City of BURLINGTON

COMPREHENSIVE TRANSPORTATION PLAN

1999 Update

Rod Garrett
City Engineer/Public Works Director

William Popp Associates
Transportation Engineers/Planners

February 1999

$10.00

TABLE OF CONTENTS

List of Tables

List of Figures

I. INTRODUCTION

Background

The Comprehensive Transportation Plan was adopted on May 12, 1994 by Resolution #5-94 and has been updated annually by the adoption of a new Six Year Road Plan each subsequent year. The plan completed the Skagit County Sub-Regional Transportation Planning Organization (RTPO) Transportation Certification process and was certified in the fall of 1997.

A number of regional documents have been prepared and adopted since the original adoption of the Transportation Plan in 1994, including the completion of the County-side Air, Rail, Water and Port Transportation System Study in February of 1996 and completion of the Skagit/Island Regional Transportation Plan in April of 1996, and the adoption of the 1998-2003 Six Year Transportation Improvement Plan in the fall of 1997. The City of Burlington Parks and Recreation Comprehensive Plan has also been updated which is the document that identifies trails, walkways, bike paths which are the non-motorized element of this plan.

This edition of the Comprehensive Transportation Plan incorporates relevant information from each of these planning documents and addresses the outstanding issues identified in the Transportation Plan Certification process through the Skagit Sub-Regional RTPO.

The Skagit County Overall Economic Development Plan (OEDP) anticipates an increase in employment from 35,340 in 1994 to 61,761 persons in 2014 which means an increase in of employment by 26,421 persons between 1994 and 2014. Much of the increase is expected to occur in sectors which generate freight such as manufacturing, retail and wholesale trade, resource extraction, and agriculture among other sectors. Many businesses seeking to locate in Burlington are attracted by the efficient transportation system and the area's proximity to resources and markets. Transportation costs are a very important component of business planning, with logistics being extremely important to freight-generating businesses. For retail firms, fast, efficient and reliable delivery is of paramount importance, while speed is of the essence in receiving inputs and shipping products to market for both manufacturing growth and agricultural growth. Improvements to the transportation system are critical as a means to enhance economic development.

Transportation is a major issue facing the elected officials, staff, business owners, and residents of the City of Burlington. Over the past nine years, a total of 2,325,477 square feet of new retail and commercial construction has been built, as well as 211 single family and 492 multi-family residential units. Growth is expected to continue at a reasonable pace and each new development is carefully evaluated for its impact on the transportation system. This growth generates increased traffic volumes to, from, and within the City of Burlington and it is very important to adequately mitigate the impacts of new development so that the impacts on level of service and traffic accidents are minimized.

The impact of growth has been realized throughout the State of Washington prompting the legislature to pass the Growth Management Act of 1990 with a subsequent amendment in 1991. The Act requires each city and county to prepare a comprehensive plan which identifies growth potential and its related impacts. Furthermore, the Act requires each agency adopt and enforce ordinances which insure facility improvements required to mitigate development impacts are functional at the time the development is

operational. Standards are established in Burlington Municipal Code Chapter 12.28. Level of service changes that may result in the need for additional traffic mitigation would be reviewed in accordance with the policies and procedures under Burlington Municipal Code Chapter 15.12 Environmental Policy.

The Capital Improvement Plan is updated annually, along with the Six-Year Transportation Plan and a detailed reevaluation of the financing of this plan continues to show that Impact Fees are only warranted in areas that generate traffic in the two corridors where new bridges are planned. The rate is $35 per peak hour trip per 1000 square feet or per dwelling unit. This limited contribution supports the grant application process.

Goals and Objectives

1. The transportation plan is designed to ensure the continued ability of the transportation system to function at a reasonable level of service throughout the urban service area and coordinate the links to the regional transportation system along with Mount Vernon.

2. The planned Level of Service is not to exceed Level of Service C except for the Burlington Boulevard corridor which is not to exceed Level of Service E. The concurrency requirements do not apply to transportation facilities and services of statewide significance. State Route 20 is a Highway of Statewide Significance.

3. Proposed projects that decrease the level of service below the planned level, because of their traffic contribution, shall be denied unless concurrent improvements are made to prevent a decrease in level of service below the planned level for that location. Improvements shall be in place before the use is occupied, except as follows:

    a. Sites located where regional improvements are the only means to improve or maintain the level of service existing prior to the development, may be developed if the proponents make a fair share contribution to the regional improvement, when the improvement is planned for construction within six years, or sign an Agreement to Perform at a future date when the City sees needed improvements that are not possible under the Washington State Department of Transportation Warrant System.

    b. Essential public facilities may be constructed subject to a commitment to contribute to the regional improvement at a future date, as funding becomes available from the public entity, including schools, hospitals, police and fire stations and the like.

    c. Other exceptions may be authorized by the City of Burlington Technical Committee if consistent with the policy intent.

4. Optimize the potential for increased use of public transportation and access to the state and interstate routes in land use and site planning.

5. Complete the construction and upgrading of the arterial street network to maximize circulation and level of service within the community.

6. Implement detailed standards for upgrading residential streets so that the changes will enhance, rather than adversely affect the character of the area, whether initiated by the City or required to mitigate the impacts of developing a site.

7. The Six Year Road Plan and the transportation element of the annually updated City of Burlington Capital Improvement Plan shall be coordinated with the Land Use, Utilities and other relevant plan elements to ensure a balanced program that is adequately funded and responsive to community interests.

8. Implement programs to encourage the use of flextime, carpooling and transit as traffic levels increase over time, coordinating with Skagit Public Transit (SKAT).

9. Coordinate the Capital Improvement Plan with regional non-motorized travel plans, including bicycle and pedestrian.

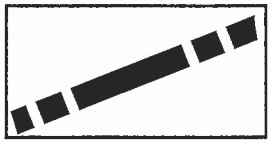
FUNCTIONAL CLASSIFICATIONS

of Public Roads

Washington State Department of Transportation

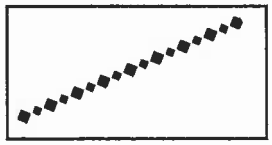
NATIONAL CLASSIFICATIONS

INTERSTATE



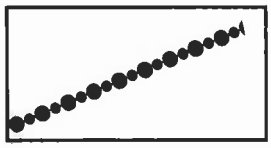
MINOR
COLLECTOR

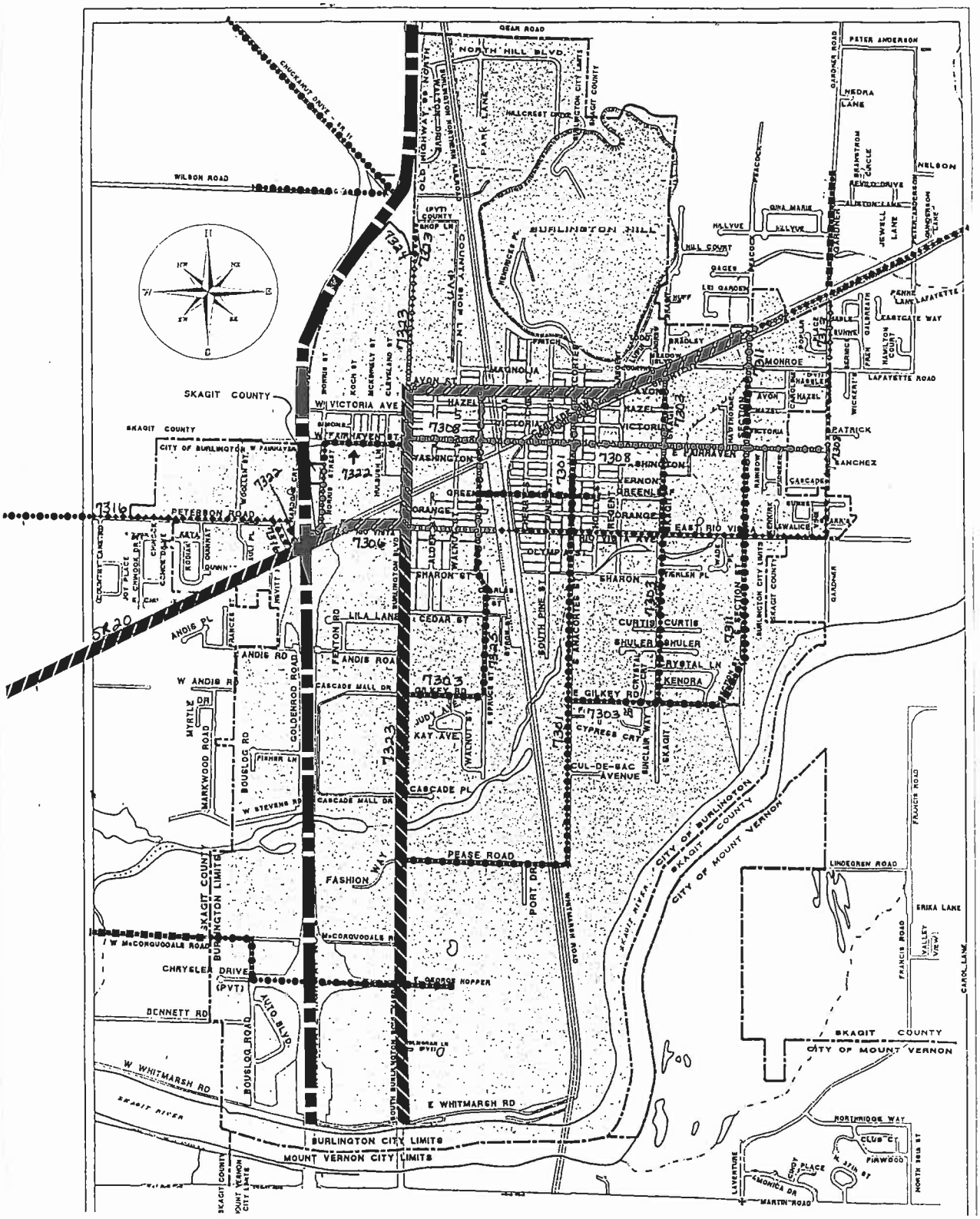
MINOR
ARTERIAL



OTHER
PRINCIPAL
ARTERIAL

MAJOR
COLLECTOR





WILLIAM POPP ASSOCIATES	FUNCTIONAL CLASS **FIGURE 1**	CITY OF BURLINGTON

II. INVENTORY AND ANALYSIS OF EXISTING TRANSPORTATION SERVICES AND FACILITIES

The purpose of this chapter is to document the current status of known transportation facilities and services with the City of Burlington. The discussion is categorized as follows:

- local streets, arterials, and highways
- transit
- non-motorized transportation
- air, rail, water and port transportation

Local Streets, Arterials, and Highways

The City of Burlington is strategically located at the junction of two major state highways, Interstate 5 and State Route 20. Interstate 5 extends north and south along the western edge of the City connecting Burlington to Seattle on the south and Vancouver, B.C. Canada on the north. State Route 20 extends east and west along the northern edge of the City and provides connections to Oak Harbor on the west and the North Cascades Highway and the Okanogan on the east.

Travel on the local streets, arterials, and highways account for the vast majority of travel on the City of Burlington transportation system. In addition to Interstate 5 and SR 20 discussed above, the City is comprised of an extensive grid like pattern of local streets and arterials. The arterials are functionally classified as major, secondary, and collector arterials. Those streets not classified as arterials are termed "local streets". Figure 1 illustrates the City's arterial classification.

The City is responsible for approximately 35 miles of roads, including 1.86 miles of major arterials, 4.25 miles of minor arterials, and 10.6 miles of collector arterials. In addition, there are approximately 4.6 miles of state highways, including I-5, within the City. Most of the City streets are two lane facilities and most have bituminous or asphalt concrete surfaces. SR 20 is generally two lanes while I-5 is a four-lane freeway.

A summary of the existing conditions of the City's arterial network is presented in Table 1. These roadways comprise the predominant routes of travel in the City. Information presented in Table 1 includes the route segment between arterial/arterial intersections, segment length, functional classification, number of lanes, roadway width, shoulder type, existence of on-street parking, the condition of the roadway surface, posted speed limit, the existing average weekday traffic volume (AWDT), and the existence of bicycle/pedestrian facilities. Because of the length of these segments, the conditions specified in Table 1 represent conditions which exist throughout the segment rather than in a sporadic fashion.

Traffic Volumes

Average weekday traffic (AWDT), and PM peak hour counts were collected for the arterial network during 1992. The counts were provided by the Washington State Department of Transportation, Skagit County Public Works, and William Popp Associates. Where AWDT counts were unavailable, peak hour counts were factored to estimate AWDT volumes using area specific relationships between daily and peak hour volumes. The AWDT volumes are presented in Table 1. In general, traffic volumes have been increasing at a stead y rate of 4 percent per year over the last 10-year period.

Level of Service

A level of service analysis was provided for each of the arterial/arterial intersections in the City including intersections with SR 20. Level of service was calculated using the techniques presented in the 1985 Highway Capacity Manual and was based on recent PM peak hour counts. Level of service (LOS) is a term used by traffic and transportation professionals to qualitatively rate a section of the transportation system based on a quantitative analysis. For streets and highways within urban areas, the qualitative level of service is directly correlated to a quantitative analysis expressed in seconds of delay for signalized intersections or reserve capacity for unsignalized intersections. The level of service ranges from a high of LOS A to a low of LOS F. LOS C is generally accepted as adequate for rural areas and low density urban areas. A more detailed description of level of service is presented in Technical Appendix B. The relationship between the qualitative and quantitative analysis for the signalized and unsignalized intersections is presented in Table 2.

Transit

In November 1992, a Skagit County Public Transportation Benefit Area (PTBA) was established serving the cities of Mount Vernon and Burlington, and Transit operations began November 1993. Services include fixed and demand responsive service seven days per week. In subsequent elections, most of the rest of Skagit County was annexed into the PTBA. There are three transit routes in the City of Burlington, Routes 300, 101 and 513 coming from Anacortes. In 1999, service will expand from one-hour headways to one-half hour service on Routes 300 and 101. The 513 from Anacortes will increase service from one bus every two hours to hourly service in 1999.

During the weekdays, Monday through Friday, service is available from 6:30 AM to 9:30 PM. On the weekends, Saturday and Sunday, service is available from 10:00 AM to 8:00 PM.
The system is funded through an additional 0.2 of 1 percent additional sales tax throughout the Public Transit Benefit Area. This money is matched with state motor vehicle excise tax. There are no passenger fares.

The Transit Board is comprised of the three County Commissioners, the Mayors of Burlington, Mount Vernon and Anacortes, and one Councilperson from Burlington, Mount Vernon and Sedro Woolley. They are planning to construct an administrative, shop, fueling and bus parking facility in the City Limits of Burlington for the system as a whole.

TABLE 1

TRAFFIC COUNTS - AWDT

		1995 SPLIT		1995 TOTAL	1996 SPLIT		1996 TOTAL	1997 SPLIT		1997 TOTAL
1	Burlington Blvd. north of Fairhaven Avenue	8,445 7,883	NB SB	16,328				5,101 2,344	NB SB	7,445
2	Burlington Blvd. south of Fairhaven Avenue	10,841 9,668	NB SB	20,509						
3	Burlington Blvd. south of Rio Vista Avenue	8,830 8,288	NB SB	17,118	14,311 14,793	NB SB	29,104	10,427 11,091	NB SB	21,518
4	Burlington Blvd. south of Gilkey Road	7,577 8,274	NB SB	15,851	13,641 8,956	NB SB	22,597	10,659 10,237	NB SB	20,896
5	Burlington Blvd. south of Pease Road	9,863 9,244	NB SB	18,151	10,750 10,500	NB SB	21,250	13,218 13,563	NB SB	26,761
6	Burlington Blvd. south of George Hopper	7,958 6,886	NB SB	14,844	9,144 9,608	NB SB	18,752	10,768 10,358	NB SB	21,126
7	Peterson Road east of Pulver Road	1,880 1,983	WB EB	3,864	2,047 1,993	WB EB	3,980	2,328 2,235	WB EB	4,563
8	Peterson Road north of Norris Street	2,883 2,800	NB SB	5683	2,938 2,860	NB SB	5,798	3,208 3,216	NB SB	6,424
9	Pulver Road south of Peterson Road	372 312	NB SB	685	322 238	NB SB	560	442 321	NB SB	763
10	Goldenrod Road south of SR 20	3,579 9,154	NB SB	12,733	3,653 8,155	NB SB	11,808	5,163 10,787	NB SB	15,950
11	Spruce Street south of Fairhaven Avenue	938 724	NB SB	1,662	685 817	NB SB	1,502	1,183 1,546	NB SB	2,729
12	Skagit Street north of SR 20	471 467	NB SB	938	479 470	NB SB	949	530 527	NB SB	1,057
13	Skagit Street south of SR 20	667 539	NB SB	1,206	654 665	NB SB	1,319	741 749	NB SB	1,490
14	Section Street south of SR 20	266 386	NB SB	652	315 451	NB SB	766	339 362	NB SB	701
15	Section Street south of Rio Vista Avenue				577 491	NB SB	1,068			
16	Fairhaven Avenue corner of Walnut							5,209 4,909	WB EB	10,118

TRAFFIC COUNTS – AWDT										
		1995 SPLIT		1995 TOTAL	1996 SPLIT		1996 TOTAL	1997 SPLIT		1997 TOTAL
17	Burlington Blvd. north of Avon Avenue							5,883 (failed)	NB SB	(NB ONLY) 5,883
18	Avon (SR 20) east of Anacortes Street							7,086 5,889	WB EB	12,975
19	Avon (SR 20) east of Burlington Boulevard							7,044 6,711	WB EB	13,755
21	Fairhaven Ave. west of Burlington Boulevard							2,446 2,399	WB EB	4,845
22	Fairhaven Avenue west of Pine Street							2,708 3,023	WB EB	5,731
23	Rio Vista (SR20) west of Burlington Boulevard							8,828 8,691	EB WB	17,519
24	SR20 (county) east of Pulver Road							9,529 (not avail.)	WB EB	(WB ONLY 9,529
25	Old Cascade Hwy east of Anacortes Street							1,071 1,766	WB EB	2,147
26	Norris Street east of Peterson Road							2,206 2,703	NB SB	4,909
27	Spruce Street south of Avon Avenue (SR20)							562 423	NB SB	985
28	SR 20 (county) east of Avon-Allen Road							8,871 9,493	EB WB	18,364
29	Pease Road east of Burlington Blvd. (K Mart)									
30	Greenleaf Avenue east of Spruce Street									
31										
32										
33										
34										

TABLE 1

TRAFFIC COUNTS - AWDT

		1998 SPLIT		1998 TOTAL	1999 SPLIT		1999 TOTAL	2000 SPLIT		2000 TOTAL
1	Burlington Blvd. north of Fairhaven Avenue									
2	Burlington Blvd. south of Fairhaven Avenue									
3	Burlington Blvd. south of Rio Vista Avenue	10,991 10,804	NB SB	21,795						
3a	Burlington Blvd. south of Rio Vista Ave **(WEEKEND)**	10,027 10,109	NB SB	20,136						
4	Burlington Blvd. south of Gilkey Road	10,157 9,806	NB SB	19,963						
4a	Burlington Blvd. south of Gilkey Road **(WEEKEND)**	9,150 8,995	NB SB	18,145						
5	Burlington Blvd. south of Pease Road	12,754 12,659	NB SB	25,413						
6	Burlington Blvd. south of George Hopper	10,842 10,179	NB SB	21,021						
7	Peterson Road east of Pulver Road	2,196 2,107	EB WB	4,303						
8	Peterson Road north of Norris Street	3,128 2,910	NB SB	6,038						
9	Pulver Road south of Peterson Road	367 261	NB SB	628						
10	Goldenrod Road south of SR 20	4,874 10,292	NB SB	15,166						
10a	Goldenrod Road south of SR 20 **(WEEKEND)**	4,699 9,933	NB SB	14,632						
11	Spruce Street south of Fairhaven Avenue	11,825 11,347	NB SB	3,172						
12	Skagit Street north of SR 20	468 451	NB SB	919						
13	Skagit Street south of SR 20	818 806	NB SB	1,624						
14	Section Street south of SR 20									
15	Section Street south of Rio Vista Avenue									

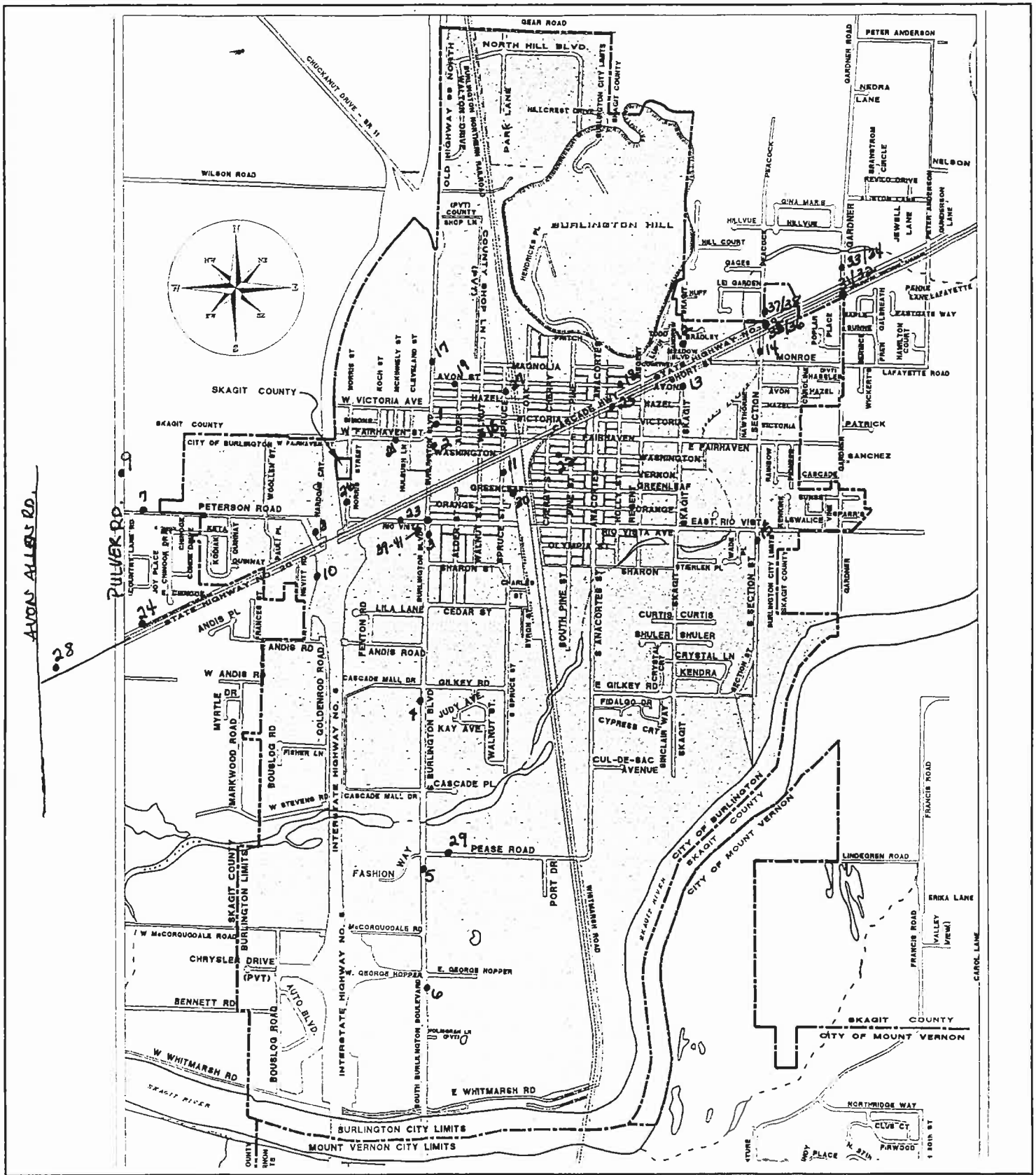
TABLE 1

TRAFFIC COUNTS – AWDT

		1998 SPLIT		1998 TOTAL	1999 SPLIT		1999 TOTAL	2000 SPLIT		2000 TOTAL
16	Fairhaven Avenue east of Walnut	4472 4505	EB WB	8,977						
17	Burlington Blvd. north of Avon Avenue									
18	Avon (SR 20) east of Anacortes Street									
19	Avon (SR 20) east of Burlington Boulevard									
21	Fairhaven Ave. west of Burlington Boulevard	2,945 2,644	EB WB	5,589						
22	Fairhaven Avenue west of Pine Street									
23	Rio Vista (SR20) west of Burlington Boulevard									
24	SR20 (county) east of Pulver Road									
25	Old Cascade Hwy east of Anacortes Street									
26	Norris Street east of Peterson Road									
27	Spruce Street south of Avon Avenue (SR20)									
28	SR 20 (county) east of Avon-Allen Road									
29	Pease Road east of Burlington Blvd. (K Mart)	3,015 2,879	EB WB	5,894						
30	Greenleaf Avenue east of Spruce Street	1,648 1,835	EB WB	3,483						
31	SR 20 / Gardner Road (WEST LEG)	10,117 10,064	WB EB	20,181						
32	SR 20 / Gardner Road (EAST LEG)	10,042 10,105	WB EB	20,147						
33	SR 20 / Gardner Road (NORTH LEG)	695	SB	695						
34	SR 20 / Gardner Road (SOUTH LEG)	817	NB	817						

TRAFFIC COUNTS – AWDT

		1998 SPLIT		1998 TOTAL	1999 SPLIT		1999 TOTAL	2000 SPLIT		2000 TOTAL
35	SR 20 / Peacock/Section (WEST LEG)	8,994 10,287	WB EB	19,281						
36	SR 20 / Peacock/Section (EAST LEG)	10,117 10,064	WB EB	20,181						
37	SR 20 / Peacock Lane (NORTH LEG)	534	SB	534						
38	SR 20 / Section Street (SOUTH LEG)	293	NB	293						
39	SR 20 / Rio Vista/Blvd. (NORTH LEG)	12,542 11,075	NB SB	23,617						
40	SR 20 / Rio Vista/Blvd. (SOUTH LEG)	11,454	NB	11,454						
41	SR 20 / Rio Vista/Blvd. (EAST LEG)	2,008	WB	2,008						
42										
43										
44										
45										
46										
47										
48										
49										
50	State (count)				*(SEE 1997 STATE INTERSECTION COUNTS)*					
51	State (count)									
52	State (count)									



WILLIAM POPP ASSOCIATES	TRAFFIC COUNT LOCATIONS **FIGURE 1a**	CITY OF BURLINGTON

Non-Motorized Transportation

Non-motorized transportation is generally comprised of bicycles, pedestrian and equestrian facilities. While there is not a countywide non-motorized plan to date, the City of Burlington has constructed a 1.7-mile pedestrian trail that runs along State Route 20 and could be linked with Sedro-Woolley in the future. The City has also constructed an informal fitness/jogging course around Rotary Park. An Interlocal Agreement has been reached with Dike District #12 to provide 2.0 miles of nonmotorized access along the Skagit River Dike from the Gardner Road Boat Launch to the Railroad Bridge fishing access area. This will link up with the new bridge across the Skagit River that will replace the existing Burlington-Mount Vernon Bridge. The new bridge is planned to be constructed in the year 2000-2001 and the bridge will include nonmotorized public access. Proposed bicycle and pedestrian facilities are identified in Figure 2. There is lots of potential for future connections to any county wide network that comes near the edges of Burlington, since the existing and future routes in the City link to the major east-west and north-south routes in the county.

