and unresponsive to changing conditions" and that the "current funding system generates insufficient revenues to keep pace with the growing system, and in some cases, even fund the basic maintenance and preservation of what already exists." The BRCT's recommendations for systemic change in how transportation is funded include encouraging partnerships with the private sector, authorizing local governments to raise taxes and fees to generate new revenues, and developing user-based revenues to support the system. The BRCT's revenue recommendations suggested that the Governor and Legislature develop a package of new revenues to fund a comprehensive multi-modal set of investments, which, taken together with the recommended efficiency measures and reforms, ensure a 20-year program of preserving, optimizing, and expanding the State's transportation system.

During the 2001 State Legislative session and special sessions, the State Legislature could not reach consensus on a revenue package to pay for much-needed improvements to the transportation system, even in the face of broad agreement that improvements were needed. The Legislature took the issue up again during the 2002 session and successfully passed legislation authorizing two separate revenue packages to be taken to voters for approval. The following is a brief discussion of each of these packages:

Regional Package

The regional proposal, Senate Bill 6140, allows Puget Sound counties to request tax authority from the voters for major transportation projects that would be spelled out in ballot measures. The Puget Sound committee will be made up of county council members from each of the three counties. The bill allows Pierce, King and Snohomish counties to submit a plan to voters to form a Regional Transportation Investment district. The district is a mechanism to approve funding for transportation capital projects, including new lanes or reconstruction on highways of statewide significance. Ten percent of the revenues authorized may be used for local arterials, existing and new highways. The tax authority granted to these districts includes a vehicle license fee of $100 per year; a sales and use tax of up to 0.5 percent; a parking tax; tolls on reconstructed lanes; and unused local taxes. The proposal could allow Puget Sound voters to approve up to $8.7 billion over 10 years in local taxes for transportation improvements. In the spring of 2002, expectations are that a regional package would be submitted to the voters in one year.

State Package

The statewide transportation funding package, Referendum 51, was based largely on a 9 cents per gallon increase in the current 23-cent per gallon gas tax, along with other taxes that are expected to raise $7.7 billion statewide over 10 years, mostly for highways. This measure failed in November 2002. A 5-cent gas tax increase was approved by the State Legislature in the 2003 session. Collection will begin in July 2003.

There may also be opportunities for the city of Fife to pursue transportation funding from the City Corridor Program, Main Street Paving Program, Rural Economic Development Program, and School Safety Program. The city would need to participate in a competitive process to garner a share of these funds.

City of Fife Funding

In the event that funding shortfalls remain after exhausting all other options, the city could generate new funds for transportation projects by changing the rate of existing fees and taxes it currently assesses, as

well adding new taxes that other local cities assess. The most likely candidates would appear to be utility taxes and impact mitigation fees.

Impact Mitigation Fees

The city could examine its current pricing structures and methods for how it imposes impact mitigation fees on new development. However, to implement a new impact mitigation fee structure, there needs to be a sound methodology to support higher fees that is based on the identified project impact costs and an assignment of costs to the "growth component" of trips in the future. The fees and their application should also show a nexus between types of development and their associated impacts on the local environment and traffic conditions.

Local Taxes

Local utility taxes imposed by Fife may offer an opportunity to generate additional revenues for the city to fund transportation and other needs. The city currently assesses a 3 percent utility tax on electricity and a 4.5 percent tax on natural gas, telephone, water, and sewer with proceeds going to the current expense fund. The statutory limit for utility taxes assessed on telephone, natural gas and electricity is 6 percent. There is no statutory limit for water and sewer. In addition, the city could extend the utility tax to other utilities that are currently not taxed, including garbage, cable TV (franchise fee), and cellular telephone.

The city of Fife may want to review these local tax sources and consider whether it is prudent to adjust some of its tax rates and potentially add new taxes to increase funding for the city, some of which could be earmarked for transportation improvements.

GOALS, POLICIES, AND IMPLEMENTATION STRATEGIES

The Transportation Plan must be consistent with goals and policies of the Growth Management Act and Pierce County county-wide planning policies. Relevant policies are presented below.

Growth Management Act Goals

The Revised Code of Washington (RCW) 36.70A.020 lists 13 growth management goals. Two of those goals apply most directly to this Transportation Plan:

*3. **Transportation**.* Encourage efficient multi-modal transportation systems that are based on regional priorities and coordinated with county and city comprehensive plans.

*12. **Public Facilities and Services.*** Ensure that those public facilities and services necessary to support development shall be adequate to serve the development at the time the development is available for occupancy and use without decreasing current service levels below locally established minimum standards.

Pierce County Countywide Planning Policies

Pierce County has adopted a total of 29 policies that relate to county-wide transportation planning. This plan was developed consistent with these policies.

Transportation Policy 1: Include the following as transportation services deemed countywide in nature: State and federal highways; major arterials; public transit facilities and services; waterborne transportation (ferries, shipping); airports (passenger or freight); and rail facilities (passenger or freight).

Transportation Policy 2: Include the following facilities and system components in the multi-modal network: roads, including major highways, arterials and collectors, public transit, including bus, rail, and park-and-ride lots, non-motorized facilities, ferries, airports, parking facilities, and facilities related to transportation demand management.

Transportation Policy 3: Coordinate service levels between jurisdictions and other transportation service providers by designating roadway, intersection and transit Levels of Service (LOS), understanding that the adopted LOS will affect not only the quality of the transportation system, but also the amount of public investment required and the permissible growth levels which the transportation system can support, and entering into interlocal agreements to establish uniform, coordinated service levels between jurisdictions for countywide facilities.

Transportation Policy 4: The adopted LOS may be set below existing levels, set above existing levels, set at existing levels, set at different levels of service in different zones, set at different levels of service based on facility classifications, or set for multi-modal facilities.

Transportation Policy 5: Determine the adequacy of transportation facilities taking into account existing development, approved but unbuilt development and proposed development through utilization of capacity-to-demand (LOS), availability of capacity including phased capacity, and/or coordination of appropriate standards of design across jurisdictional lines.

Transportation Policy 6: Address substandard LOS for existing facilities or existing deficiencies by designating funding mechanisms, prioritizing facilities needed to correct existing deficiencies, using transportation demand management to minimize demand, and/or using transportation systems management to redirect traffic to uncongested areas and to modify travel behavior.

Transportation Policy 7: Assign responsibility for the correction of existing transportation deficiencies in the urban growth areas: the county in unincorporated areas, a municipality in incorporated areas, and joint county-municipal when part of an agreement for a joint planning area.

Transportation Policy 8: Adopt parking regulatory codes for park-and-ride facilities and parking requirements for public facilities so as to encourage public transit use.

Transportation Policy 9: Address concurrency by providing transportation facilities needed to accommodate new development within six years of development approval, limiting new development to a level that can be accommodated by existing facilities and facilities planned for completion over the next six years, and encouraging new and existing development to implement measures to decrease congestion and enhance mobility through transportation demand and congestion management.

Transportation Policy 10: Address compatibility between land use and transportation facilities by requiring new transportation facilities and services in appropriate or desirable areas to be phased within a 20-year time frame consistent with tiered areas and six year capital improvement programs, restricting the extension of new transportation facilities outside the urban growth area, using development regulations to ensure that development does not create demands exceeding the transportation system capacity, using land use regulations to increase the modal split between automobiles and other forms of travel, and approving transportation facilities in conjunction with land use approvals.[1]

[1] This policy has been recommended for deletion by the PCRC and the Growth Management Coordinating Committee.

Transportation Policy 11: Address environmental impacts of the transportation policies through programming\capital improvements and transportation facilities designed to alleviate and mitigate impacts on land use, air quality and energy consumption (e.g., high-occupancy vehicle lanes, public transit, vanpool/carpool facilities, or bicycle/pedestrian facilities); and locating and constructing transportation improvements so as to discourage adverse impacts on water quality and other environmental features.

Transportation Policy 12: Address energy consumption/conservation by designing transportation improvements to encourage alternatives to automobile travel; locating and designing new development so as to encourage pedestrian or non-automobile travel; providing regulatory and financial incentives to encourage the public and private sector to conserve energy; and reducing the number of vehicle miles traveled and number of vehicle trips.

Transportation Policy 13: Provide the following facilities to encourage alternatives to automobile travel and/or to reduce the number of vehicle miles traveled (modal split, trip generation and trip length): structural alternatives (e.g., public transit, construction of new HOV lanes, limitations on highway/roadway construction, carpool/vanpool facilities, nonrecreational bicycle/pedestrian facilities), and non-structural/regulatory alternatives (e.g., growth management, roadway/congestion pricing, auto-restricted zones, parking management, site design, ridesharing incentives).

Transportation Policy 14: Utilize the following transportation systems management measures to make the most efficient use of the existing roadway system: structural improvements (e.g., super street arterials, signalization improvements, computerized signal systems, one-way streets, ramp metering, designation of HOV lanes, reversible traffic lanes), and nonstructural improvements (e.g., incident detection and monitoring systems, network surveillance and control, motorist information systems, turn prohibitions, alternative work hours).

Transportation Policy 15: Consider a number of financing measures, including but not limited to: general revenues; fuel taxes; toll roads; bonding; congestion pricing; public/private partnerships; assessment and improvement districts, facility benefit assessments, impact fees, dedication of right-of-way and voluntary funding agreements; and others, as may be appropriate.

Transportation Policy 16: Coordinate access needs and control for county and/or municipal funded transportation facilities through designating limited access facilities in the regional plan, determining access regulations through mutual agreement by the affected jurisdictions and/or by an agency designated by the affected jurisdictions, and developing access regulations by the agency having primary jurisdiction or funding responsibility.

Transportation Policy 17: The following development standards shall be the minimum required for urban developments and shall apply to all new development in urban growth areas:

a. **Streets, Roads and Arterials.** All public streets, roads, and arterials shall be constructed to the minimum requirements outlined in the City and County Design Standards adopted pursuant to RCW 35.78.030 and RCW 43.32.020. Curbs, gutters, and sidewalks will be required on both sides. Private streets and roads may be approved, but shall be required to meet these requirements.

b. **Street Lighting.** Street lighting shall be required at signalized intersections. Street lighting in new subdivisions shall be provided at all intersections controlled by a traffic signal or sign, and at certain road corners, elbows and cul-de-sacs. Installation and maintenance of street lighting in subdivisions shall be the responsibility of the developer or homeowner's association unless the

local jurisdiction assumes responsibility. When ownership of the street lighting has not been assumed by the local jurisdiction, the light standards shall be located on private property. (Urban Growth Policies 5.2.1, 5.2.2)

Urban Growth Policy 18: To encourage transit use within centers, establish mechanisms to limit the use of single occupancy vehicles. Such mechanisms could include charges for parking, limiting the number of off-street parking spaces, establishing minimum and maximum parking requirements, commute trip reduction (CTR) measures, and developing CTR programs for multiple employers not otherwise affected by law.

Urban Growth Policy 19: Centers should receive a high priority for the location of high capacity stations and/or transit centers.

Urban Growth Policy 20: Locate higher densities/intensities of use close to transit stops within centers by creating a core area to support transit use, encouraging all types of transit facilities (transit centers, bus pullouts, etc.) within centers, and establishing incentives for developers to provide transit supportive amenities.

Urban Growth Policy 21: Allow on-street parking within centers in order to narrow the streetscape, provide a buffer between moving traffic and pedestrians, and provide common parking areas.

Urban Growth Policy 22: Provide for non-motorized transportation using measures including but not limited to bicycle-friendly roadway design, wider outside lane or shared parking/bike lanes, bike-activated signals, covered, secure bicycle parking at all places of employment, bicycle racks, and pedestrian pathways.

Urban Growth Policy 24: Give centers priority consideration for that portion of countywide and regional funding distribution oriented for urban transportation improvements.

Urban Growth Policy 27: Metropolitan centers shall be planned to have fast and frequent high capacity transit and other forms of transit.

Urban Growth Policy 30: Urban centers have fast and frequent high capacity transit, as well as other forms of transit.

Urban Growth Policy 34: At a minimum, town centers will be served by public transit and/or ferries, which connect them to other centers, and to the regional high capacity transit system. In some instances, town centers may have direct connections to high capacity transit.

Urban Growth Policy 38: Transportation network within manufacturing centers should provide for the needs of freight movement and employees by ensuring a variety of transportation modes such as transit, rail and trucking facilities.

Urban Growth Policy 39: The transportation system within manufacturing centers shall be built to accommodate truck traffic and acceleration. Review of projects should consider the infrastructure enhancements such as turn lanes and turn pockets to allow turning vehicles to move out of through traffic lanes, designing turn lanes with a width to allow freight vehicles to turn without interrupting the flow of traffic in other lanes, designing the far side of intersections with acceleration lanes for trucking vehicles and heavy loads to facilitate traffic flow, constructing climbing lanes where necessary to allow for slow moving vehicles, and providing off-street truck loading facilities to separate goods loading and unloading.

Urban Growth Policy 41: Support transportation capital improvement projects that support access and movement of goods to manufacturing centers.

City of Fife Goals and Policies

The transportation goals and policies serve to bring specific form and shape to the community's future transportation system. For solutions to become reality, concrete steps must be taken to implement the goals and policies. The implementation strategies are the actions needed to make the community's goals a reality. Fife's transportation goals and implementation strategies are presented below.

Goal 1 **Provide for an efficient multi-modal transportation plan. The plan should seek to reduce traffic congestion, support the other elements of the comprehensive plan, de-emphasize dependence on single occupancy vehicle, address environmental concerns (including disruption of habitat corridors), and support the goal of strengthening residential areas.**

Policy 1.1 Promote a transportation system that is responsive to all transportation modes.

Implementation 1.1.1 *Implement the bicycle, pedestrian, and equestrian path plan as set forth in the Parks and Recreation Plan.*

Implementation 1.1.2 *Ensure that city development regulations require commercial and industrial development to provide adequate on-site parking to meet their own needs.*

Implementation 1.1.3 *Continue to work with the Union Pacific Railroad to ensure public safety at all road/rail crossings in the planning area.*

Implementation 1.1.4 *Complete the closure of the 54th Avenue East railroad crossing; continue to examine the implications of the closure, including changes in emergency vehicle response time. Seek alternative measures for access, including the obligation of the Puyallup Tribe to construct a connector road between Frank Albert Road and 54th Avenue East. Other alternatives for consideration may include the construction of a pedestrian and/or vehicular overpass.*

Implementation 1.1.5 *Work with UPRR and others to provide grade separated rail crossings wherever possible.*

Policy 1.2 Continue to work with Pierce Transit and other transportation providers to facilitate extension of transit services, and to maintain existing facilities.

Implementation 1.2.1 *Encourage through development standards the construction of bus shelters, and turn-outs in association with residential and commercial areas currently or projected to be served by transit.*

Implementation 1.2.2 *Work with Pierce Transit to establish transit service serving residential areas along Valley Avenue, portions of 54th Avenue East, and Levee Road.*

Implementation 1.2.3 *Continue to work with WSDOT to promote the Adopt-A-Road Landscape Maintenance Program.*

Implementation 1.2.4 *Work with Pierce Transit to encourage the proposed Adopt-a-Shelter Trash can program at bus stops.*

Implementation 1.2.5 *Continue to work with WSDOT to extend high occupancy vehicle (HOV) lanes on I-5 through Fife.*

Policy 1.3 Continue to implement the Commute Trip Reduction Plan for affected employees within the city and a Commute Trip Reduction Program for city work sites.

Implementation 1.3.1 *Implement a Commute Trip Reduction Plan for city employees requiring the city to take steps to reduce the portion of its employees who commute to work in single occupancy vehicles.*

Implementation 1.3.2 *Create and implement a Commute Trip Reduction Ordinance and Plan requiring major employers to take steps to reduce the proportion of their employees who commute to work in single occupancy vehicles.*

Policy 1.4 The city's development regulations shall work to preserve existing habitat corridors and shall require enhancement of disrupted habitat corridors.

Implementation 1.4.1 *Appropriate landscaping and beautification shall be used along traffic corridors to improve the appearance of the area and to preserve and encourage habitat areas. These areas shall be diligently maintained.*

Implementation 1.4.2 *The city's development regulations should be amended so that minimum disruption results when road crossings disturb habitat corridors.*

Policy 1.5 Provide incentives to encourage the use of speed reduction and other traffic calming mechanisms on local access residential streets, to minimize through traffic.

Implementation 1.5.1 *Revise the street standards ordinance to provide design standards for speed reducing traffic calming features such as lower speed signs, street narrowing, cul-de-sacs, and drive around circles on local access residential streets, to minimize through traffic.*

Policy 1.6 Provide truck routes to ensure that industrial and commercial areas are adequately served, while minimizing the impacts of truck traffic on residential streets.

Implementation 1.6.1 *Establish business/truck routes that reduce truck and commercial traffic impacts on residential areas. These routes shall be established as overlays within the streets classification system and a revised map showing any new routes shall be created within one year of plan adoption.*

Implementation 1.6.2 *Improve 70th Avenue East from Valley Avenue to Pacific Highway East. Traffic capacity on 70th Avenue should be increased to provide an alternate route for trucks, and other through traffic from Valley Avenue and 54th Avenue East.*

Goal 2 **Promote and encourage the use of Transportation Demand Management (TDM) and Concurrency Management strategies to reduce peak traffic demand.**

Policy 2.1 Permit the location of park-and-ride lots in conjunction with transit-oriented development, in locations proximate to freeway access; provide incentives to developing properties for the creation of support facilities for transit.

Implementation 2.1.1 Permit the creation of facilities for transit in conjunction with residential and commercial areas. Facilities may include bus turn-outs, shelters and park-and-ride lots.

Implementation 2.1.2 Review the city's development regulations to ensure that transit-oriented development is permitted in appropriate areas.

Policy 2.2 The Transportation Improvement Plan (TIP) shall program projects for new construction and system improvements, and list funding sources and availability. The TIP shall be used as a basis for establishing that transportation improvements will be provided concurrent with proposed development. The city of Fife shall actively seek outside sources of funding to improve existing roadways and carry out new projects.

Implementation 2.2.1 Annually update TIP programs for transportation system projects as part of the capital facilities plan.

Policy 2.3 The city shall require that adequately sized and designed transportation facilities be provided concurrently with development.

Implementation 2.3.1 Establish by ordinance and practice a concurrency management system that provides a mechanism for assuring that facilities are provided at the time of development or that such facilities will be provided within six years of the completion of the development.

Implementation 2.3.2 When developments occur where new rights-of-way are proposed, the developer shall be required to dedicate necessary right-of-way. Where appropriate, the city may assist in the acquisition of land to ensure satisfactory roadway alignment.

Implementation 2.3.3 Develop and maintain a six-year capital expenditure program for transportation facilities that is related to and consistent with the overall capital facilities element of the comprehensive plan.

Policy 2.4 Adopt policies to respond to requests for the vacation of existing rights-of-way when presented with a logical plan for development of an area and when there is no value to using the right-of-way for pedestrian or bicycle paths, or other public uses.

Implementation 2.4.1 Revise the vacation process to allow the city to examine the potential of the right-of-way for use as open space, bicycle/pedestrian paths, buffer areas, or other public uses prior to allowing the vacation.

Goal 3 Actively pursue agreements with adjacent and regional jurisdictions to mitigate traffic impacts in Fife caused by development in nearby areas.

Policy 3.1 Work with others in the region, such as the Port of Tacoma, to obtain agreements that development that impacts traffic conditions in Fife should contribute to traffic mitigation in Fife.

Implementation 3.1.1 *Work with WSDOT to promote the construction of appropriate highway improvements, including new highway construction, to help relieve regional traffic congestion.*

Implementation 3.1.2 *Work with Pierce County to encourage construction of the Canyon Road North Extension project to relieve traffic impacts at the Clarks Creek Bridge.*

Implementation 3.1.3 *Keep neighboring jurisdictions and agencies informed by distributing the city's Transportation Improvement Program (TIP) to surrounding cities, Pierce County, the Port of Tacoma, the Puyallup Tribe, and the Puget Sound Regional Council.*

Implementation 3.1.4 *Where projects involve agencies or properties not under the city's jurisdiction, provide city services only to those projects that adequately address city transportation policies.*

Policy 3.2 Seek and maintain representation on all governmental and civic groups or committees that are concerned with traffic problems/solutions for both the local and Pierce County area.

Implementation 3.2.1 *Compile a list of all groups and/or committees that are concerned with traffic problems/solutions for Fife and the greater Fife area. Appoint staff members or, where appropriate, citizen volunteers to represent the city's interests and goals regarding transportation issues.*

Implementation 3.2.2 *Work to provide for local access to regional transportation projects.*

Goal 4 **Maintain a commitment to meet federal and state air quality standards, working with state, regional, and local agencies and jurisdictions to develop transportation control measures and/or similar mobile source emission reduction programs that may be warranted to attain or maintain air quality requirements.**

Policy 4.1 Protect air quality from adverse impacts.