Air, Rail, Water and Port Transportation system

A Countywide Air, Rail, Water and Port Transportation System Study was completed for The Skagit County Sub-Regional Transportation Planning Organization in February 1996. That document is hereby adopted by reference as a part of the City of Burlington's Comprehensive Plan. For detailed information on any element, refer to the Study. Information specific to the Burlington area is excerpted here.

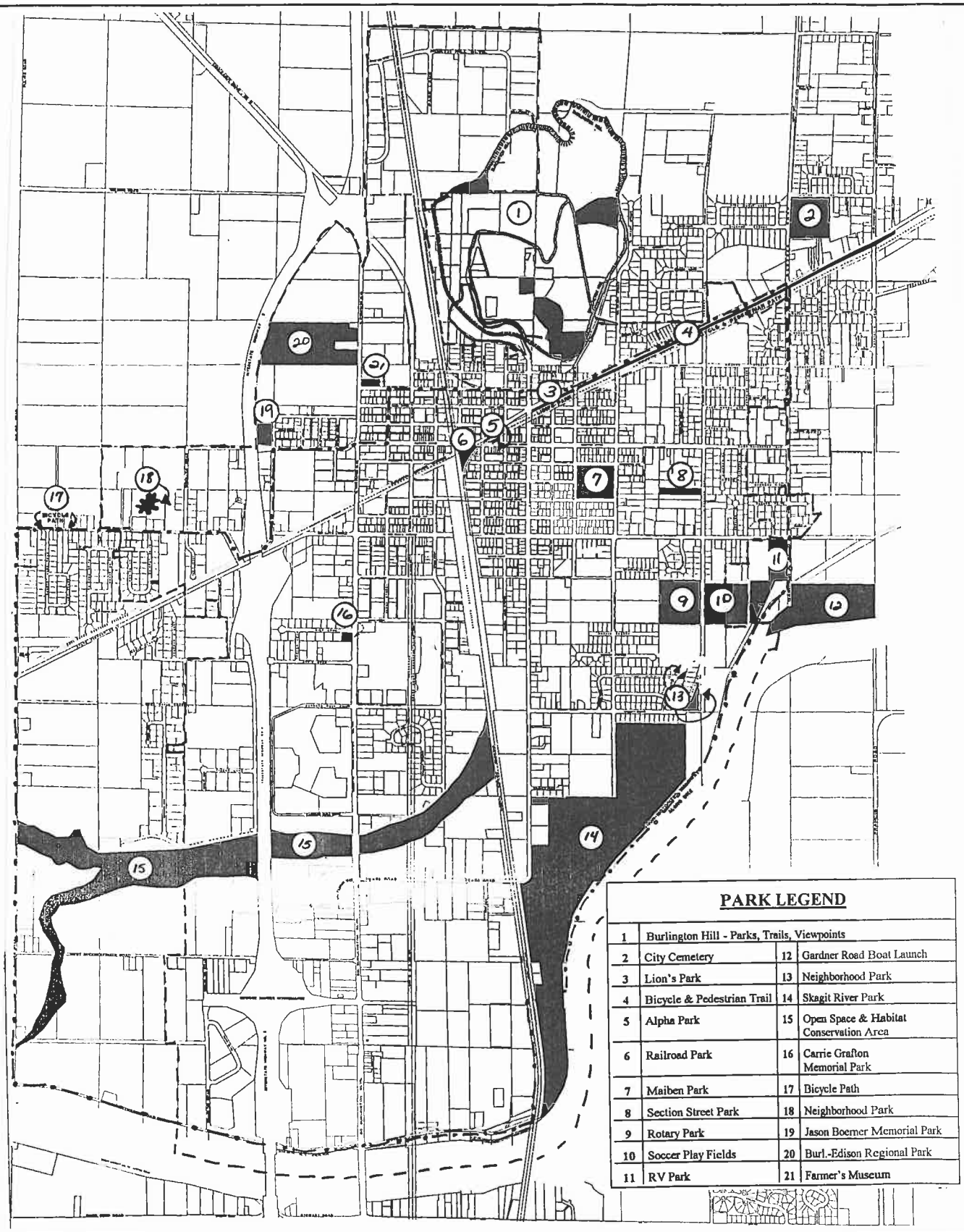
Rail

The railroad system in Skagit County consists of the Burlington Northern Santa Fe Railroad (BNSF) mainline which generally parallels I-5, a secondary line from Sedro-Woolley to Sumas in Whatcom County, as well as two branchlines of the BNSF - one from Burlington west to Anacortes and the other from Burlington east to Sedro-Woolley.

The track east of Sedro-Woolley is abandoned and entered into the rails-to-trails program.
Currently, rail service is limited to freight hauling operations. Burlington Northern operates north/south and east/west routes through the City. The are approximately 12 freight trains per day.

AMTRAK passenger service started in the Fall of 1994. This service provides one round trip per day between Vancouver, B.C. Canada and Seattle. It is anticipated that this service will be increased in the future and the state is forecasting growth from approximately 600,000 passengers in 1995 to between 2.3 and 2.8 million by 2015. To support this service, the Skagit County Regional Transportation Planning Organization conducted a study to locate a new passenger terminal and recommended that the facility be located at the site of the existing train station in Mount Vernon. In 1995, approximately $24 million was spent to improve the track from Seattle to Vancouver, B.C.

With the increased rail speed through the City Limits, the railroad has installed fencing adjacent to the more densely populated residential areas to help minimum accident potential.



PARK LEGEND

1	Burlington Hill - Parks, Trails, Viewpoints		
2	City Cemetery	12	Gardner Road Boat Launch
3	Lion's Park	13	Neighborhood Park
4	Bicycle & Pedestrian Trail	14	Skagit River Park
5	Alpha Park	15	Open Space & Habitat Conservation Area
6	Railroad Park	16	Carrie Grafton Memorial Park
7	Maiben Park	17	Bicycle Path
8	Section Street Park	18	Neighborhood Park
9	Rotary Park	19	Jason Boerner Memorial Park
10	Soccer Play Fields	20	Burl.-Edison Regional Park
11	RV Park	21	Farmer's Museum

WILLIAM POPP ASSOCIATES	NON MOTORIZED TRAILS & BICYCLE TRAILS	CITY OF BURLINGTON

FIGURE 2

Rail - continued

There is a switching yard in the City of Burlington, which causes daily traffic slow-downs. Regional and local north/south and east/west rail lines intersect in the middle of town. There are very few through streets in the east/west direction.

Airports

Although there are no airfields within the City of Burlington, there are three public airports and several private airports/ airfields in the area including:

1) Skagit Regional Airport (Bayview Airport) - Elevation 140 feet. Skagit Regional is a general aviation airport owned and maintained by the Port of Skagit County. It is located 3 miles west of the City, 55 air miles north of Seattle. It is located in the City/County Urban Growth Area. In 1992, there were approximately 4,370 air cargo operations accounting for 1,775 tons of cargo, and activity is forecast to increase to 7,300 operations in 2013, using a larger aircraft that will require lengthening of the runway. As part of the Growth Management Act implementation, restrictions on the future location of residential development and airport height restrictions will be implemented. The forecasts of future aviation activity show that the types of activity at the airport are not expected to change dramatically in the next 20 years. The 182 airplanes expected to be based at the airport in the year 2013 represent a 27% increase over the 143 based aircraft in 1993. General aviation aircraft operations are forecast to increase about 90%, from 55,230 annual take-offs and landings in 1992 to 105,800 operations by the year 2013. Commercial passenger service is forecast to be feasible in the next five years.

As traffic increases, a signal is needed at the intersection of Higgins Airport Way and SR 20.

2) Anacortes Airfield - Elevation 242 feet. The Anacortes airport is a community-oriented general aviation airport owned by the Port of Anacortes, located two miles from downtown Anacortes.

3) Concrete Municipal Airport - Elevation 264 feet. The Concrete Municipal Airport is a general aviation airport owned by the City of Concrete.

4) Barker Airfield - Located approximately 5 miles south of Burlington, directly south of the City of Mt. Vernon. The airport is limited to service for local crop dusters.

Water

The Skagit River was the major navigable body of water for years, but today, the new bridges are being exempted from the requirement to be operable after review by the Coast Guard and the Corps of Engineers.

Freight and Truck Traffic

Interstate 5 and State Route 20 intersect in Burlington. I-5 is rated over 10,000,000 tons per year; SR 20 is rated between 300,000 and 5 million tons annually from the eastern boarder of the County to I-5 and over 10 million tons from I-5 to Fidalgo Bay. There are seasonal weight restrictions.

Within the City of Burlington, Burlington Boulevard and Avon (seasonally restricted) are rated between 300,000 and 5 million tons. Anacortes Street and Pease Road are rated between 100,000 and 500,000 tons per year.

Truck traffic counts are only available for state routes and I-5. Between Burlington Boulevard and the City of Anacortes, truck traffic on SR 20 ranges from 1,500 to 2,000 trucks per day, or between 10% and 12% of total traffic.

Excerpts from Table 4-11, Summary of Average Daily Truck Traffic Originating/Terminating in Skagit County

AREA	1994	2014	AVERAGE ANNUAL GROWTH RATE
Burlington	597	1,141	3.5%
Mount Vernon	939	1,423	2.1%
SR 20	1,023	1,852	3.0%
Bayview/Skagit Regional	78	296	6.9%

Truck traffic is expected to grow along I-5 at retail and industrial centers as well as at the Burlington Hill Business Park and the Port of Skagit County's Riverbend Industrial Park. In 1998, a storm water management system is being constructed along with roads and utilities connecting Port Drive with East George Hopper Road, facilitating the development of the Riverbend Industrial Park and providing excellent freeway access from the City's southerly industrial areas.

Traffic improvements planned in this document that specifically improve safety and freight access include extensions across Gages Slough to connect Goldenrod Road as a freeway frontage road, widening Burlington Boulevard north of Fairhaven, adding a new road from South Walnut to a new bridge over the Skagit River, and improving SR 20 including widening the route to 4 lanes, signals at Higgins Airport Way and Pulver Road and changing the access from Peterson Road to SR 20.

III. LEVEL OF SERVICE STANDARDS

Level of service standards is established for all arterials and transit routes to serve as a gauge to judge performance of the system. These standards are regionally coordinated through the Regional Transportation Planning Organization.

Today, the City of Burlington uses the authority of Burlington Municipal Code Chapter 12.28, Street standards, and Chapter 15.12 Environmental Policy to prohibit development approval if the development causes the level of service on a transportation facility to decline below the standards adopted in this Comprehensive Transportation Plan, unless transportation improvements or strategies to accommodate the impacts of development are made concurrent with the development. These strategies may include increased public transportation service, ride sharing programs, demand management, and other transportation systems management strategies. For the purpose of this transportation comprehensive plan, "concurrent with development" shall mean that improvements or strategies are in place at the time of development, or that a financial commitment is in place to complete the improvements or strategies within six years.

This comprehensive transportation plan is designed to meet the adopted level of service standard. There are significant ramifications of a level of service policy on the development of the community and with respect to on-going economic well-being, and public reaction to congestion.
The focus of this chapter is to define a LOS standard to be used in planning, designing and operating the arterial network within the City of Burlington. Transit is discussed in Chapter II above.

As a part of this study, an analysis of existing conditions and policies was performed to suggest an appropriate level of service standard for plan development. The analysis rationale and discussion was presented as a technical memorandum in June 1993 and is included in Technical Appendix B to this report. Appendix B evaluated existing level of service on City streets and adopted level of service policies for surrounding jurisdictions in coming to a recommendation. Based on these factors, level of service C was recommended for the overall City standard with level of service D accepted along Burlington Boulevard. Level of service D was considered acceptable along Burlington Boulevard because of the retail nature of development along the corridor.

Following the year 2012 system level of service evaluation, it was determined that the costs and disruption associated with meeting the previously recommended policy were extreme. As a result, the proposed policy has been revised such that the recommended overall level of service standard is C with E accepted on Burlington Boulevard and at certain intersections along SR 20.

Goals and Policies that specifically relate to the level of service are adopted both here and as part of the overall Comprehensive Plan for the City.

The transportation plan is designed to ensure the continued ability of the transportation system to function at a reasonable level of service throughout the urban service area and coordinate the links to the regional transportation system along with Mount Vernon.

The planned Level of Service is not to exceed Level of Service C except for the Burlington Boulevard corridor which is not to exceed Level of Service E. The concurrency requirements do not apply to transportation facilities and services of statewide significance. State Route 20 is a Highway of Statewide Significance.

Proposed projects that decrease the level of service below the planned level, because of their traffic contribution, shall be denied unless concurrent improvements are made to prevent a decrease in level of service below the planned level for that location. Improvements shall be in place before the use is occupied, except as follows:

- Sites located where regional improvements are the only means to improve or maintain the level of service existing prior to the development, may be developed if the proponents make a fair share contribution to the regional improvement, when the improvement is planned for construction within five years, or sign an Agreement to Perform at a future date when the City sees needed improvements that are not possible under the Washington State Department of Transportation Warrant System.

- Essential public facilities may be constructed subject to a commitment to contribute to the regional improvement at a future date, as funding becomes available from the public entity, including schools, hospitals, police and fire stations and the like.

- Other exceptions may be authorized by the City of Burlington Technical Committee if consistent with the policy intent.

TABLE 2
Level of Service Definitions

Level of Service	Signalized Intersections Seconds of Delay	Unsignalized Intersections Reserve Capacity (in pcph[1])
A	≤ 5.0	≥ 400
B	5.1 - 15.0	300 - 399
C	15.1 - 25.0	200 - 299
D	25.1 - 40.0	100 - 199
E	40.1 - 60.0	0 -99
F	> 60	

1) pcph = passenger cars per hour

The results of the level of service analysis are presented in Table 1

TABLE 3
BURLINGTON TRANSPORTATION PLAN
EXISTING LEVEL OF SERVICE

No.	Intersection	LOS	Intersection Control	PM Peak Volume
1	SR 11/Josh Wilson	A	2-Way Stop	599
2	SR 11/I-5 SB Ramps	B	2-Way Stop	799
3	SR 11/I-5 NB Ramps	B	2-Way Stop	698
4	SR 11/I-5 SR 99	B	2-Way Stop	743
5	SR 20/Anderson Road	E	2-Way Stop	1404
6	SR 20/Gardner Road	E	2-Way Stop	1494
7	SR 20/Section Street	D	2-Way Stop	1367
8	SR 20/Skagit Street	D	2-Way Stop	1989
9	SR 20/Regent Street	D	2-Way Stop	1450
10	SR 20/Cherry Street	C	2-Way Stop	1182
11	SR 20/Anacortes Street	A	2-Way Stop	983
12	SR 20/Spruce Street	C	2-Way Stop	1204
13	Avon/Burlington Blvd.	B	Signal	1669
14	Rio Vista/Burlington Blvd.	E	Signal	2646
15	Lafayette/Gardner	A	2-Way Stop	178
16	Fairhaven/Gardner	A	2-Way Stop	335
17	Fairhaven/Section	A	2-Way Stop	328
18	Fairhaven/Skagit	A	2-Way Stop	522
19	Fairhaven/Regent	A	2-Way Stop	328
20	Fairhaven/Anacortes	C	All-Way Stop	911
21	Fairhaven/Cherry	B	2-Way Stop	890
22	Fairhaven/Spruce	D	Signal	1229

TABLE 3 - continued

No.	Intersection	LOS	Intersection Control	PM Peak Volume
23	Fairhaven/Burlington Blvd.	B	Signal	2367
24	Rio Vista/Gardner	A	2-Way Stop	119
25	Rio Vista/Section	A	2-Way Stop	145
26	Rio Vista/Skagit	A	All-way stop	311
27	Rio Vista/Regent	A	2-Way Stop	110
28	Rio Vista/Anacortes	A	2-Way Stop	554
29	Rio Vista/Spruce	A	2-Way Stop	327
30	SR 20 /I-5 NB Ramps	B	Signal	2128
31	SR 20/Frontage Road	C	Signal	2712
32	Frontage Road/I-5 SB Ramps	E	2-Way Stop	1260
33	SR 20/Pulver Road	D	2-Way Stop	1601
34	SR 20/Higgins Airport Way	C	2-Way Stop	1207
35	Spruce/Sharon	A	2-Way Stop	109
36	Burlington Blvd/Sharon	E	2-Way Stop	1985
37	Burlington Blvd/Gilkey	B	Signal	1661
38	Burlington Blvd/Andis Road	D	2-Way Stop	1600
39	Burlington Blvd/Cascade Mall (S)	B	Signal	1861
40	Burlington Blvd/Cascade Mall (N)	B	Signal	1756
41	Burlington Blvd/Pease Road	C	Signal	2465
42	Burlington Blvd/Whitmarsh Road	D	2-Way Stop	1947
43	Burlington Blvd/George Hopper	B	Signal	2335
44	Anacortes/Gilkey	B	2-Way Stop	688
45	George Hopper/Bouslog Road	A	2-Way Stop	457
46	George Hopper/I-5 SB Ramps	E	2-Way Stop	850
47	George Hopper/I-5 NB Off-Ramp	C	2-Way Stop	1150
48	George Hopper/I-5 NB On-Ramp	A	2-Way Stop	1159
49	Pulver Road/Bennett Road	A	2-Way Stop	453
50	Pease Road/Whitmarsh Road	A	2-Way Stop	635

* to be determined

As shown in Table 3:

- There are a total of 50 arterial/arterial intersections, of which 20 are controlled by the WSDOT.
- 40 of the intersections are controlled by stop signs, while the remainder are signalized.
- 18 intersections operate at LOS A. 2 of these are WSDOT controlled.
- 12 intersections operate at LOS B. 4 of these are WSDOT controlled.
- 7 intersections operate at LOS C. 5 of these are WSDOT controlled.
- 7 intersections operate at LOS D. 4 of these are WSDOT controlled.
- 6 intersection operate at LOS E. 4 of these are WSDOT controlled.

IV. MODEL DEVELOPMENT AND FORECASTS

In order to systematically and intelligently estimate future travel demand on the study area network, it was necessary to develop a computerized travel forecast model. The model facilitates system analysis of network alternatives by providing a consistent datum that incorporates expected changes in land use, population, employment and transportation facilities.

The modeling process for this effort consisted of several steps or modules: 1) Population and employment forecast by small area traffic analysis zones (TAZ's), 2) PM peak hour trip generation (how many trips ends per zone), 3) trip distribution (to which zones are trips attracted), and 4) trip assignment (which routes do the trips take). The computer software used is called 'T-Model2", developed by Professional Solutions, Inc., which dynamically models traffic flow on a network of streets (links) and intersections. The study area road network included all arterials within the Burlington sphere of influence. The model is however a combination of Burlington and Mount Vernon regional areas. A depiction of the model's network and zone centroids for Burlington is given in Figure 3.

Briefly, the process consisted of calibrating a 1992 PM peak hour traffic forecast model to replicate ground counts within specified statistical limits. This was followed with creation of year 2000 and 2012 PM peak hour forecast models. Internal (study area) population, employment and trip end growth summary information is depicted in Table 4. The population and employment estimates and allocation to small geographic areas proved to be a fairly major analysis task.

Population and employment are forecast to increase 67% and 96% respectively from 1992 to 2012. This results in a combined internal trip end growth of 95% from 1992 to 2012.

The results of the modeling process are best depicted with an actual loading. Figure 4 presents 2012 PM peak hour volumes loaded on the existing network.

Documentation of the population and employment estimates and the allocation process are contained in Technical Appendix C; the travel demand model calibration and forecasts are contained in Technical Appendix D. Both are on file with the City of Burlington Public Works Department.

The same traffic model was used in the development of the Skagit Sub-Regional Transportation Plan. The reconciliation of differences in numbers in terms of population and forecast employment resulted in the exchange of several memoranda among the experts. The model has provided a very useful tool in the design and prioritization of street improvements. The question of constructing the South Walnut to Interurban Bridge has not been resolved. The commitment of the State to widening Interstate 5 is not established. A corridor study was done in late 1997 to look at alternative approaches to the traffic problems of State Route 20 and Cook Road from Burlington east to Sedro Woolley, intended to clarify issues in that regional corridor.

New traffic counts have been taken on a regular basis to track the performance of the Plan and look at regional and local issues. Traffic growth varies on different segments of the system, but the amount of growth over the past 4-5 years is generally consistent with the expected impacts based on the system model. The model will be revisited in 1999-2000 to identify whether any adjustments in the road plan or priorities are needed.

TABLE 4
City of Burlington
Population, Employment and Trip End Summaries

Item	Year 1992	Year 2012	Growth
Population *(person)*			
Single-Family	6,498	10,515	62%
Multi-Family	762	1,620	113%
Employment *(employees)*			
Agriculture, Construction, Manufacturing	1,826	3,375	85%
Trade	2,339	4,936	111%
Trans., Comm., Utilities	268	646	141%
Services	1,345	2,320	72%
Health Services	141	270	93%
Hotels	50	127	154%
Government	146	378	159%
High School	77	77	0%
Elementary/Middle School	95	184	94%
Trip Ends *(PM peak hour vehicle trips)*			
Origin	4,388	8,862	97%
Destination	4,192	8,085	93%

NOTE: Subsequent to this study, the Skagit/Island Regional Transportation Plan was developed. See Appendix D for correspondence that discusses the differences in the two documents.

V. SYSTEM ANALYSIS AND ARTERIAL PLAN DEVELOPMENT

System Analysis

The system analysis process used in the study consisted of comparing future year volumes on individual links of the various networks to an acceptable performance standard, the (LOS) level-of-service of either C or E depending on location in the system. When the demand volumes exceeded the standard, additional lanes or links were identified as needed to meet the standard. The analysis approach started with loadings of the existing network with the two future trip scenarios (2000, and 2012) followed by the "existing and committed" projects network. This latter network was defined based on conversation with the City Public Works Director. The term "committed" may be more appropriately considered as "highly probable".

The methodology used in determining needed improvements employed a table of generalized urban peak-hour level-of-service maximum volumes developed around data from the 1985 Highway Capacity Manual. This table along with computer network loading plots are contained in Appendix C.

Figures 5 through 8 depict LOS results of various loading combinations. Figure 5 also shows the new number of lanes and signals assumed for the various "committed" projects. It may be noted that LOS E extends nearly the full length of Burlington Boulevard with LOS F existing just north of George Hopper Interchange Road and on the Skagit River Bridge. SR 20 exhibits LOS F conditions east of Burlington Boulevard.