Implementation 4.1.1 *In order to reduce reliance on the automobile as the primary method of transportation, encourage the use of alternative modes of transportation.*

Implementation 4.1.2 *Work with other agencies to educate the public about air quality impacts.*

Implementation 4.1.3 *Work with other agencies to monitor air quality within the planning area.*

Implementation 4.1.4 *Encourage the use of alternative fuels.*

Goal 5 **Ensure that adequate parking facilities are available for residential and non-residential uses.**

Policy 5.1 Provide for adequate parking for all new development.

Implementation 5.1.1 *Ensure that city development regulations adequately address the need for parking facilities as a component of all new development proposals.*

Policy 5.2 Adopt parking design standards that includes landscaping and other appropriate amenities.

Implementation 5.2.1 Require appropriate design standards for new development.

Policy 5.3 Prohibit parking for non-residential uses from locating in residential areas.

Implementation 5.1.1 Review zoning regulations to ensure adequate buffers between residential areas and parking required for non-residential uses.

Goal 6 Provide adequate funding for needed transportation improvements.

Policy 6.1 Actively pursue outside funding sources for transportation projects.

Implementation 6.1.1 Assign staff from the Community Development and Public Works departments to monitor the availability of state and federal transportation funds.

Implementation 6.1.2 Maintain relationships with the Puget Sound Regional Council to keep abreast of regional funding capacity.

Policy 6.2 Evaluate the feasibility of implementing local transportation funding mechanisms.

Implementation 6.2.1 Evaluate the potential use of the local option gasoline tax.

Implementation 6.2.2 Examine the feasibility of assessing and collecting transportation impact fees.

Appendix A
Public Opinion Survey
Summary of Results

City of Fife
Public Survey: Transportation Plan
March 2002

1.	Do you live in Fife?		*Yes*		*No*
2.	Do you work in Fife?		*Yes*		*No*
3.	How long have you lived or worked in Fife?		*Less than 1 year*		
			1 to 5 years		
			More than 5 - 10 years		
			More than 10 years		
4.	Approximately how many miles do you travel by automobile each day?		*Less than 5 miles*		
			5 – 10 miles		
			10 – 20 miles		
			20 – 40 miles		
			More than 40 miles		
5.	Which of the following describes your (or your family's) use of Pierce Transit bus service?		*Almost daily*		
			More than once per week		
			Once or more per month		
			Less than once per month		
			Never		
6.	Overall, how do you rate the quality of the local transportation system compared to other areas of the state?		*Well above average*		
			Moderately above average		
			About average		
			Moderately below average		
			Well below average		
7.	The use of public transportation may be part of the solution to easing traffic congestion. If you are not a regular user of Pierce Transit, which response most accurately reflects your reason?		*Don't know routes or schedules*		
			Routes/schedules not convenient		
			Prefer to drive my own vehicle		
			No need		
			Don't like Pierce Transit service		
			Not close enough to home		
			Don't know		
			Other (please specify below)		

Other:

8. How would you rank the following **issues** related to transportation improvements, according to your own priorities? Use 1 as the highest. If issues are of equal importance to you, you may use the same rank more than once. Please **do not** use the same rank more than three times.

	Rank
A. Provide better access to and from I-5	
B. Provide better east-west access through the city	
C. Add sidewalks to 20th Street to permit the re-introduction of truck traffic	
D. Create an additional overpass over I-5	
E. Add/improve sidewalks in residential areas	
F. Provide additional north/south access through the city.	
G. Build/designate bicycle paths on arterial roads	
H. Construct SR167 with an I-5 interchange	
I. Build off-street bicycle paths/trails	
J. Add/improve sidewalks on arterial roads	
K. Other *(please specify)*	
L. Other *(please specify)*	
M. Other *(please specify)*	

9. How would you rank the following **projects** related to transportation improvements, according to your own priorities? Use 1 as the highest. If issues are of equal importance to you, you may use the same rank more than once. Please **do not** use the same rank more than three times.

	Rank
A. 70th Avenue to Valley Avenue corridor: widening with sidewalks	
B. Add sidewalks on Valley Avenue from 54th Street Wilton Lane	
C. Reconstruct Pacific Highway E (including sidewalks) from Alexander to Port of Tacoma Road	
D. Create a connector arterial from Frank Albert Road to 54th Street	
E. Improve 20th Street E from Port of Tacoma Road to Industry	
F. Perform general widening of intersections to accommodate trucks	
G. Create a bicycle/pedestrian trail connecting Valley Avenue to 20th Street, in the area of 64th.	
H. Extend 62nd Avenue to Valley Avenue	
I. Construct SR167 with interchanges at Valley Avenue, I-5, 54th, and Taylor	
J. Build an overpass over I-5 at 62nd Avenue	
K. Build an overpass over the Union Pacific Railroad at 70th Avenue E	
L. Extend Port of Tacoma Road to Levee Road, with an overpass over the Union Pacific Railroad	
M. Add traffic signals at the intersection of 62nd and 20th	
N. Build an overpass over I-5 at either Frank Albert Road OR Alexander Avenue	
O. Replace the Melroy Bridge at 70th Avenue E	
P. Add/widen travel lanes to Levee Road	
Q. Widen 12th Avenue from 54th to Alexander	
R. Extend 12th from Alexander Avenue to Port of Tacoma Road	
S. Widen/straighten Freeman Road	
T. Other *(please specify)*	
U. Other *(please specify)*	
V. Other *(please specify)*	
W. Other *(please specify)*	
X. Other *(please specify)*	

9.	The City of Fife has limited funds to spread across a variety of needs. If you could choose only one course of action to improve traffic conditions, which would you choose? *(please check one only)*	*Build new roads*	
		Improve or widen existing roads and intersections.	
10.	If you were buying or building a new home or business in Fife, should you pay a fee to accommodate the extra traffic?*)*	*Yes*	
		No	
11.	Imagine the City of Fife puts a bond issue on the ballot to improve city transportation facilities. How much do you think a household like your own should contribute annually to improve city roads? ($$)	$_____	

Please tell us about yourself and your family:

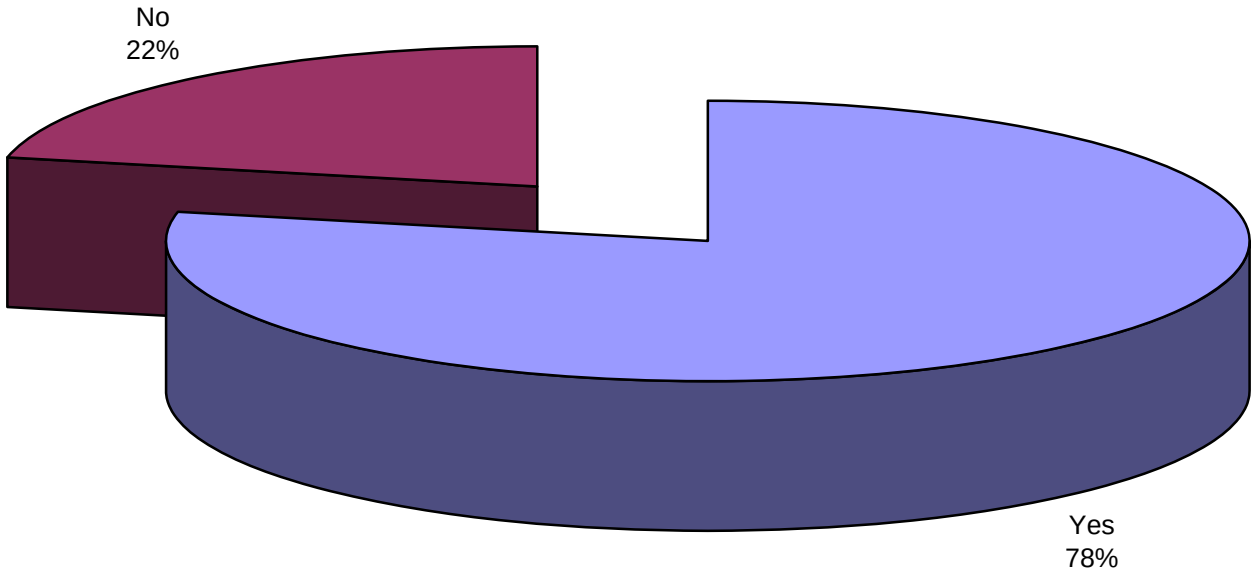
12.	Your age	*under 18*	
		18 to 29	
		30 to 39	
		40 to 49	
		50 to 59	
		60 - 69	
		over 69	
13.	How many children under the age of 18 currently reside in your household?		
	Age of each of the children?	*infant to less than 6 years*	
		6 to less than 12	
		12 to 18	
		N/A	
14.	Including yourself, how many people currently reside in your home?		

15.	Is there any comment you'd like to make about the city or regional transportation system?

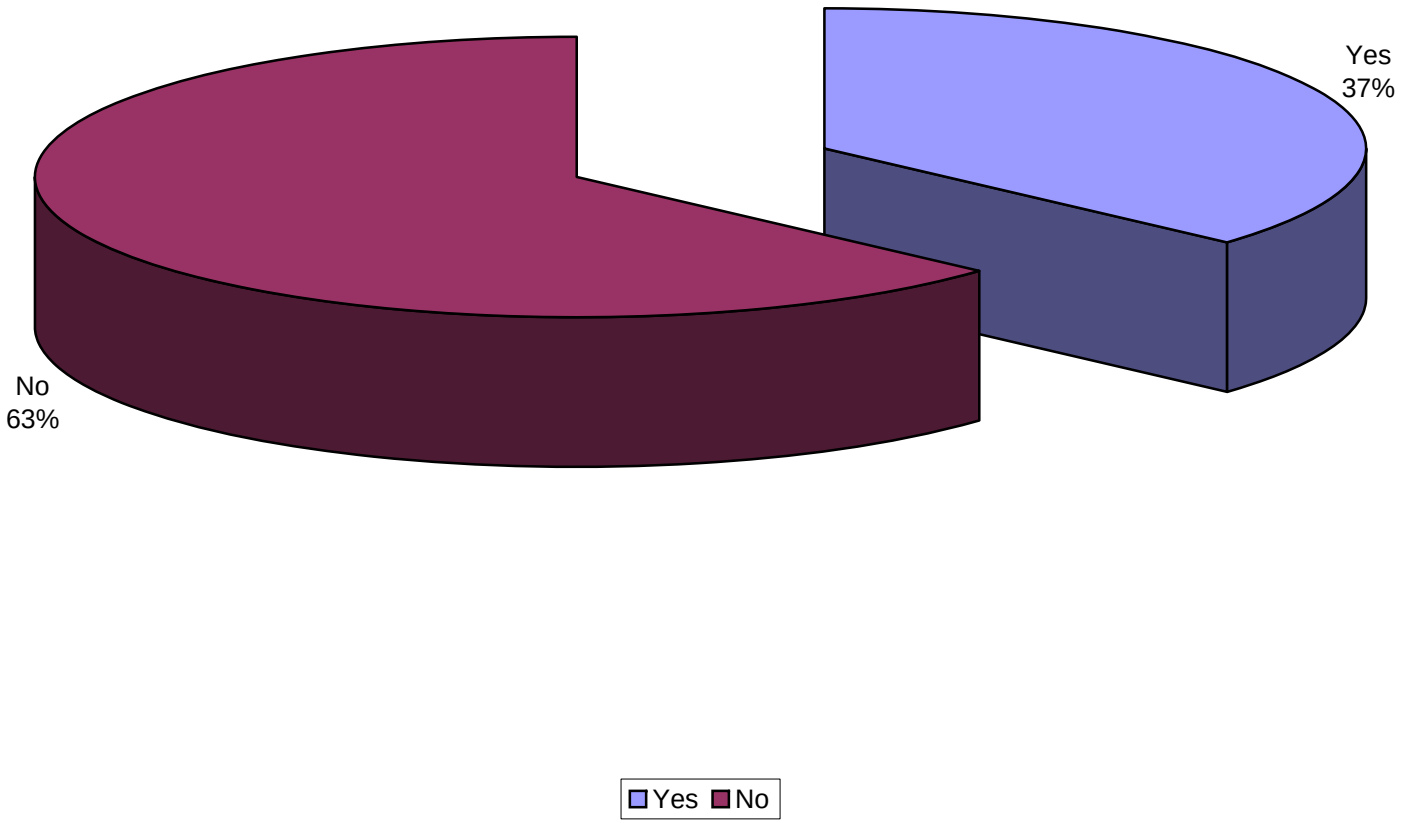
Thank You! Please return no later than March 29, 2002, to:

Steve Worthington
City of Fife Community Development Department
5411 23rd Street, E, Fife, WA 98424

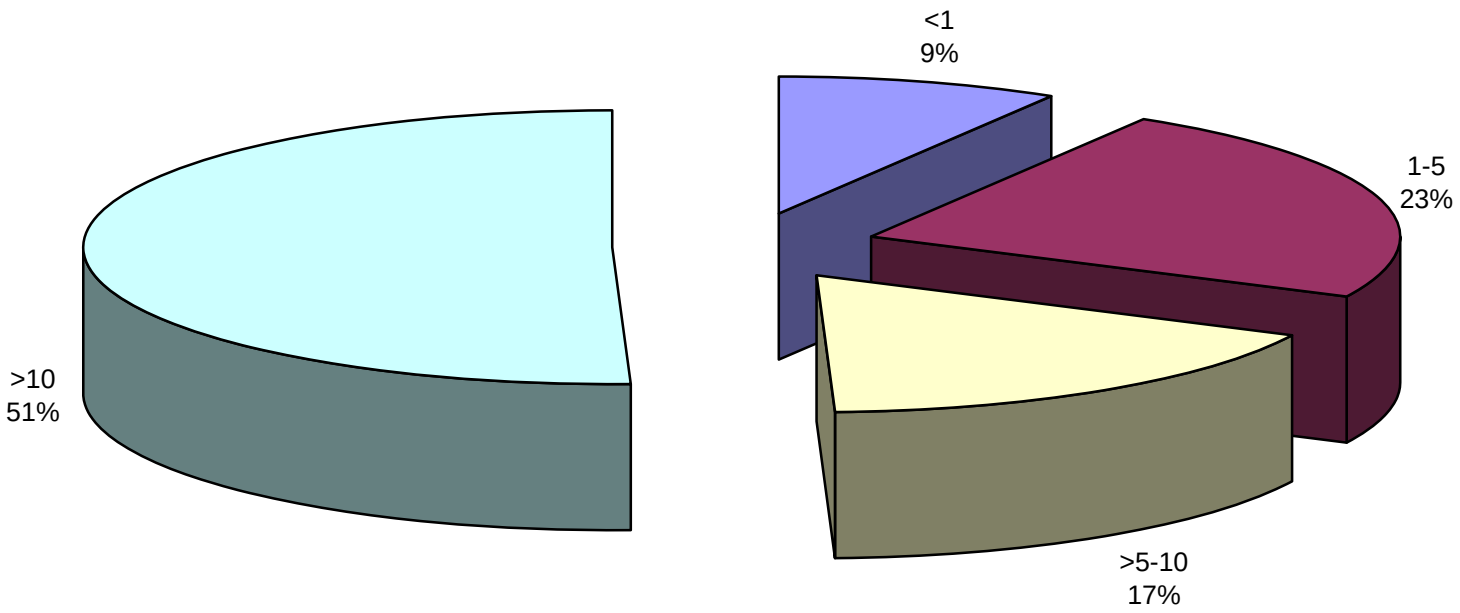
Do you live in Fife?



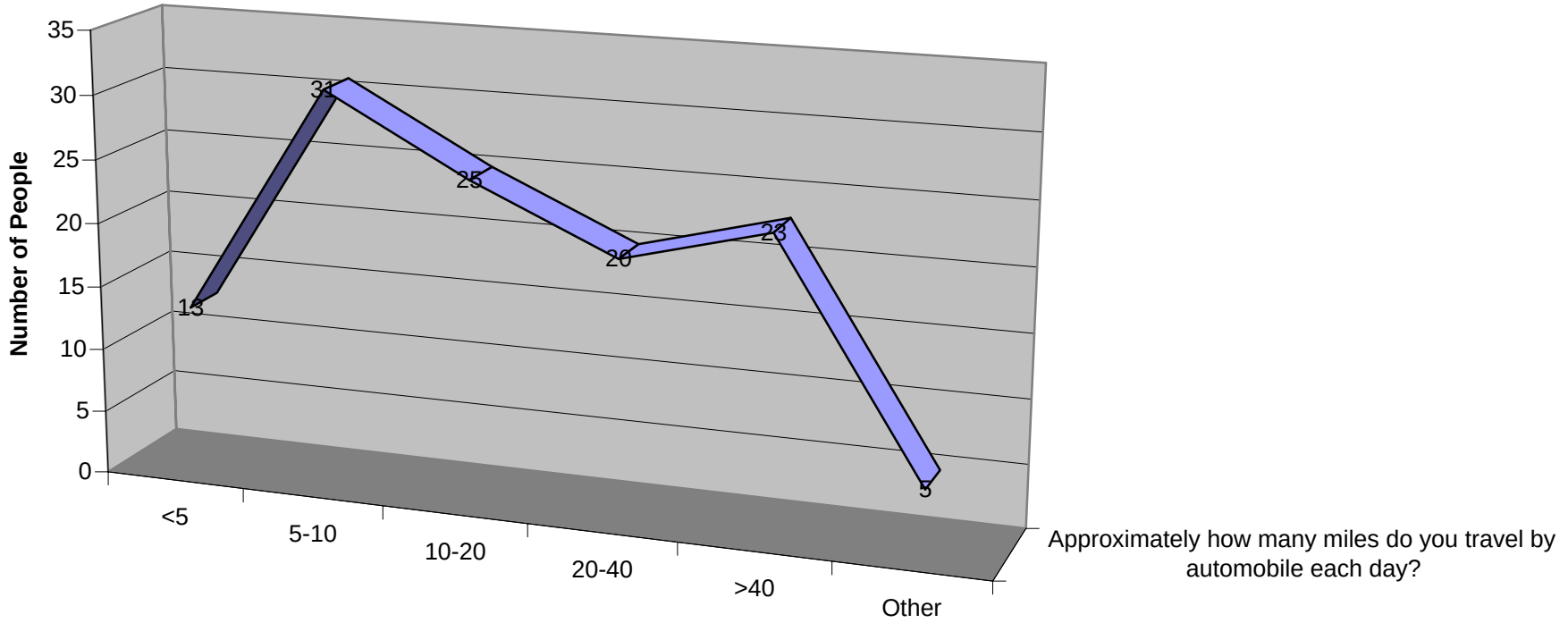
Do you work in Fife?



How long have you lived in Fife?