Figure 6 is the most extreme condition with 2012 volumes on the existing network ("Do-Nothing"). LOS F completely covers the principle arterial system.

Figure 7 shows LOS conditions with 2012 volumes on the committed network plus 6 lanes on I-5 south of SR 20, 4 lanes on SR 20 east of Burlington Blvd., 4/5 lanes on Burlington Blvd. from George Hopper Interchange Rd. south across the river, and the George Hopper Interchange Rd. extension over to Whitmarsh. The most significant problem with this scenario is Burlington Blvd. across the river - the proposed bridge widening will not be adequate. Ergo Figure 8 - another bridge over the Skagit River is added at Whitmarsh and the LOS F problem with the bridge crossings is corrected. Some other more minor and correctable LOS E and F problems exist which are addressed subsequently with the Recommended Plan.

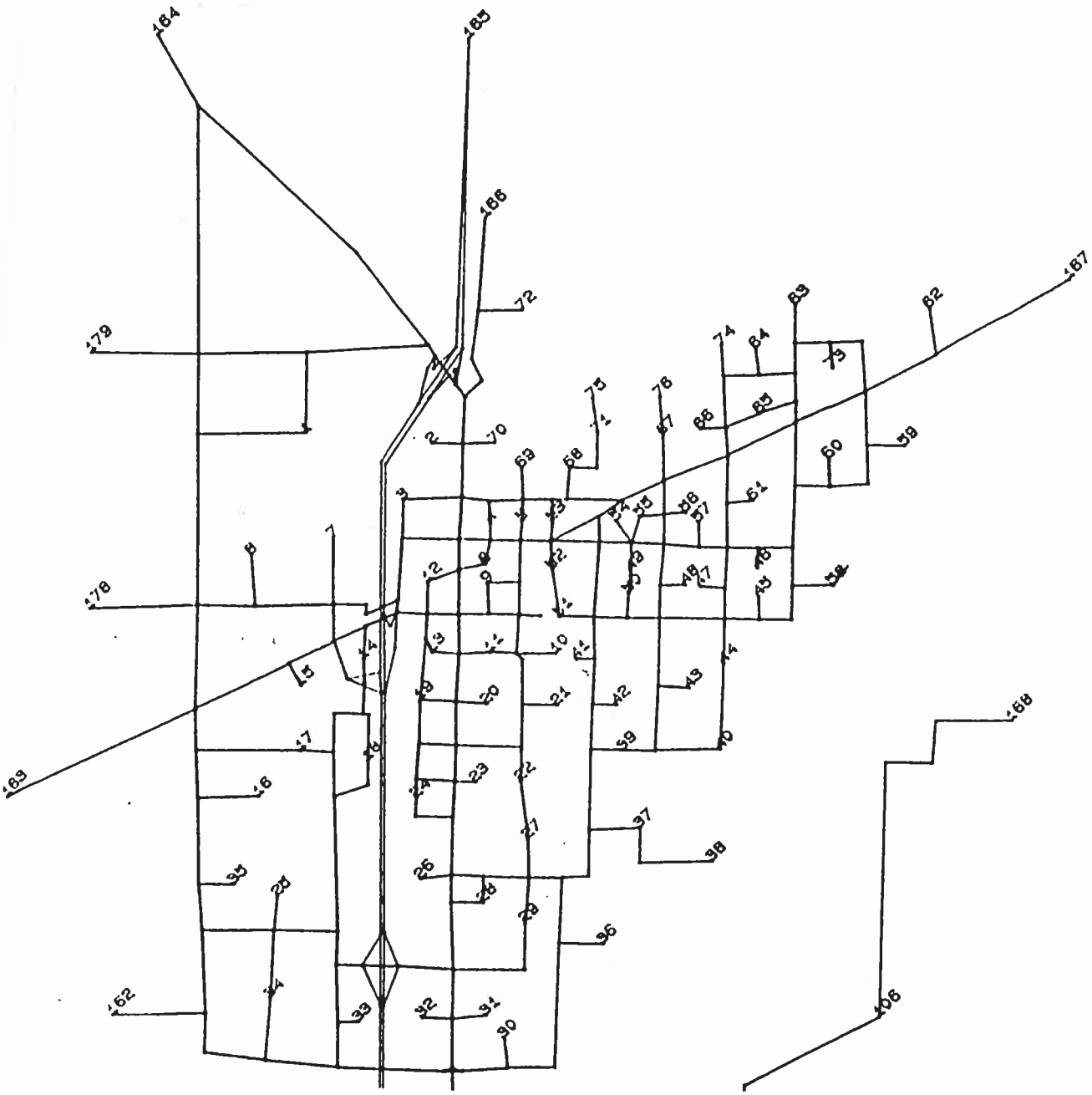
Recommended 2012 Arterial Plan

Figure 9 depicts the Recommended Long Range Plan for the arterial and freeway system. Critical capacity elements of the plan are I-5 at 6 lanes from SR 20 south; SR 20 from the east to the west Urban Growth Boundary with sections ranging from 4 lanes to 7 lanes; Burlington Blvd. Bridge at 4 lanes; a new Skagit River bridge at South Walnut - along with 4 lane construction of South Walnut between the river and Pease; 5-lane widening of the Hopper Interchange Road, 4 lane George Hopper Interchange Road extension to South Walnut, 3 lane extension of Spruce to Pease with a direct connection to the new South Walnut link; added southbound right turn lane on Burlington Blvd. at Rio

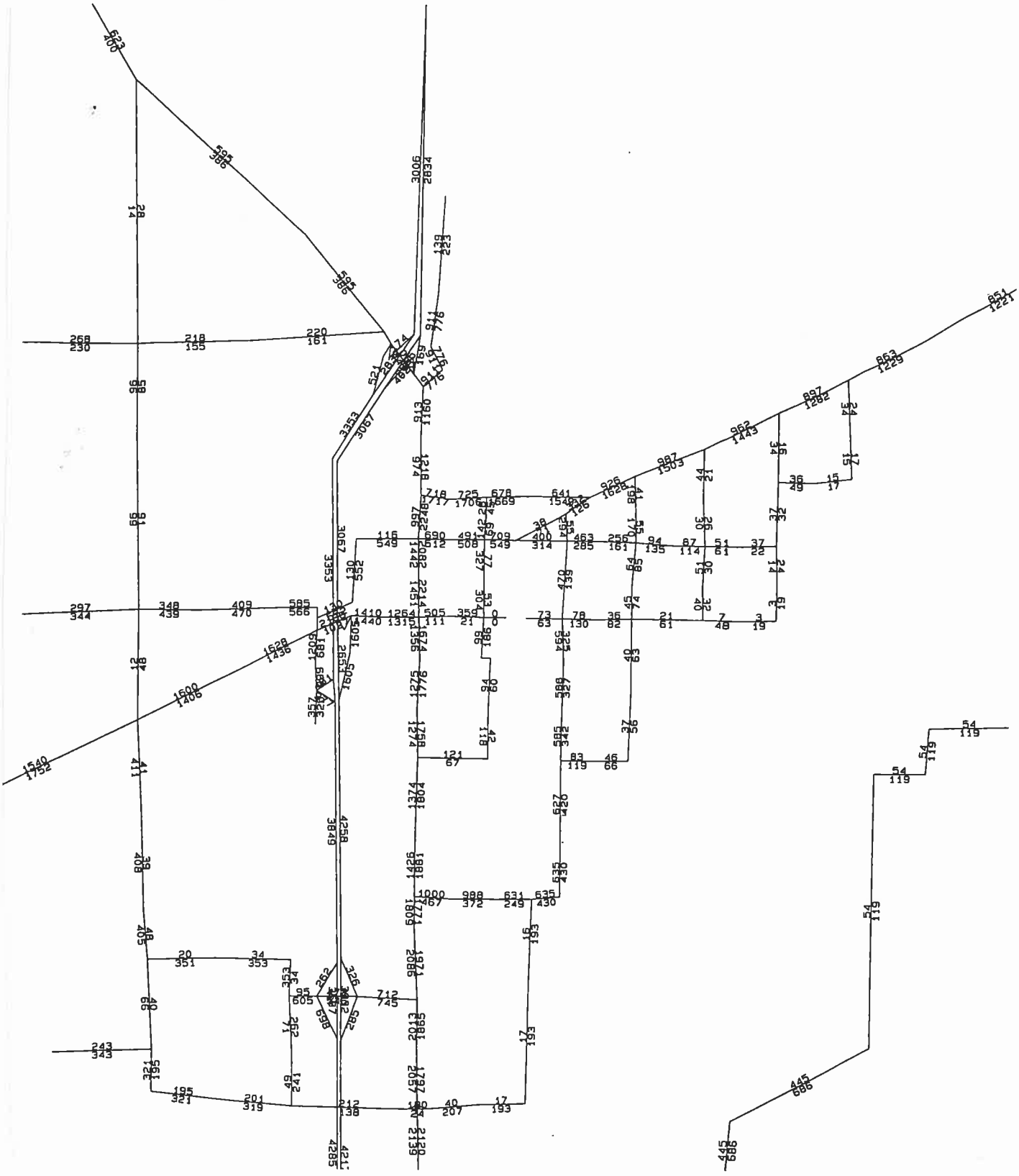
Vista (6 lanes); 4 lanes on Burlington Boulevard from north City limit to SR 11/I-5 interchange northbound ramps.

The proposed South Walnut Street Bridge would connect into Urban Ave. in Mt. Vernon (the old Inter-Urban R.O.W.) and provide very desirable capacity relief for Riverside Drive in the City of Mt. Vernon.

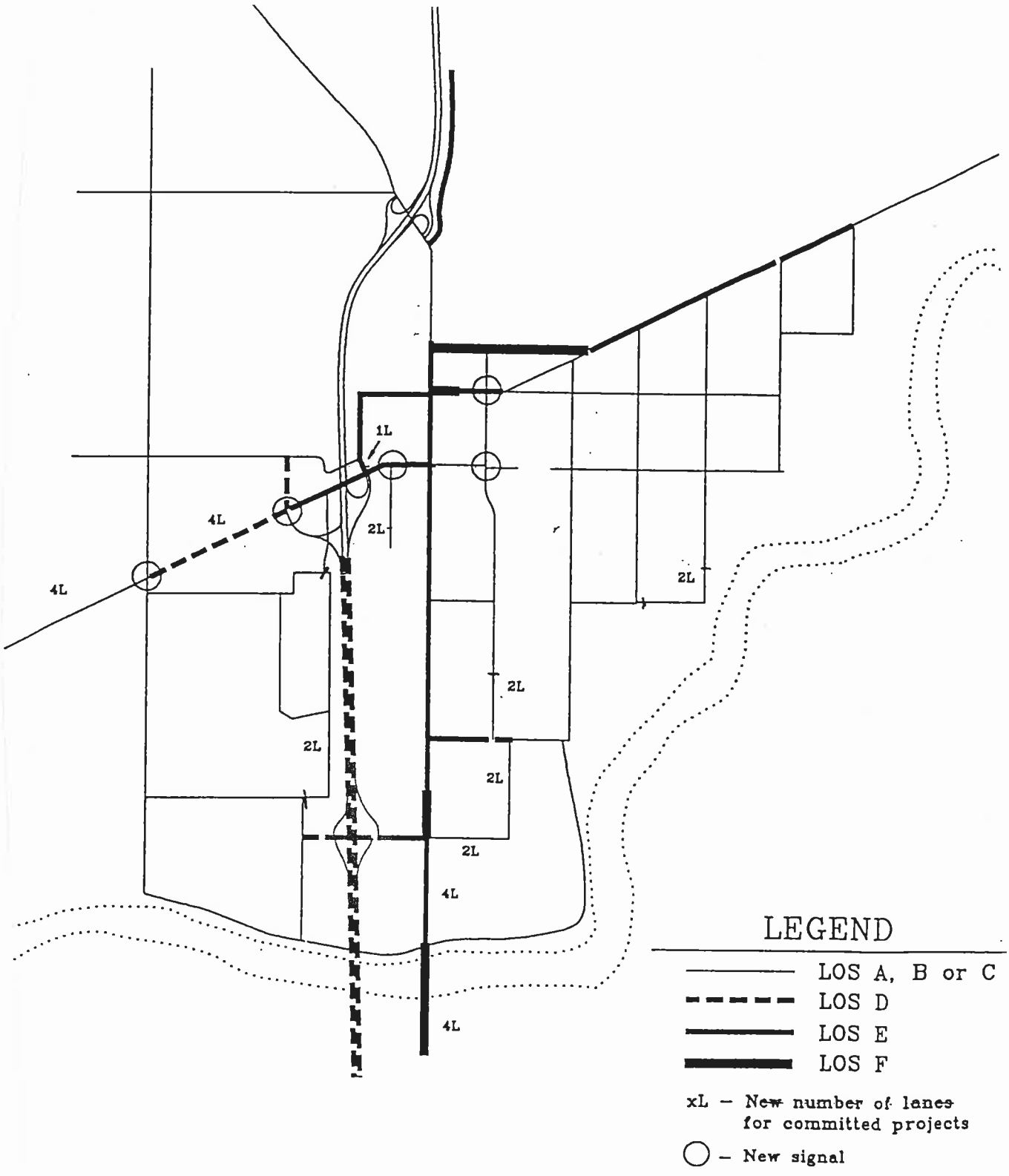
Figures 10 and 11 show recommended configurations for the two most critical intersections on Burlington Boulevard - Rio Vista and George Hopper Interchange Road. The George Hopper Interchange Road was reconfigured in 1997 based on modeling done for the Port of Skagit County, using the City of Burlington's traffic model.



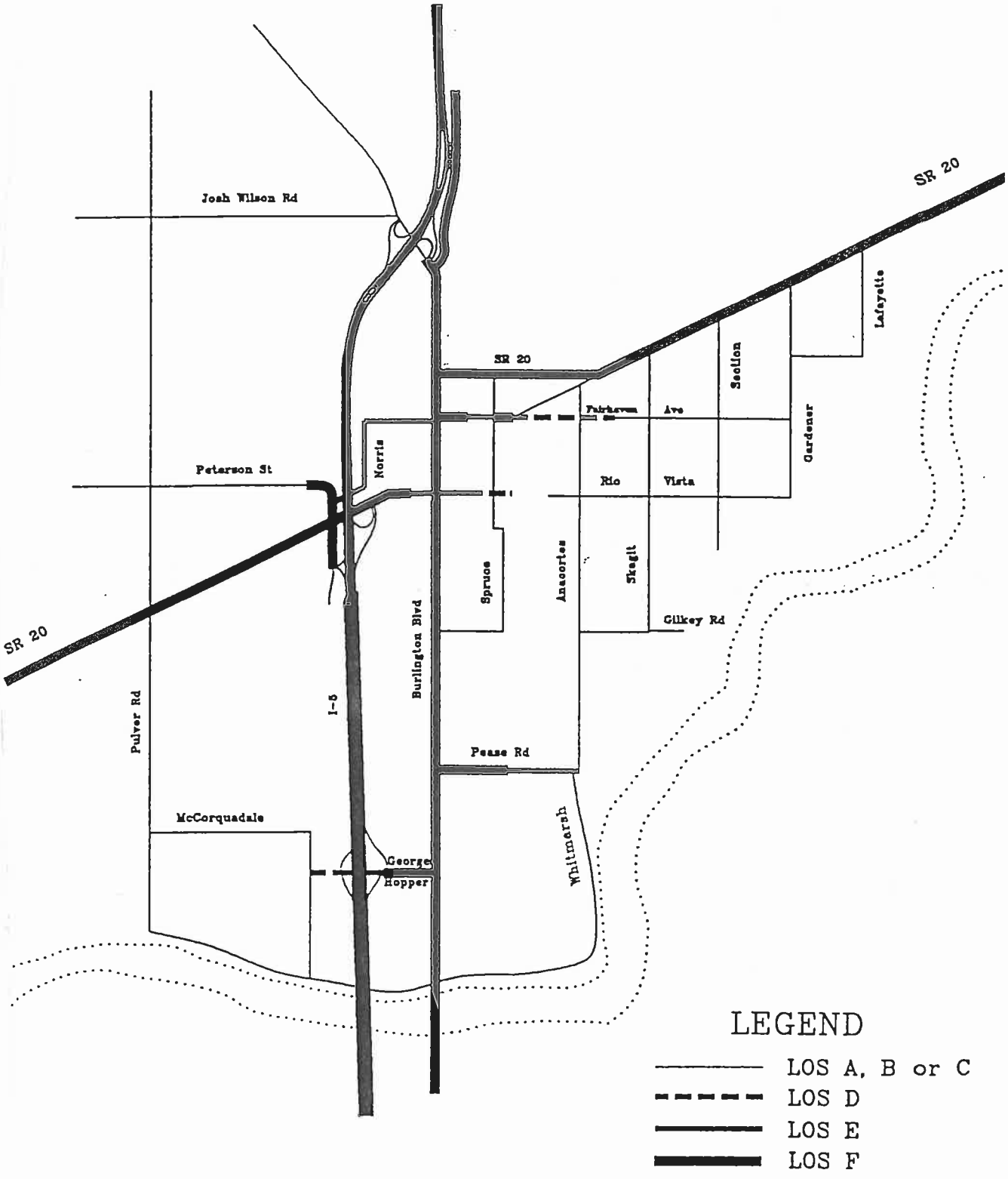
WILLIAM POPP ASSOCIATES	NETWORK ZONE CENTROIDS BURLINGTON STUDY AREA **FIGURE 3**	CITY OF BURLINGTON



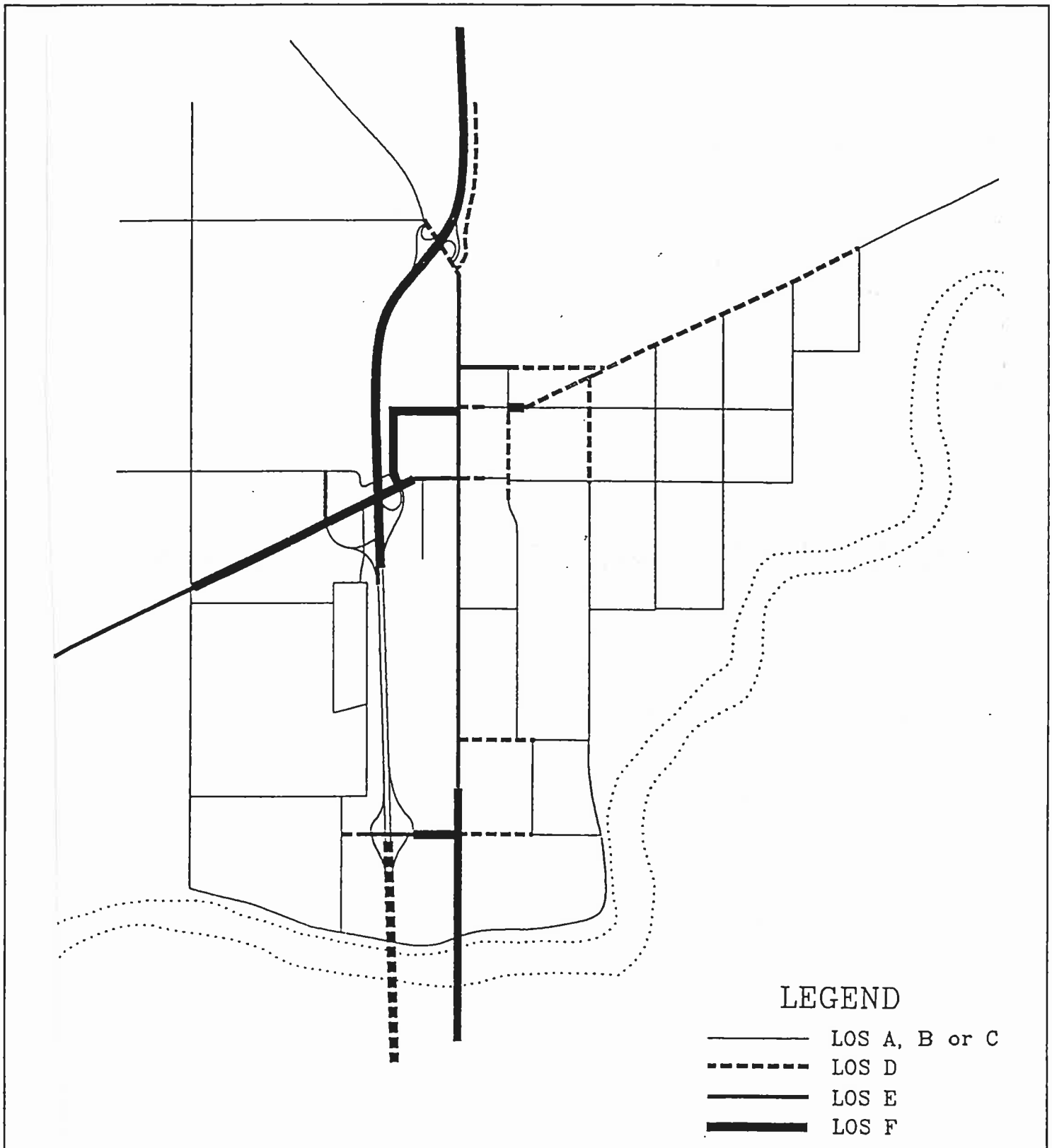
WILLIAM POPP ASSOCIATES	EXISTING NETWORK - 2012 PM PEAK VOLUMES CITY OF BURLINGTON **FIGURE 4**	CITY OF BURLINGTON



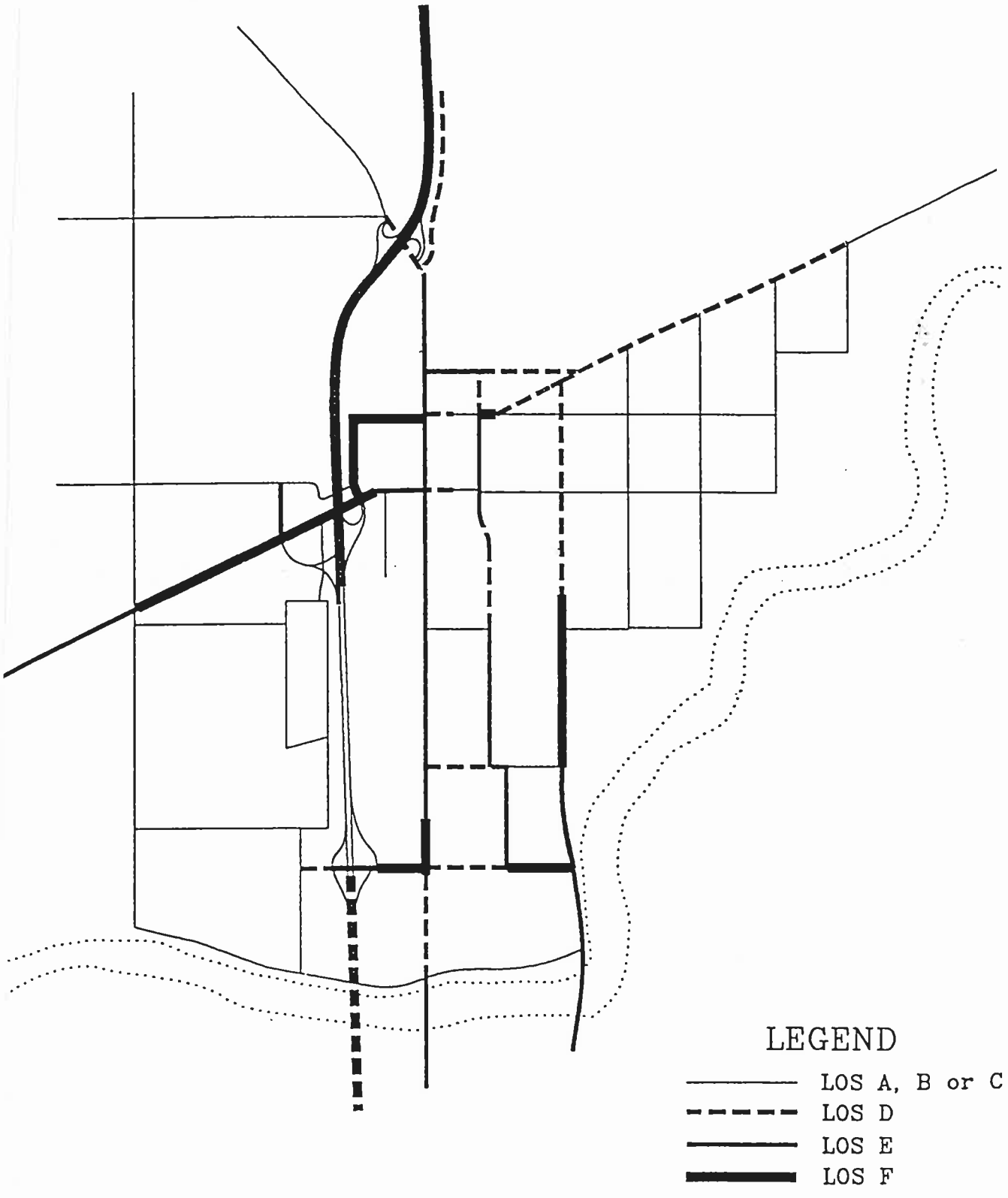
WILLIAM POPP ASSOCIATES	LOS RESULTS OF YEAR 2000 PM PEAK VOLUMES ON COMMITTED NETWORK **FIGURE 5**	CITY OF BURLINGTON



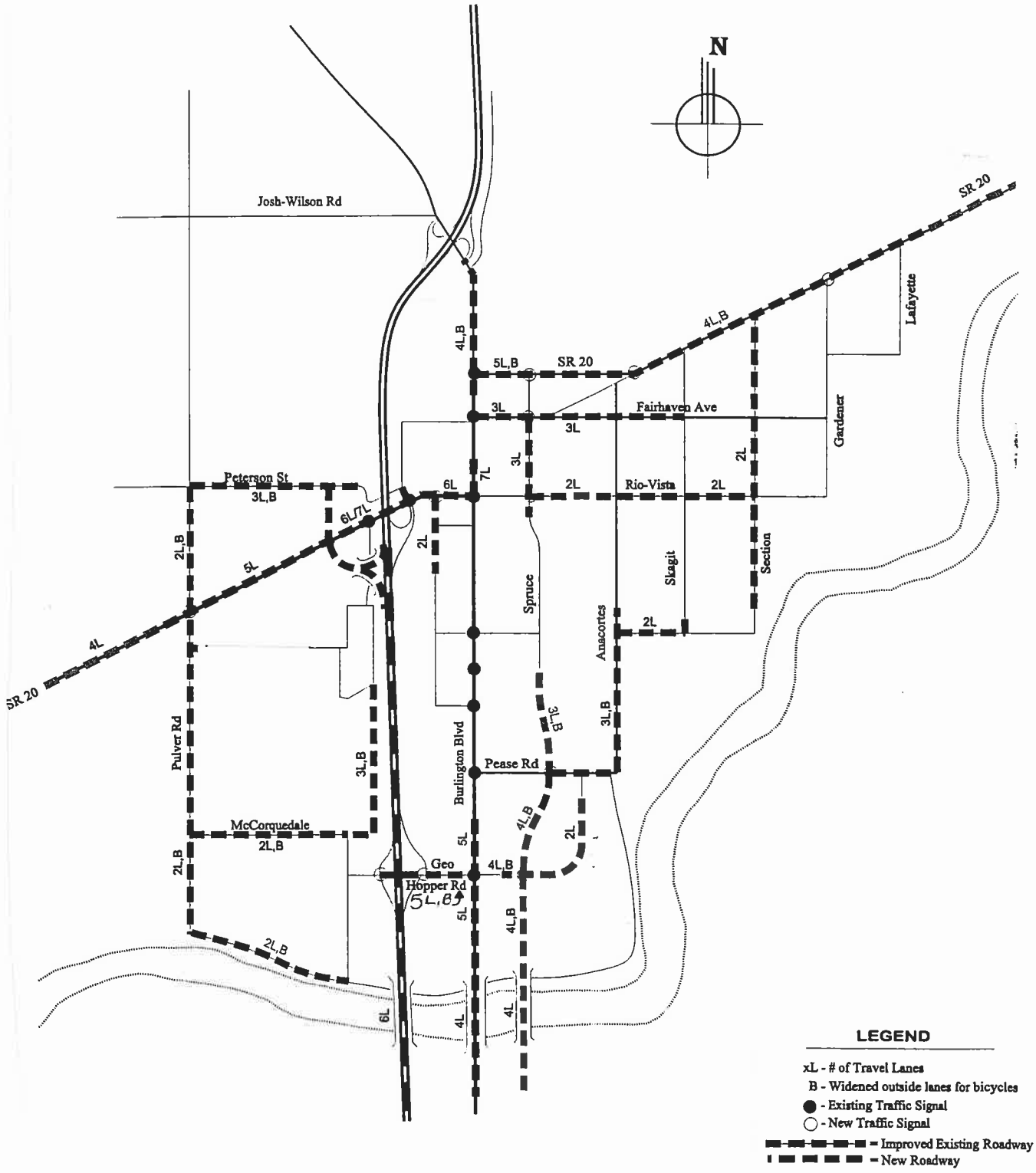
WILLIAM POPP ASSOCIATES	LOS RESULTS OF YEAR 2012 PM PEAK VOLUMES ON EXISTING NETWORK **FIGURE 6**	CITY OF BURLINGTON



WILLIAM POPP ASSOCIATES	LOS RESULTS 2012 PM PEAK HOUR VOLUMES NETWORK ALTERNATIVE 9 **FIGURE 7**	CITY OF BURLINGTON

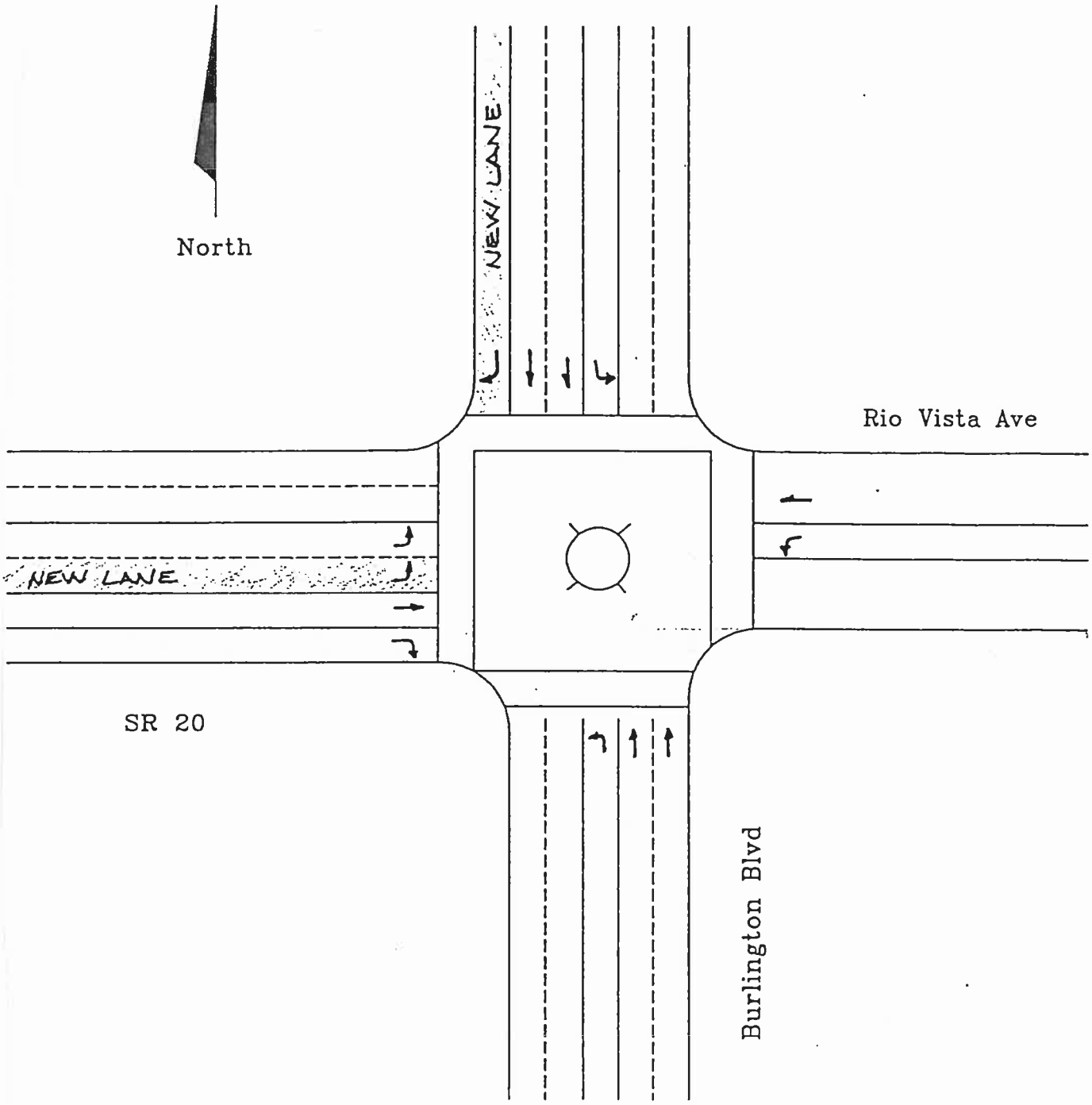


WILLIAM POPP ASSOCIATES	LOS RESULTS 2012 PM PEAK HOUR VOLUMES NETWORK ALTERNATIVE 10 **FIGURE 8**	CITY OF BURLINGTON

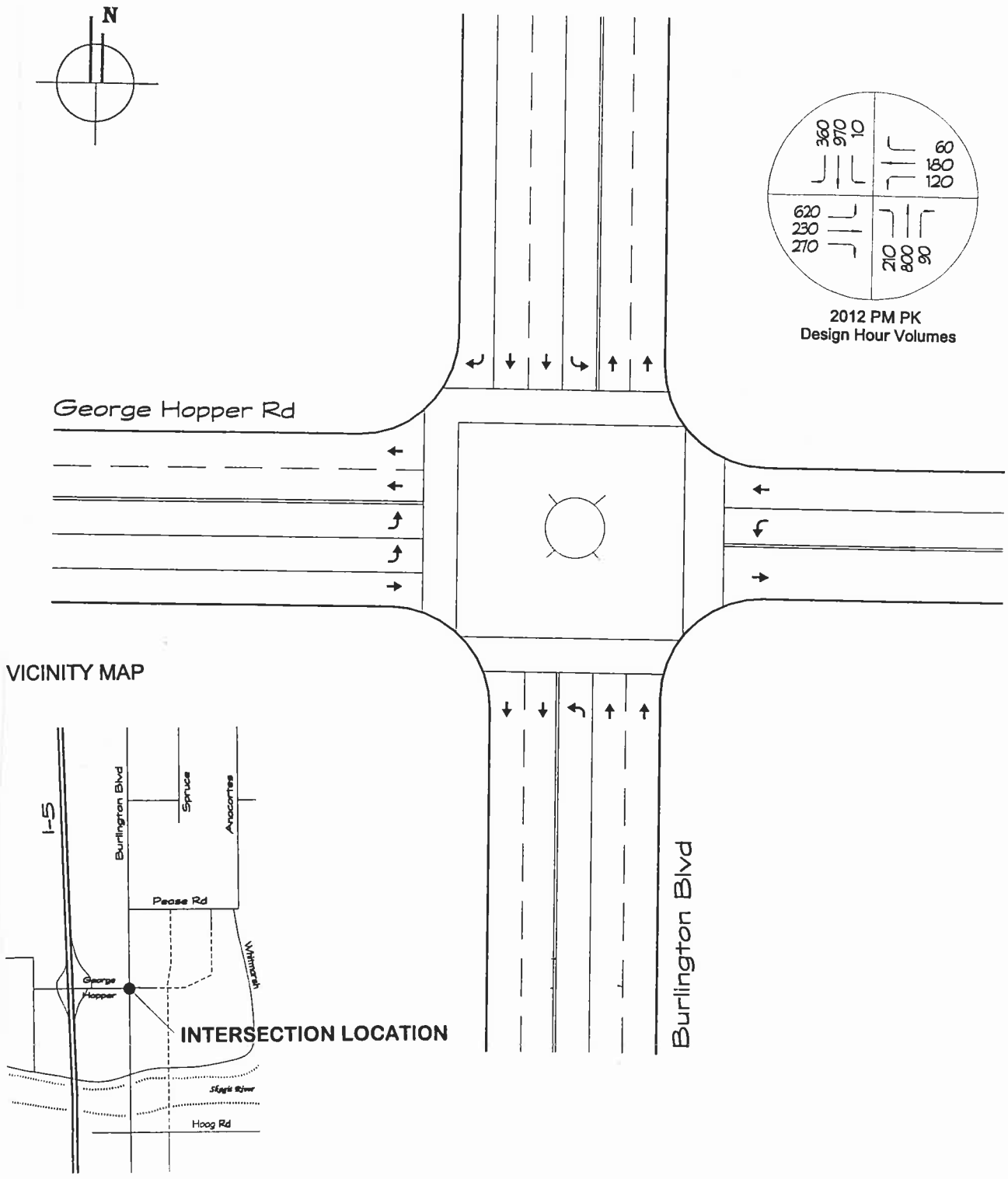


WILLIAM POPP ASSOCIATES	LONG RANGE RECOMMENDED PLAN	CITY OF BURLINGTON

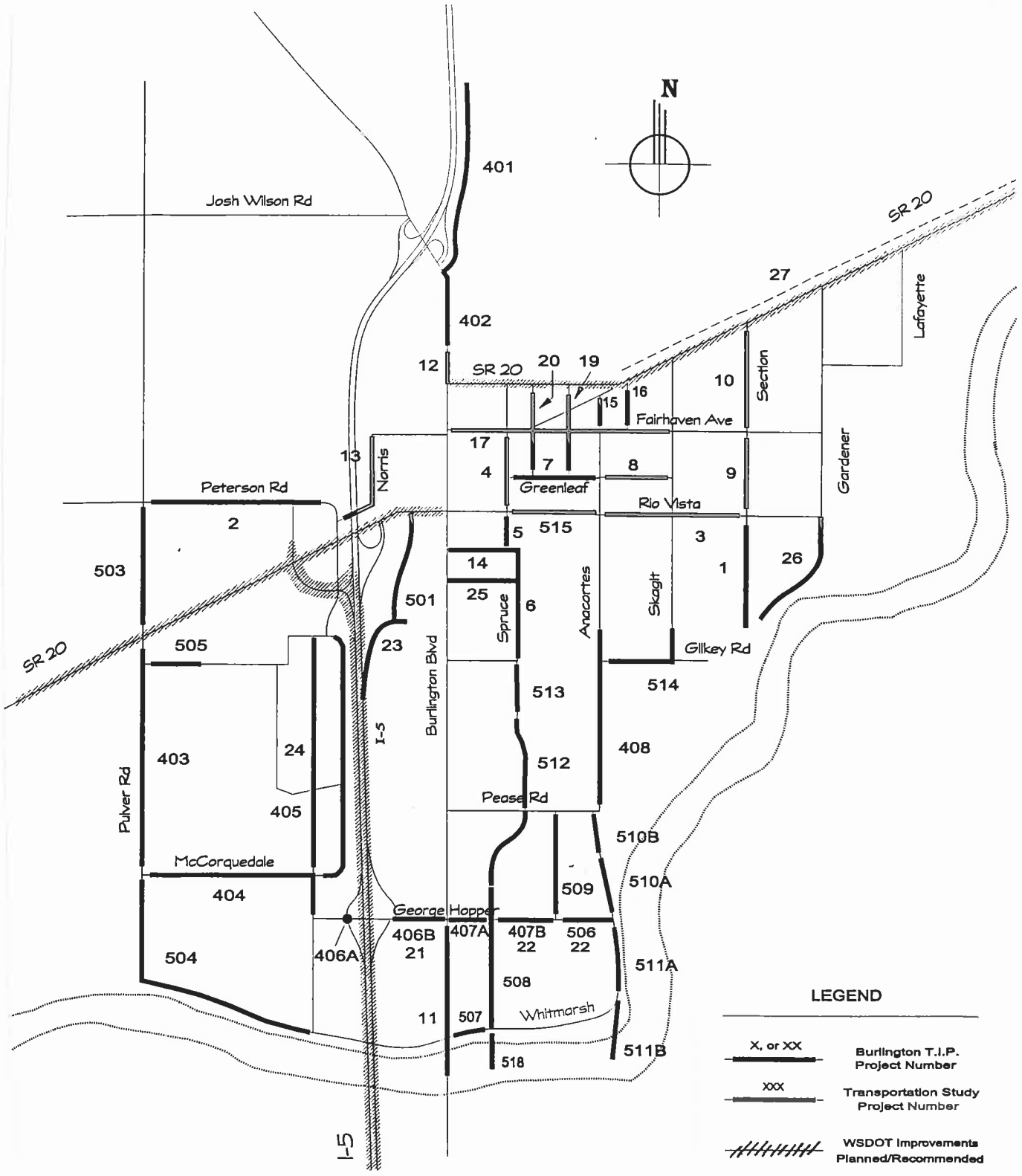
FIGURE 9



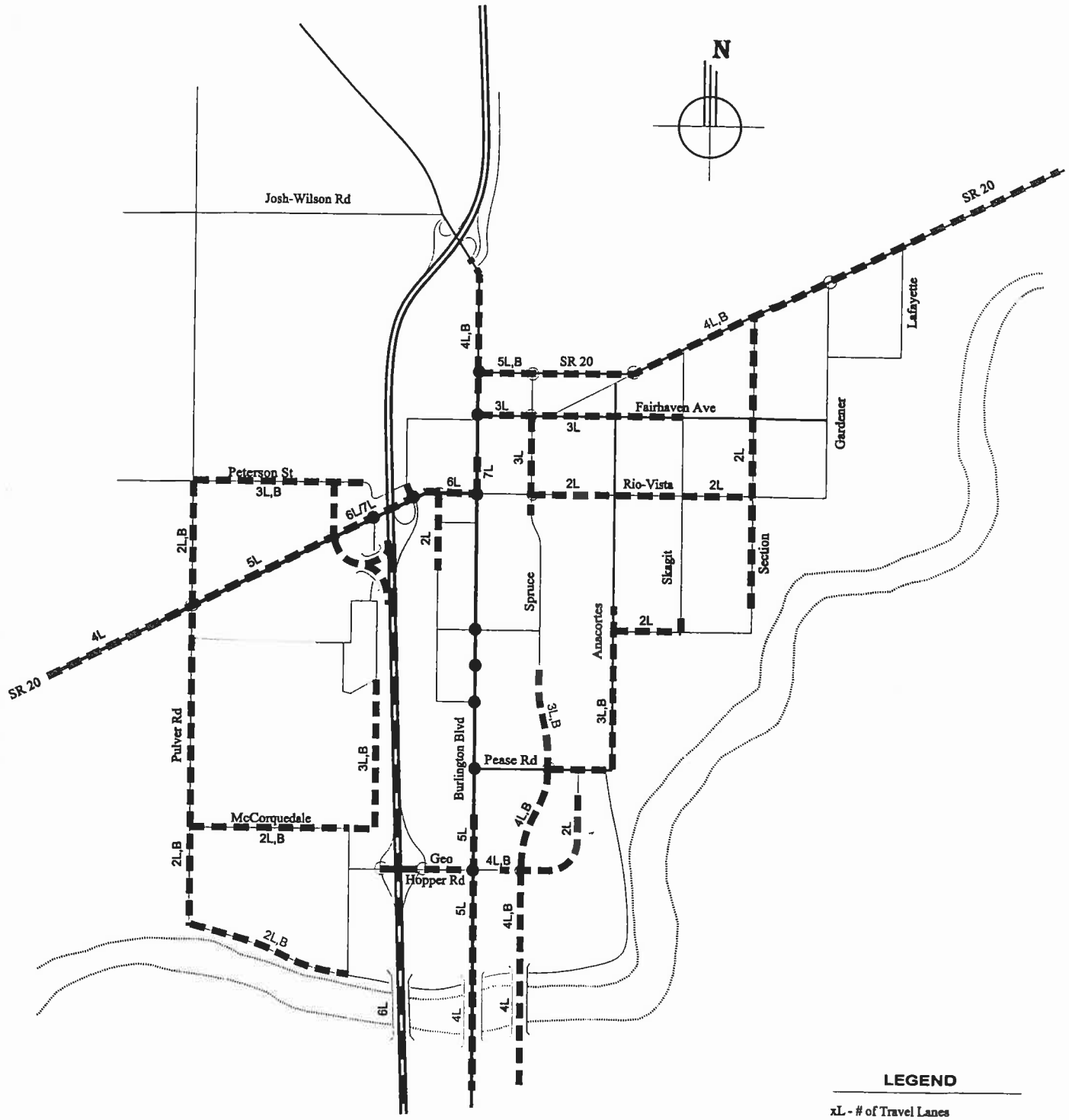
WILLIAM POPP ASSOCIATES	RECOMMENDED CONFIGURATION **FIGURE 10**	CITY OF BURLINGTON



WILLIAM POPP ASSOCIATES	RECOMMENDED CONFIGURATION **FIGURE 11**	CITY OF BURLINGTON



WILLIAM POPP ASSOCIATES	PROJECTS LOCATION MAP **FIGURE 12**	CITY OF BURLINGTON



WILLIAM POPP ASSOCIATES	LONG RANGE RECOMMENDED PLAN **FIGURE 13**	CITY OF BURLINGTON

VI. COSTS AND FINANCING, STAGING

Background

The financial accountability and system concurrency requirements of the Growth Management Act for Transportation in particular and Capital Facilities Planning in general have challenged the forecasters and their methodologies have been held accountable for the first time. If the plan cannot be completed at a pace suitable for concurrency and financing fall short of the estimates, then the land use assumptions must be reevaluated and adjusted or alternative funding sources must be located.

The City of Burlington has constructed several new streets and made significant improvements to the street grid in the past few years, at the same time that additional traffic growth has required the upgrading of existing intersections, addition of signals and installation of drainage to relieve storm water problems triggered by new development. As improvements are planned, utilities are encouraged to upgrade during the construction process, because cutting of the new street is prohibited except in emergencies.

Traffic Impact Fee Program

With the adoption of the first Comprehensive Transportation Plan in 1994, the City made specific funding and project timing assumptions. As a result, a decision was made NOT to charge transportation impact fees for new development, with the exception of a specific private contribution towards the design of two new bridges at the rate of $35/peak hour trip/1000 square feet or per unit. New development is required to prepare any traffic studies necessary to adequately assess the impacts of new development and street improvements are required to serve the development consistent with the Burlington Municipal Code and this plan.

1998-2003 Capital Improvement Plan

In 1996, a complete reevaluation of the Financial Plan for the funding and costs of the twenty-year transportation plan was completed as part of the update of the Six Year Road Plan, an annual requirement of the state planning process. More conservative future funding assumptions were made; however, the costs still work out without the need for additional impact fees. See Appendix E for detailed information.

Relationship of Transportation funding to RTPO

The Regional Transportation Planning Organization is a creation of the 1990 Washington State Legislature in an effort to ensure that transportation planning, at all jurisdictional levels, is coordinated with local comprehensive plans. The statute (RCW 47.80) also provides that local jurisdictions and the state should cooperate to achieve both statewide and local transportation goals. The legislature declared it to be in the state's interest to establish a coordinated planning program for regional transportation systems and facilities throughout the state. Figure 14 represents the WSDOT National

Classification map for the City of Burlington. The identified roads are shown with functional classifications that enable the City to request funding for improvements on these roads.

Today, those requests are centrally coordinated through the RTPO. The RTPO Board is a reflection of the Skagit Council of Governments Board with representation by key elected officials of the County. The staff of each jurisdiction provides representatives to the Technical Committee who in turn reports to the Board.