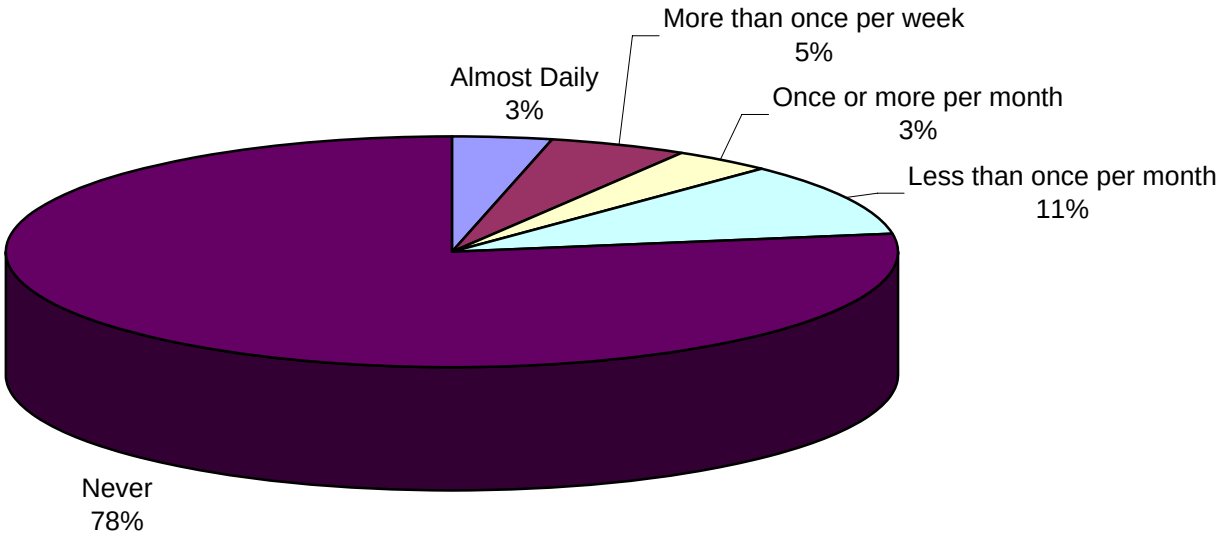
?Approximately how many miles do you travel by automobile each day

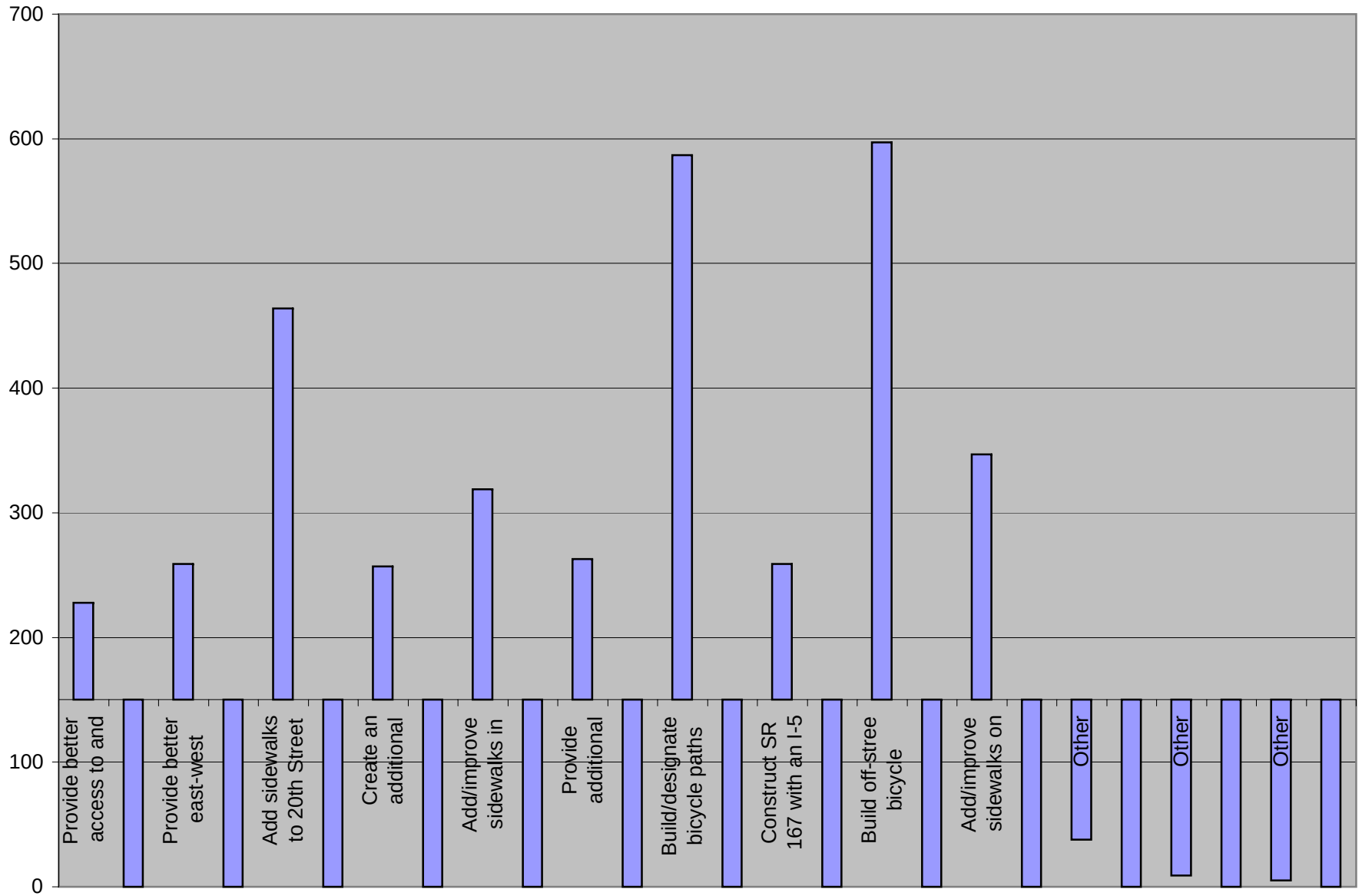


	<5	5-10	10-20	20-40	>40	Other
Approximately how many miles do you travel by automobile each day?	13	31	25	20	23	5

Approximately how many miles do you travel by automobile each day?

?Which of the following describes your (or your family's) use of Pierce Transit bus service




700
600
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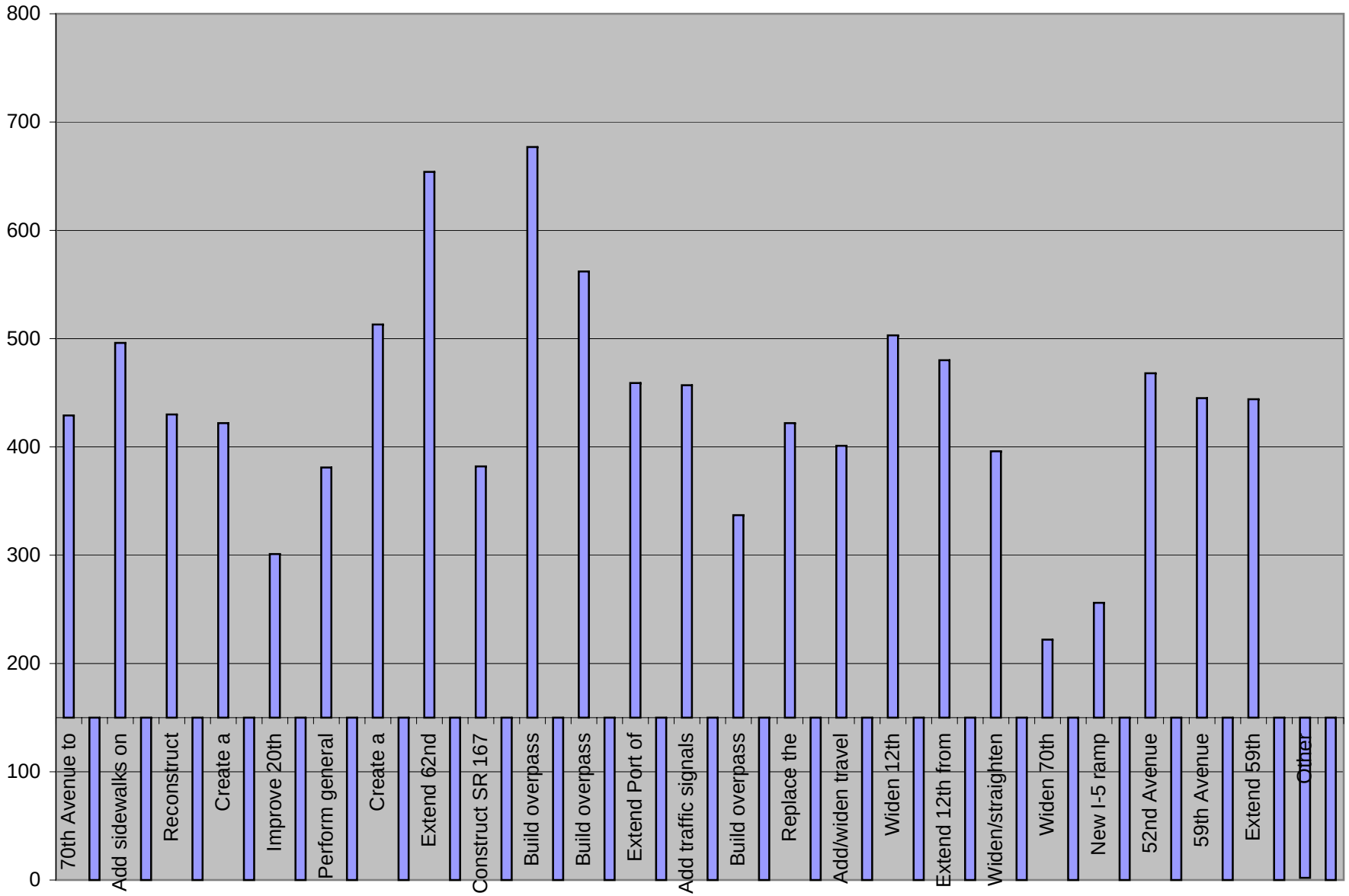
Provide better access to and
Provide better east-west
Add sidewalks to 20th Street
Create an additional
Add/improve sidewalks in
Provide additional
Build/designate bicycle paths
Construct SR 167 with an I-5
Build off-stree bicycle
Add/improve sidewalks on
Other
Other
Other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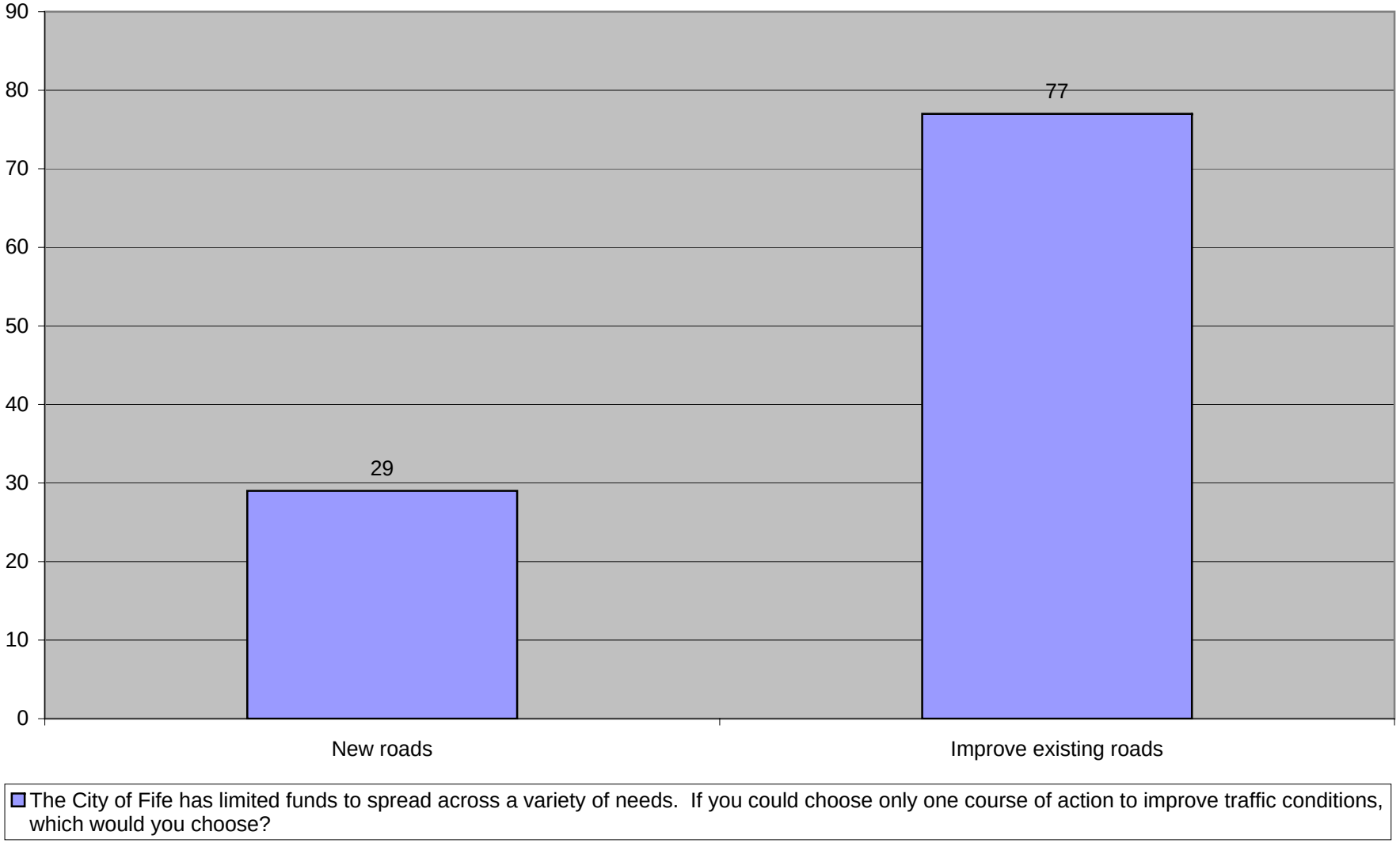
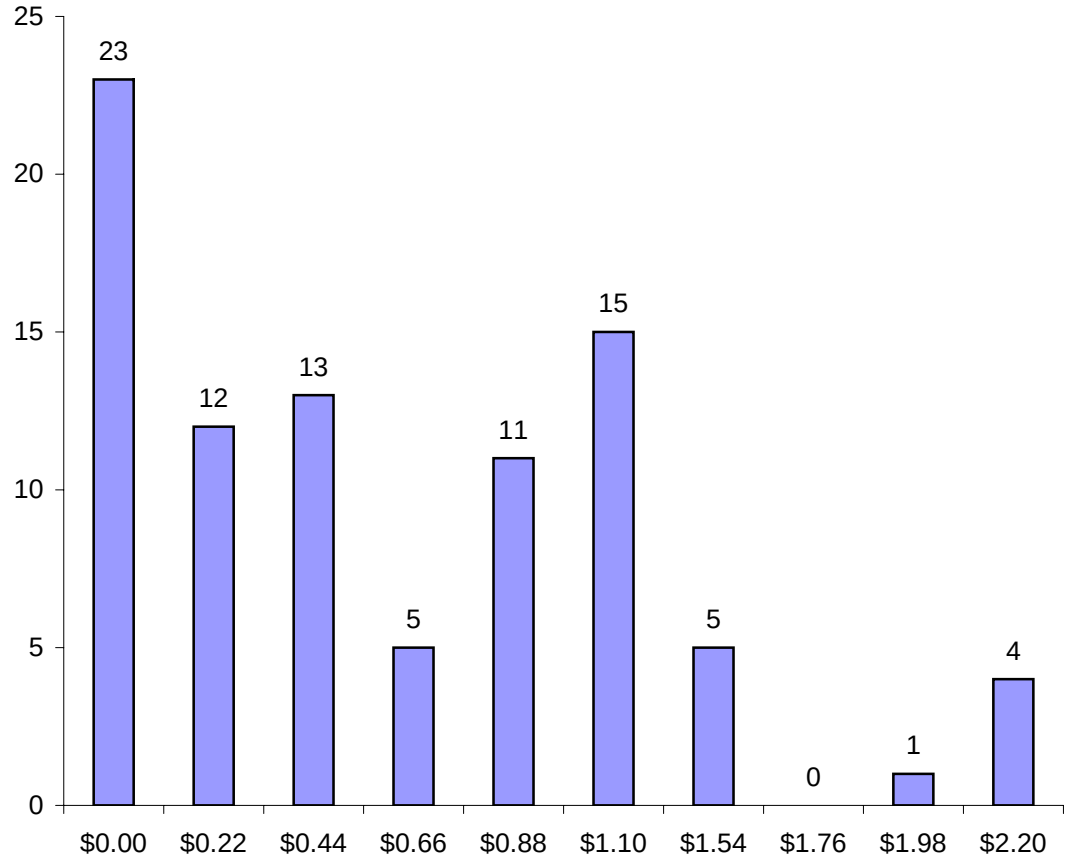
70th Avenue to
Add sidewalks on
Reconstruct
Create a
Improve 20th
Perform general
Create a
Extend 62nd
Construct SR 167
Build overpass
Build overpass
Extend Port of
Add traffic signals
Build overpass
Replace the
Add/widen travel
Widen 12th
Extend 12th from
Widen/straighten
Widen 70th
New I-5 ramp
52nd Avenue
59th Avenue
Extend 59th
Other

The City of Fife has limited funds to spread across a variety of needs. If you could choose only one course of action to improve traffic conditions, which would you choose?



Imagine the City of Fife puts a bond issue on the ballet to improve city transportation facilities. How much do you think a household or business like your own should contribute annually to improve city roads?



Imagine the City of Fife puts a bond issue on the ballet to improve city transportation facilities. How much do you think a household or business like your own should contribute annually to improve city roads?

Appendix B
Travel Forecasting Model

Appendix B
Travel Forecasting Model
Fife Transportation Plan

This appendix describes the model validation process undertaken in support of the Fife Transportation Plan. The validation and calibration focused on enhancing socioeconomic and roadway data inputs, as well as calibrating model parameters.

TAZ System

A fundamental element of model development is the creation of an appropriate traffic analysis zone (TAZ) system. The TAZ system is used to associate land use and socioeconomic data, such as population and employment, within specific geographical areas.

The zone system and the network representing the transportation system determine the potential levels of detail and accuracy that can be achieved with the model. If the zones are too large, traffic flows from the model will be "lumpy" and localized traffic flows are likely to be underestimated (since intrazonal trips do not get assigned to the network). The TAZ structure encompasses the four-county region modeled by Puget Sound Regional Council (PSRC) and Pierce County. Pierce County's TAZs nest within the Regional Council's system within Pierce County and South King County, and aggregate zones in Snohomish and north Kitsap and King counties. The Fife TAZs nests within the county's TAZs in the study area and are equivalent to the county's system outside the city. The Pierce County system has 1182 TAZs regionwide with 26 TAZs in the study area; 34 new TAZs were added to bring the total up to 60 TAZs in the study area and 1216 TAZs regionwide. The TAZ system in and around the study area (the shaded portion) is presented in **Figure B-1**.

Socioeconomic Data

Households

Pierce County provided 1999 household data by TAZ. This data was assembled from the County's Assessor/Treasurer database, and PSRC TAZ-level households derived from building permits. No change was made to Pierce County's TAZ level data, but we needed to allocate households to the refined TAZ level. The 2000 Census data for households at census block-level was allocated to the Fife TAZs, and the Pierce County parcel map where the Fife TAZs were smaller than blocks. The households are listed by TAZ in **Table B-1**.

Figure B1: Fife Traffic Analysis Zones

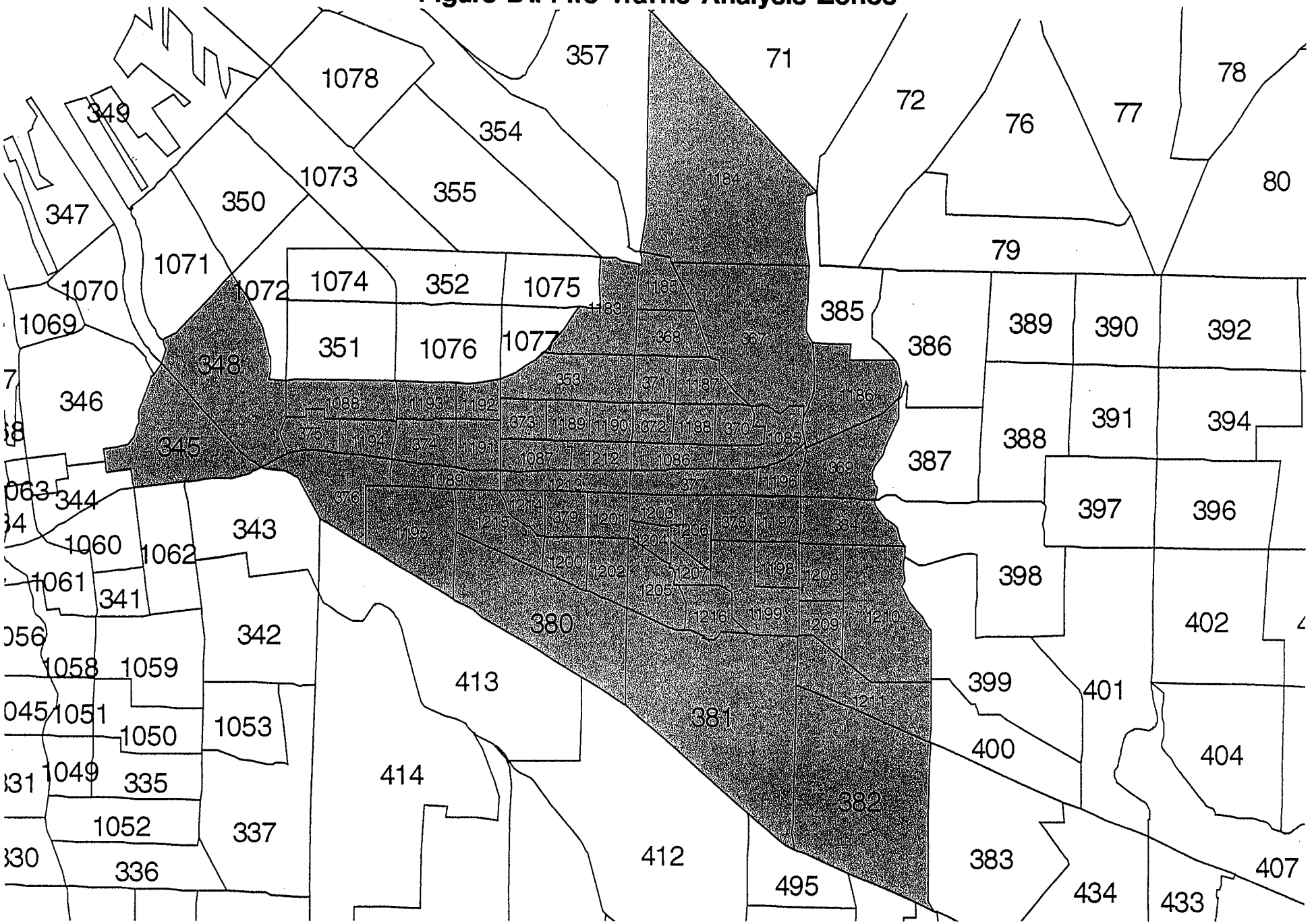


Table B-1. Households by Fife TAZ

PCTAZ	FifeTAZ	HH		PCTAZ	FifeTAZ	HH
345	345	12		378	1198	0
348	348	0		378	1199	0
353	353	0		378	1216	175
353	1183	17		379	379	0
367	367	351		379	1200	0
367	1184	300		379	1201	0
368	368	24		379	1202	82
368	1185	60		379	1203	0
369	369	102		379	1204	171
369	1186	10		379	1205	18
370	370	14		379	1206	601
371	371	5		379	1207	42
371	1187	77		380	380	30
372	372	17		381	381	72
372	1188	17		382	382	180
373	373	10		384	384	8
373	1189	59		384	1208	0
373	1190	0		384	1209	0
374	374	0		384	1210	30
374	1191	0		384	1211	24
374	1192	0		1085	1085	35
374	1193	14		1086	1086	3
375	375	0		1087	1087	206
375	1194	14		1087	1212	20
376	376	1		1088	1088	0
376	1195	0		1089	1089	1
377	377	21		1089	1213	3
377	1196	345		1089	1214	4
378	378	242		1089	1215	0
378	1197	0		Total		3417

Employment

The starting point for the employment input to the 1999 transportation model was point-level data from the State Employment Securities Department (ESD). This data is collected by ESD on tax reports required to be filed by a majority of private employers. PSRC, with the help from its member jurisdictions, geocoded the addresses; PSRC and Pierce County use this data in their models. Government data were compiled using a survey of government sites.

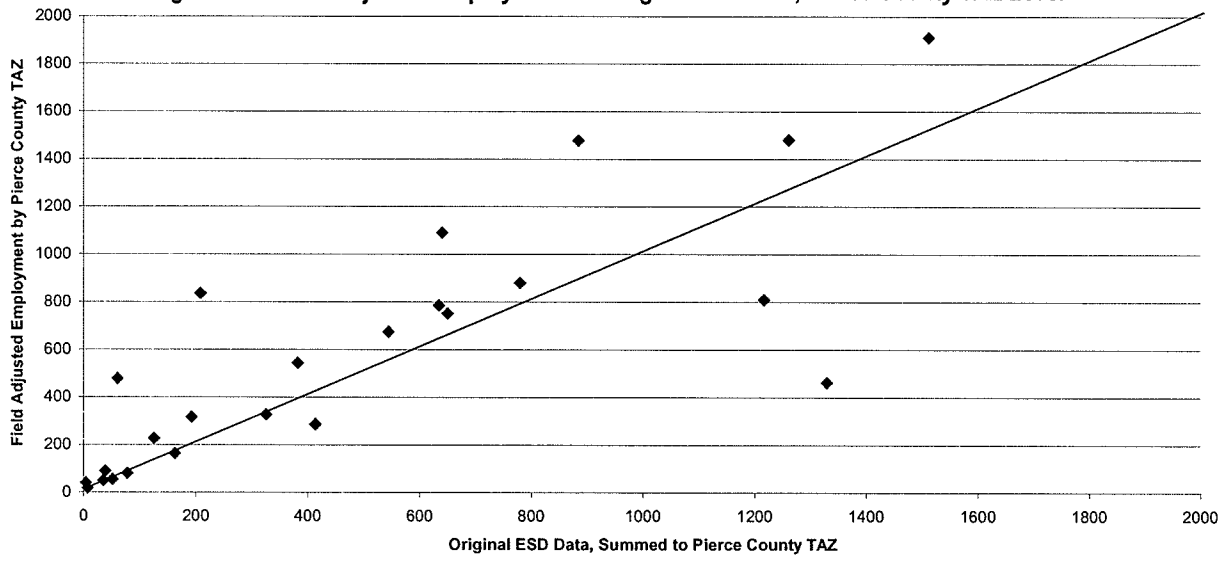
The ESD data is an excellent source of employment information, but it does have some drawbacks. One is that the employment data is usually reported from a centralized location rather than from each site. For example, a firm may have employees working at three separate locations, with a main corporate office handling paperwork such as payroll—the ESD data would report all employees at the corporate office address. Second, not all employees are "covered" by the Employment Securities Act (which provides unemployment insurance). Public employees, proprietors, self-employed, independent contractors,

railroad workers, enrolled students, employees of many religious institutions, temporary emergency employees, uniformed military personnel, and some corporate officers (who so choose) are not covered. ESD's covered wage and salary jobs in total account for approximately 85 percent of the total private jobs in the region (although not necessarily at the correct location). A final drawback of ESD data is that to protect the confidential nature of the data, only the x-y coordinate data is available, the Standard Industrial Classification (SIC), and the employment. Neither the business name nor the address is available. Neither of these is needed to compute zone level data for the model, but it does make it more difficult to validate the employment location, size or geocoding accuracy. To determine the level of error associated with the data set, DDS performed a field inventory, identifying businesses on a parcel map. The ESD point was matched with the businesses found in the field as best as possible. Then an assessment was made for each point, or groups of points, and where the points and businesses could not be reconciled, we identified likely errors and remedies as follows:

- Geocoding errors—points that were apparently in the wrong place were moved to the correct TAZ;
- Employer locations missing from ESD—estimate additional employees using secondary sources of employment information; and
- Central reporting location (ESD points that reported too many employees than could be housed at the location)—estimate employees at location.

DDS had access to 1995 sales and marketing databases of business and government sites, from Dun and Bradstreet, which reports actual employment and American Business Information, which reports employment range. These two sources, which also include name, address, and SIC were used to fill in missing locations and disaggregate central reporting locations. Where the two sources didn't agree on the level of employment, we chose the best estimate based on the field survey. Where neither source included a business, we made an estimate based on the type of business, the size of the building, and the number of vehicles on-site compared to other similar sites. **Figure B-2** shows the field adjustments.

Figure B-2. Field Adjusted Employment vs. Original ESD Data, Pierce County TAZ Level



As Figure B-2 illustrates, there were significant adjustments made to employment. Several TAZs had hundreds of employees either missing or mislocated in a TAZ outside the study area. The two biggest decreases were related to a centralized reporting government site and Port-related employment that was relocated when SR-509 was built.

Table B-2 presents a summary of data by type of employment for the study area (the shaded area of the TAZ map, including the TAZs listed in Table B-1).

Table B-2. Employment in Study Area

Retail	2,730
Finance, Insurance, Real Estate and Services	2,800
Manufacturing	3,670
Wholesale Trade, Communication and Utilities	4,620
Government	160
Education	240
Total	14,230

Roadway Data

DDS also collected roadway information in the field. Data was collected on speed limit, number of lanes, and existence of turn pockets. This data was used to correct Pierce County's roadway network information where needed. The existence of turn-pockets influence capacity per lane, as shown in **Table B-3**. The link types and capacities in Table B-3 follow Pierce County's methodology.

Table B-3. PM Peak Hour Capacity Per Lane With and Without Center Turn Lanes

Link Type	Without Center Turn Lane	2-Lane Road w/ Center Turn Lane	4-Lane Road With Center Turn Lane
Rural Collector	600	750	700
Rural Local	600	750	700
Rural Major	900	1100	1000
Rural Secondary	800	1000	900
Rural State	1200	1200	1200
Urban Collector	500	600	550
Urban Local	500	600	550
Urban Major	800	1000	900
Urban Secondary	700	850	800
Urban State	900	1100	1100

Source: Pierce County Public Works and Utilities

The updated roadway information is presented in **Figures B-3** and **B-4**. Figure B-3 presents the lanes and speeds; and Figure B-4 presents the updated roadway capacities/lane.

Traffic Counts

There were many locations with more than one count, and many counts were from different years. Rather than determining the most appropriate count to compare with volumes, we compared the volumes to the range of counts available. **Table B-4** presents the intersection count data received for this project. Some of these counts included truck volumes separately, for the approach only; the truck volumes were estimated for the exit links and added to the auto volumes. These are also included in Table B-4. **Figure B-5** presents a selected count for each model network link, included those already contained in the Pierce County model database. **Table B-5** presents the existing and 2025 turning movement data produced by the travel forecasting model. **Figure B-6** presents the modeled base year PM Peak hour volumes.

Figure B-3: 1999 Number Lanes/Volume Delay Function (vdf)

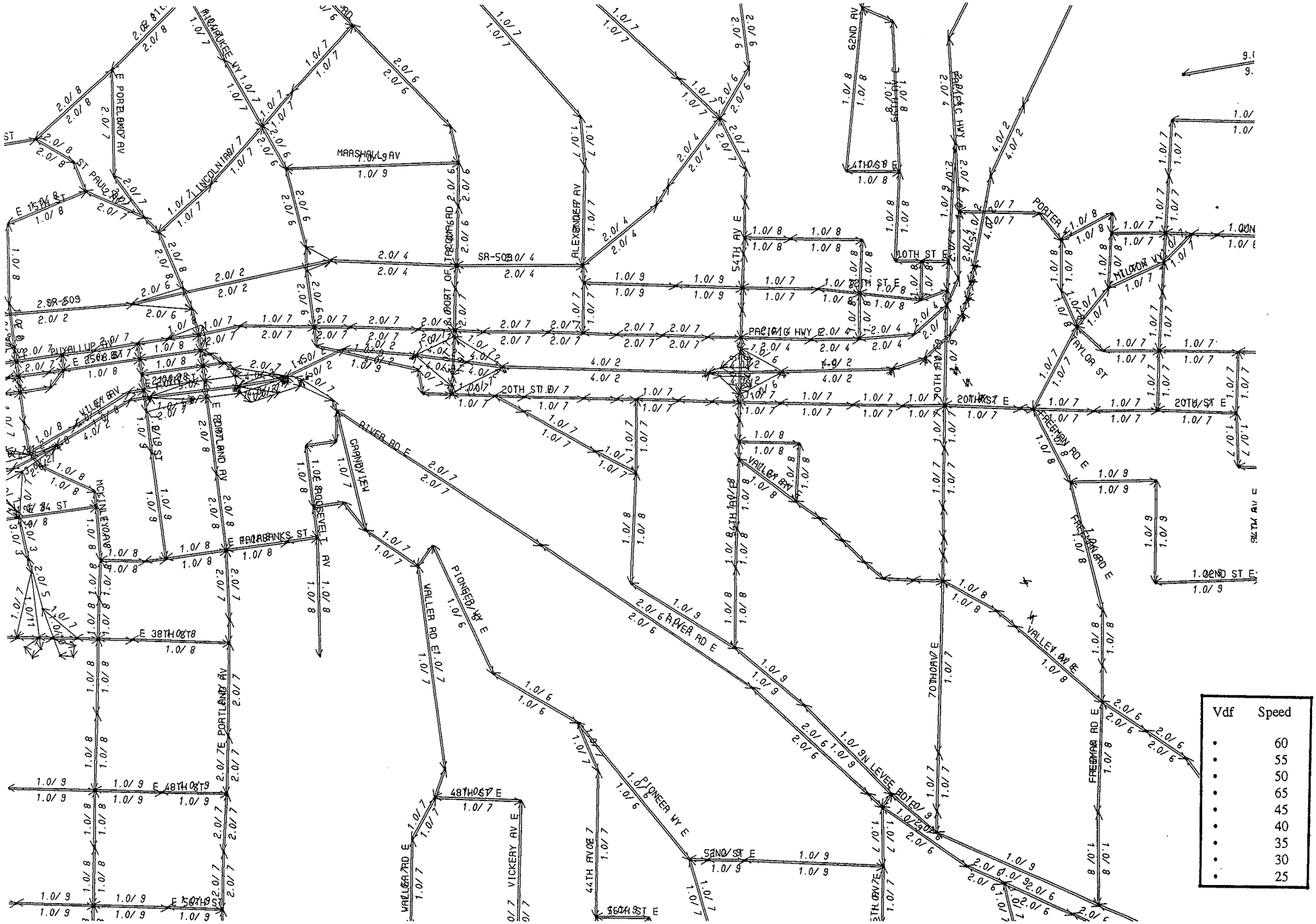


Figure B-4. 1999 Capacity/Lane

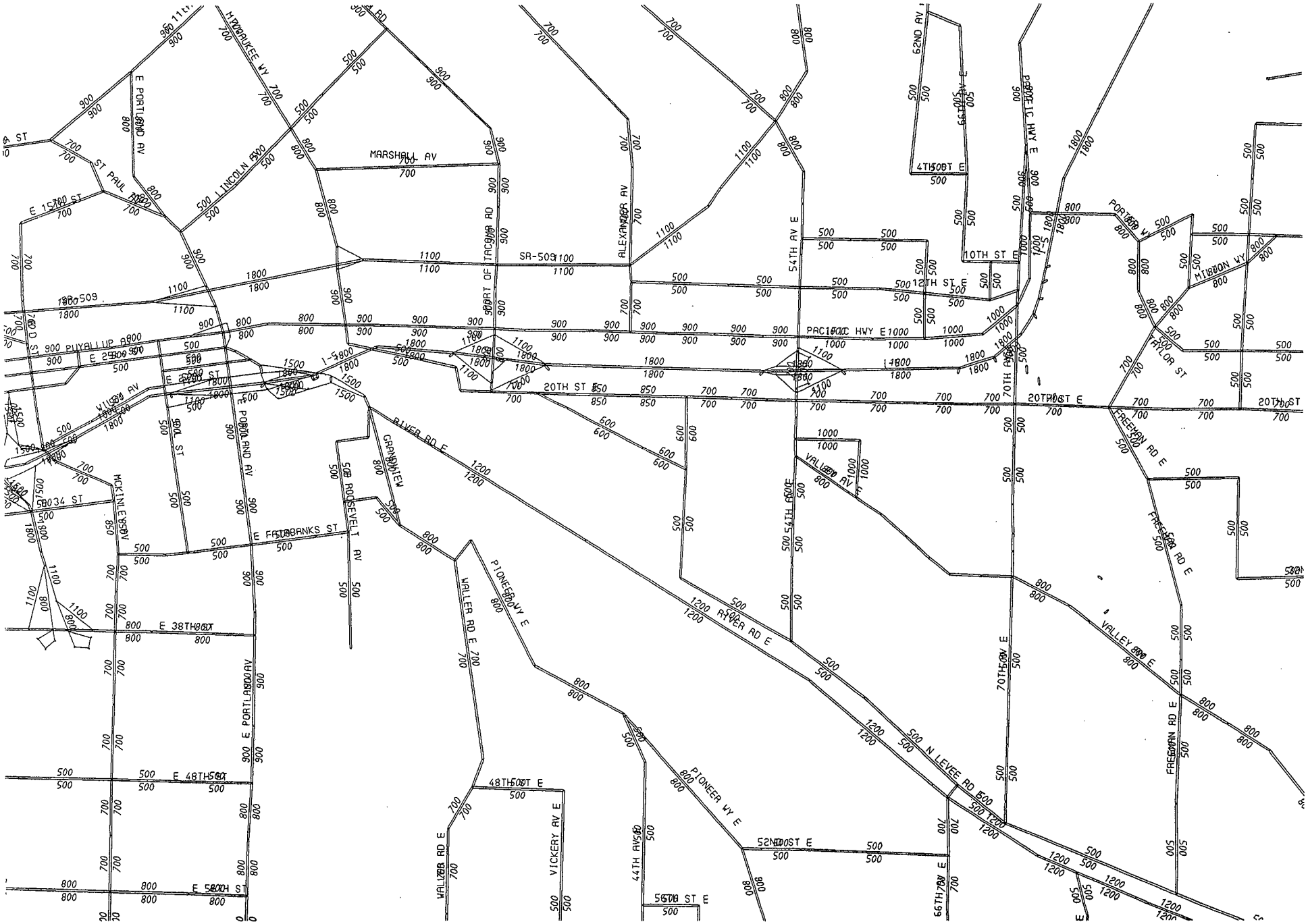


Table B-4. Fife Traffic Counts

Intersection		SR99/54th	20th/54th	20th/ 62nd	20th/70th	36th/ 56th	Valley/ Freeman	Valley/ 70th	Levee/ 54th	Levee/ 70th	Levee/ 66th
Volume (Trafficount auto only)											
Approach		Trafficount 4-5 (52nd)	Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	McCann	McCann	McCann	Trafficount 4-5	Trafficount 4-5	Heath
N	SB		1412	64	519	535	125	580	205	272	
	NB		1131	35	262	455	85	335	134	138	
E	WB		715	597	467	75	410	415	171	103	269
	EB		788	552	700	240	920	925	288	240	218
S	NB		446	52	400	135	30	190	0	0	341
	SB		919	90	359	140	60	265	0	0	530
W	EB	973	718	583	576	600	870	600	87	236	319
	WB	920	453	619	641	510	370	260	41	233	181
Trucks		Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount 4-5				Trafficount 4-5	Trafficount 4-5	
N	SB		58	4	40				1	19	
E	WB		22	23	20				7	18	
S	NB		13	6	21				0	0	
W	EB	42	43	24	13				2	13	
Truck %		Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount 4-5				Trafficount 4-5	Trafficount 4-5	
N	SB	0%	4%	6%	7%				0%	7%	
E	WB	0%	3%	4%	4%				4%	15%	
S	NB	0%	3%	10%	5%				0%	0%	
W	EB	4%	6%	4%	2%				2%	5%	
Volume 2nd source (Total)											
		TPE	Heath		Heath			Heath	Heath	Heath	
N	SB	654	1114		593			566	215	307	
	NB	628	1083		260			248	139	139	
E	WB	817	592		476			342	167	113	
	EB	838	669		711			878	319	239	
S	NB	1106	463		367			123			
	SB	1224	843		558			236			
W	EB	1195	839		695			545	112	223	
	WB	1082	413		602			214	36	265	
Volume 3rd		MCCANN a	McCann		McCann			Valley/70th			
N	SB	653	1255		640			591			
	NB	645	1315		265			229			
E	WB	1055	765		605			307			
	EB	920	775		575			843			
S	NB	1085	510		335			142			
	SB	1425	925		660			269			
W	EB	1135	920		625			542			
	WB	938	435		705			241			

Table B-4. Fife Traffic Counts (cont.)