FUNCTIONAL CLASSIFICATIONS

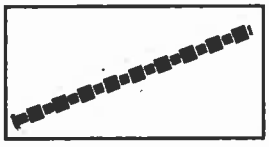
of Public Roads

Washington State Department of Transportation

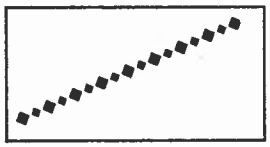
NATIONAL CLASSIFICATIONS

INTERSTATE

MINOR
COLLECTOR

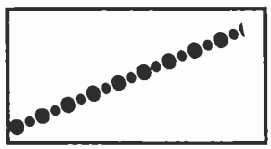


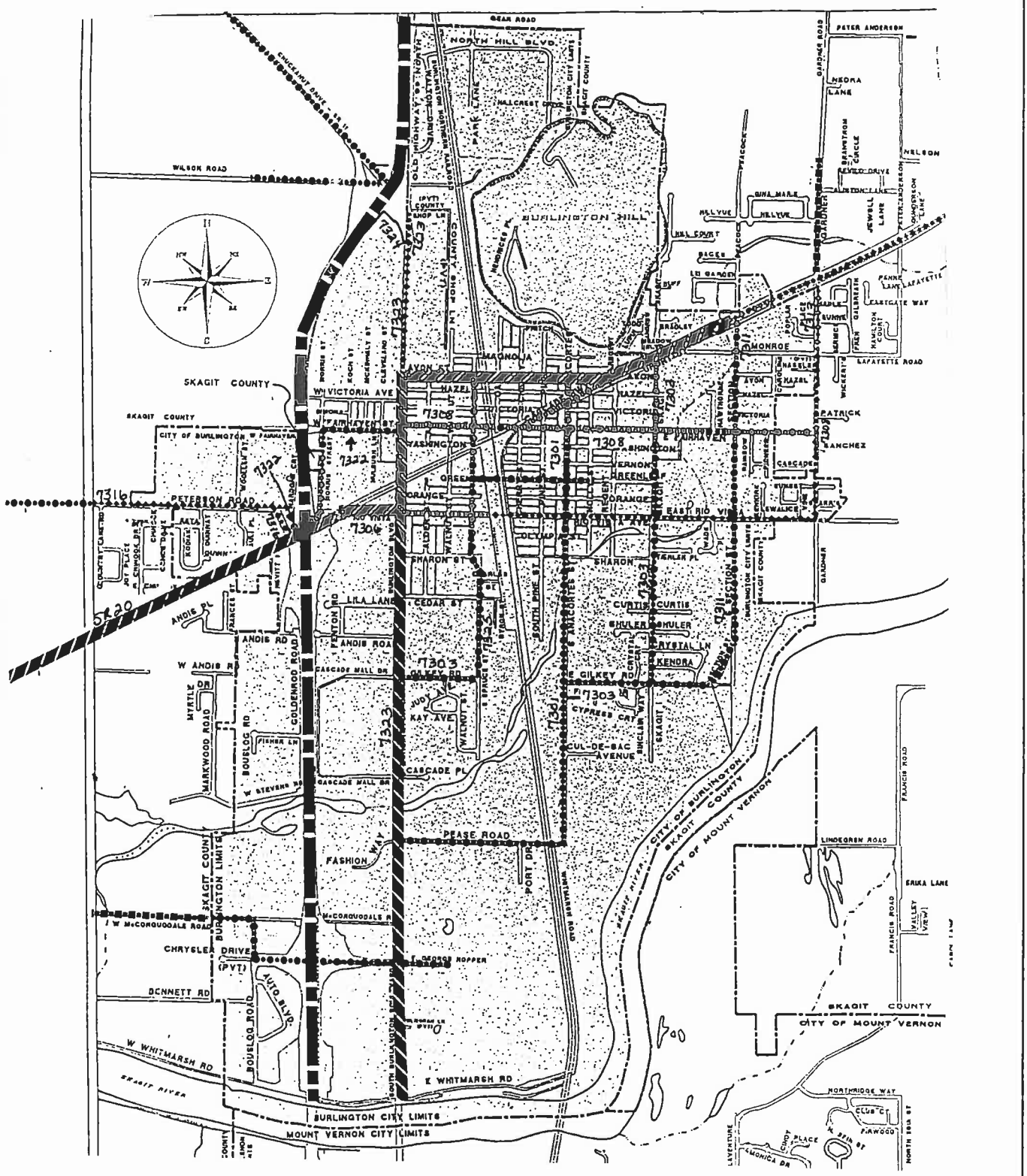
MINOR
ARTERIAL



OTHER
PRINCIPAL
ARTERIAL

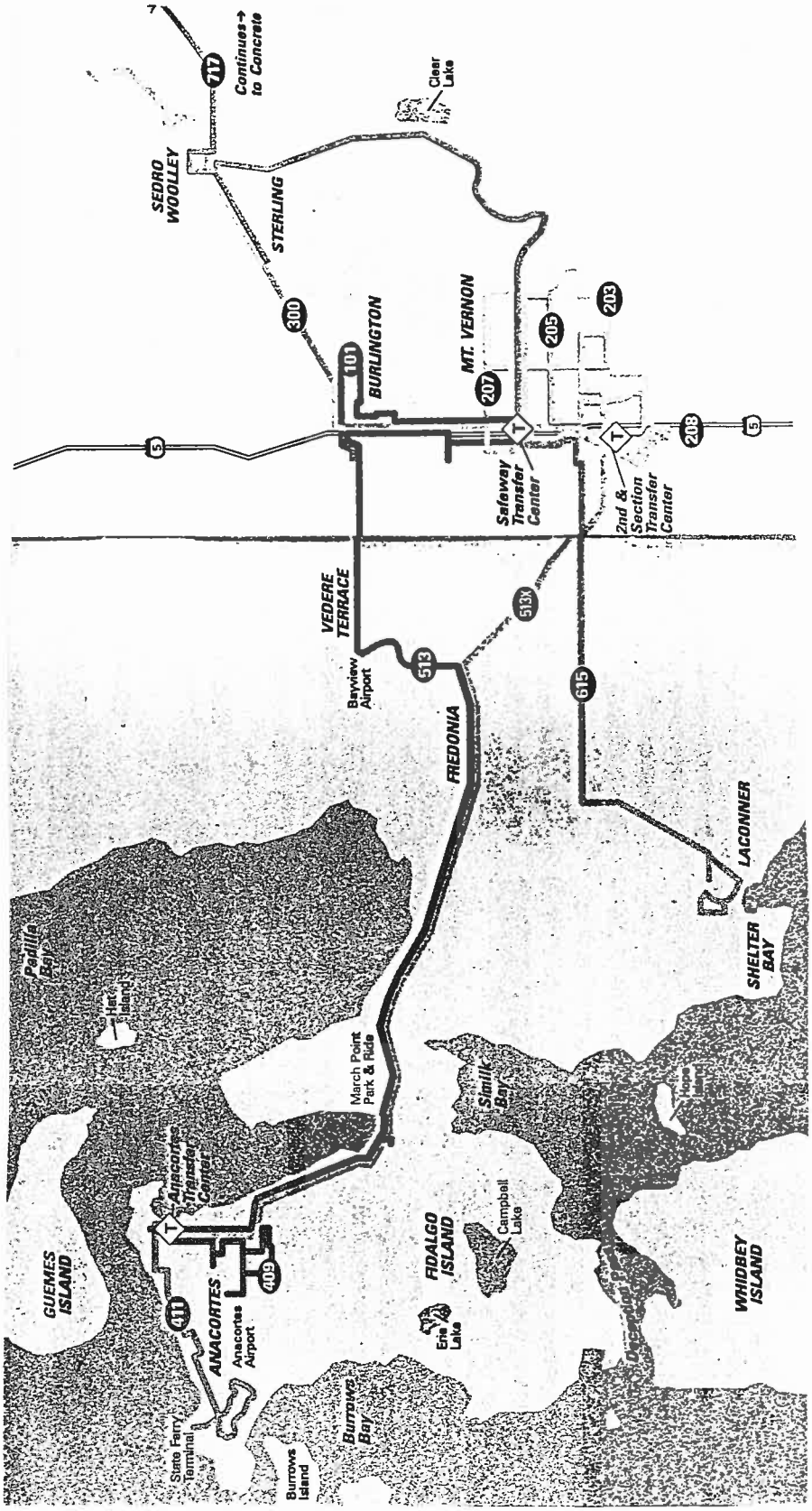
MAJOR
COLLECTOR





WILLIAM POPP ASSOCIATES	FUNCTIONAL CLASS	CITY OF BURLINGTON

FIGURE 14



WILLIAM POPP ASSOCIATES	TRANSIT ROUTING MAP **FIGURE 15**	CITY OF BURLINGTON

APPENDIX A

- Intersection counts
- Level of service calculations
- Signal warrant analysis

William Popp Associates *Transportation Engineers/Planners*

(206) 454-6692
FAX (206) 454-0187

CITY OF BURLINGTON

Transportation Element of Comprehensive Plan

INVENTORY OF EXISTING TRANSPORTATION SERVICES AND FACILITIES

June 10, 1993

William Popp Associates

First Interstate Center · Suite 314 · 225 108th Ave NE · Bellevue, WA · 98004

I. INTRODUCTION

Transportation is a major issue facing the elected officials, staff, business owners, and residents of the City of Burlington. Over the past ten years, retail and commercial, as well as residential, development has increased and is expected to continue growing over the next decade. This growth generates increased traffic volumes to, from, and within the City of Burlington.

The impact of growth has been realized throughout the State of Washington, prompting the legislature to pass the Growth Management Act of 1990 with a subsequent amendment in 1991. The Act requires each City and County to prepare a comprehensive plan which identifies growth potential and its related impacts. Furthermore, the Act requires each agency adopt and enforce ordinances which insure facility improvements required to mitigate development impact are functional at the time the development is operational.

The Comprehensive plan contains many elements. The transportation element must include all arterials and transit routes. Other transportation services and facilities may also be included.

The purpose of this report is to document the current status of known transportation facilities and services within the City of Burlington. These facilities and services are categorized as follows:

- local streets, arterials, and highways
- transit
- rail
- non-motorized transportation
- airports

II. LOCAL STREETS, ARTERIALS, AND HIGHWAYS

The City of Burlington is strategically located at the junction of two major state highways, Interstate 5 and State Route 20. Interstate 5 extends north and south along the western edge of the City connecting Burlington to Seattle on the south and Vancouver, B.C. Canada on the north. State Route 20 extends east and west along the northern edge of the City and provides connections to Oak Harbor on the west and the North Cascades Highway and the Okanogan on the east.

Travel on the local streets, arterials, and highways account for the vast majority of travel on the City of Burlington transportation system. In addition to Interstate 5 and SR 20 discussed above, the City is comprised of an extensive grid like pattern of local streets and arterials. The arterials are functionally classified as major, secondary, and collector arterials. Those streets not classified as arterials are termed "local streets". Figure 1 illustrates the City's arterial classification.

The City is responsible for approximately 26 miles of roads, including 1.86 miles of major arterials, 4.25 miles of minor arterials, and 6.6 miles of collector arterials. In addition, there are approximately 4.6 miles of state highways, including I-5, within the City. Most of the City streets are two lane facilities and most have bituminous or asphalt concrete surfaces. SR 20 is generally two lanes while I-5 is a 4-lane freeway.

A summary of the existing conditions of the City's arterial network is presented in Table 1. These roadways comprise the predominant routes of travel in the City. Information presented in Table 1 includes the route segment between arterial/arterial intersections, segment length, functional classification, number of lanes, roadway width, shoulder type, existence of on-street parking, the condition of the roadway surface, posted speed limit, the existing average weekday traffic volume (AWDT), and the existence of bicycle/pedestrian facilities. Because of the length of these segments, the conditions specified in Table 1 represent conditions which exist throughout the segment rather than in a sporadic fashion.

Average weekday traffic (AWDT), and PM peak hour counts were collected for the arterial network during 1992. The counts were provided by the Washington State Department of Transportation, Skagit County Public Works, and William Popp Associates. Where AWDT counts were unavailable, peak hour counts were factored to estimate AWDT volumes using area specific relationships between daily and peak hour volumes. The AWDT volumes are presented in Table 1. In general, traffic volumes have been increasing at a steady rate of 4 percent per year over the last 10-year period.

A level of service analysis was provided for each of the arterial/arterial intersections in the City including intersections with SR 20. Level of service was calculated using the techniques presented in the 1985 Highway capacity Manual and was based on recent PM peak hour counts. The results of the level of service analysis is presented in Table 2. Level of service (LOS) is a term used by traffic and transportation professional to qualitatively rate a section of the transportation system based on a quantitative analysis. For streets and highways within urban areas, the qualitative level of service is directly correlated to a quantitative analysis expressed in seconds of delay for signalized intersections or reserve capacity for unsignalized intersections. The level of service ranges from a high of LOS A to a low of LOS F. LOS C is generally accepted as adequate for rural areas and low density urban areas. The relationship between the qualitative and quantitative analysis for the signalized and unsignalized intersections is presented in Table 3.

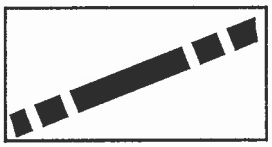
FUNCTIONAL CLASSIFICATIONS

of Public Roads

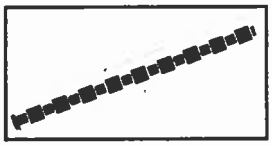
Washington State Department of Transportation

NATIONAL CLASSIFICATIONS

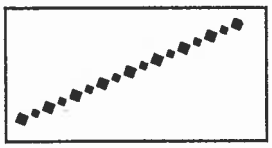
INTERSTATE



MINOR
COLLECTOR

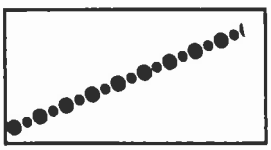


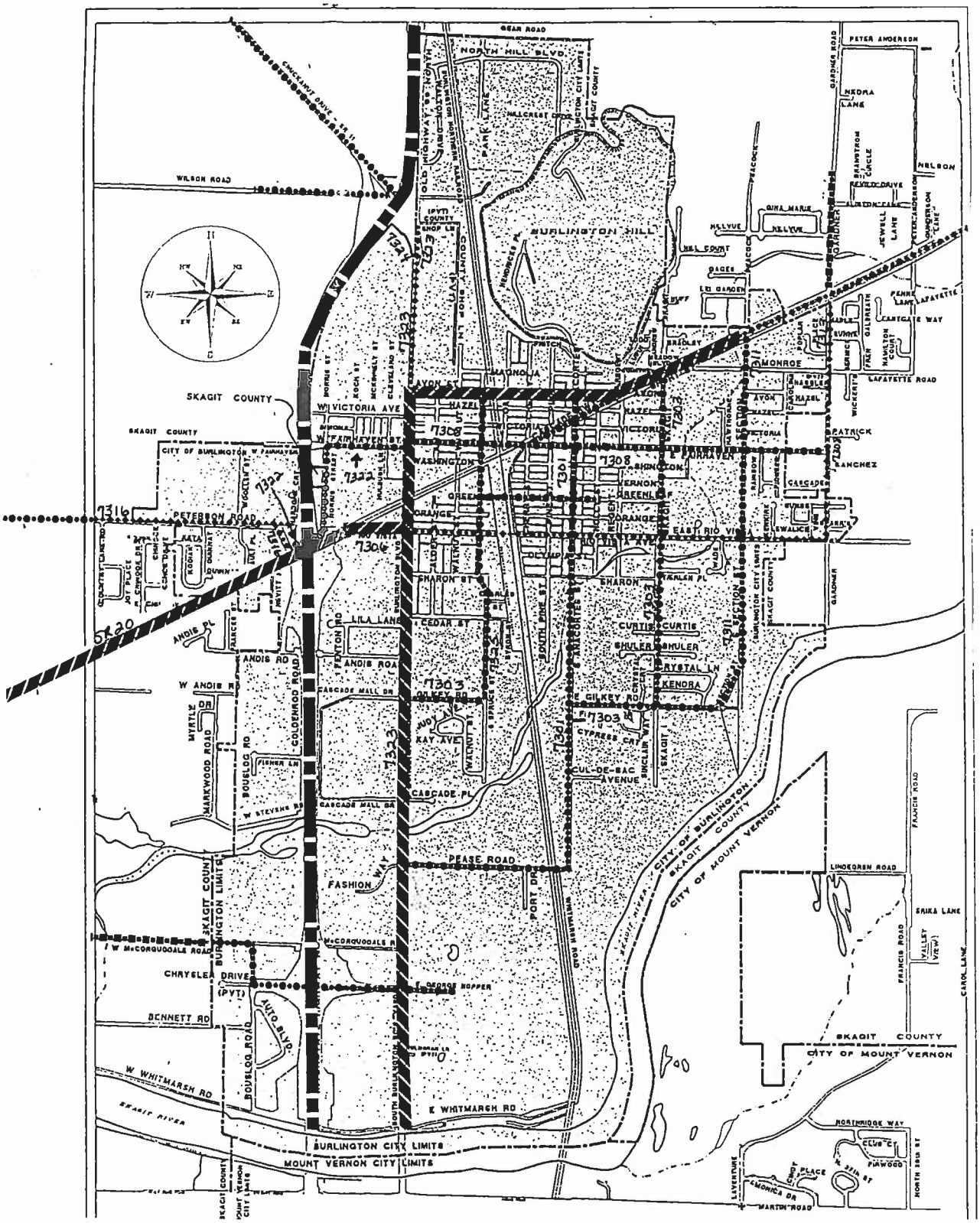
MINOR
ARTERIAL



OTHER
PRINCIPAL
ARTERIAL

MAJOR
COLLECTOR





WILLIAM POPP ASSOCIATES	FUNCTIONAL CLASS **FIGURE 1**	CITY OF BURLINGTON

Ta 1

City of Burlington Existing Roadway Conditions

ROAD NAME	FROM	TO	(1) Section Length (miles)	(2) F/C	(3) # of Lanes	(4) Roadway Width (feet)	(5) Shoulder Type	(6) On-Street Parking	(7) Pavement Condition	(8) Posted Speed (mph)	(9) AWDT	(10) Bicycle-Pedestrian Facilities
Burlington Boulevard	South City Limits	Hopper Interchange Road	0.47	1	2	22	5 (S)	N	P	35	20,500	N
Burlington Boulevard	Hopper Interchange	Pease Road	0.36	1	5	56	1	N	P	35	17,600	5' SW
Burlington Boulevard	Pease Road	Gilkey Road	0.49	1	4	44	5	N	F	35	16,900	N
Burlington Boulevard	Gilkey Road	Rio Vista Avenue	0.49	1	5	56	5	N	F	35	16,200	5' SW
Burlington Boulevard	Avon Avenue (SR 20)	SR 11	0.51	1	2	24	1	N	P	35	6,800	N
Burlington Boulevard (SR 20)	Fairhaven Avenue	Avon Avenue (SR 20)	0.16	1 (S)	5	56	1	N	F	35	14,000	5' SW
Burlington Boulevard (SR 20)	Rio Vista Avenue	Fairhaven Avenue	0.27	1 (S)	5	56	5	N	F	35	17,400	5' SW
West Rio Vista (SR 20)	West City Limits	Frontage Road	0.18	1 (S)	2	22	3	N	G	55	19,400	N
West Rio Vista (SR 20)	Frontage Road	Burlington Boulevard	0.34	1 (S)	4	44	3	N	F	55	17,200	6' SH
Avon Avenue (SR 20)	Burlington Boulevard	Spruce Street		1 (S)	2	24	3	N	F	35	11,500	8' SH
Avon Avenue (SR 20)	Spruce Street	Cascade Highway	0.61	1 (S)	2	24	3	N	F	35	13,800	N
Cascade Highway (SR 20)	Avon Avenue	Skagit Street	0.14	1 (S)	2	36	3	N	P	35	18,700	4' SH
Cascade Highway (SR 20)	Skagit Street	Section Street	0.26	1 (S)	2	22	1	N	P	35	13,300	N
Cascade Highway (SR 20)	Section Street	East City Limits	0.04	1 (S)	2	22	3	N	P	50	13,300	8' SH
Anacortes Avenue	Fairhaven Avenue	SR 20	0.05	2	2	22	1	N	G	25	1,700	SW on WS
Bouslog Road	Hopper Interchange	McCorquedale Road	0.12	2	2	22	3	N	P	25	1,500	6' SH
Goldenrod Road	Stevens Road	Fisher Lane	0.18	2	2	22	1	N	F	35	*	N
Goldenrod Road	Fisher Lane	Andis Road	0.32	2	2	22	1	N	F	35	*	N
Frontage Road	Andis Road	West Rio Vista	0.28	2	2	24-36	3	N	P	35	11,900	8' SH
Anacortes Avenue	South City Limits	Rio Vista Avenue	0.37	2	2	36	5 (S)	Y	P	25	4,900	SW on ES
Anacortes Avenue	Rio Vista Avenue	Greenleaf Avenue	0.10	2	2	36	5 (S)	Y	P	25	4,500	SW on ES
Anacortes Avenue	Greenleaf Avenue	Fairhaven Avenue	0.16	2	2	36	5 (S)	Y	P	25	3,500	SW on WS
Gardner Road	South City Limits	North City Limits	0.12	2	2	18	1	N	P	25	1,000	N
Hopper Interchange Road	Bouslog Road	Burlington Boulevard	0.43	2	2	22	3	N	P	35	11,700	7' SH
McCorquedale Road	West City Limits	Bouslog Road	0.06	2	2	18	1	N	F	35	500	N
McCorquedale Road	Bouslog Road	Cul de sac	0.12	2	1	12	1	N	P	35	1,100	N
Pease Road	Burlington Boulevard	East City Limits	0.43	2	2	30	1	N	P	35	5,300	N
Andis Road	Frontage Road	Goldenrod Road	0.05	2	2	18	1	N	P	35	3,200	N
Peterson Road	West City Limits	Frontage Road	0.38	2	2	18	1	N	F	35	3,300	6' SH
Fairhaven Avenue	Burlington Boulevard	Spruce Street	0.23	2	2	54	5 (S)	Y	P	25	10,700	SW on BS
Fairhaven Avenue	Spruce Street	Anacortes Avenue	0.27	2	2	54	5 (S)	Y	P	25	7,200	SW on BS
Fairhaven Avenue	Anacortes Avenue	Skagit Street	0.25	2	2	54	5 (S)	Y	P	25	4,600	SW on BS
Fairhaven Avenue	Skagit Street	Section Street	0.24	2	2	36	5 (S)	Y	G	25	3,000	SW on BS
Fairhaven Avenue	Section Street	East City Limits	0.12	2	2	18	1	N	P	25	1,200	N
Bouslog Road	Hopper Road	Hopper Interchange Road	0.40	3	2	28	3	Y	P	25	3,300	7' SH
Norris Street	Frontage Road	West Fairhaven Avenue	0.36	3	2	24-36	1	N	P	25		N
Spruce Street	Gages Slough Road	Gilkey Road	0.26	3	2	22	N	N	F	25		N
Spruce Street	Gilkey Road	Sharon Avenue	0.39	3	2	18	1	N	P	25		N
Spruce Street	Sharon Avenue	Rio Vista Avenue	0.12	3	2	15	N	N	P	25	1,400	N
Spruce Street	Rio Vista Avenue	Greenleaf Avenue	0.10	3	2	36	N	Y	P	25	2,300	N
Spruce Street	Greenleaf Avenue	Fairhaven Avenue	0.16	3	2	36	N	Y	P	25	1,600	N
Spruce Street	Fairhaven Avenue	Victoria Avenue	0.06	3	2	36	N	Y	P	25	700	SW
Spruce Street	Victoria Avenue	Avon Avenue (SR 20)	0.11	3	2	22	N	N	G	25	700	SW on WS
Skagit Street	South City Limits	Rio Vista Avenue	0.37	3	2	36	5 (S)	Y	G	25	1,600	SW on BS
Skagit Street	Rio Vista Avenue	Fairhaven Avenue	0.26	3	2	36	5 (S)	Y	G	25	1,400	SW on BS
Skagit Street	Fairhaven Avenue	SR 20	0.22	3	2	36	5 (S)	Y	P	25	1,400	SW on BS
Section Street	South City Limits	Rio Vista Avenue	0.36	3	2	30	4 (S)	Y	P	25	300	SW on WS

TABLE 1

Tı 1

City of Burlington Existing Roadway Conditions

ROAD NAME	FROM	TO	(1) Section Length (miles)	(2) F/C	(3) # of Lanes	(4) Roadway Width (feet)	(5) Shoulder Type	(6) On-Street Parking	(7) Pavement Condition	(8) Posted Speed (mph)	(9) AWDT	(10) Bicycle-Pedestrian Facilities
Section Street	Rio Vista Avenue	Fairhaven Avenue	0.26	3	2	22	1	N	G	25	500	N
Section Street	Fairhaven Avenue	Monroe Street	0.24	3	2	22	1	N	G	25	800	N
Section Street	Monroe Street	SR 20	0.11	3	2	22	1	N	G	25	500	N
Hopper Road	West City Limits	Burlington Boulevard	0.16	3	2	28	1	N	P	35		N
Hopper Road	Burlington Boulevard	East City Limits	0.24	3	2	18	1	N	F	35		N
Fisher Lane	Bouslog Road	Goldenrod Road	0.16	3	2	32	5 (S)	N	P	25		5' SW
Gilkey Road	Burlington Boulevard	Spruce Street	0.23	3	2	24	1	N	P	25		N
Rio Vista Avenue	Burlington Boulevard	Spruce Street	0.23	3	2	24	5 (S)	Y	F	25	2,500	N
Rio Vista Avenue	Cherry Street	Anacortes Avenue	0.16	3	2	22	1	N	G	25	200	SW on BS
Rio Vista Avenue	Anacortes Avenue	Skagit Street	0.24	3	2	22	1	N	P	25	1,500	N
Rio Vista Avenue	Skagit Street	Section Street	0.24	3	2	22	1	N	P	25	1,000	N
Rio Vista Avenue	Section Street	Gardner Road	0.24	3	2	22	1	N	F	25	1,100	N
Greenleaf Avenue	Spruce Street	Anacortes Avenue	0.28	3	2	22	1	N	P	25		N
West Fairhaven Avenue	Norris Street	Burlington Boulevard	0.24	3	2	36	5 (S)	N	F	25	5,100	SW on BS
Victoria Avenue	Oak Street	Pine Avenue		3	2	21	1	N	P	25		N
Monroe Street	Short Street	Section Street	0.16	3	2	18	1	N	G	25		N
Monroe Street	Section Street	East City Limits	0.16	3	2	18	1	N	G	25		N
Short Street	Skagit Street	Monroe Street	0.08	3	2	18	1	N	P	25		N

(1) Section Length — Length of section in miles

(2) Functional Classification
- 1 = Principal
- 1 (S) = State Highway
- 2 = Minor
- 3 = Collector

(3) # of Lanes — Specifies the number of lanes in the typical cross-section. Does not represent intersection channelization.