Intersection		Valley/ 54th	Marine View/ 54th	12th/ 54th	SR99/Port of Tacoma	Alexander/ SR509	Alexander/ 12th	Alexander/ SR99	54th/ SR509
Volume (Trafficount auto only)									
Approach		Trafficount 4-5	TPE	Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount4-5	Trafficount 4-5	Trafficount 4-5
N	SB	0	236	591	497	614	408	355	242
	NB	0	163	580	254	525	358	292	129
E	WB	218	882	114	821	1066	81	763	967
	EB	465	1372	156	575	965	91	688	1015
S	NB	133	692	612	465	359	304	33	473
	SB	206	476	614	808	449	344	25	476
W	EB	641	1253	117	385	1252	0	603	988
	WB	321	1052	84	531	1352	0	749	1050
Trucks		Trafficount 4-5		Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount4-5	Trafficount 4-5	Trafficount 4-5
N	SB	0		54	104	44	7	10	54
E	WB	0		9	43	62	1	42	29
S	NB	0		63	72	5	8	5	68
W	EB	0		2	31	71	0	35	48
Truck %		Trafficount 4-5		Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount4-5	Trafficount 4-5	Trafficount 4-5
N	SB	0%		8%	17%	7%	2%	3%	18%
E	WB	0%		7%	5%	5%	1%	5%	3%
S	NB	0%		9%	13%	1%	3%	13%	13%
W	EB	0%		2%	7%	5%	0%	5%	5%
Volume 2nd source (Total)									
		Hamlin		TPE	Trafficount 5-6	Trafficount 5-6	Trafficount4 45-545	Trafficount 5-6	Trafficount 430-530
N	SB			676	464	551	453	335	308
	NB			672	414	362	413	305	127
E	WB	219		102	1068	1193	97	1014	1003
	EB	550		174	556	1269	132	737	1326
S	NB	151		725	699	409	351	44	576
	SB	284		715	825	428	356	26	520
W	EB	815		193	452	1614	0	601	1242
	WB	351		135	905	1659	0	925	1117
Volume 3rd s		Heath			Heath Fig 3				
N	SB				494				
	NB				355				
E	WB	277			1026				
	EB	604			500				
S	NB	155			442				
	SB	270			833				
W	EB	842			422				
	WB	400			696				

Table B-4. Fife Traffic Counts (cont)

Intersection		SR509/ Port of Tacoma	70th/ SR99	20th/ Industry	20th/ Fr Albert	Industry/ Fr Albert	Levee/ Fr Albert	20th/ POT	SR99/ TPTC	54th/ 23rd	12th/ 62nd
Volume (Trafficount auto only)											
Approach		Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount 4-5
N	SB	430	82	0	0	117	84	442		779	23
	NB	199	76	0	0	36	63	511		443	17
E	WB	0	1004	402	293	0	58	517	758	87	88
	EB	0	704	400	507	44	86	508	606	93	157
S	NB	215	284	116	132	59	0	0		368	24
	SB	395	588	69	89	61	0	0		695	20
W	EB		837	461	464	50		159		15	148
	WB		839	510	293	85		86		18	89
Trucks		Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount 4-5
N	SB	115	6	0	0	6	0	59	1	0	0
E	WB		51	22	26	0	13	33	40	0	0
S	NB	30	32	3	40	6	0	1	1	0	0
W	EB		67	46	31	13	0	17	36	0	1
Truck %		Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount 4-5	Trafficount 4-5
N	SB	21%	7%	0%	0%	5%	0%	12%	0%	0%	0%
E	WB	0%	5%	5%	8%	0%	18%	6%	5%	0%	0%
S	NB	12%	10%	3%	23%	9%	0%	0%	0%	0%	0%
W	EB	0%	7%	9%	6%	21%	0%	10%	0%	0%	1%
Volume 2nd source (Total)											
			Trafficount 430-530	Trafficount 430-530	Trafficount 415-515	Trafficount 430-530	Trafficount 415-515	Trafficount 430-530			
N	SB		103	0	0	104	90	591			
	NB		89	0	0	131	63	686			
E	WB		1184	435	351	0	69	633			
	EB		725	431	567	0	118	644			
S	NB		344	143	163	68	0	0			
	SB		722	101	125	104	0	0			
W	EB		875	555	500	179	0	198			
	WB		994	604	316	106	0	291			

Figure B-5: Traffic Counts

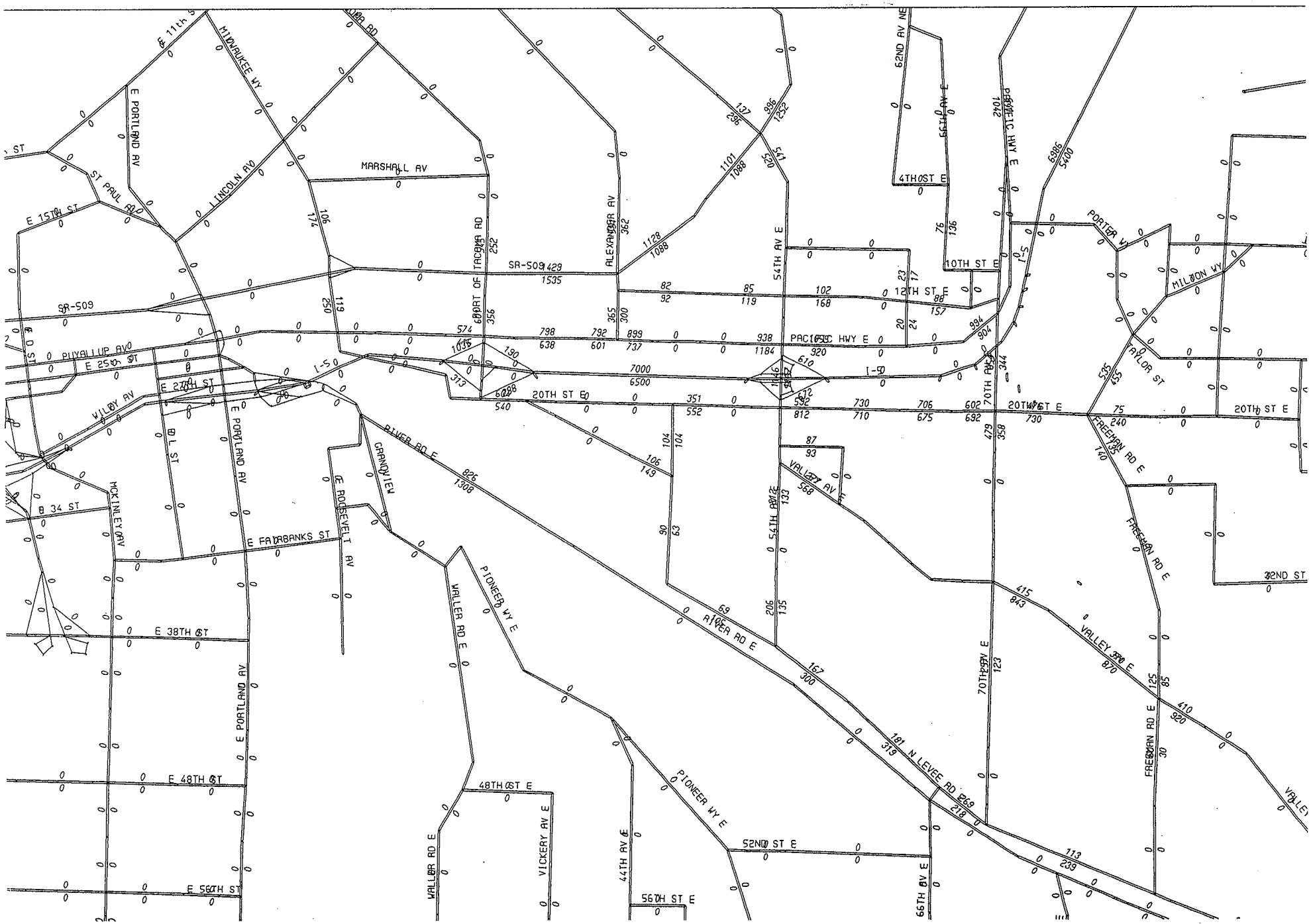


Figure B-6: 1999 PM Peak Hour Voumes

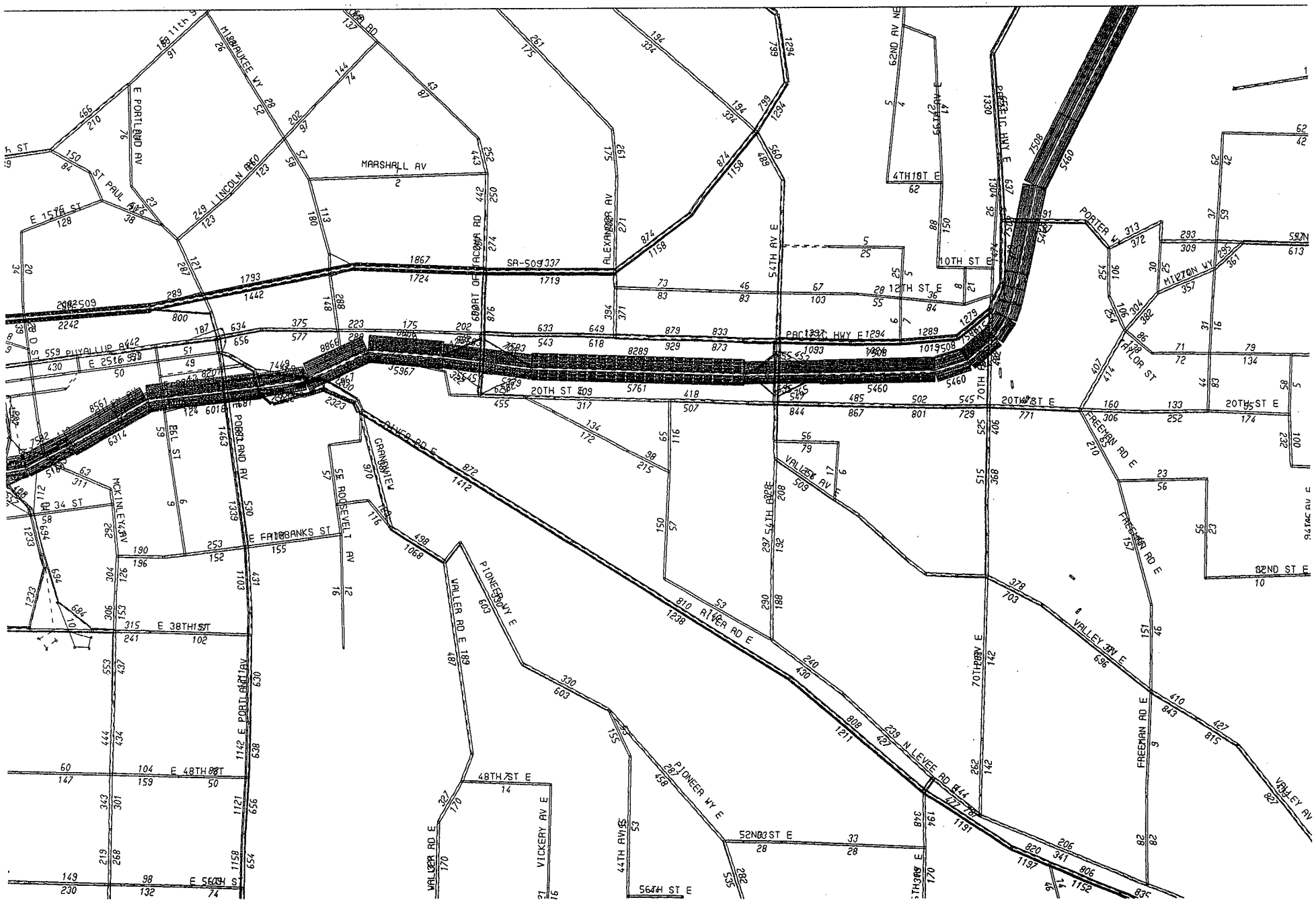


Table B-5.
Turning Movement Volumes
Existing and 2025 PM Peak Hour

PM Peak Hour Turn Volumes		Existing					2025 Baseline					2025 Alt. 1					2025 Alt. 2				
Intersection	**Year**	**LT**	**THRU**	**RT**	**App.**	**Dep.**	**LT**	**THRU**	**RT**	**App.**	**Dep.**	**LT**	**THRU**	**RT**	**App.**	**Dep.**	**LT**	**THRU**	**RT**	**App.**	**Dep.**
	2002		4:00 - 5:00 PM																		
Port of Tacoma Road	NB	97	118	0	215	199	670	270	0	940	397	207	425	0	632	568	844	300	0	1144	413
	SB	0	360	70	430	395	0	528	220	748	899	0	632	190	822	1023	0	586	223	809	989
SR 509	EB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Westbound Ramps	WB	35	94	81	210	261	371	150	127	648	1040	391	15	143	549	412	403	94	113	610	1161
	Total				*855*	*855*				*2336*	*2336*				*2003*	*2003*				*2563*	*2563*
	2002		4:30 - 5:30 PM																		
Port of Tacoma Road	NB	46	193	11	250	240	137	739	0	876	995	207	425	10	642	714	132	957	40	1129	1264
	SB	0	261	109	370	420	0	677	222	899	931	5	627	396	1028	821	70	759	230	1059	1021
SR 509	EB	10	2	74	86	13	201	0	124	325	0	234	5	64	303	20	187	10	132	329	120
Eastbound Ramps	WB	85	7	37	129	162	130	10	55	195	369	130	10	55	195	613	130	10	120	260	372
	Total				*835*	*835*				*2295*	*2295*				*2168*	*2168*				*2777*	*2777*
	2002		5:00 - 6:00 PM																		
Alexander Avenue	NB	218	310	0	528	338	500	0	0	500	0	129	0	0	129	0	514	0	0	514	0
	SB	0	232	282	514	261	0	0	0	0	33	0	0	0	0	82	0	0	0	0	103
WB SR 509	EB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	WB	29	1070	28	1127	1570	33	945	0	978	1445	82	2474	0	2556	2603	103	1035	0	1138	1549
	Total				*2169*	*2169*				*1478*	*1478*				*2685*	*2685*				*1652*	*1652*
	2002		4:45 - 5:45 PM																		
Alexander Avenue	NB	0	365	38	403	559	0	500	53	553	500	0	129	222	351	129	0	514	95	609	514
	SB	28	222	0	250	422	0	33	0	33	460	0	82	0	82	382	0	103	0	103	512
EB SR 509	EB	194	1133	200	1527	1199	0	1354	427	1781	1407	0	2144	300	2444	2366	0	1257	409	1666	1352
	WB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total				*2180*	*2180*				*2367*	*2367*				*2877*	*2877*				*2378*	*2378*
	2002		4:30 - 5:30 PM																		
Taylor/54th Avenue East	NWB	235	71	198	504	104	169	131	466	766	212	117	152	660	929	659	154	125	472	751	186
	SEB	32	174	46	252	455	50	301	104	455	664	50	389	61	500	452	0	320	112	432	696
SR 509	NEB	19	1057	108	1184	1287	61	1275	70	1406	1791	53	977	43	1073	1687	61	1185	70	1316	1657
	SWB	173	784	14	971	1065	293	805	20	1118	1078	20	770	454	1244	948	306	848	0	1154	1114

PM Peak Hour Turn Volumes		Existing					2025 Baseline					2025 Alt. 1					2025 Alt. 2				
Intersection	Year	LT	THRU	RT	App.	Dep.	LT	THRU	RT	App.	Dep.	LT	THRU	RT	App.	Dep.	LT	THRU	RT	App.	Dep.
	Total				*2911*	*2911*				*3745*	*3745*				*3746*	*3746*				*3653*	*3653*
	2002	N/A					N/A										N/A				
54th Avenue East	NB											0	404	0	404	878					
	SB											0	955	0	955	1176					
SR 167 WB	EB											0	0	0	0	0					
	WB											221	0	474	695	0					
	Total														*2054*	*2054*					
	2002	N/A					N/A										N/A				
54th Avenue East	NB											0	404	685	1089	404					
	SB											758	418	0	1176	418					
SR 167 EB	EB											0	0	0	0	1443					
	WB											0	0	0	0	0					
	Total														*2265*	*2265*					
	2002																				
54th Avenue East	NB	13	560	0	573	607	20	750	5	775	825	20	1032	51	1103	1153	20	732	63	815	757
	SB	3	575	11	589	597	5	655	15	675	890	30	370	10	410	572	4	740	4	748	936
8th Street East	EB	41	0	19	60	3	65	5	130	200	15	65	5	130	200	86	0	11	114	125	78
	WB	3	1	6	10	25	105	5	10	120	40	72	9	56	137	39	82	7	25	114	31
	Total				*1232*	*1232*				*1770*	*1770*				*1850*	*1850*				*1802*	*1802*
	2002		4:15 - 5:15 PM																		
12th Street East	NB	37	538	47	622	591	88	881	64	1033	948	8	932	58	998	1034	90	807	79	976	852
	SB	59	562	13	634	647	85	950	25	1060	1082	58	372	29	459	440	17	909	15	941	997
54th Avenue East	EB	16	64	38	118	170	12	95	66	173	244	47	95	12	154	211	32	53	49	134	149
	WB	47	39	37	123	89	66	60	55	181	173	56	60	55	171	97	39	60	13	112	165
	Total				*1497*	*1497*				*2447*	*2447*				*1782*	*1782*				*2163*	*2163*
	2002		5:00 - 6:00 PM																		
Port of Tacoma Road	NB	209	213	183	605	342	205	739	336	1280	891	237	414	359	1010	718	135	1051	318	1504	1159
	SB	63	336	50	449	779	84	309	726	1119	1078	49	215	592	856	1213	78	510	481	1069	1433
SR 99	EB	40	282	96	418	528	27	404	182	613	824	19	241	261	521	649	24	207	211	442	603
	WB	347	579	89	1015	838	587	670	125	1382	1601	737	131	285	1153	960	712	123	84	919	739
	Total				*2487*	*2487*				*4394*	*4394*				*3540*	*3540*				*3934*	*3934*
	2002		5:00 - 6:00 PM																		

PM Peak Hour Turn Volumes		Existing					2025 Baseline					2025 Alt. 1					2025 Alt. 2				
Intersection	**Year**	**LT**	**THRU**	**RT**	**App.**	**Dep.**	**LT**	**THRU**	**RT**	**App.**	**Dep.**	**LT**	**THRU**	**RT**	**App.**	**Dep.**	**LT**	**THRU**	**RT**	**App.**	**Dep.**
Police Station	NB	48	4	24	76	11	70	10	35	115	25	70	10	35	115	25	70	10	35	115	25
South of Alexander	SB	11	1	7	19	5	15	5	10	30	20	15	5	10	30	20	15	5	10	30	20
SR 99	EB	3	525	0	528	560	5	750	5	760	800	5	659	5	669	709	5	570	5	580	620
	WB	4	839	4	847	894	10	1054	10	1074	1134	10	999	10	1019	1079	10	750	10	770	830
	Total				*1470*	*1470*				*1979*	*1979*				*1833*	*1833*				*1495*	*1495*
	2002		5:00 - 6:00 PM																		
Alexander Ave	NB	10	9	19	38	297	15	14	28	57	351	15	15	30	60	274	15	15	30	60	508
	SB	212	12	102	326	23	344	18	29	391	35	277	20	29	326	35	344	20	26	390	35
SR 99	EB	96	468	4	568	699	47	736	6	789	1108	115	589	5	709	896	41	560	5	606	934
	WB	7	762	192	961	874	11	1030	290	1331	1074	10	975	144	1129	1019	10	696	452	1158	737
	Total				*1893*	*1893*				*2568*	*2568*				*2224*	*2224*				*2214*	*2214*
	2002	N/A					N/A														
Frank Albert/46th Avenue East	NB											569	6	72	647	45	0	0	0	0	112
	SB											0	7	41	48	261	33	0	58	91	0
SR 99	EB											39	648	197	884	720	112	822	0	934	855
	WB											57	472	0	529	1082	0	1041	0	1041	1099
	Total														*2108*	*2108*				*2066*	*2066*
	2002		4:30 - 5:30 PM																		
Willow Road	NB	52	5	56	113	24	80	10	85	175	40	65	10	85	160	35	65	10	85	160	35
	SB	34	5	9	48	84	50	10	15	75	130	50	10	10	70	110	50	10	10	70	110
SR 99	EB	2	665	33	700	755	5	1175	50	1230	1310	5	675	40	720	810	5	810	40	855	945
	WB	46	861	17	924	922	70	1135	25	1230	1230	60	408	20	488	483	60	805	20	885	880
	Total				*1785*	*1785*				*2710*	*2710*				*1438*	*1438*				*1970*	*1970*
	2002		4:30 - 5:30 PM																		
51st Avenue East	NB	24	3	56	83	148	35	5	85	125	225	30	5	85	120	185	100	10	130	240	333
	SB	174	5	76	255	92	260	10	115	385	140	260	10	95	365	120	357	10	185	552	285
SR 99	EB	33	669	34	736	899	50	1305	50	1405	1650	40	725	45	810	1070	53	754	75	882	1241
	WB	53	791	112	956	891	80	1010	170	1260	1160	65	363	140	568	488	200	819	270	1289	1104
	Total				*2030*	*2030*				*3175*	*3175*				*1863*	*1863*				*2963*	*2963*
	2002		4:30 - 5:30 PM																		
52nd Avenue East	NB	68	5	85	158	34	100	10	130	240	55	100	10	105	215	75	100	10	105	215	75

PM Peak Hour Turn Volumes		Existing					2025 Baseline					2025 Alt. 1					2025 Alt. 2				
Intersection	**Year**	**LT**	**THRU**	**RT**	**App.**	**Dep.**	**LT**	**THRU**	**RT**	**App.**	**Dep.**	**LT**	**THRU**	**RT**	**App.**	**Dep.**	**LT**	**THRU**	**RT**	**App.**	**Dep.**
	SB	46	8	2	56	206	70	10	5	85	305	260	10	5	275	260	260	10	5	275	260
SR 99	EB	19	838	50	907	969	30	1205	75	1310	1405	25	980	65	1070	1345	25	980	65	1070	1345
	WB	148	848	10	1006	918	220	1025	15	1260	1130	185	463	40	688	568	185	463	40	688	568
	Total				*2127*	*2127*				*2895*	*2895*				*2248*	*2248*				*2248*	*2248*
	2001																				
54th Avenue East	NB	367	328	391	1086	1160	431	721	459	1611	1206	374	360	493	1227	1126	440	686	363	1489	1070
	SB	158	419	73	650	905	518	317	728	1563	1414	130	56	465	651	1251	500	263	542	1305	1333
SR 99	EB	190	500	363	1053	1049	200	820	565	1585	1797	456	537	565	1558	1160	54	816	385	1255	1679
	WB	123	372	642	1137	812	532	730	285	1547	1889	630	860	310	1800	1699	685	855	330	1870	1837
	Total				*3926*	*3926*				*6306*	*6306*				*5236*	*5236*				*5919*	*5919*
	2002		4:30 - 5:30 PM																		
70th Avenue East	NB	120	52	137	309	83	300	150	477	927	228	133	138	402	673	279	23	125	430	578	273
	SB	9	70	17	96	649	40	166	29	235	1689	43	123	21	187	991	46	180	19	245	1270
SR 99	EB	29	544	237	810	690	25	904	678	1607	1421	83	814	124	1021	1259	85	912	265	1262	1388
	WB	342	783	2	1127	920	845	1054	53	1952	1383	744	1326	58	2128	1480	825	1303	63	2191	1345
	Total				*2342*	*2342*				*4721*	*4721*				*4009*	*4009*				*4276*	*4276*
	2002		4:30 - 5:30 PM																		
Port of Tacoma Road	NB	429	383	3	815	524	339	474	0	813	1281	289	479	0	768	1011	351	568	0	919	1459
	SB	0	319	606	925	329	0	586	1043	1629	632	0	491	1285	1776	493	0	992	907	1899	1178
I-5 WB Ramps	EB	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	WB	10	0	141	151	1035	46	0	807	853	1382	2	0	532	534	1574	186	0	891	1077	1258
	Total				*1891*	*1891*				*3295*	*3295*				*3078*	*3078*				*3895*	*3895*
	2002		4:15 - 5:15 PM																		
54th Avenue East	NB	0	916	404	1320	1139	0	1146	226	1372	1611	0	575	4	579	1171	0	938	30	968	1488
	SB	0	1153	404	1557	1521	0	632	1210	1842	1050	0	197	1465	1662	328	0	606	1268	1874	731
I-5 WB Ramps	EB	0	0	0	0	404	0	0	0	0	226	0	0	0	0	4	0	0	0	0	30
	WB	368	0	223	591	404	418	0	465	883	1210	131	0	596	727	1465	125	0	550	675	1268
	Total				*3468*	*3468*				*4097*	*4097*				*2968*	*2968*				*3517*	*3517*
	2002		4:30 - 5:30 PM																		
54th Avenue East	NB	92	377	69	538	1227	135	630	105	870	1370	75	81	26	182	659	100	530	33	663	1091

PM Peak Hour Turn Volumes		Existing					2025 Baseline					2025 Alt. 1					2025 Alt. 2				
Intersection	**Year**	**LT**	**THRU**	**RT**	**App.**	**Dep.**	**LT**	**THRU**	**RT**	**App.**	**Dep.**	**LT**	**THRU**	**RT**	**App.**	**Dep.**	**LT**	**THRU**	**RT**	**App.**	**Dep.**
	SB	513	723	293	1529	1023	604	975	450	2029	1102	424	428	204	1056	496	344	699	459	1502	809
20th Street East	EB	260	337	236	833	919	393	281	37	711	990	340	299	39	678	749	389	282	30	701	659
	WB	64	113	590	767	498	90	170	347	607	755	29	333	238	600	612	80	205	172	457	764
	Total				*3667*	*3667*				*4217*	*4217*				*2516*	*2516*				*3323*	*3323*
	2002		4:30 - 5:30 PM																		
70th Avenue East	NB	121	184	45	350	264	101	653	204	958	927	375	503	0	878	673	192	510	197	899	577
	SB	173	320	83	576	413	114	1551	71	1736	1935	0	790	207	997	1143	102	1147	20	1269	1565
20th Street East	EB	44	535	67	646	753	54	720	166	940	1038	170	0	353	523	0	9	738	178	925	1037
	WB	26	367	36	429	571	218	346	220	784	518	0	0	0	0	582	240	554	58	852	766
	Total				*2001*	*2001*				*4418*	*4418*				*2398*	*2398*				*3945*	*3945*
	2001																				
20th Street East	NB	80	100	15	195	480	128	83	23	234	615	56	35	14	105	539	123	69	24	216	608
	SB	10	125	425	560	525	0	159	400	559	294	10	99	409	518	169	0	156	453	609	272
Freeman Road	EB	370	230	395	995	255	532	386	116	1034	409	494	382	53	929	406	539	398	97	1034	422
	WB	5	70	10	85	575	19	237	0	256	765	17	239	10	266	704	19	255	0	274	831
	Total				*1835*	*1835*				*2083*	*2083*				*1818*	*1818*				*2133*	*2133*
	2001																				
Valley Ave	NB	30	95	25	150	245	272	600	70	942	846	61	504	284	849	853	265	589	78	932	800
	SB	385	195	40	620	285	643	1195	57	1895	1701	380	764	42	1186	1742	394	1084	57	1535	1598
70th Avenue East	EB	20	465	80	565	875	47	468	434	949	1181	43	132	314	489	796	42	517	422	981	989
	WB	10	185	130	325	255	72	375	199	646	704	664	171	306	1141	274	92	297	169	558	619
	Total				*1660*	*1660*				*4432*	*4432*				*3665*	*3665*				*4006*	*4006*
	2002	N/A					N/A					N/A									
Port of Tacoma Road	NB																0	293	17	310	555
	SB																635	731	0	1366	782
B Street East	EB																0	0	0	0	652
	WB																51	0	262	313	0
	Total																			*1989*	*1989*
	2002	N/A					N/A														
70th Avenue East	NB											105	630	0	735	848	156	755	0	911	932
	SB											0	1394	348	1742	1538	0	1363	236	1599	1526
A Street East	EB											218	0	144	362	0	177	0	163	340	0

PM Peak Hour Turn Volumes		Existing					2025 Baseline					2025 Alt. 1					2025 Alt. 2				
Intersection	Year	LT	THRU	RT	App.	Dep.	LT	THRU	RT	App.	Dep.	LT	THRU	RT	App.	Dep.	LT	THRU	RT	App.	Dep.
	WB											0	0	0	0	453	0	0	0	0	392
	Total														*2839*	*2839*				*2850*	*2850*
	2002	N/A					N/A										N/A				
Valley Ave	NB											0	0	0	0	0					
	SB											17	0	114 6	1163	590					
SR 167 SB	EB											0	273	590	863	290					
	WB											0	22	0	22	1168					
	Total														*2048*	*2048*					
	2002	N/A					N/A										N/A				
Valley Ave	NB											8	0	363	371	627					
	SB											0	0	0	0	0					
SR 167 NB	EB											244	46	0	290	409					
	WB											0	15	383	398	23					
	Total														*1059*	*1059*					
	2002	4:45 - 5:45 PM																			
Alexander Avenue	NB	0	323	19	342	406	0	415	30	445	540	0	244	20	264	349	10	474	30	514	609
	SB	111	334	0	445	347	165	325	0	490	345	130	287	0	417	307	165	337	10	512	367
12th Street East	EB	0	0	0	0	130	0	0	0	0	195	0	0	0	0	150	10	75	10	95	270
	WB	13	0	83	96	0	20	0	125	145	0	20	0	105	125	0	20	70	125	215	90
	Total				*883*	*883*				*1080*	*1080*				*806*	*806*				*1336*	*1336*
	2002	4:30 - 5:30 PM																			
62nd Avenue East	NB	5	5	12	22	15	20	10	91	121	29	20	10	27	57	30	17	10	90	117	30
	SB	9	11	2	22	27	28	20	5	53	71	6	20	5	31	87	27	20	5	52	69
12th Street East	EB	5	166	12	183	187	5	230	15	250	349	5	215	15	235	248	5	235	15	255	352
	WB	4	81	5	90	88	36	150	14	200	175	52	145	15	212	170	34	155	15	204	177
	Total				*317*	*317*				*624*	*624*				*535*	*535*				*628*	*628*
	2002	4:45 - 5:45 PM																			
62nd Avenue East	NB	6	2	11	19	19	10	15	19	44	132	10	15	20	45	68	503	52	220	775	92
	SB	11	0	10	21	12	15	10	37	62	16	15	10	52	77	20	15	26	77	118	713
SR 99	EB	2	753	10	765	775	92	1638	3	1733	1672	28	1013	5	1046	1048	15	1048	561	1624	1283
	WB	2	976	15	993	992	3	1467	25	1495	1514	5	1483	25	1513	1545	126	1233	25	1384	1813

PM Peak Hour Turn Volumes		Existing					2025 Baseline					2025 Alt. 1					2025 Alt. 2				
Intersection	Year	LT	THRU	RT	App.	Dep.	LT	THRU	RT	App.	Dep.	LT	THRU	RT	App.	Dep.	LT	THRU	RT	App.	Dep.
	Total				*1798*	*1798*				*3334*	*3334*				*2681*	*2681*				*3901*	*3901*
	2002	4:30 - 5:30 PM																			
Port of Tacoma Road	NB	0	520	68	588	520	0	681	163	844	681	0	346	7	353	346	0	739	148	887	739
	SB	189	150	0	339	494	359	273	0	632	681	441	97	0	538	435	106	1072	0	1178	1072
I-5 EB Ramps	EB	0	0	344	344	257	0	0	408	408	522	0	0	338	338	448	0	0	0	0	254
	WB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total				*1271*	*1271*				*1884*	*1884*				*1229*	*1229*				*2065*	*2065*
	2002	4:00 - 5:00 PM																			
54th Avenue East	NB	0	936	238	1174	1360	0	923	446	1369	1372	0	229	430	659	634	0	687	404	1091	968
	SB	329	1031	0	1360	1422	272	778	0	1050	2029	0	324	0	324	1056	249	482	0	731	1503
I-5 EB Ramps	EB	0	0	391	391	567	0	0	125	1251	718	0	0	732	732	430	0	0	102	1021	653
	WB	0	0	424	424	0	0	0	449	449	0	0	0	405	405	0	0	0	281	281	0
	Total				*3349*	*3349*				*4119*	*4119*				*2120*	*2120*				*3124*	*3124*
	2002	4:30 - 5:30 PM																			
Port of Tacoma Road	NB	1	8	1	10	605	2	12	2	16	711	2	12	2	16	436	8	531	17	556	926
	SB	487	8	26	521	11	620	12	49	681	17	385	0	50	435	5	33	1037	50	1120	1366
20th Street East	EB	61	117	1	179	605	85	160	2	247	782	85	160	2	247	547	52	470	254	776	520
	WB	2	57	536	595	84	3	86	614	703	137	3	85	339	427	137	75	85	343	503	143
	Total				*1305*	*1305*				*1647*	*1647*				*1125*	*1125*				*2955*	*2955*
	2002	4:30 - 5:30 PM																			
Industry Drive	NB	138	0	1	139	0	242	0	0	242	0	174	0	10	184	0	262	0	0	262	0
	SB	0	0	0	0	98	0	0	0	0	403	0	0	0	0	230	0	0	0	0	255
20th Street East	EB	0	408	97	505	409	0	390	393	783	390	0	306	220	526	316	0	265	255	520	265
	WB	1	411	0	412	549	10	580	0	590	822	10	166	0	176	340	0	374	0	374	636
	Total				*1056*	*1056*				*1615*	*1615*				*886*	*886*				*1156*	*1156*
	2002	4:15 - 5:15 PM																			
Frank Albert Road	NB	41	0	84	125	0	60	0	161	221	0	6	93	74	173	646	60	0	170	230	0
	SB	0	0	0	0	96	0	0	0	0	199	104	112	45	261	184	0	0	0	0	307
20th Street East	EB	0	437	32	469	521	0	340	50	390	501	80	259	12	351	437	0	224	31	255	394
	WB	64	255	0	319	296	149	521	0	670	581	60	92	473	625	143	276	298	0	574	358
	Total				*913*	*913*				*1281*	*1281*				*1410*	*1410*				*1059*	*1059*

PM Peak Hour Turn Volumes		Existing					2025 Baseline					2025 Alt. 1					2025 Alt. 2				
Intersection	Year	LT	THRU	RT	App.	Dep.	LT	THRU	RT	App.	Dep.	LT	THRU	RT	App.	Dep.	LT	THRU	RT	App.	Dep.
	2002	N/A					N/A										N/A				
20th Street East	NB											0	0	0	0	944					
	SB											293	0	441	734	0					
69th Avenue East	EB											635	230	0	865	523					
	WB											0	267	309	576	708					
	Total														*2175*	*2175*					
	2002		4:45 - 5:45 PM																		
62nd Avenue East	NB	26	0	31	57	25	40	5	45	90	45	40	5	45	90	45	40	68	45	153	770
	SB	14	1	48	63	87	25	5	70	100	135	25	5	70	100	17	329	329	70	728	395
20th Street East	EB	14	664	51	729	709	25	891	75	991	961	25	846	5	876	916	172	795	11	978	1169
	WB	35	469	11	515	543	55	577	15	647	687	7	600	15	622	710	55	346	530	931	456
	Total				*1364*	*1364*				*1828*	*1828*				*1688*	*1688*				*2790*	*2790*
	2002		4:30 - 5:30 PM																		
Frank Albert Road	NB	27	35	0	62	125	205	101	0	306	221	129	93	0	222	153	16	0	52	68	120
	SB	0	42	57	99	94	0	140	24	164	535	0	148	29	177	354	0	276	24	300	328
Industry Dr	EB	90	0	52	142	0	120	0	395	515	0	60	0	206	266	0	120	0	52	172	52
	WB	0	0	0	0	84	0	0	0	0	229	0	0	0	0	158	0	0	0	0	40
	Total				*303*	*303*				*985*	*985*				*665*	*665*				*540*	*540*
	2002		4:45 - 5:45 PM																		
54th Avenue East	NB	4	321	9	334	398	6	679	15	700	796	0	137	15	152	244	5	533	15	553	653
	SB	100	783	14	897	796	150	990	15	1155	1011	142	436	0	578	454	150	713	15	878	733
23rd Street East	EB	5	5	8	18	114	7	7	11	25	172	5	5	8	18	162	10	10	10	30	175
	WB	5	1	72	78	19	10	1	110	121	22	10	0	102	112	0	10	5	110	125	25
	Total				*1327*	*1327*				*2001*	*2001*				*860*	*860*				*1586*	*1586*
	2002		4:30 - 5:30 PM																		
54th Avenue East	NB	5	0	207	212	119	12	615	0	627	679	16	77	0	93	138	12	468	0	480	533
	SB	0	490	224	714	532	0	907	84	991	919	0	356	80	436	372	0	629	84	713	641
Valley Avenue	EB	119	0	42	161	207	64	0	12	76	0	61	0	16	77	0	65	0	12	77	0
	WB	0	0	0	0	229	0	0	0	0	96	0	0	0	0	96	0	0	0	0	96
	Total				*1087*	*1087*				*1694*	*1694*				*606*	*606*				*1270*	*1270*
	2002	N/A					N/A					N/A									
Valley Ave	NB																0	0	0	0	80

PM Peak Hour Turn Volumes		Existing					2025 Baseline					2025 Alt. 1					2025 Alt. 2				
Intersection	**Year**	**LT**	**THRU**	**RT**	**App.**	**Dep.**	**LT**	**THRU**	**RT**	**App.**	**Dep.**	**LT**	**THRU**	**RT**	**App.**	**Dep.**	**LT**	**THRU**	**RT**	**App.**	**Dep.**
	SB																345	0	0	345	0
62nd Avenue East	EB																0	653	0	653	998
	WB																0	492	80	572	492
	Total																			*1570*	*1570*
	2001																				
Valley Avenue	NB	10	20	15	45	100	15	92	270	377	236	225	30	252	507	206	15	69	302	386	221
	SB	90	25	25	140	75	116	85	11	212	412	89	65	102	256	547	122	82	11	215	417
Freeman Road	EB	30	850	25	905	955	50	1076	40	1166	1462	88	119	201	408	460	50	950	40	1040	1374
	WB	25	360	50	435	395	287	580	94	961	606	281	71	88	440	398	295	490	102	887	516
	Total				*1525*	*1525*				*2716*	*2716*				*1611*	*1611*				*2528*	*2528*
	2002		4:15 - 5:15 PM																		
Frank Albert Road	NB	0	0	0	0	63	0	0	0	0	105	0	0	0	0	109	0	0	0	0	222
	SB	83	0	7	90	0	253	0	11	264	0	139	0	10	149	0	191	0	122	313	0
Levee Road	EB	12	10	0	22	93	20	20	0	40	273	20	20	0	40	159	191	462	0	653	653
	WB	0	5	51	56	12	0	10	85	95	21	0	10	89	99	20	0	207	31	238	329
	Total				*168*	*168*				*399*	*399*				*288*	*288*				*1204*	*1204*
	2002		4:30 - 5:30 PM																		
54th Avenue East	NB	0	36	138	174	37	0	96	20	116	96	0	46	20	66	46	0	214	70	284	214
	SB	217	0	2	219	0	20	0	20	40	0	20	0	20	40	0	20	0	20	40	0
Levee Road	EB	1	81	0	82	436	0	230	0	230	270	0	98	0	98	138	0	623	0	623	713
	WB	0	0	0	0	2	0	0	0	0	20	0	0	0	0	20	0	0	0	0	20
	Total				*475*	*475*				*386*	*386*				*204*	*204*				*947*	*947*
	2002						N/A					N/A					N/A				
Valley Avenue	NB	159	0	182	341	0															
	SB	0	0	0	0	530															
Melroy Bridge	EB	0	36	283	319	218															
	WB	247	22	0	269	181															
	Total				*929*	*929*															
	2002		4:30 - 5:30 PM																		
70th Avenue East	NB	0	0	0	0	140	87	858	476	1421	887	39	662	106	807	668	98	788	475	1361	817
	SB	139	0	169	308	0	3	1532	1	1536	2136	2	1478	0	1480	1781	4	1413	3	1420	2190
Levee Road	EB	105	111	0	216	250	1	23	207	231	502	0	11	87	98	119	4	353	342	699	832

PM Peak Hour Turn Volumes		Existing					2025 Baseline					2025 Alt. 1					2025 Alt. 2				
Intersection	Year	LT	THRU	RT	App.	Dep.	LT	THRU	RT	App.	Dep.	LT	THRU	RT	App.	Dep.	LT	THRU	RT	App.	Dep.
	WB	0	72	35	107	241	397	8	28	433	96	216	6	6	228	45	435	283	25	743	384
	Total				*631*	*631*				*3621*	*3621*				*2613*	*2613*				*4223*	*4223*
	2002																				
Levee Road	NB	0	0	0	0	90	0	0	0	0	340	0	0	0	0	340	0	0	0	0	340
	SB	92	0	71	163	0	170	0	170	340	0	170	0	170	340	0	170	0	170	340	0
Freeman Road	EB	54	172	0	226	264	170	332	0	502	502	170	119	0	289	289	170	662	0	832	832
	WB	0	77	36	113	148	0	260	170	430	430	0	228	170	398	398	0	573	170	743	743
	Total				*502*	*502*				*1272*	*1272*				*1027*	*1027*				*1915*	*1915*

Appendix C
Traffic Calming Procedures

Appendix C
Traffic Calming Procedures

Traffic Calming Procedures – Initial Screening

Traffic calming devices should not be installed unless the installation site meets all of the following criteria:

- Two-lane roadway;
- Average Daily Traffic (ATD) between 300 and 3,000 vehicles;
- The 85th percentile speeds shall be greater than 5 mph above the speed limit (for 25 mph speed limit, speed must be greater than 30 mph);
- Must have concurrence from the fire department;
- Minimum vertical and horizontal sign distance of at least 150 feet;
- Roadway grade of less than 10 percent; and
- Placement of any traffic-calming device will not result in unacceptable diversion of traffic onto another street.

If the site being evaluated meets the above screening criteria, the evaluation can proceed to the next level, described below.