(4) Roadway Width — Specifies the width of the travelled portion of the roadway. In sections with paved shoulders, it specifies the distance between fog lines. In curb and gutter sections, it is the distance between the face of curb. In sections without shoulders, it is simply the pavement width.

(5) Shoulder Type
- (1) = No shoulder
- (2) = Paved shoulder on one side
- (3) = Paved shoulder on both sides
- (4) = Curb & gutter on one side
- (5) = Curb & gutter on both sides
- (S) = Sidewalk

Note: Shoulder type is consistent through the section, not random.

(6) Parking
- Y = on-street parking
- N = no on-street parking

Note: Parking condition is consistent through the section.

(7) Pavement Condition
- G = Good = Brand new pavement
- F = Fair = Not brand new, but no signs of failure
- P = Poor = Signs of failure, alligation cracking, etc.

(8) Posted Speed — Posted speed in MPH

(9) AWDT — Average Weekday Traffic Volumes

(10) Bicycle/Pedestrian Facilities
- SW = Sidewalk
- N = No facilities
- SH = Shoulder
- WS = West side
- ES = East side
- BS = Both sides

TABLE 1

TABLE 2
BURLINGTON TRANSPORTATION PLAN

Existing Levels of Service

No.	Intersection	LOS	Intersection Control	PM Volume
1	SR 11 /Josh Wilson	A	2-Way Stop	599
2	SR 11 /I-5 SB Ramps	B	2-Way Stop	799
3	SR 11 /I-5 NB Ramps	B	2-Way Stop	698
4	SR 11 /Old SR 99	B	2-Way Stop	743
5	SR 20 /Anderson Rd	E	2-Way Stop	1404
6	SR 20 /Gardener	E	2-Way Stop	1494
7	SR 20 /Section	D	2-Way Stop	1367
8	SR 20 /Skagit	D	2-Way Stop	1989
9	SR 20 /Regent	D	2-Way Stop	1450
10	SR 20 /Cherry	C	2-Way Stop	1182
11	SR 20 /Anacortes	A	2-Way Stop	983
12	SR 20 /Spruce	C	2-Way Stop	1204
13	Avon /Burlington Blvd	B	Signal	1669
13A	Rio Vista /Burlington Blvd	E	Signal	2646
14	Lafayette /Gardener	A	2-Way Stop	178
15	Fairhaven /Gardener	A	2-Way Stop	335
16	Fairhaven /Section	A	2-Way Stop	328
17	Fairhaven /Skagit	A	2-Way Stop	522
18	Fairhaven /Regent	A	2-Way Stop	328
19	Fairhaven /Anacortes	C	2-Way Stop	911
20	Fairhaven /Cherry		Special	890
21	Fairhaven /Spruce	D	2-Way Stop	1229
22	Fairhaven /Burlington Blvd	B	Signal	2367
23	Rio Vista /Gardener	A	2-Way Stop	119
24	Rio Vista /Section	A	2-Way Stop	145
25	Rio Vista /Skagit	A	All-way Stop	311
26	Rio Vista /Regent	A	2-Way Stop	110
27	Rio Vista /Anacortes	A	2-Way Stop	554
28	Rio Vista /Spruce	A	2-Way Stop	327
29	SR 20 /I-5 NB Ramps	B	Signal	2128
30	SR 20 /Frontage Rd	C	Signal	2712
31	Frontage Rd /I-5 SB Ramps	E	2-Way Stop	1260
32	SR 20 /Pulver Rd	D	2-Way Stop	1601
33	SR 20 /Higgins Airport Way	C	2-Way Stop	1207
34	Spruce /Sharon	A	2-Way Stop	109
35	Burlington Blvd /Sharon	E	2-Way Stop	1985
36	Burlington Blvd /Gilkey	B	Signal	1661
37	Burlington Blvd /Andis Rd	D	2-Way Stop	1600
38	Burlington Blvd /Cascade Mall (S)	B	Signal	1861
39	Burlington Blvd /Cascade Mall (N)	B	Signal	1756
40	Burlington Blvd /Pease Rd	C	Signal	2186
41	Burlington Blvd /Whitmarsh Rd	D	2-Way Stop	1947
42	Burlington Blvd /Geo Hopper Rd	B	Signal	2416
43	Anacortes /Gilkey	B	2-Way Stop	688
44	Geo Hopper Rd /Bouslag Rd	A	2-Way Stop	457
45	Geo Hopper Rd /I-5 SB Ramps	E	2-Way Stop	850
46	Geo Hopper Rd /I-5 NB Off-Ramp	C	2-Way Stop	1150
47	Geo Hopper Rd /I-5 NB On-Ramp	A	2-Way Stop	1159
48	Pulver Rd /Bennett Rd	A	2-Way Stop	453
49	Pease Rd /Whitmarsh Rd	A	2-Way Stop	635

TABLE 3 Level of Service Definitions		
Level of Service	**Signalized Intersections Seconds of Delay**	**Unsignalized Intersections Reserve Capacity (in pcph[1])**
A	≤ 5.0	≥ 400
B	5.1 - 15.0	300 - 399
C	15.1 - 25.0	200 - 299
D	25.1 - 40.0	100 - 199
E	40.1 - 60.0	0 -99
F	> 60	
1) pcph = passenger cars per hour		

III. TRANSIT

Currently, there is no public transit service available in Skagit County. However, in November 1992, a Skagit County Public Transportation Benefit Area (PTBA) was established through vote. Currently, the Benefit Area is limited to the Cities of Mount Vernon and Burlington. The operating details are in the process of being established sat this time but will most likely include 5 buses providing fixed route and demand responsive service within the Cities of Burlington and Mount Vernon. Service will begin in November 1993 and is intended to serve the downtown areas, commercial areas, hospitals (including the hospital in Sedro-Woolley which is outside the Benefit Area), Skagit Valley College and other schools, and the close in residential areas in each City. In addition, demand responsive service will be provided for disabled persons as required under PTBA enabling legislation. Headways for the fixed route service will be between ½ hour to 1 hour with ½ hour provided along Riverside Drive and Burlington Boulevard.

The system will be funded through an additional 0.2 of 1 percent additional sales tax in each of the two Cities. This money will be matched with the state motor vehicle excise tax. The system currently has 80% matching funds to purchase 4 buses and anticipates purchasing another bus with 100 percent PTBA funds.

The Transit Board is comprised of three County Commissioners, as well as 1 Mayor and 1 Councilperson from each city.

IV. RAIL

Currently, rail service is limited to freight hauling operations. Burlington Northern operates north/south and east/west routes through the City. There are approximately 12 trains per day. There is a plan to begin AMTRAK passenger service in the Fall of 1993. This service would provide one round trip per day between Vancouver, B.C. Canada and Seattle. It is anticipated that this service will be increased in the future. Mount Vernon is currently conducting a study to locate a new passenger terminal to support passenger service. There are 3 alternative sites under consideration, including one in Burlington. The results of the study should be out in the summer of 1993.

V. NON-MOTORIZED TRANSPORTATION

Non-motorized transportation is generally comprised of bicycles, pedestrians and equestrian facilities. Proposed bicycle and pedestrian facilities are identified in Figure 2. Currently there are no bicycle or equestrian facilities in the city. There are, however, limited sidewalk facilities in the city. Most of them are located adjacent to new development.

VI. AIRPORTS

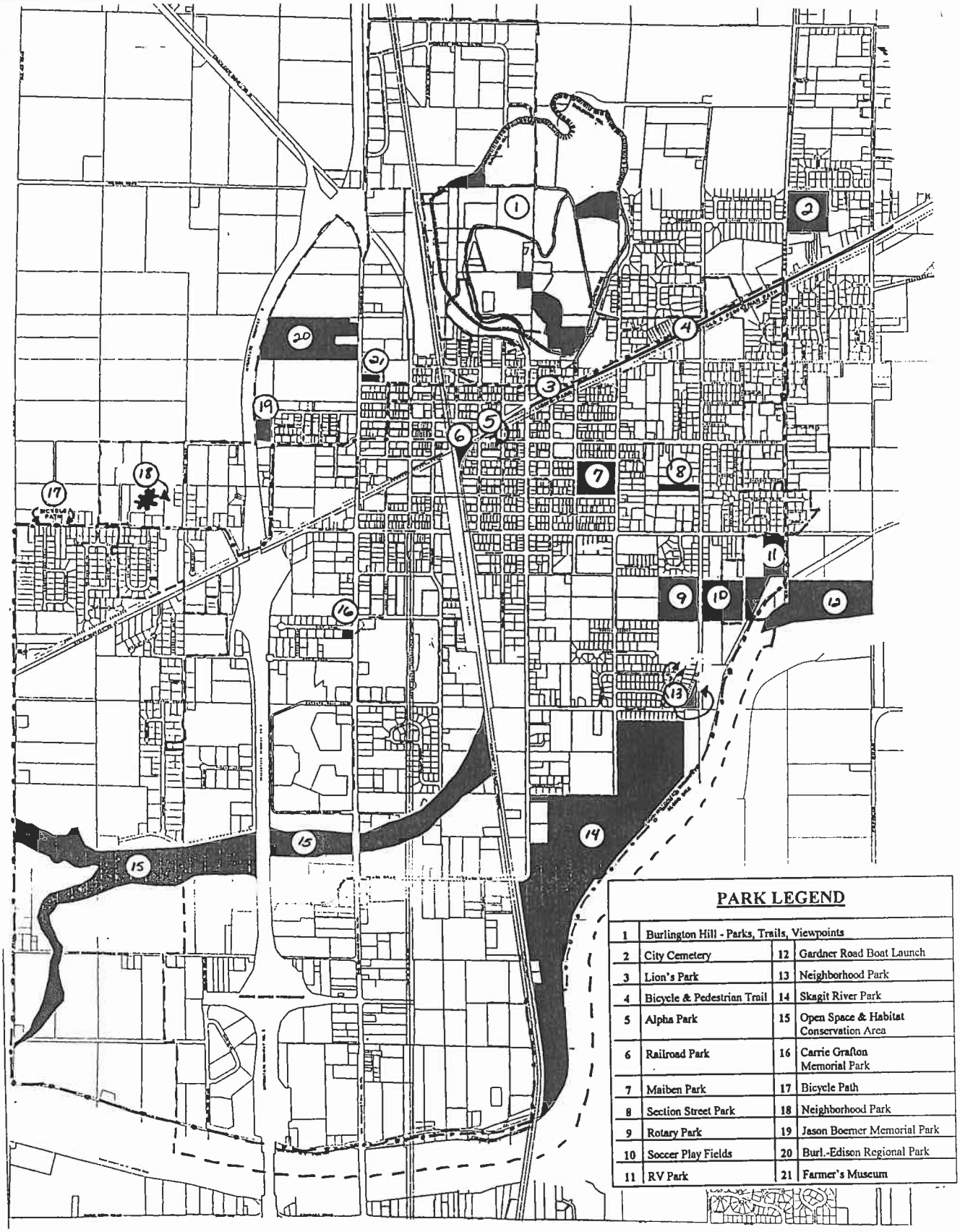
Although there are no airfields within the City of Burlington, there are four airfields in the area including:

1. Skagit Regional Airport (Bayview Airport) – Located approximately 4 miles west of the city. There are currently two fixed base operators which provide airframe and power plant overhaul facilities. There are also fueling facilities available. There are currently plans to provide air taxi service within the next couple of months. This service will most likely include Seattle-Tacoma and San Juan destinations.

2. Anacortes Airfield – Located approximately 20 miles west of Burlington on the west side of the City of Anacortes. Having over 10,000 emplanements a year, it is rated as the tenth busiest airport in the State. There is one fixed base operator which provides commuter service to the San Juan Islands as well as mail and freight service. They also provide charter flights. There are also facilities for airframe and engine maintenance, as well as fueling.

3. Barker Airfield – Located approximately 5 miles south of Burlington, directly south of the City of Mount Vernon. The airport is limited to service for local crop dusters.

4. Concrete Municipal Airport – Located approximately 30 miles east of Burlington, on the south side of the City of Concrete. The airport is owned by the City and serves private aircraft. There is a hangar space for 11 aircraft although only 3 are presently occupied. An airframe maintenance shop is available but there are no fueling capabilities.



PARK LEGEND

1	Burlington Hill - Parks, Trails, Viewpoints		
2	City Cemetery	12	Gardner Road Boat Launch
3	Lion's Park	13	Neighborhood Park
4	Bicycle & Pedestrian Trail	14	Skagit River Park
5	Alpha Park	15	Open Space & Habitat Conservation Area
6	Railroad Park	16	Carrie Grafton Memorial Park
7	Maiben Park	17	Bicycle Path
8	Section Street Park	18	Neighborhood Park
9	Rotary Park	19	Jason Boerner Memorial Park
10	Soccer Play Fields	20	Burl.-Edison Regional Park
11	RV Park	21	Farmer's Museum

WILLIAM POPP ASSOCIATES	NON MOTORIZED TRAILS & BICYCLE TRAILS	CITY OF BURLINGTON

FIGURE 2

APPENDIX B

- Level of service policy

William Popp Associates *Transportation Engineers/Planners*

(206) 454-6692
FAX (206) 454-0187

CITY OF BURLINGTON

LEVEL OF SERVICE POLICY

May 12, 1993

First Interstate Center · Suite 314 · 225 108th Ave NE · Bellevue, WA · 98004

TABLE OF CONTENTS

TABLES

I. INTRODUCTION

The purpose of this task is to recommend a street and highway level of service policy which will be used as a gauge to judge system performance. The purpose of this memorandum is to identify what level of service is, types of level of service, and the process used to establish a level of service policy for the City of Burlington. The focus of this technical memorandum is to define level of service for the arterial network system. Transit level of service has been deleted from the discussion because there is currently no transit service in Skagit County, although voters recently approved legislation to develop one.

II. HIGHWAY/ARTERIAL LEVEL OF SERVICE

A. Background

Researchers have attempted to understand highway capacity since soon after the beginning of automobile travel almost 70 years ago. According to the 1985 Highway Capacity Manual[1] (TRB Special Report 209), level of service is defined as a qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers. Level of service definitions generally describe these conditions in terms of delay, speed, travel time, freedom to maneuver, traffic interruption, comfort, convenience, and safety.

Level of service is generally determined for two types of facility operating conditions. These conditions are *interrupted flow* and *uninterrupted flow*.

Uninterrupted flow facilities have no fixed elements external to the traffic stream, such as traffic signals, that cause interruptions to the traffic flow. In these facilities, traffic flow conditions are the result of interactions among vehicles in the traffic stream, and between vehicles and the geometric and environmental characteristics of the roadway. Uninterrupted flow conditions primarily exist on freeways, expressways, and on rural highways where traffic control devices such as stop signs and traffic signals are sufficiently spaced so that traffic flow is not impacted by their existence.

---

1) "Highway Capacity Manual" Special Report 209, Transportation Research Board, National Research Council, Washington DC, 1985, p. 10-9

Interrupted flow facilities have fixed elements causing periodic interruptions to traffic flow. Such elements include traffic signals, stop signs, and other types of controls. These devices cause traffic to periodically stop (or significantly slow), regardless of how much traffic exists. Interrupted flow conditions typically apply to arterials in urban and suburban areas where traffic flow is significantly impacted by closely spaced signalized and/or stop sign controlled intersections, such as is the case in the City of Burlington.

Pedestrian and transit flows are generally considered to be interrupted flow although uninterrupted flow for each of the modes can exist under certain circumstances.

For the purposes of this task, since our discussion is aimed at arterial traffic flow conditions within the City of Burlington, development of a level of service policy will be limited to interrupted flow conditions.

B. Purpose

The purpose of a level of service policy is four-fold. These include:

- allows community to specify the type of service to be provided on the transportation system
- identifies significant impact from new development
- identifies facilities which require improvement
- provide staff with policy direction on the operation of existing transportation systems

Establishing a level of service policy through the legislative process allows the community to evaluate alternative policies available before choosing one that best fits the goals, desires and financial resources of the community. A level of service policy will establish a threshold against which the operation of the transportation system can be measured when impacted by new development. Developments which generate traffic volumes such that the level of service falls below the standard can be conditioned to improve the facility. A level of service policy will identify facilities which are not at an acceptable level. A level of service policy gives agency staff direction on how the system should be operated.

C. Various Levels of Service

The 1985 Highway Capacity Manual identifies six level of service grades from "A" through "F" that are specific to the operating flow condition being analyzed.

Intersection LOS is separated into signalized and non-signalized categories for purposes of definition and analysis. Signalized intersection LOS definitions are based on an average stopped delay grading scale and are further defined as given below.

Signalized Intersection LOS

Level of Service A describes operations with very low delay, i.e. less than 5.0 sec of average stopped delay per vehicle. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

Level of Service B describes operations with delay in the range of 5.1 to 15.0 sec of average stopped delay per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.

Level of Service C describes operations with delay in the range of 15.1 to 25.0 sec of average stopped delay per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual vehicles may be held in the intersection for more than one red signal phase (cycle failure). The number of vehicles stopping is significant at this level, although many still progress through the intersection without stopping.

Level of Service D describes operations with delay in the range of 25.1 to 40.0 sec of average stopped delay per vehicle. At Level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high vehicle/capacity (v/c) ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. A noticeable number of vehicles fail to progress through the intersection within one cycle (i.e. get held for more than one red signal phase).

Level of Service E describes operations with delay in the range of 40.1 to 60.0 sec of average stopped delay per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Vehicles are frequently held in the intersection for more than one red signal phase.

Level of Service F describes operations with delay in excess of 60.0 sec of average stopped delay per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection. There are many individual cycle failures.

Unsignalized Intersection LOS

Level of service measurement rationale for unsignalized intersections is based on gap acceptance; that is, the ability for vehicles at yield and/or stop signs to find an acceptable gap in the opposing traffic stream(s). The criteria are described in very general terms relating to general delay ranges, but are specifically quantified with a term called reserve capacity. Reserve capacity refers to the available vehicular capacity for a particular movement, expressed in passenger cars per hour. The definitions and values are as follows:

Level of Service	Expected Delay to Minor Street Traffic	Reserve Capacity (pcph)
A	Little or no delay	400 or better
B	Short traffic delays	300 - 399
C	Average traffic delays	200 - 299
D	Long traffic delays	100 - 199
E	Very long traffic delays	0 - 99
F	Extreme traffic delays	

An intersection level of service grade for unsignalized intersections applies only to the yield or stop movements. The major street through movements are assumed to be unimpeded.

D. Basis for Selecting an LOS Policy

The selection of an appropriate level of service policy for the City of Burlington should be based on the following criteria:

- existing level of service on city streets
- adopted level of service policies for surrounding jurisdictions
- costs associated with implementing the policy

Existing Level of Service

Specification of a level of service policy requires knowledge of existing level of service at the intersections within the City. Adopting a policy that does not recognize existing conditions could either create a financial burden on the City in terms of requiring extensive capital facility improvements to provide an improved level of service, or allowing conditions to deteriorate below that which is acceptable to the community. Both of these situations should be avoided.

Existing level of service for unsignalized and signalized arterial/arterial intersections is presented in Table 1. The results of the analysis indicate the following:

- There are a total of 49 arterial/arterial intersections, of which 17 are controlled by the WSDOT.
- 29 of the intersections are controlled by stop signs, while the remainder are signalized.
- 18 intersections operate at LOS A. 2 of these are WSDOT controlled.
- 11 intersections operate at LOS B. 4 of these are WSDOT controlled.
- 7 intersections operate at LOS C. 4 of these are WSDOT controlled.
- 7 intersections operate at LOS D. 4 of these are WSDOT controlled.
- 6 intersections operate at LOS E. 3 of these are WSDOT controlled.

The majority of the intersections (36 out of 49) operate at LOS C or above, and 43 of the 49 operate at LOS D or above. Approximately half of the intersections (11 of 20) which operate at LOS C or below are controlled by the WSDOT. City controlled intersections currently operating at LOS D or below are, with the exception of Fairhaven Avenue and Spruce Street, located along Burlington Boulevard. In general, there is currently a relatively high level of service throughout the community. It is recommended that this condition be maintained. Therefore, based on existing conditions, a policy of LOS C or D would be appropriate.

TABLE 1
CITY OF BURLINGTON EXISTING LEVEL OF SERVICE
SIGNALIZED AND UNSIGNALIZED INTERSECTIONS

No.	Intersection	LOS	PM Volume
1	SR 11/Josh Wilson	A	599
2	SR 11/I-5 SB Ramps	B	799
3	SR 11/I-5 NB Ramps	B	698
4	SR 11/Old SR 99	B	743
5	SR 20/Anderson Rd	E	1404
6	SR 20/Gardener	E	1494
7	SR 20/Section	D	1367
8	SR 20/Skagit	D	1989
9	SR 20/Regent	D	1450
10	SR 20/Cherry	C	1182
11	SR 20/Anacortes	A	983
12	SR 20/Spruce	C	1204
13	Avon/Burlington Blvd	B	1669
13A	Rio Vista/Burlington Blvd	E	2646
14	Lafayette/Gardener	A	178
15	Fairhaven/Gardener	A	335
16	Fairhaven/Section	A	328
17	Fairhaven/Skagit	A	522
18	Fairhaven/Regent	A	328
19	Fairhaven/Anacortes	C	911
20	Fairhaven/Cherry	*	890
21	Fairhaven/Spruce	D	1229
22	Fairhaven/Burlington Blvd	B	2367
23	Rio Vista/Gardener	A	119
24	Rio Vista/Section	A	145
25	Rio Vista/Skagit	A	311
26	Rio Vista/Regent	A	110
27	Rio Vista/Anacortes	A	554
28	Rio Vista/Spruce	A	327
29	SR 20/I-5 NB Ramps	B	2128
30	SR 20/Frontage Rd	C	2712
31	Frontage Rd/I-5 SB Ramps	E	1260
32	SR 20/Pulver Rd	D	1601
33	SR 20/Higgins Airport Way	C	1207
34	Spruce/Sharon	A	109
35	Burlington Blvd/Sharon	E	1985
36	Burlington Blvd/Gilkey	B	1661
37	Burlington Blvd/Andis Rd	D	1600
38	Burlington Blvd/Cascade Mall (S)	B	1861
39	Burlington Blvd/Cascade Mall (N)	B	1756
40	Burlington Blvd/Pease Rd	C	2465
41	Burlington Blvd/Whitmarsh Rd	D	1947
42	Burlington Blvd/Geo Hopper Rd	B	2335
43	Anacortes/Gilkey	B	688
44	Geo Hopper Rd/Bouslag Rd	A	457
45	Geo Hopper Rd/I-5 SB Ramps	E	850
46	Geo Hopper Rd/I-5 NB Off-Ramp	C	1150
47	Geo Hopper Rd/I-5 NB On-Ramp	A	1159
48	Pulver Rd/Bennett Rd	A	453
49	Pease Rd/Whitmarsh Rd	A	635

* to be determined

Adopted Level of Service Policies for Surrounding Jurisdictions

The Growth Management Act requires that the level of service policy between adjacent jurisdictions be consistent. Inconsistent policies have the potential of impacting development location decisions, thereby creating detrimental impacts.

A brief survey was conducted of surrounding jurisdictions and agencies to identify current or proposed level of service standards. For the most part, the surrounding jurisdictions are currently in the process of developing their LOS policy. The results of our survey are presented in Table 2.

TABLE 2
LEVEL OF SERVICE
SURROUNDING JURISDICTIONS

Jurisdiction/Agency	LOS Policy
Island County	*
Oak Harbor	*
Langley	*
Skagit County	C
Mount Vernon	*
Anacortes	C
Whatcom County	*
Bellingham	*
Snohomish County	C
Washington State Department of Transportation	
Rural Areas	C
Urban	
>50,000	D
>200,000	E

* currently under consideration

Discussions with WSDOT staff indicate they will apply a LOS D standard to their facilities within the incorporated areas. If agencies prefer a different level of service for WSDOT roadways, WSDOT staff is willing to discuss the matter.

Based on this criteria also, a level of service of C or D would be reasonable.

Costs Associated with Implementing the Level of Service Policy

Implementation of any specific level of service policy will have specific costs associated with it. These costs can be categorized as follows:

Construction, Operation and Maintenance Costs

As new development occurs in the City, new facilities must be constructed to maintain or improve level of service. Obviously, the extent of capital facility improvements for any given development scenario is dependent upon the desired level of service. In addition to the construction costs, there are costs associated with operating and maintaining transportation services and facilities. Comparing these costs to anticipated transportation related revenues is a basic concurrency check which is required under GMA and is included in Task 6.