Traffic Calming Procedures – Approval Process

Community Request/Support
Responsible Party: requesting community
- Initial request received from neighborhood resident/association or business/business association

Evaluation of Request
Responsible Party: city or consultant
- Initial neighborhood meeting, to get information on problem areas from residents
- Analysis areas focused based on public input
- Safety analysis (collision history)
- Speed study
- Traffic volume counts

Community Input
Responsible Party: city and requesting community
- Results of the safety, speed and volume analyses presented
- City informs the neighborhood of likely costs of device, cost-sharing plan and maintenance responsibilities for landscaped areas
- Preferred alternative reviewed by neighborhood, if studies show need exists

Community Petition of Support
Responsible Party: Requesting Community
- City determines the households and businesses/property owners which may be impacted by the device
- Requesting community members must obtain signatures of 60 percent of these households and businesses/property owners approving temporary device installation

Design and Construction Review
Responsible Party: City

- Device location and design reviewed by an advisory group including at minimum the following concerned parties: emergency services, transit, school district
- Approval to install a temporary device obtained from this advisory group

Temporary Device Installation/Assessment

Responsible Party: City

- Temporary device installed by city
- Device remains in place for 6 months to one year
- During this time traffic speeds and volumes are measured to help determine the effectiveness of the device
- At the conclusion of the test period, results are shared with the neighborhood
- If results show that the device has intended traffic calming effects, and does not result in adverse effects in such areas as emergency services response time, traffic diversion, etc, project will proceed to final device determination/installation

Final Device Determination/Installation

Responsible Party: City and requesting community

- Ballots outlining study results and costs of the device are mailed to the affected neighborhood
- Based on the outcome of balloting, installation of the permanent device will be approved
- Results of the balloting and Committee review will be shared with the community
- Temporary device remains in place until a permanent device is installed
- Neighborhood association or group commits to contribute the required matching funds of total project cost
- Engineering Department will design and construct the permanent device as soon as possible, keeping the neighborhood association or group informed of progress

Device Maintenance

Responsible Party: Requesting Community

- Neighborhood signs an agreement to maintain the device
- If maintenance of the device's plantings lapses, the landscaped areas will be paved over

Traffic Calming Tool Matrix

Tool	Reduces Accidents	Reduces Volumes	Reduces Speed
Education			
Traditional Enforcement			
Photographic Radar			
Neighborhood Speed Watch			
Radar Trailer			
Speed Limit Sign			
Neighborhood Signage			
One Way Street			
Traversable Barrier			
Forced Turn Barrier			
Diagonal Diverters			
Semi-Diverter			
Street Closure			
Chicanes (Deviations)			
Lane Narrowing			
Neckdown (Bulbouts)			
Channelization			
Lane Elimination Choker			
Chokers			
Traffic Circle			
Median			
Raised Crosswalk			
Raised Intersection			
Pedestrian Refuge			
Rumble Strip			
Speed Humps			
Colored/Textured Pavement			
Stop Sign			
Turn Prohibition			
On-Street Parking			
Bicycle Lanes			

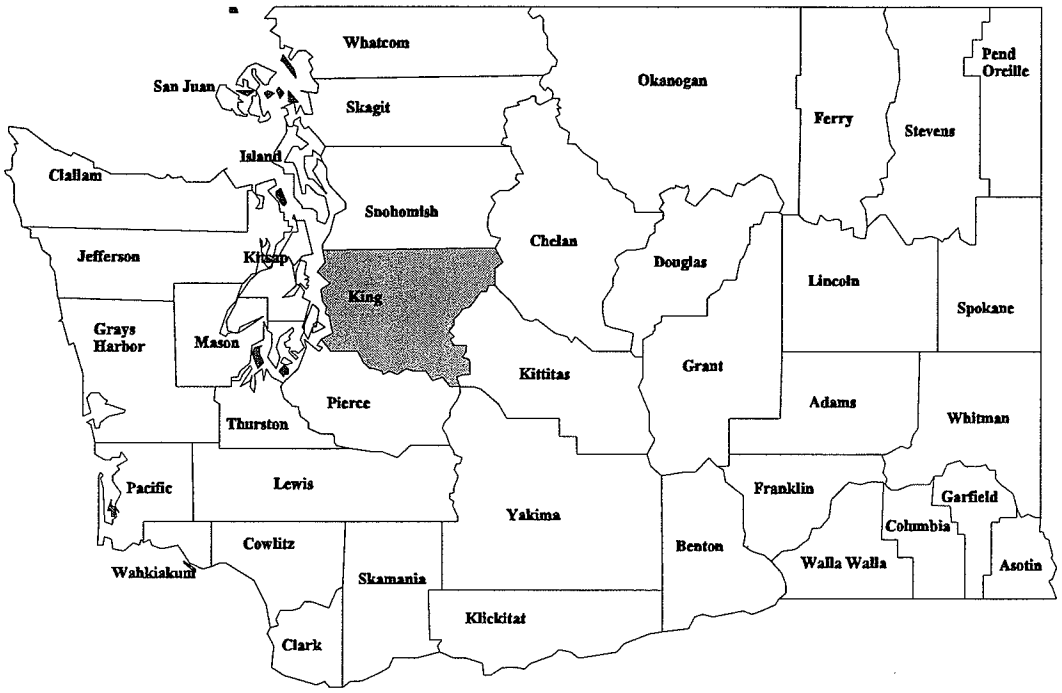
Little or no effect

Might accomplish this as a secondary effect

Primary purpose of this tool

Appendix D
Washington State Freight Truck Origin and Destination Study: King County

Washington State Freight Truck Origin and Destination Study: King County



EWITS Research Report Number 21-King
January 1998

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King County Results

The most heavily used truck route in King County is Interstate 5 (I5), with daily average truck traffic ranging from 15,116 in summer to 11,358 in spring (Table 1). Interstate 90 (I90), Interstate 405 (I405), State Route 167 (SR167), and State Route 18 (SR18) are the next most heavily used truck routes, averaging between 2,000 and 5,000 trucks per day. Other routes averaging more than 200 trucks per day include State Routes 101, 522, 167, 99, and 520 (SR101, SR522, SR167, SR99, and SR520). The most commonly hauled products on I5, in order of magnitude, are food, general freight, lumber or wood products, paper or pulp products, and agricultural products, with an average payload weight ranging from 14 to 18 tons. Truck traffic on I90 is similar in composition, but more agricultural products and transportation equipment are hauled. In addition, no paper or pulp products are hauled on I90, according to the survey data. Average daily truck traffic on I90 is highest in fall, averaging 4,097 per day, and lowest in summer at 3,127 per day. The average payload weight is slightly higher for I90 than I5, ranging between 16 and 20 tons across the seasons.

Truck traffic on I405 ranges from an average of 4,045 trucks per day in summer to 3,253 per day in fall. Cargo composition is similar to I5 and I90: food makes up one-fifth or more of the trucks with freight and other major categories include general freight, lumber or wood products, paper or pulp products, and agricultural products. Payload weights average between 14 and 18 tons. Daily truck traffic on SR167 averages from 2,768 trucks per day in fall to 3,782 per day in winter, with similar cargo characteristics to the previously mentioned routes. On SR18, daily truck traffic is much higher in winter, averaging 4,664 trucks per day. During the rest of the year, daily truck traffic is below 3,000 trucks per day. Cargo is again quite similar to the other routes. Average payload weights for all the main trucking routes in King County rarely exceed 20

tons; the highest average payload weight of 27 tons occurs on SR169 in summer, when two-thirds of the loads are carrying lumber or wood products. Average payloads ranging between 30 to 31 tons occur on SR203 in fall, SR3 in winter, and SR203 in spring, but these routes have six or less loaded trucks per day.

The majority of truck traffic originating from King County leaves from the town of Seattle, ranging from an average of 4,315 trucks per day in summer to 2,580 per day in spring (Table 2). Main categories of outgoing freight from Seattle include food, general freight, mail or packages, and petroleum, in declining order of importance. Kent and Auburn have the next highest levels of outgoing truck traffic. Kent averages from 1,425 trucks per day in winter to 1,195 per day in spring, while truck traffic from Auburn ranges from a daily average of 490 in winter to 325 in spring. Major categories of freight from Kent include general freight, food, and pulp or paper products. General freight, transportation equipment, food, and lumber or wood products make up the main categories of cargo from Auburn, with considerable seasonal variation. Freight from 15 other towns in King County is presented in Table 1; the same freight categories mentioned above are dominant in these towns as well. The highest average payload weights of 34 and 40 tons occur for freight originating from Black Diamond in fall and spring respectively, when freight consists of coal and machinery.

Trucks headed to destinations in King County are most likely to be headed for Seattle, Kent and Auburn (Table 3). Seattle receives on average from a high of 4,620 trucks per day in winter to a low of 4,237 in fall; Kent receives from 1,906 per day in winter to 1,557 in summer; and Auburn receives from 695 trucks per day in winter to 406 in summer. Another 15 towns receive significant but lesser amounts of daily truck traffic (see Table 3). Freight to Seattle is most likely to fall into the categories of food, general freight, and agricultural products, although lumber or wood products and pulp or paper products are also important. Freight to Kent consists

mainly of food, general freight, and pulp or paper products, in order of importance. Food, agricultural products, general freight, lumber or wood, petroleum, and transportation equipment make up the main freight categories bound for Auburn. Average payload weights are 20 tons or less for truck traffic heading to most towns in King County. The highest average payload weight of 40 tons occurs for trucks heading to Burien in winter, when transportation equipment is the only category of freight in the survey.

Total truck traffic heading for or leaving from King County ranges from 17,823 trucks per day in winter to 14,323 trucks per day in spring (Table 4). The most common freight categories include food products, which make up 20% or more of all trucks with freight; general freight; lumber or wood products; agricultural products; and pulp or paper products. Average payload weights are highest in summer at 18 tons.

Table 5 shows road usage by type of freight for the major commodities hauled into or out of King County over the entire year. I5 is used by over 80% of all trucks hauling freight in King County. Other routes that are heavily used by trucks include SR167, used by 19% to 32% of loaded trucks across the seasons; I90, used by one-fourth of all loaded trucks, except those hauling pulp or paper; and I405, used by 15% to 32% of loaded trucks across the seasons. Food products are the predominant commodity hauled into and from King County, accounting for 21% of trucks with loads and 22% of total tonnage. Lumber or wood products make up 7% of loaded trucks and account for 9% of the total tonnage. The heaviest average payload weight among the most commonly hauled commodities is 21 tons, for lumber or wood products.

Weight category by commodity for trucks hauling freight into or out of King County is presented in Table 6. For trucks carrying food products, half have loads weighing between 15 and 25 tons. For trucks carrying general freight, nearly three-quarters have payload weights of less than 30 tons. For trucks carrying lumber or wood products, two-thirds have payload weights

of 20 tons or more and 21% weigh over 30 tons. Ten percent or less of the loads in other freight categories fall in the over 30-ton category.

Table 7 shows weight category by roadway for truck loads originating or ending in King County. For the 27,596 trucks with loads in the survey using I5, one-fourth have payload weights of less than five tons while 23% have payloads in the 20- to 25-ton category. I90 carries the highest percentage of trucks with freight weighing 20 tons or more; half of all loads on I90 fall in this category. Just 13% of the trucks with loads on I90 fall in the under 5-ton category. For the rest of the major truck routes in King County, 21% to 29% of the loads weigh less than 5 tons.

The most common truck configuration for trucks carrying loads into or out of King County is the tractor-trailer configuration, accounting for half of the trucks with loads (Table 8). Another 17% each are straight trucks and tractors with two trailers. Sixteen percent are truck and tractor configurations. Food products are mainly carried by tractor and trailer configurations (60% of loads). For the trucks carrying lumber or wood products, 45% are tractor and trailers and 23% are tractors plus two trailers. Half of all general freight is hauled by tractors plus two trailers, and another 32% is carried by tractors and one trailer.

Over a four-day period (one day in each season), a total of 50,779 trucks, loaded and empty, were either heading for or leaving King County (Table 9). Of these trucks, 64% were Washington-based carriers. Seattle is home base for 18% of the surveyed carriers, while another 7% each are based out of Kent, Tacoma, and Portland, Oregon.

TABLE 1. Daily Truck Traffic by Road for Each Season, King County (cont.).

Season/ Road	Total Trucks Per Day (No.)	Loaded Trucks Per Day (No.)	Average Payload (Tons)	Total Tonnage[1] (Tons)	Commodity	
					Category	Percent
FALL (cont.):						
SR2	153	97	12	1,180	Propane	12
					Food	22
					Lumber, wood	13
					General freight	12
SR522	296	188	15	2,870	Agriculture	6
					Propane	6
					Food	11
					Lumber, wood	35
					Glass, cement	18
					Metal products	5
					Machinery	12
					General freight	5
SR167	2,768	2,050	14	28,184	Food	23
					Lumber, wood	7
					Pulp, paper	9
					Electrical	5
					General freight	14
SR169	83	50	23	1,135	Coal	10
					Food	33
					Petroleum	17
					Electrical	17
					Trans. equipment	17

TABLE 1. Daily Truck Traffic by Road for Each Season, King County (cont.).

Season/ Road	Total Trucks Per Day (No.)	Loaded Trucks Per Day (No.)	Average Payload (Tons)	Total Tonnage[1] (Tons)	Commodity	
					Category	Percent
WINTER (cont.):						
SR2	117	61	12	716	Rock, sand	14
					Chemicals	28
					Metal products	19
					Machinery	12
SR522	353	234	12	2,902	Agriculture	7
					Food	11
					Lumber, wood	44
					Rubber, plastic	11
					Glass, cement	7
					Metal products	5
SR167	3,782	2,609	14	36,852	Food	18
					Lumber, wood	8
					Pulp, paper	9
					Chemicals	5
					Glass, cement	5
					Trans. equipment	8
					General freight	13
SR169	91	41	15	598	Agriculture	25
					Textiles	18
					Lumber, wood	27
					Machinery	30

TABLE 1. Daily Truck Traffic by Road for Each Season, King County (cont.).

Season/ Road	Total Trucks Per Day (No.)	Loaded Trucks Per Day (No.)	Average Payload (Tons)	Total Tonnage[1] (Tons)	Commodity	
					Category	Percent
SPRING (cont.):						
SR101	270	157	16	2,507	Food	21
					Lumber, wood	24
					Machinery	22
					Trans. equipment	6
SR2	111	64	18	1,152	Agriculture	6
					Pulp, paper	8
					Print materials	26
					Glass, cement	17
					Trans. equipment	33
SR522	346	218	12	2,635	Lumber, wood	5
					Pulp, paper	5
					Glass, cement	5
					Metal	10
					Machinery	8
					Trans. equipment	15
					Medical equip.	9
					General freight	12
SR167	3,049	2,275	14	31,079	Food	21
					Lumber, wood	7
					Pulp, paper	10
					Metal products	5
					Trans. equipment	5
					General freight	20

TABLE 1. Daily Truck Traffic by Road for Each Season, King County (cont.).

Season/ Road	Total Trucks Per Day (No.)	Loaded Trucks Per Day (No.)	Average Payload (Tons)	Total Tonnage[1] (Tons)	Commodity	
					Category	Percent
SUMMER (cont.):						
SR522	429	236	18	4,203	Agricultural	7
					Food	8
					Laundry	6
					Lumber, wood	12
					Furniture	5
					Petroleum	5
					Rubber, plastic	15
					Glass, cement	6
					Metal	11
					Metal products	5
					Electrical	5
					General freight	5
					Recycled materials	5
SR167	3,768	2,687	17	46,938	Food	19
					Lumber, wood	5
					Pulp, paper	10
					Glass, cement	5
					Transp. equip.	7
					General freight	16
SR169	58	47	27	1,251	Rock, sand	8
					Food	25
					Lumber, wood	67

Appendix E
Washington State Freight Truck Origin and Destination Study: Pierce County

Washington State Freight Truck Origin and Destination Study: Pierce County

EWITS Research Report Number 21-Pierce
January 1998

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Pierce County Results

The main truck routes in Pierce County are Interstate 5 (I5) and State Routes 167, 512, and 16 (SR167, SR512, and SR16) (Table 1). Truck traffic is highest on I5, ranging from an average of 7,430 trucks per day in winter to 5,453 per day in spring. Food and lumber or wood products are the predominant freight on this route. SR167 receives the next highest levels of truck traffic, ranging from an average of 907 trucks per day in summer to 702 per day in winter. Food and lumber or wood products are also the most commonly hauled freight on this route. Traffic on SR512 is much higher in winter and spring, averaging over 300 trucks per day, than in summer and fall when average daily truck traffic falls below 200 trucks per day. Common freight on this route includes lumber or wood products, paper or pulp, food, and metal, among others. Traffic on SR16 varies considerably over the seasons as well, ranging from 191 trucks per day in fall to 504 trucks per day in winter. Again, food and lumber or wood products comprise the main categories of freight. The highest average payload in the survey of 22 tons occurs in summer on SR512, when metal products make up the largest category of freight.

The majority of truck traffic originating from Pierce County leaves from the town of Tacoma, ranging from an average of 3,454 trucks per day in spring to 2,788 per day in fall (Table 2). Main categories of freight leaving from Tacoma include food, lumber or wood products, and general freight. Fife and Sumner have the next highest levels of outgoing truck traffic. Fife averages from 312 trucks per day in fall to 212 per day in winter, while truck traffic from Sumner ranges from a daily average of 180 in spring to 119 in summer. Freight leaving Fife is quite varied over the seasons; it includes general freight, food, petroleum, chemicals, and pulp or paper products, among others. Food, pulp or paper products, glass or cement, metal products, and electrical products make up the main categories of cargo from Sumner, with considerable seasonal

variation. Freight from a number of other towns in Pierce County is presented in Table 2. The highest average payload of 40 tons occurs for freight originating from Steilacoom in winter, when freight consists of lumber or wood products.

Trucks headed to destinations in Pierce County are most likely to be headed for Tacoma, Fife, Sumner, and Puyallup (Table 3). On average, Tacoma receives from a high of 3,064 trucks per day in winter to a low of 1,297 in spring. Ingoing truck traffic for Fife averages from 222 per day in winter to 24 in spring, while Sumner averages from 133 trucks per day in fall to 58 in summer. Several other towns receive significant but lesser amounts of daily truck traffic (see Table 3). Freight to Tacoma is most likely to fall into the categories of lumber or wood products, food, and agricultural products. Freight to Fife, Sumner, and Puyallup is quite varied, including food, lumber or wood, petroleum, laundry, general freight, agricultural products, metal, and pulp or paper products. Average payload weights of over 30 tons occur five times in Table 3, mainly for trucks hauling lumber or wood products and glass or cement. The highest average payload weight of 39 tons occurs for trucks heading to Graham in summer, when lumber or wood products is the only category of freight in the survey.

Total truck traffic heading for or leaving from Pierce County ranges from 7732 trucks per day in winter to 5753 trucks per day in spring (Table 4). The predominant freight types are food, lumber or wood products, general freight, and paper or pulp products. The average payload weight is 16 tons for each season except summer when the average rises to 19 tons.

Table 5 shows road usage by type of freight for the major commodities hauled into or out of Pierce County over the entire year. Food is the predominant commodity hauled into and out of Pierce County, accounting for 18% of trucks with loads and 16% of total tonnage. Lumber or wood products are the next most common category of freight, accounting for 14% of the trucks with loads and 20% of total tonnage. General freight and pulp or paper products make up 10%

and 6%, respectively, of the remaining trucks with loads. I5 is the most commonly used route for trucks with freight, used by 93% or more of all trucks with loads. SR167 is the next most commonly used truck routes in the county, used by 12% to 17% of the trucks with loads for the various commodities. The average payload weight is highest for lumber or wood products at 24 tons.

Weight category by commodity for trucks hauling freight into or out of Pierce County is presented in Table 6. For trucks carrying lumber or wood products, 69% have loads weighing over 20 tons. The majority of trucks carrying either food or paper and pulp products have payloads weighing between 20 and 25 tons. Twenty-nine percent of the trucks carrying lumber or wood products have payloads weighing over 30 tons.

Table 7 shows weight category by roadway for truck loads originating or ending in Pierce County. A higher percentage of trucks with loads over 30 tons travel on SR512 and SR16, at 16% and 19%, respectively, although the actual truck numbers are much lower on these routes than on I5 and SR167. On I5, 11% of the trucks carry payloads of over 30 tons.

Truck configuration for trucks carrying loads into or out of Pierce County are most likely to be tractor-trailer configurations, with 52% of trucks with loads falling in this category (Table 8). Another 14% are tractors plus two trailers. Sixteen percent of trucks with loads are truck and trailer configurations and another 17% are straight trucks.

Over the four-day survey period (one day in each season), a total of 26,770 trucks, loaded and empty, were either heading for or leaving Pierce County (Table 9). Of these trucks, 74% are Washington-based carriers. Tacoma serves as home base for 24% of the surveyed carriers. Another 11% are based out of Seattle.

TABLE 1. Daily Truck Traffic by Road for Each Season, Pierce County.

Season/ Road	Total Trucks Per Day (No.)	Loaded Trucks Per Day (No.)	Average Payload (Tons)	Total Tonnage[1] (Tons)	Commodity	
					Category	Percent
FALL:						
I5	5,941	3,654	16	57,959	Agriculture	5
					Food	22
					Lumber, wood	14
					Pulp, paper	7
					Chemicals	5
					Petroleum	7
					General freight	8
SR16	191	123	19	2,324	Food	5
					Lumber, wood	42
SR167	876	550	15	8,285	Agriculture	8
					Food	27
					Lumber, wood	10
					Pulp, paper	6
					Electrical	8
					Trans. equipment	8
					General freight	8
SR512	178	112	12	1,387	Agriculture	10
					Livestock	5
					Lumber, wood	22
					Furniture	15
					Pulp, paper	19
					Machinery	12
					Electrical	7

TABLE 1. Daily Truck Traffic by Road for Each Season, Pierce County (cont.).

Season/ Road	Total Trucks Per Day (No.)	Loaded Trucks Per Day (No.)	Average Payload (Tons)	Total Tonnage[1] (Tons)	Commodity	
					Category	Percent
WINTER:						
I5	7,430	4,306	15	66,204	Food	18
					Lumber, wood	13
					Pulp, paper	5
					Petroleum	6
					General freight	7
SR16	504	281	14	3,850	Food	21
					Lumber, wood	23
					Pulp, paper	7
					Petroleum	11
					General freight	10
SR167	702	333	11	3,823	Food	20
					Lumber, wood	12
					Pulp, paper	10
					Print materials	7
					Chemicals	5
					Petroleum	9
					Trans. equipment	7
					General freight	7

TABLE 1. Daily Truck Traffic by Road for Each Season, Pierce County (cont.).

Season/ Road	Total Trucks Per Day (No.)	Loaded Trucks Per Day (No.)	Average Payload (Tons)	Total Tonnage[1] (Tons)	Commodity	
					Category	Percent
SPRING (cont.):						
SR167	821	430	15	6,319	Agriculture	7
					Food	18
					Lumber, wood	20
					Pulp, paper	9
					Petroleum	5
					Metal	8
					Electrical	7
					General freight	11
SR512	320	171	16	2,687	Livestock	7
					Food	21
					Lumber, wood	14
					Pulp, paper	11
					Glass, cement	7
					Metal	20
					General freight	14
					Recycled materials	6
SUMMER:						
I5	5,971	3,401	20	66,752	Agriculture	7
					Food	11
					Lumber, wood	14
					Pulp, paper	6
					Petroleum	5
					Glass, cement	6
					Metal products	5
					General freight	13

TABLE 1. Daily Truck Traffic by Road for Each Season, Pierce County (cont.).