Environmental Costs

At any given level of service, specific environmental costs such as noise and air pollution, as well as fuel consumption will be realized. Other environmental impacts realized as a part of constructing capital facilities include encroachment on wetlands and impacts on wildlife habitats. In the evaluation of specific projects these costs should be considered. Project level decisions will impact level of service conditions. Under certain circumstances, the cost of the environmental impacts may override the level of service considerations.

The costs of environmental impacts are not specifically addressed in our current scope. However, as specific projects are developed, the environmental impacts will be addressed.

Community Costs

Constructing additional transportation facilities to provide a specific level of service often results in community impacts such as displacement of businesses and residents and disruption of neighborhoods. In these situations there is naturally a community reaction. When the reaction occurs experience indicates that projects are scaled back or in some cases dropped from further consideration. The end result is that the desired level of service is not achieved.

Although community reaction is not always clearly understood until a project completes preliminary design and the impacts are realized, it is important in the project development stage that these aspects are considered. Although not a specific task or element in this work, we will consider and identify these issues as a part of project specification.

Although the actual costs realized under each of these categories may not be specifically identifiable at this stage, such that their impact on a specific level of service may be determined, the level of service policy may change as these costs are realized.

E. Recommended Policy

Based on the forgoing discussion, it is our recommendation that the City of Burlington adopt a level of service C as the preferred policy for the City as a whole with a level of service D along the Burlington Boulevard corridor. The standard will serve as a gauge to judge system performance for this planning effort. This policy may be reconsidered if during the Financing phase (Task 6) of this study it is determined that the recommended LOS is not affordable and the City's policy body is willing to accept a lower LOS in the future.

APPENDIX C

- Model development and alternative network loadings

CITY OF BURLINGTON
TRANSPORTATION STUDY

APPENDIX C

MODEL DEVELOPMENT

SUMMARY

Appendix C includes all model development data and system analysis for the Burlington/Mount Vernon transportation model. The information included in this appendix consists of model calibration process and results, internal TAZ and external TAZ defintion; trip generation rates; internal and external trip end summaries for existing and future years; traffic growth estimates at all external locations; existing model calibration results and future model assumptions and results.

INTRODUCTION

One of the major components of the transportation planning process has been the development of a transportation model that will assist the planner in developing data that policy makers can use in making decisions regarding transportation policy issues. The model is a tool that can be used to help answer questions regarding the development and utilization of current transportation facilities, as well as transportation infrastructure planned for the future. The transportation model used for this study was developed using software developed by Professional Solutions, Inc. entitled "TMODEL2" (TM2). The effectiveness of TM2, and the validity of the data that it produces, is contingent on data inputs that are used. In this regard, William Popp Associates relied on City of Burlington, Skagit County, Washington State Department of Transportation, Washington State Department of Employment Security, Watterson West Group, Inc., Bell-Walker, and McConnel/Burke Inc. for all pertinent data necessary in developing a solid transportation model.

The Modeling Process

TModel-2 is designed specifically to assist in the analysis of future an alternative transportation demands and systems. The model William Popp Associates has developed for assistance in the transportation plan is a representation of the greater Burlington and Mount Vernon areas. The model incorporates all principal and minor arterials and collectors as well as I-5 and other state route facilities.

With regard to traffic characteristics, the existing model reflects 1992 PM peak hour traffic volumes and 1992 roadway and intersection network characteristics. Future traffic models represent future year PM peak hour traffic volumes on the existing network as well as alternative networks which are intended to alleviate potential future (and existing) traffic capacity issues.

Model Calibration

In order to best assess the impacts of increased traffic demand and/or increased capacity, ie., roadway/intersection improvements, it is necessary to ensure that the existing year network is a valid representation of the real traffic volumes and patterns. In order to do this, existing model link volumes were compared to actual traffic volumes throughout the network. An extensive calibration effort was performed necessary for proper results. Once a valid model was developed, it was then possible to project future traffic volumes with a high degree of confidence in the results.

In this study eighteen screenlines were used for the calibration effort; nine in Burlington and nine in Mount Vernon. Screenlines 1 through 9 are shown in Figure __. In Table __, all 1992 screenline results are tabulated and compared with NCHRP 255 maximum allowable deviations. For the 18 major screenlines the model is averaging only 1% over existing traffic which is quite good. Note that on an individual screenline basis the screenlines are all within allowable deviation ranges; the majority of the screenlines are well within allowable. On a link by link bases there are only 6 links out of a total 90 links which exceed the allowable deviation.

Traffic Analsis Zones (TAZ's)

In general, a TAZ is a specific geographic area that has specific land use data associated with it. The fundamental task a TAZ performs in the model is to generate vehicle trip ends at the TAZ. The land use data pertinent to a TAZ determines the number of trips that TAZ either produces to or attracts from all other TAZ's in the model. In sum, trip generation to and from each TAZ in the network is based on number of persons within households, type of household, number of employees and type of employment in each TAZ. See Appendix D for Population and Employment discussion.

In order to be able to adequately load vehicle trips onto all links in the network, it was necessary to incorporate a large number of TAZ's into the network. The TAZ structure was developed to coincide with census block groups which facilitates the acquisition of population and employment data.

The TAZ structure for the model consists of 179 zones; 161 internal zones and 18 external zones.

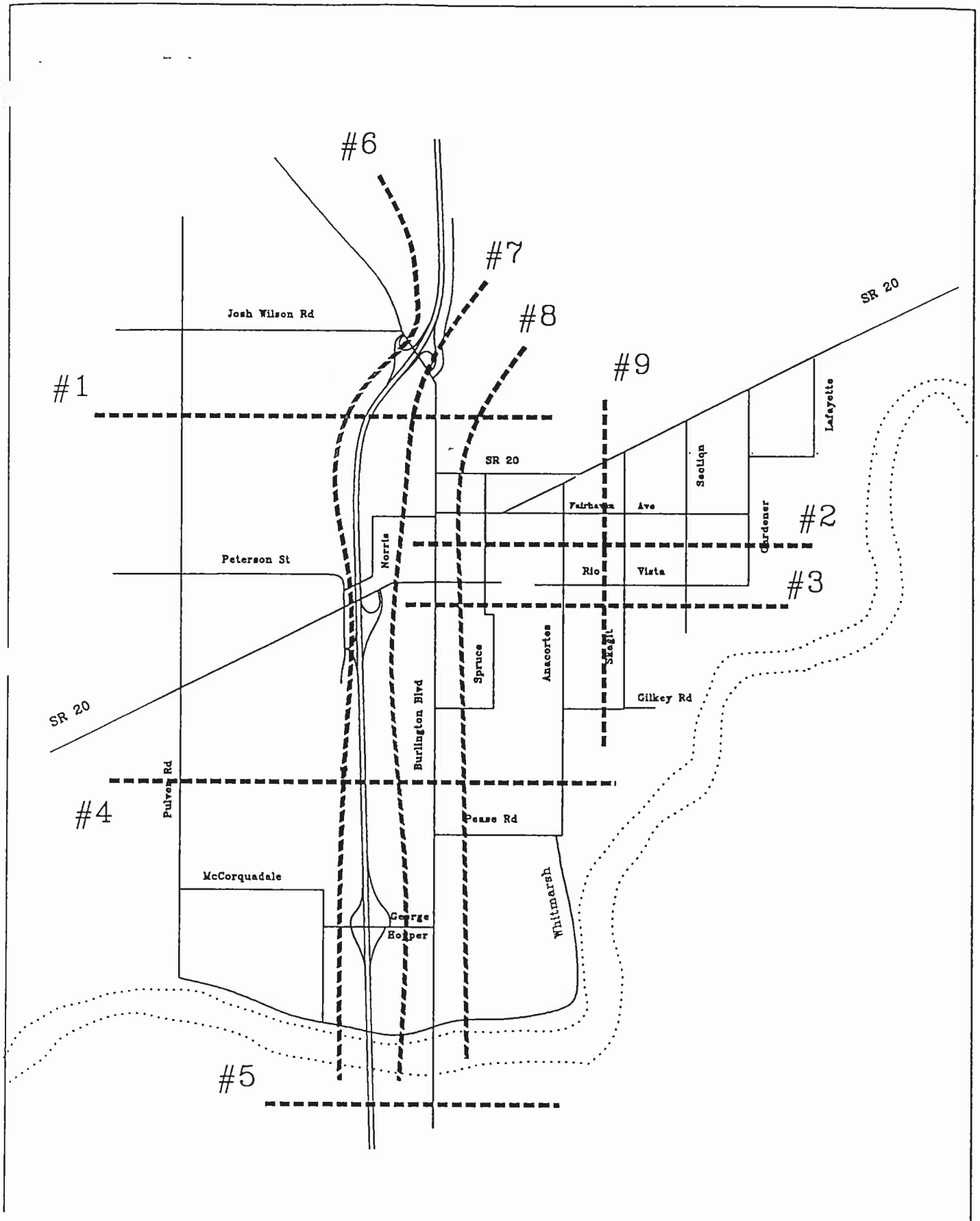
Internal Zones

The Burlington urban growth area consists of 76 internal traffic analysis zones (TAZ's); TAZ 1 through 76. The model includes Mount Vernon as well which consists of 64 internal TAZ's; TAZ 98 through 161. TAZ's 77 through 97 are "dummy TAZ's" setup for future zones splits, if ever necessary. See Figure __ for Burlington TAZ locations.

External Zone

There are 18 external zones "surrounding" the study area numbered 162 through 179 in the model. These zones are designed to incorporate trips that are generated to and/or from points outside the network. Trips to and from each external are determined from actual traffic counts. These external zones are defined as follows:

- Zone 162: Bennet w/o Pulver
- Zone 163: SR 20 w/o Pulver
- Zone 164: SR 11 nw/o Pulver with Pulver n/o SR 11
- Zone 165: I-5 north
- Zone 166: Old SR 99
- Zone 167: SR 20 east
- Zone 168: Francis Rd
- Zone 169: SR 9 n/o SR 538
- Zone 170: SR 9 s/o Big Lake
- Zone 171: West Big Lake Rd
- Zone 172: SR 534 e/o Cedardale
- Zone 173: Cedardale s/o SR 534



WILLIAM POPP ASSOCIATES	BURLINGTON SCREENLINES	CITY OF BURLINGTON Transportation Study

CITY OF BURLINGTON
SCREENLINE SUMMARY TABLE
1992 PM PEAK HOUR MODEL

SCREENLINES	Model Volume	Ground Count	Percent Difference	Allowable Deviation	Volume Difference
Screenline 1					
Pulver Rd s/o Josh Wilson Rd	41	40	2%	62	1
I-5 SB s/o SR 11	1,528	1,660	-8%	20	-132
I-5 NB s/o SR 11	1,554	1,660	-6%	20	-106
Burlington Blvd s/o SR 11	567	730	-22%	28	-163
TOTAL	3,690	4,090	-10%	15	-400
Screenline 2					
Burlington Blvd s/o Fairhaven Ave	2,257	1,715	32%	19	542
Spruce St s/o Fairhaven Ave	165	230	-28%	44	-65
Anacortes St s/o Fairhaven Ave	238	345	-31%	38	-107
Skagit St s/o Fairhaven Ave	119	140	-15%	51	-21
Section St s/o Fairhaven Ave	57	55	4%	60	2
Gardner Rd s/o Fairhaven Ave	20	160	-88%	49	-140
TOTAL	2,856	2,645	8%	16	211
Screenline 3					
Burlington Blvd s/o Rio Vista Ave	1,545	1,520	2%	21	25
Spruce St s/o Rio Vista Ave	140	140	0%	51	0
Anacortes St s/o Rio Vista Ave	456	490	-7%	33	-34
Skagit St s/o Rio Vista Ave	71	155	-54%	50	-84
TOTAL	2,212	2,305	-4%	16	-93
Screenline 4					
Pulver Rd s/o SR 20	163	80	104%	57	83
I-5 SB s/o SR 20	2,104	2,130	-1%	17	-26
I-5 NB s/o SR 20	2,415	2,180	11%	17	235
Burlington Blvd s/o Gilkey Rd	1,568	1,300	21%	22	268
Anacortes St s/o Gilkey Rd	528	470	12%	33	58
TOTAL	6,778	6,160	10%	15	618
Screenline 5					
I-5 SB at Skagit River	2,327	2,300	1%	17	27
I-5 NB at Skagit River	2,596	2,320	12%	16	276
Burlington Blvd at Skagit River	2,062	2,000	3%	18	62
TOTAL	6,985	6,620	6%	15	365

Screenline 6

SR 11 w/o I-5	642	600	7%	30	42
Norris St e/o Peterson Rd	299	250	20%	42	49
SR 20 e/o Peterson St	1,926	1,870	3%	19	56
I-5 SB off ramp at SR 20	225	260	-13%	42	-35
I-5 SB on ramp at SR 20	801	730	10%	28	71
George Hopper Rd w/o I-5	313	430	-27%	35	-117
Hopper Rd e/o Bouslog Rd	261	195	34%	46	66
TOTAL	4,467	4,335	3%	15	132

Screenline 7

SR 11 w/o Old SR 99	537	650	-17%	29	-113
Norris St w/o Burlington Blvd	294	510	-42%	32	-216
SR 20 w/o Burlington Blvd	1,887	1,630	16%	20	257
George Hopper Rd w/o Burlington B	855	1,030	-17%	24	-175
Hopper Rd w/o Burlington Blvd	261	195	34%	46	66
TOTAL	3,834	4,015	-5%	15	-181

Screenline 8

Avon Ave e/o Burlington Blvd	1,496	1,090	37%	24	406
Fairhaven Ave e/o Burlington Blvd	1,033	1,025	1%	24	8
Rio Vista Ave e/o Burlington Blvd	272	255	7%	42	17
Gilkey Rd e/o Burlington Blvd	93	100	-7%	55	-7
Pease Rd e/o Burlington Blvd	668	620	8%	30	48
Whitmarsh Rd e/o Burlington Blvd	668	620	8%	30	48
TOTAL	4,230	3,710	14%	15	520

Screenline 9

SR 20 e/o Regent St	155	195	-21%	46	-40
Fairhaven Ave e/o Anacortes St	1,614	1,425	13%	21	189
Rio Vista e/o Anacortes St	151	140	8%	51	11
Gilkey Rd e/o Anacortes St	107	155	-31%	50	-48
TOTAL	2,027	1,915	6%	19	112

BURLINGTON SCREENLINE TOTALS

37,079	35,795	4%

Screenline 14

W Division St at Skagit River	2,024	1,960	3%	18	64
TOTAL	2,024	1,960	3%	18	64

Screenline 15

Stewart Rd w/o Riverside Dr	324	260	25%	42	64
College Way w/o Riverside Dr	1,480	1,820	-19%	19	-340
Cameron Way w/o Riverside Dr	483	660	-27%	29	-177
4th St N s/o Fulton St	1,362	1,150	18%	23	212
Kincaid St e/o I-5	1,184	1,130	5%	23	54
TOTAL	4,833	5,020	-4%	15	-187

Screenline 16

Hoag Rd w/o Riverside Dr	593	460	29%	34	133
College Way w/o Riverside Dr	1,824	1,940	-6%	18	-116
Fir St w/o Riverside Dr	983	740	33%	28	243
Fulton St e/o 4th St N	458	620	-26%	30	-162
TOTAL	3,858	3,760	3%	15	98

Screenline 17

Hoag Rd w/o Laventure Rd	185	225	-18%	44	-40
College Way w/o Laventure Rd	1,093	1,100	-1%	23	-7
Fir St w/o Laventure Rd	397	350	13%	38	47
Division St e/o Laventure Rd	464	325	43%	40	139
Section St e/o Laventure Rd	138	150	-8%	50	-12
Blackburn Rd e/o Laventure Rd	86	85	1%	57	1
TOTAL	2,363	2,235	6%	17	128

Screenline 18

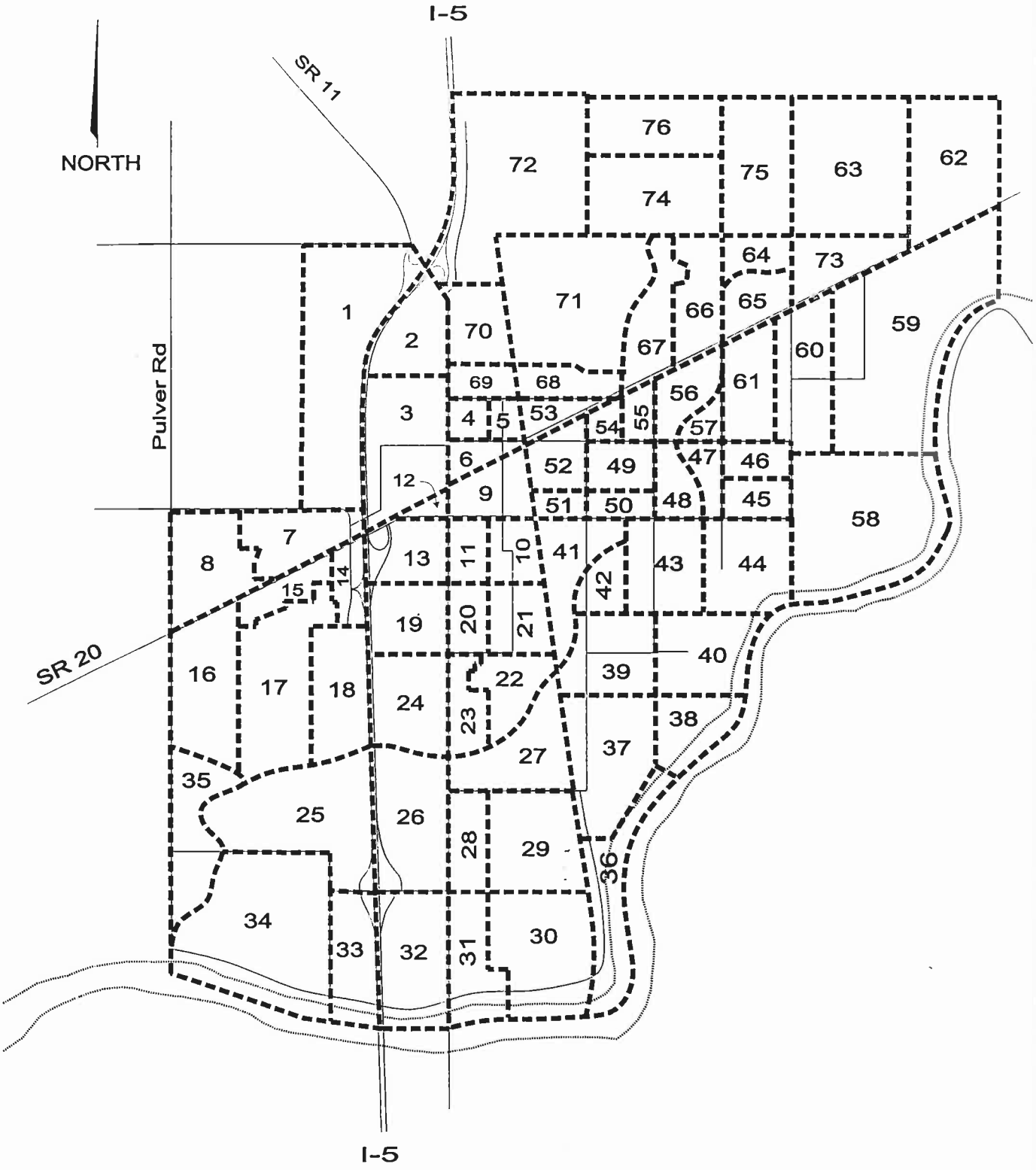
SR 538 e/o Martin Rd	653	560	17%	31	93
Division St e/o Waugh Rd	103	115	-10%	54	-12
Little Mountain Rd e/o "Waugh Rd"	86	85	1%	57	1
TOTAL	842	760	11%	27	82

MOUNT VERNON SCREENLINE TOTALS

42,622	42,755	0%

CITY OF MOUNT VERNON
SCREENLINE SUMMARY TABLE
1992 PM PEAK HOUR MODEL

SCREENLINES	Model Volume	Ground Count	Percent Difference	Allowable Deviation	Volume Difference
Screenline 10					
Freeway Dr n/o College Way	761	780	-2%	27	-19
I-5 SB n/o College Way	2,327	2,300	1%	17	27
I-5 NB n/o College Way	2,596	2,320	12%	16	276
Riverside Dr n/o College Way	1,706	1,570	9%	20	136
Laventure Rd n/o College Way	372	730	-49%	28	-358
Martin Rd n/o College Way	219	125	75%	52	94
TOTAL	7,981	7,825	2%	15	156
Screenline 11					
Freeway Dr s/o College Way	783	1,060	-26%	24	-277
I-5 SB s/o College Way	1,890	2,090	-10%	18	-200
I-5 NB s/o College Way	2,447	2,130	15%	17	317
Riverside Dr s/o College Way	1,407	1,540	-9%	21	-133
18th St N s/o College Way	569	490	16%	33	79
Laventure Rd s/o College Way	766	630	22%	29	136
Waugh Rd s/o College Way	132	215	-39%	45	-83
TOTAL	7,994	8,155	-2%	15	-161
Screenline 12					
Freeway Dr s/o Cameron Way	1,254	1,440	-13%	21	-186
I-5 SB s/o College Way	1,890	2,090	-10%	18	-200
I-5 NB s/o College Way	2,447	2,130	15%	17	317
Riverside Dr s/o Fir St	1,188	1,150	3%	23	38
18th St N s/o Fir St	436	350	25%	38	86
Laventure s/o Fir St	406	400	1%	36	6
Waugh Rd s/o Fir St	37	150	-75%	50	-113
TOTAL	7,658	7,710	-1%	15	-52
Screenline 13					
Blackburn Rd w/o Old Hwy 99	119	280	-58%	41	-161
2nd St S n/o Blackburn Rd	852	710	20%	28	142
6th St S n/o Blackburn Rd	23	100	-77%	55	-77
I-5 SB n/o Blackburn Rd	1,799	2,130	-16%	17	-331
I-5 NB n/o Blackburn Rd	1,939	1,865	4%	19	74
18th St S Blackburn Rd	337	245	38%	42	92
TOTAL	5,069	5,330	-5%	15	-261



WILLIAM POPP ASSOCIATES	TRAFFIC ANALYSIS ZONES	CITY OF BURLINGTON TRANSPORTATION STUDY

- Zone 174: I-5 s/o SR 534/SR 530
- Zone 175: SR 530 s/o SR 534
- Zone 176: McLean w/o Pulver
- Zone 177: SR 536 w/o Pulver
- Zone 178: Peterson Rd w/o Pulver
- Zone 179: Josh-Wilson Rd w/o Pulver

These external zones play a two part role in the model; only a certain portion of the trips at an external zone interact with TAZ's within the model, the remainder of the trips at an external interact with other external zones outlying the study area. These trips are commonly called through trips since they have neither an origin or destination within the study area yet they pass through the study area impacting the network. An origin-destination study conducted by KPMG Peat Marwick in 1992 on I-5 at Bow-Hill assisted in determining destinations percentages to Burlington, Mount Vernon and all locations outside the study area.

In order to determine trip distribution from externals to other externals, for trips not associated with the I-5 at Bow-Hill O-D study, a "spreadsheet gravity analysis" was conducted based on respective trip end weighting of individual external zone totals and zone totals for the Burlington area and the Mount Vernon area. Note that some initial zeroing of some external-external interchanges was made prior to the gravity analysis. This was done to prevent the model from distributing trips from one external to another (through the network) that would normally not enter the modeled network to reach its destination. For example, trip interchanges from I-5 south of Cook Rd to SR 11 south of Cook Rd would likely use Cook Rd thus not entering the model network. Therefore, we can assume that no trips (negligable, if any) would interact between I-5 south of Cook Rd and SR 11 south of Cook Rd which would impact the network; all trips interacting between these two externals would be north of the model network.

The remainder of trips at the externals (total trip ends minus pass-through trips) will interact with the internal TAZ's. This trip distribution process uses the Inner Mode Subtractive (IMS) Gravity Model to distribute trips between zones. In simple, this process is based on the trip ends at each zone divided by the distance between them.

Table __ depicts total external trips, external-external trips, and external-internal (vic-versa) trips.

External Zone Historical Traffic Counts and Projections

In order to determine future year traffic volumes at all external locations, a thorough review of historical count data was performed. If the data was limited, traffic projections were based on TAZ growth in the vicinity of the external; generally based on Burlington total trip end growth or Mount Vernon total trip growth. The following are the assumptions made at each external:

- Zone 162: Bennet w/o Pulver Growth Factor = 1.40
  Growth based on growth within surrounding area.
- Zone 163: SR 20 w/o Pulver Growth Factor = 2.11
  Growth based on SR 20 ADT historical count data. Based on 15 years of data the growth rate was calculated to be 3.8% per year (compounded annually).
- Zone 164: SR 11 nw/o Pulver Growth Factor = 2.28
  Growth based on SR 11 ADT historical count data. The growth rate was calculated to be 4.2% per year (compounded annually). Note that this zone also includes Pulver n/o SR 11.