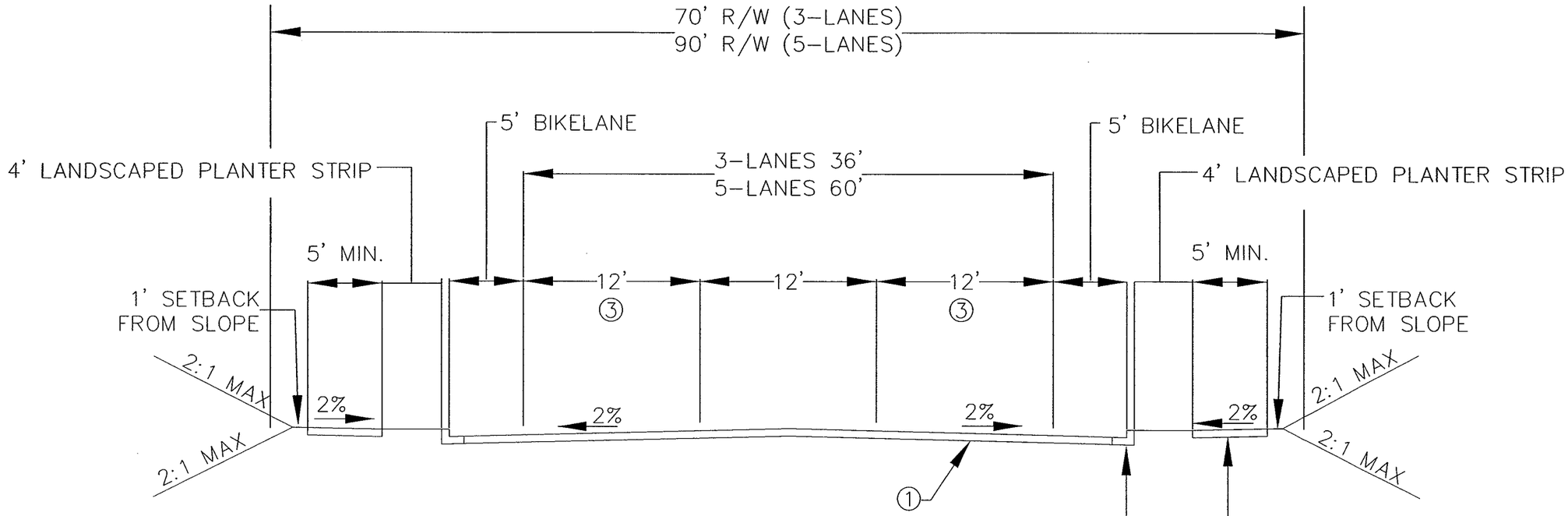
Season/ Road	Total Trucks Per Day (No.)	Loaded Trucks Per Day (No.)	Average Payload (Tons)	Total Tonnage[1] (Tons)	Commodity	
					Category	Percent
SUMMER (cont.):						
SR16	254	142	17	2,367	Food	10
					Rock, sand	8
					Petroleum	10
					Glass, cement	17
					Trans. equip.	16
					Metal products	9
					Print materials	8
					Recycled materials	8
SR167	907	502	17	8,368	Food	19
					Pulp, paper	5
					Petroleum	8
					Glass, cement	7
					Metal	8
					Metal products	10
					Trans. equipment	5
					General freight	9
					Recycled materials	5
SR512	106	73	22	1,586	Food	12
					Glass, cement	16
					Metal	6
					Metal products	40
					Electrical	12
					General freight	6

[1] Total tonnage may differ from the number of trucks per day multiplied by the average payload due to rounding of values for average number of loaded trucks per day and average payload.

TABLE 5. Truck Trips by Commodity for Truck Traffic Originating or Ending in Pierce County.

Commodity	Truck Trips Per Year (%)	Total Weight		Avg. Payload (Tons)	County Roads Used	
		Tons	% of Total		Road	% of Trips
Food	18	43,612	16	15	I5	93
					SR167	17
Lumber, wood	14	53,664	20	24	I5	97
					SR167	12
General freight	10	19,644	7	13	I5	98
					SR7	17
					SR16	21
					SR167	12
Pulp, paper	6	16,380	6	17	I5	96
					SR167	17
OTHER	53	135,733	50	16	I5	95
					SR167	14

Appendix F
Street Cross-Sections



NOTES:

① ASPHALT DEPTH TO BE DETERMINED BY ENGINEER. THE MINIMUM ALLOWABLE DEPTH IS 4" ASPHALT PAVEMENT CLASS "B" OVERLYING 2" CRUSHED SURFACING TOP COURSE AND 14" GRAVEL BASE CLASS "B".

② MINIMUM VERTICAL SLOPE: 0.25 PERCENT

③ 14' IF BIKELANE NOT REQUIRED

PROJECT ENGINEER:	R. ANDERSON			
DESIGNED BY:	G. NELSON			
DRAWN BY:	H. RODRIGUEZ			
CHECKED BY:	-			
DATE PLOTTED:	JAN 2003			
FILE:	FIFE53G-1.DWG	DATE	REVISIONS	APPRVD.

RANDOLPH A. ANDERSON STATE OF WASHINGTON 14972 REGISTERED PROFESSIONAL ENGINEER
EXPIRES 09-12-04

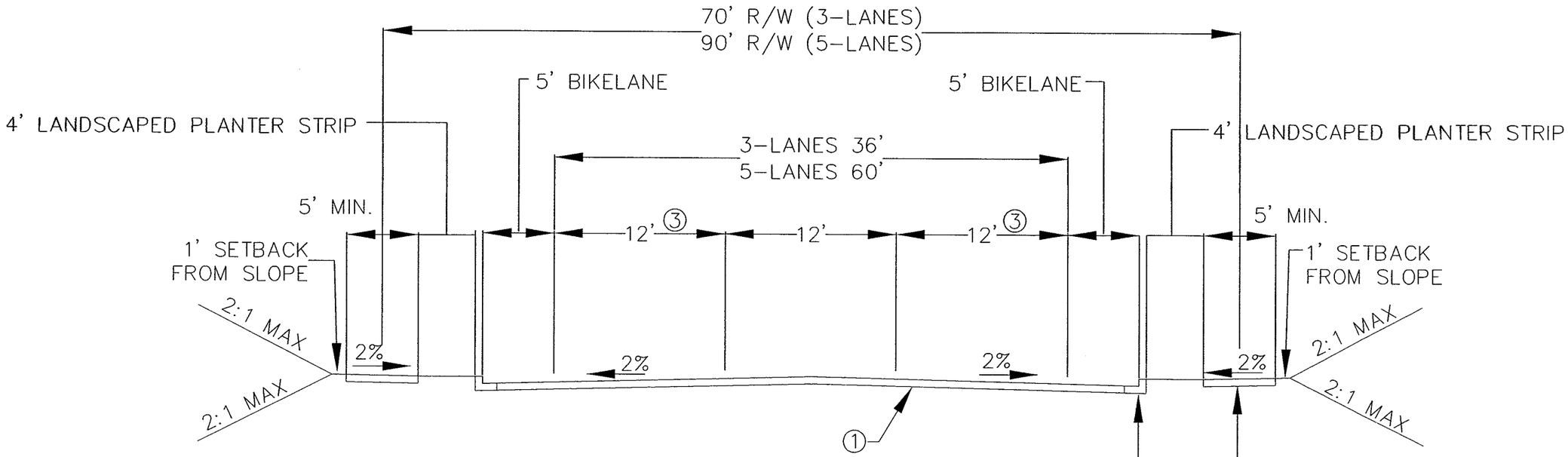
City of Fife
Department of Public Works
5411-23rd Street East
Fife, Washington 98424

PLANS PREPARED BY:
DAVID EVANS AND ASSOCIATES INC.
3700 Pacific Hwy. East, Suite 311
Tacoma Washington 98424
Phone: 253.922.9780

STREET CROSS SECTION STANDARD
FIFE TRANSPORTATION PLAN
NOVEMBER 2002

PRINCIPAL ARTERIAL

SHEET XS-1
OF
5



NOTES:

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② MINIMUM VERTICAL SLOPE: 0.25 PERCENT

③ 14' IF BIKELANE NOT REQUIRED

PROJECT ENGINEER:	R. ANDERSON			
DESIGNED BY:	G. NELSON			
DRAWN BY:	H. RODRIGUEZ			
CHECKED BY:	-			
DATE PLOTTED:	JAN 2003			
FILE:	FIFE53G-1.DWG	DATE	REVISIONS	APPRVD.

RANDOLPH A. ANDERSON STATE OF WASHINGTON 19373 REGISTERED PROFESSIONAL ENGINEER
EXPIRES 09-12-04

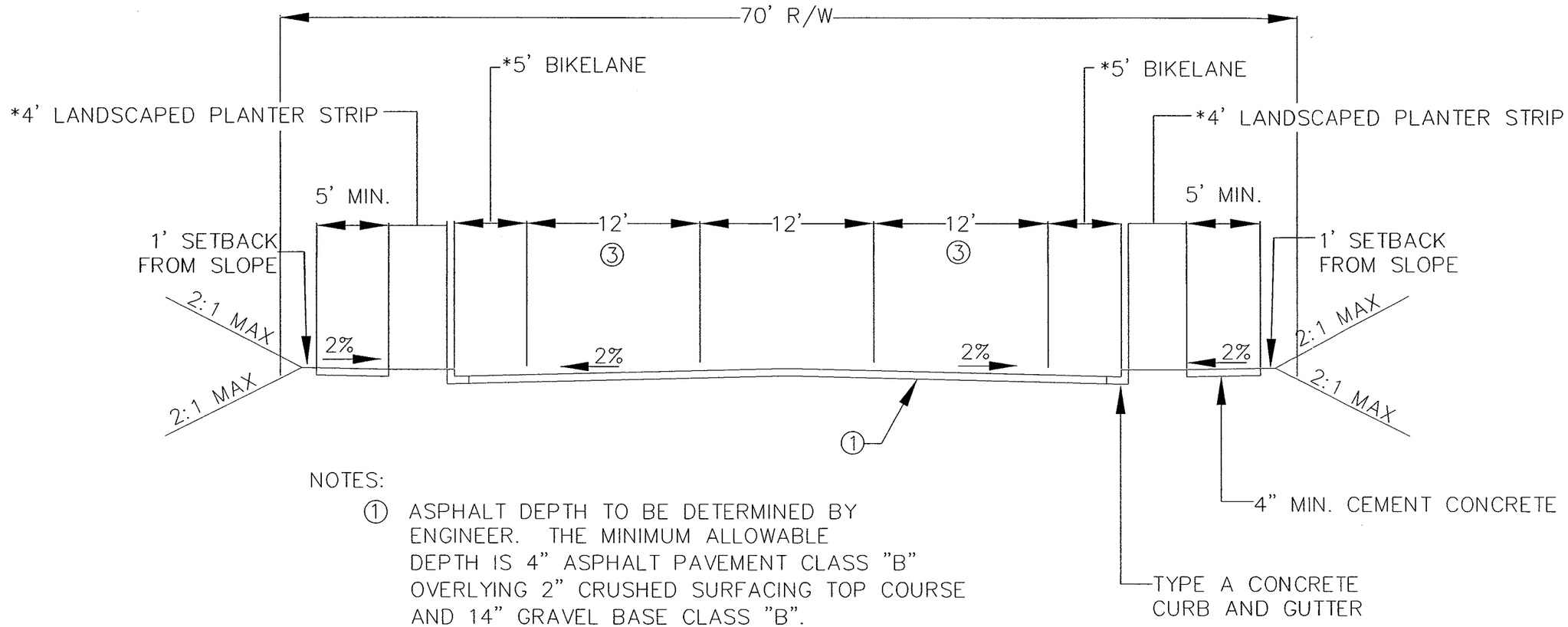
City of Fife
Department of Public Works
5411-23rd Street East
Fife, Washington 98424

PLANS PREPARED BY:
DAVID EVANS AND ASSOCIATES INC.
3700 Pacific Hwy. East, Suite 311
Tacoma Washington 98424
Phone: 253.922.9780

STREET CROSS SECTION STANDARD
FIFE TRANSPORTATION PLAN
NOVEMBER 2002

MINOR ARTERIAL

SHEET XS-2
OF
5



NOTES:

① ASPHALT DEPTH TO BE DETERMINED BY ENGINEER. THE MINIMUM ALLOWABLE DEPTH IS 4" ASPHALT PAVEMENT CLASS "B" OVERLYING 2" CRUSHED SURFACING TOP COURSE AND 14" GRAVEL BASE CLASS "B".

② MINIMUM VERTICAL SLOPE: 0.25 PERCENT

③ 14' IF BIKELANE NOT REQUIRED

*REQUIREMENT SPECIFIC TO PROJECT

PROJECT ENGINEER:	R. ANDERSON			
DESIGNED BY:	G. NELSON			
DRAWN BY:	H. RODRIGUEZ			
CHECKED BY:	-			
DATE PLOTTED	JAN 2003			
FILE:	FIFE53C-1.DWG	DATE	REVISIONS	APPRVD.

RANDOLPH A. ANDERSON STATE OF WASHINGTON 14377 REGISTERED PROFESSIONAL ENGINEER
EXPIRES 09-12-04

City of Fife
Department of Public Works
5411-23rd Street East
Fife, Washington 98424

PLANS PREPARED BY:
DAVID EVANS AND ASSOCIATES INC.
3700 Pacific Hwy. East, Suite 311
Tacoma Washington 98424
Phone: 253.922.9780

STREET CROSS SECTION STANDARD
FIFE TRANSPORTATION PLAN
NOVEMBER 2002

3 LANE COLLECTOR ARTERIAL

SHEET XS-3
OF
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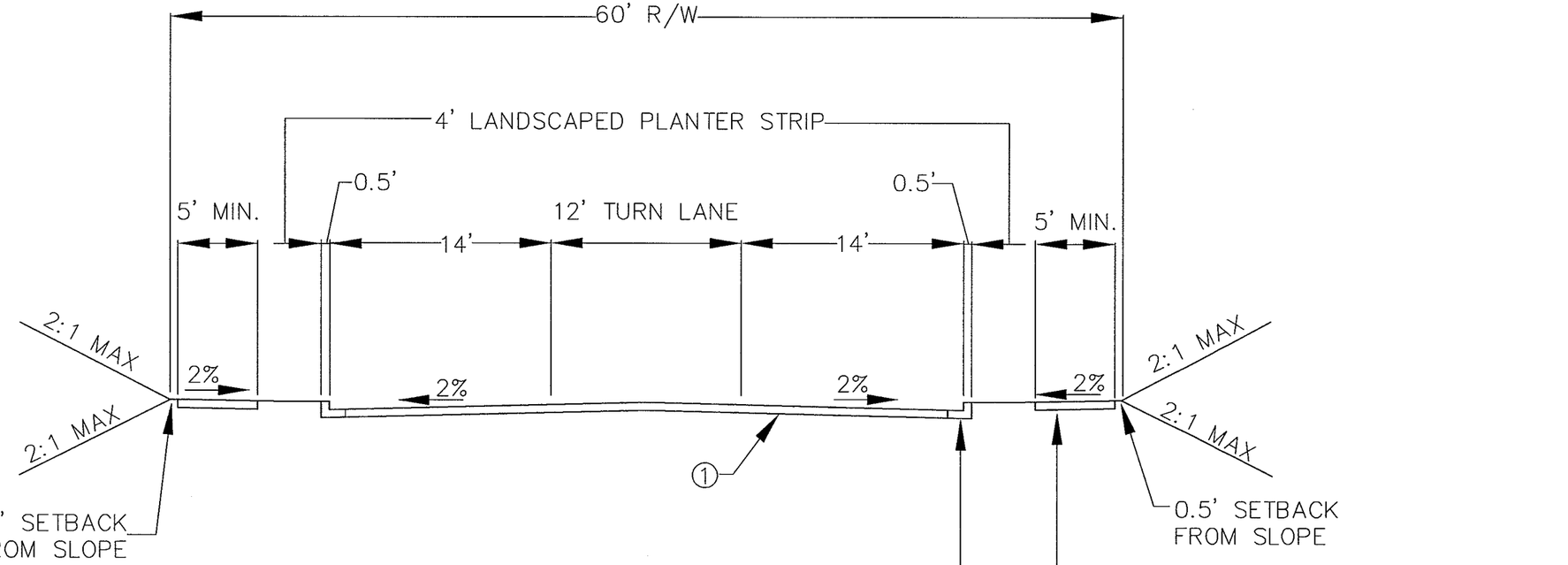

NOTES:

1. ASPHALT DEPTH TO BE DETERMINED BY ENGINEER. THE MINIMUM ALLOWABLE DEPTH IS 4" ASPHALT PAVEMENT CLASS "B" OVERLYING 2" CRUSHED SURFACING TOP COURSE AND 16" GRAVEL BASE CLASS "B".
2. MINIMUM VERTICAL SLOPE: 0.5 PERCENT

PROJECT ENGINEER:	R. ANDERSON			
DESIGNED BY:	G. NELSON			
DRAWN BY:	H. RODRIGUEZ			
CHECKED BY:	-			
DATE PLOTTED:	AUG 2005			
FILE:	XS-6 Appendix F.DWG	DATE	REVISIONS	APPRVD.

RANDOLPH A. ANDERSON — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER — EXPIRES 09-12-04

City of Fife
Department of Public Works
5411-23rd Street East
Fife, Washington 98424

PLANS PREPARED BY:
DAVID EVANS AND ASSOCIATES INC.
3700 Pacific Hwy. East, Suite 311
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Phone: 253.922.9780

STREET CROSS SECTION STANDARD
FIFE TRANSPORTATION PLAN
NOVEMBER 2002

COMMERCIAL/INDUSTRIAL/MULTI-FAMILY ACCESS STREET

SHEET XS-4 OF 6

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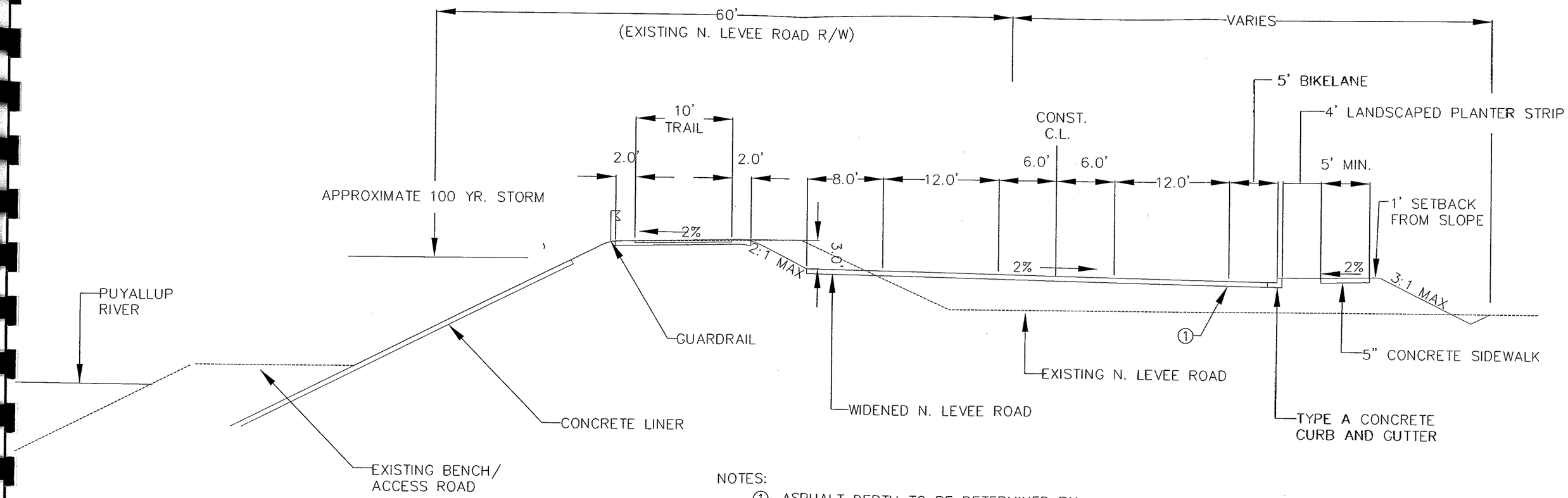

NOTES:

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PROJECT ENGINEER:	R. ANDERSON			
DESIGNED BY:	G. NELSON			
DRAWN BY:	H. RODRIGUEZ			
CHECKED BY:	-			
DATE PLOTTED:	JAN 2003			
FILE:	FIFE53C-1.DWG	DATE	REVISIONS	APPRVD.

RANDOLPH A. ANDERSON
STATE OF WASHINGTON
REGISTERED
PROFESSIONAL ENGINEER
EXPIRES 09-12-04

City of Fife
Department of Public Works
5411-23rd Street East
Fife, Washington 98424

PLANS PREPARED BY:
DAVID EVANS AND ASSOCIATES INC.
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STREET CROSS SECTION STANDARD
FIFE TRANSPORTATION PLAN
NOVEMBER 2002

N LEVEE RD JOINT TRAIL/ROAD WIDENING PROJECT

SHEET XS-5
OF
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