EXTERNAL VOLUMES
BURLINGTON/MOUNT VERNON TRANSPORTATION MODEL

External TAZ	1992 PM Peak X - X Orig	1992 PM Peak X - X Dest	1992 PM Peak I - X, X - I Orig	1992 PM Peak I - X, X - I Dest	1992 PM Peak All Trips Orig	1992 PM Peak All Trips Dest
162	67	48	176	147	243	195
163	343	278	485	430	828	708
164	42	66	134	200	176	266
165	1227	1240	281	318	1508	1558
166	6	38	14	75	20	113
167	131	215	396	524	527	739
168	10	27	29	56	39	83
169	57	92	138	216	195	308
170	5	15	24	37	29	52
171	9	11	30	30	39	41
172	27	49	70	105	97	154
173	5	8	20	18	25	26
174	1289	1165	617	677	1906	1842
175	63	52	142	103	205	155
176	61	58	158	183	219	241
177	116	105	303	213	419	318
178	43	37	133	127	176	164
179	31	28	86	96	117	124

External TAZ	2012 PM Peak X - X Orig	2012 PM Peak X - X Dest	2012 PM Peak I - X, X - I Orig	2012 PM Peak I - X, X - I Dest	2012 PM Peak All Trips Orig	2012 PM Peak All Trips Dest	20 Year Growth
162	94	68	248	206	342	274	1.41
163	721	589	1030	901	1751	1490	2.11
164	96	150	306	457	402	607	2.28
165	2437	2479	568	623	3005	3102	1.99
166	12	74	127	145	139	219	2.69
167	211	348	640	841	851	1189	1.61
168	14	38	41	77	55	115	1.39
169	103	167	249	386	352	553	1.80
170	8	27	44	66	52	93	1.79
171	13	15	42	42	55	57	1.40
172	75	135	194	289	269	424	2.76
173	7	11	28	25	35	36	1.39
174	2810	2557	1366	1471	4176	4028	2.19
175	104	86	235	167	339	253	1.64
176	113	107	294	339	407	446	1.85
177	179	164	472	328	651	492	1.55
178	84	71	260	248	344	319	1.95
179	60	55	169	184	229	239	1.94

X-X: External to External Trips

I-X, X-I: Internal to External and External to Internal Trips

EXTSUM.XLS 11/30/93

- Zone 165: I-5 north — Growth Factor = 1.99
  Growth based on I-5 ADT historical count data. Based on 15 years of data the growth rate was calculated to be 3.5% per year (compounded annually).
- Zone 166: Old SR 99 — Growth Factor = 2.69
  Growth based on Burlington trip end growth over 20 years and adjacent TAZ.
- Zone 167: SR 20 east — Growth Factor = 1.61
  Growth based on SR 20 ADT historical count data. Based on 15 years of data the growth rate was calculated to be 2.4% per year (compounded annually).
- Zone 168: Francis Rd — Growth Factor = 1.40
  Growth assumption 2% over twenty years.
- Zone 169: SR 9 n/o SR 538 — Growth Factor = 1.80
  Growth based on straight line projections from SR 9 ADT historical count data.
- Zone 170: SR 9 s/o Big Lake — Growth Factor = 1.82
  Growth based on straight line projections from SR 9 ADT historical count data.
- Zone 171: West Big Lake Rd — Growth Factor = 1.40
  Growth assumption 2% over twenty years.
- Zone 172: SR 534 e/o Cedardale — Growth Factor = 2.76
  Growth based on SR 534 ADT historical count data. Based on 15 years of data the growth rate was calculated to be 5.2% per year (compounded annually).
- Zone 173: Cedardale s/o SR 534 — Growth Factor = 1.40
  Growth assumption 2% over twenty years.
- Zone 174: I-5 s/o SR 534/SR 530 — Growth Factor = 2.19
  Growth based on I-5 ADT historical count data. Based on 15 years of data the growth rate was calculated to be 4.0% per year (compounded annually).
- Zone 175: SR 530 s/o SR 534 — Growth Factor = 1.65
  Growth based on straight line projections from limited SR 530 ADT historical count data.
- Zone 176: McLean w/o Pulver — Growth Factor = 1.85
  Growth based on Mount Vernon trip end growth over 20 years.
- Zone 177: SR 536 w/o Pulver — Growth Factor = 1.55
  Growth based on SR 536 ADT historical count data. Based on 15 years of data the growth rate was calculated to be 2.2% per year (compounded annually).
- Zone 178: Peterson Rd w/o Pulver — Growth Factor = 1.95
  Growth based on Burlington trip end growth over 20 years.
- Zone 179: Josh-Wilson Rd w/o Pulver — Growth Factor = 1.95
  Growth based on Burlington trip end growth over 20 years.

Some traffic records/counts and projections are attached with this appendix. The full Traffic Counts appendix is on file with the City of Burlington entitled "City of Burlington Transportation Plan, Appendix A".

Trip Generation Rates

PM peak hour trip generation rates for all population and employment data were based on the Institute of Transportation Engineers (ITE) Trip Generation Report (Fifth Edition). The number of trips that a TAZ generates is a function of applying trip generation factors to the land use data applicable to that TAZ. The trip rates that were used are shown in Table __. The results of the previous Riverside Drive 1992 model calibration efforts suggested that these rates are satisfactory.

Table __
Burlington/Mount Vernon
Trip Generation Rates (PM Peak Hour)

Category	Independent Variable	Total PM PK	Origin	Dest.
Single-Family Residential	Persons	0.28	0.10	0.18
Multi-Family Residential	Persons	0.42	0.13	0.29
Manufacturing, Construction, Agriculture	Employee	0.41	0.31	0.10
Trade	Employee	2.00	1.00	1.00
Trans/Comm/Util	Employee	0.72	0.63	0.09
Office/Services	Employee	0.40	0.34	0.06
Health Services	Employee	1.14	0.74	0.40
Hotels	Employee	7.60	3.04	4.56
Government	Employee	0.70	0.48	0.22
High School	Employee	0.83	0.52	0.31
Elem/Middle School	Employee	0.28	0.20	0.08

Trip End Summaries

The Burlington study area PM peak hour traffic generation results for 1992 and 2012 are depicted by TAZ in Table __. Mount Vernon study area PM peak hour traffic generation results for 1992 and 2012 are depicted by TAZ in Table __. A trip end summary table, Table __ below, summarizes trip end totals for Burlington and Mount Vernon.

Table __
Burlington/Mount Vernon
Trip End Summaries (Vehicles, PM Peak Hour)

	Year 1992	Year 2012	Growth
Burlington			
Origins	4,388	8,662	1.97
Destinations	4,192	8,085	1.93
Burlington Totals	8,580	16,747	1.95
Mount Vernon			
Origins	9,479	17,554	1.85
Destinations	9,194	17,447	1.90
Mount Vernon Totals	18,673	34,991	1.87
Grand Totals	27,253	51,738	1.90

CITY OF BURLINGTON
TRIP END SUMMARIES

TAZ	1992 PM Peak Trips Ends Origin	Destination	Total	2012 PM Peak Trip Ends Origin	Destination	Total	Growth
1	8	7	15	11	9	20	33%
2	12	11	23	15	12	27	17%
3	207	157	364	290	271	561	54%
4	87	75	162	109	97	206	27%
5	112	43	155	134	52	186	20%
6	222	170	392	261	198	459	17%
7	67	99	166	130	213	343	107%
8	44	65	109	66	99	165	51%
9	137	99	236	173	127	300	27%
10	58	42	100	81	54	135	35%
11	116	124	240	204	211	415	73%
12	9	4	13	11	6	17	31%
13	142	155	297	440	466	906	205%
14	24	21	45	32	28	60	33%
15	33	28	61	42	35	77	26%
16	10	6	16	19	10	29	81%
17	28	44	72	32	49	81	13%
18	109	110	219	298	302	600	174%
19	47	37	84	133	103	236	181%
20	2	2	4	3	3	6	50%
21	0	1	1	70	33	103	10200%
22	20	37	57	23	41	64	12%
23	85	84	169	386	375	761	350%
24	544	542	1086	635	628	1263	16%
25	2	3	5	2	3	5	0%
26	280	275	555	487	495	982	77%
27	114	97	211	232	192	424	101%
28	365	347	712	587	553	1140	60%
29	28	7	35	238	56	294	740%
30	31	19	50	37	23	60	20%
31	68	50	118	269	221	490	315%
32	45	36	81	339	286	625	672%
33	74	69	143	88	81	169	18%
34	4	8	12	6	10	16	33%
35	4	8	12	4	8	12	0%
36	1	0	1	1	0	1	0%
37	23	26	49	33	40	73	49%
38	1	0	1	1	0	1	0%
39	23	21	44	56	76	132	200%
40	3	1	4	23	38	61	1425%
41	49	58	107	60	72	132	23%

MOUNT VERNON
TRIP END SUMMARIES BY TAZ
PM Peak Hour, Vehicles

TAZ	Year 1993 Orig	Year 1993 Dest	Year 1993 Total	Year 2013 Orig	Year 2013 Dest	Year 2013 Total	% Growth in Total TE's
101	652	540	1,192	948	763	1,711	44%
102	342	269	611	567	475	1,042	71%
103	34	63	97	70	131	201	107%
104	109	212	321	209	400	609	90%
105	43	96	139	90	186	276	99%
106	102	181	283	436	585	1,021	261%
107	363	336	699	457	421	878	26%
108	367	313	680	399	331	730	7%
109	33	51	84	58	82	140	67%
110	167	242	409	400	510	910	122%
111	81	141	222	375	530	905	308%
112	57	37	94	85	47	132	40%
113	289	337	626	484	550	1,034	65%
114	61	103	164	144	187	331	102%
115	98	90	188	218	150	368	96%
116	104	102	206	127	123	250	21%
117	204	290	494	415	467	882	79%
118	137	183	320	260	338	598	87%
119	103	158	261	230	288	518	98%
120	71	129	200	182	294	476	138%
121	37	36	73	922	877	1,799	2364%
122	351	296	647	468	403	871	35%
123	157	174	331	288	323	611	85%
124	332	210	542	437	282	719	33%
125	93	108	201	129	150	279	39%
126	38	51	89	44	62	106	19%
127	540	340	880	725	436	1,161	32%
128	363	367	730	651	634	1,285	76%
129	35	63	98	409	579	988	908%
130	2	3	5	150	220	370	7300%
131	115	208	323	154	259	413	28%
132	20	36	56	36	64	100	79%
133	6	11	17	115	133	248	1359%
134	245	226	471	324	326	650	38%
135	551	315	866	572	323	895	3%
136	72	126	198	79	139	218	10%
137	15	8	23	26	12	38	65%
138	44	83	127	55	98	153	20%

CITY OF BURLINGTON
TRIP END SUMMARIES

TAZ	1992 PM Peak Trips Ends Origin	Destination	Total	2012 PM Peak Trip Ends Origin	Destination	Total	Growth
42	20	22	42	36	48	84	100%
43	61	54	115	66	49	115	0%
44	19	29	48	22	32	54	13%
45	4	8	12	6	11	17	42%
46	23	43	66	24	43	67	2%
47	10	12	22	11	13	24	9%
48	21	38	59	29	49	78	32%
49	83	57	140	117	82	199	42%
50	36	46	82	42	51	93	13%
51	33	52	85	38	56	94	11%
52	181	136	317	216	160	376	19%
53	156	112	268	201	141	342	28%
54	66	45	111	78	52	130	17%
55	55	53	108	62	56	118	9%
56	25	32	57	43	61	104	82%
57	10	14	24	14	20	34	42%
58	6	11	17	10	19	29	71%
59	17	26	43	26	41	67	56%
60	22	28	50	31	42	73	46%
61	26	37	63	31	41	72	14%
62	15	15	30	17	16	33	10%
63	51	86	137	91	156	247	80%
64	4	4	8	18	29	47	488%
65	8	4	12	10	5	15	25%
66	14	16	30	17	19	36	20%
67	38	62	100	47	73	120	20%
68	31	45	76	55	71	126	66%
69	22	23	45	29	35	64	42%
70	24	19	43	135	124	259	502%
71	8	15	23	44	79	123	435%
72	37	25	62	978	755	1733	2695%
73	24	35	59	34	50	84	42%
74	0	0	0	23	30	53	n/a
75	0	0	0	0	0	0	0%
76	0	0	0	0	0	0	0%
Totals	4388	4192	8580	8662	8085	16747	95%
Mount Vernon TAZ Totals TAZ 98 through 161	9384	9272	18656	17461	17549	35010	88%

MOUNT VERNON
TRIP END SUMMARIES BY TAZ
PM Peak Hour, Vehicles

TAZ	Year 1993 Orig	Year 1993 Dest	Year 1993 Total	Year 2013 Orig	Year 2013 Dest	Year 2013 Total	% Growth in Total TE's
139	41	47	88	195	336	531	503%
140	38	33	71	163	119	282	297%
141	55	51	106	98	36	134	26%
142	70	83	153	581	601	1,182	673%
143	36	52	88	166	121	287	226%
144	37	29	66	546	419	965	1362%
145	63	83	146	344	336	680	366%
146	6	11	17	6	11	17	0%
147	14	25	39	14	25	39	0%
148	8	14	22	98	186	284	1191%
149	2	4	6	2	4	6	0%
150	23	42	65	23	42	65	0%
151	9	17	26	9	17	26	0%
152	20	35	55	45	81	126	129%
153	69	88	157	125	188	313	99%
154	102	149	251	215	329	544	117%
155	81	38	119	89	42	131	10%
156	383	212	595	558	283	841	41%
157	140	178	318	168	210	378	19%
158	53	65	118	62	78	140	19%
159	21	35	56	58	77	135	141%
160	0	1	1	8	14	22	2100%
161	819	619	1,438	1,018	803	1,821	27%
98	312	243	555	450	342	792	43%
99	538	456	994	572	478	1,050	6%
100	106	50	156	193	91	284	82%
Study Area Totals	9,479	9,194	18,673	17,544	17,447	34,991	87%

Future Year Analysis

In order to address the impact of facility improvements made in the future, it was necessary to develop 2012 socioeconomic data projections and external zone growth projections as they are identified previously. Also, to properly understand the impacts of future traffic, the model year 2012 was initially loaded on an existing network followed by a loading on the existing and committed network.

Also, in order to assess deficiencies and required improvements, a level of service look-up table was developed. See the level-of-service table attached to this appendix for the PM peak hour level of service maximum values used for evaluating deficiencies and needs. This table is similar to tables used previously for system analysis in this region.

The following list are the networks which were preliminary tested with Year 2012 PM peak hour volumes. These networks are defined as follows:

Existing Network: The 1992 existing network. This loading was plotted and analyzed; see loading attachments.

Existing & Committed Network: This network includes projects identified in the City of Burlington's Six Year Transportation Program as well as WSDOT plans. This loading was plotted and analyzed; see loading attachments. Identified improvements include:

- Bouslog Rd connection from Andis Rd to McCorquedale
- Andis Rd connection from Pulver Rd to Bouslog Rd
- Spruce connection to Pease Rd across Gages Slough
- George Hopper connection from Burlington Blvd to Port Drive
- A frontage road (east side of I-5) from Andis Rd to Rio Vista
- Goldenrod Road underpass of I-5 SB on/off ramps
- SR 20 interchange improvements with I-5 SB on/off ramps.
- Connection from SR 20 to Norris St at I-5 NB on/off ramps
- Deletion of Peterson Rd existing intersection with SR 20
- Connection of Peterson Rd to new I-5 SB on/off ramp location
- Widening of Burlington Boulevard from north city limits to I-5/SR 11 interchange.
- Signals at SR 20/Pulver, SR 20/Peterson Rd/I-5 SB on/off ramps (new), SR 20/Frontage Rd (east side), Fairhaven/Spruce, and Rio Vista/Spruce

This network was also loaded with the Year 2000 PM peak hour volumes. This loading was plotted and analyzed; see loading attachments.

Alternative Network 1: Existing and Committed Network with addition of connection of Rio Vista Avenue over railroad tracks and signal at Anacortes/Rio Vista.

Alternative Network 2: Alternative Network 1 with widening of SR 20 from Burlington Boulevard easterly.

Alternative Network 3: Alternative Network 1 with addition of Signals at SR 20/Spruce and Pease Rd/Port Drive

Alternative Network 4: Existing and Committed Network with widening of SR 20 from Burlington Boulevard easterly. Also includes signal at SR 20/Spruce, SR 20/Anacortes Jct, and SR 20/Gardener.

Alternative Network 5: Alternative 4 with widening of I-5 south of SR 20 interchange and Rio Vista connection from Spruce to Anacortes. Also includes signal at Burlington Blvd/Old SR 99.

Alternative Network 6: Alternative 5 with realignment of Whitmarsh to connect with Anacortes. Speed increase on Anacortes to 35 south of Gilkey. Also includes signals at I-5 ramps with George Hopper overpass.

Alternative Network 7: Alternative 6 with 4 lanes on Anacortes.

Alternative Network 8: Alternative 6 with speed increase on Rio Vista to 30.

Alternative Network 9: Alternative 8 with signal at Spruce/Pease. This loading was plotted and analyzed; see loading attachments.

Alternative Network 10: Alternative 9 with new bridge across Skagit River. This loading was plotted and analyzed; see loading attachments.

Alternative Network 11: Alternative 9 without Norris St extension. This loading was plotted and analyzed; see loading attachments.

Alternative Network 12: Alternative 11 without Rio Vista with Greenleaf with 6 lanes on SR 20 between I-5 and Burlington Blvd

Alternative Network 13: Alternative 12 with 2nd bridge over Skagit River.

Alternative Network 14: Alternative 12 with Gilkey extension between Spruce and Anacortes.

Alternative Network 15: Alternative 14 with 2nd bridge over Skagit River

APPENDIX B

ATTACHMENTS

CITY OF BURLINGTON
PEAK HOUR LEVEL OF SERVICE MAXIMUM VOLUMES - TWO WAY*

FREEWAYS (Suburban)				FREEWAYS (CBD)				MULTI-LANE HIGHWAYS			
LANES	LEVEL-OF-SERVICE			LANES	LEVEL-OF-SERVICE			LANES	LEVEL-OF-SERVICE		
	C	D	E		C	D	E		C	D	E
4	4,681	5,612	5,922	4	4,768	5,585	6,081	4	3,780	4,797	5,373
6	7,012	8,422	8,892	6	7,143	8,378	9,118	6	5,661	7,191	8,064
8	9,353	11,224	11,853	8	9,527	11,171	12,154	2 lane highway			2,100

PRINCIPAL ARTERIALS

Group 1 (0.5 to 2.5 (signalized intersections per mile)				Group 2 (2.6 to 5.0 (signalized intersections per mile)				Group 3 (more than 5.0 (signalized intersections per mile)			
LANES	LEVEL-OF-SERVICE			LANES	LEVEL-OF-SERVICE			LANES	LEVEL-OF-SERVICE		
	C	D	E		C	D	E		C**	D	E
2	1,422	1,539	1,656	2	756	1,161	1,377	2	---	891	1,287
4	2,925	3,141	3,339	4	1,557	2,457	2,853	4	---	1,800	2,718
6	4,437	4,734	5,022	6	2,367	3,789	4,338	6	---	2,709	4,176

MINOR ARTERIALS

Group 1 (0.5 to 2.5 (signalized intersections per mile)				Group 2 (2.6 to 5.0 (signalized intersections per mile)				Group 3 (more than 5.0 (signalized intersections per mile)			
LANES	LEVEL-OF-SERVICE			LANES	LEVEL-OF-SERVICE			LANES	LEVEL-OF-SERVICE		
	C	D	E		C**	D	E		C**	D	E
2	1,224	1,350	1,458	2	---	963	1,179	2	---	558	1,107
4	2,538	2,754	2,952	4	---	2,052	2,466	4	---	1,143	2,367
6	3,861	4,167	4,437	6	---	3,078	3,771	6	---	1,728	3,654

ONE-WAY FACILITIES								TWO-WAY COLLECTORS (Intersection analysis)			
Group 2 (2.6 to 5.0 (signalized intersections per mile)				Group 3 (more than 5.0 (signalized intersections per mile)							
LANES	LEVEL-OF-SERVICE			LANES	LEVEL-OF-SERVICE			LANES	LEVEL-OF-SERVICE		
	C	D	E		C	D	E		C	D	E
2	1,386	1,705	1,870	2	594	1,430	1,705	2	750	891	999
3	2,134	2,618	2,827	3	902	2,145	2,607	4	1,540	1,863	2,052
4	2,893	3,531	3,795	4	1,221	2,860	3,509	6	2,336	2,880	3,114

ASSUMPTIONS

	Freeway		Multi-	Principal Arterials			Minor Arterials			One- Way		Collector
	Suburban	CBD	Lane	G-1	G-2	G-3	G-1	G-2	G-3	G-2	G-3	
K	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
D	0.59	0.56	0.57	0.58	0.58	0.54	0.58	0.58	0.54	1.00	1.00	0.58
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Lefts	N/A	N/A	N/A	0.07	0.07	0.07	0.09	0.09	0.09	0.07	0.07	0.12
Class	N/A	N/A	N/A	I	I	II	I	I	II	I	II	N/A
Ln Cap	1,900	1,850	1,850	1,700	1,700	1,650	1,650	1,650	1,650	1,700	1,650	1,600
L Bays	N/A	N/A	N/A	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes
Level	Yes	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Speed	N/A	N/A	50	45	45	35	40	40	35	45	35	N/A
Arrival	N/A	N/A	N/A	4	4	4	4	4	4	5	5	3
Signal***	N/A	N/A	<5	1.5	4	7	1.5	4	7	4	7	N/A
C	N/A	N/A	N/A	120	120	120	120	120	120	120	120	120
g/C	N/A	N/A	N/A	0.50	0.50	0.50	0.45	0.45	0.45	0.55	0.55	0.35

* Values shown are based on the 1985 Highway Capacity Manual
The table does not constitute a standard, but can be used for general planning applications.

** Cannot be achieved

*** Signalized intersections per mile

CITY OF BURLINGTON
PEAK HOUR LEVEL OF SERVICE MAXIMUM VOLUMES* - DIRECTIONAL

FREEWAYS (Suburban)

LANES	LEVEL-OF-SERVICE		
	C	D	E
1	2,762	3,311	3,494
2	4,137	4,969	5,247
3	5,518	6,622	6,994

FREEWAYS (CBD)

LANES	LEVEL-OF-SERVICE		
	C	D	E
1	2,670	3,128	3,406
2	4,000	4,692	5,106
3	5,335	6,256	6,806

MULTI-LANE HIGHWAYS

LANES	LEVEL-OF-SERVICE		
	C	D	E
2	2,155	2,734	3,063
3	3,227	4,099	4,596

PRINCIPAL ARTERIALS

Group 1 (0.5 to 2.5 (signalized intersections per mile)

LANES	LEVEL-OF-SERVICE		
	C	D	E
1	825	893	960
2	1,697	1,822	1,937
3	2,573	2,746	2,913

Group 2 (2.6 to 5.0 (signalized intersections per mile)

LANES	LEVEL-OF-SERVICE		
	C	D	E
1	438	673	799
2	903	1,425	1,655
3	1,373	2,198	2,516

Group 3 (more than 5.0 (signalized intersections per mile)

LANES	LEVEL-OF-SERVICE		
	C**	D	E
1	---	481	695
2	---	972	1,468
3	---	1,463	2,255

MINOR ARTERIALS

Group 1 (0.5 to 2.5 (signalized intersections per mile)

LANES	LEVEL-OF-SERVICE		
	C	D	E
1	710	783	846
2	1,472	1,597	1,712
3	2,239	2,417	2,573

Group 2 (2.6 to 5.0 (signalized intersections per mile)

LANES	LEVEL-OF-SERVICE		
	C**	D	E
1	---	559	684
2	---	1,190	1,430
3	---	1,785	2,187

Group 3 (more than 5.0 (signalized intersections per mile)

LANES	LEVEL-OF-SERVICE		
	C**	D	E
1	---	301	598
2	---	617	1,278
3	---	933	1,973

ONE-WAY FACILITIES

Group 2 (2.6 to 5.0 (signalized intersections per mile)

LANES	LEVEL-OF-SERVICE		
	C	D	E
1	1,386	1,705	1,870
2	2,134	2,618	2,827
3	2,893	3,531	3,795

Group 3 (more than 5.0 (signalized intersections per mile)

LANES	LEVEL-OF-SERVICE		
	C	D	E
1	594	1,430	1,705
2	902	2,145	2,607
3	1,221	2,860	3,509

TWO-WAY COLLECTORS (Intersection analysis)

LANES	LEVEL-OF-SERVICE		
	C	D	E
1	435	517	579
2	893	1,081	1,190
3	1,355	1,670	1,806

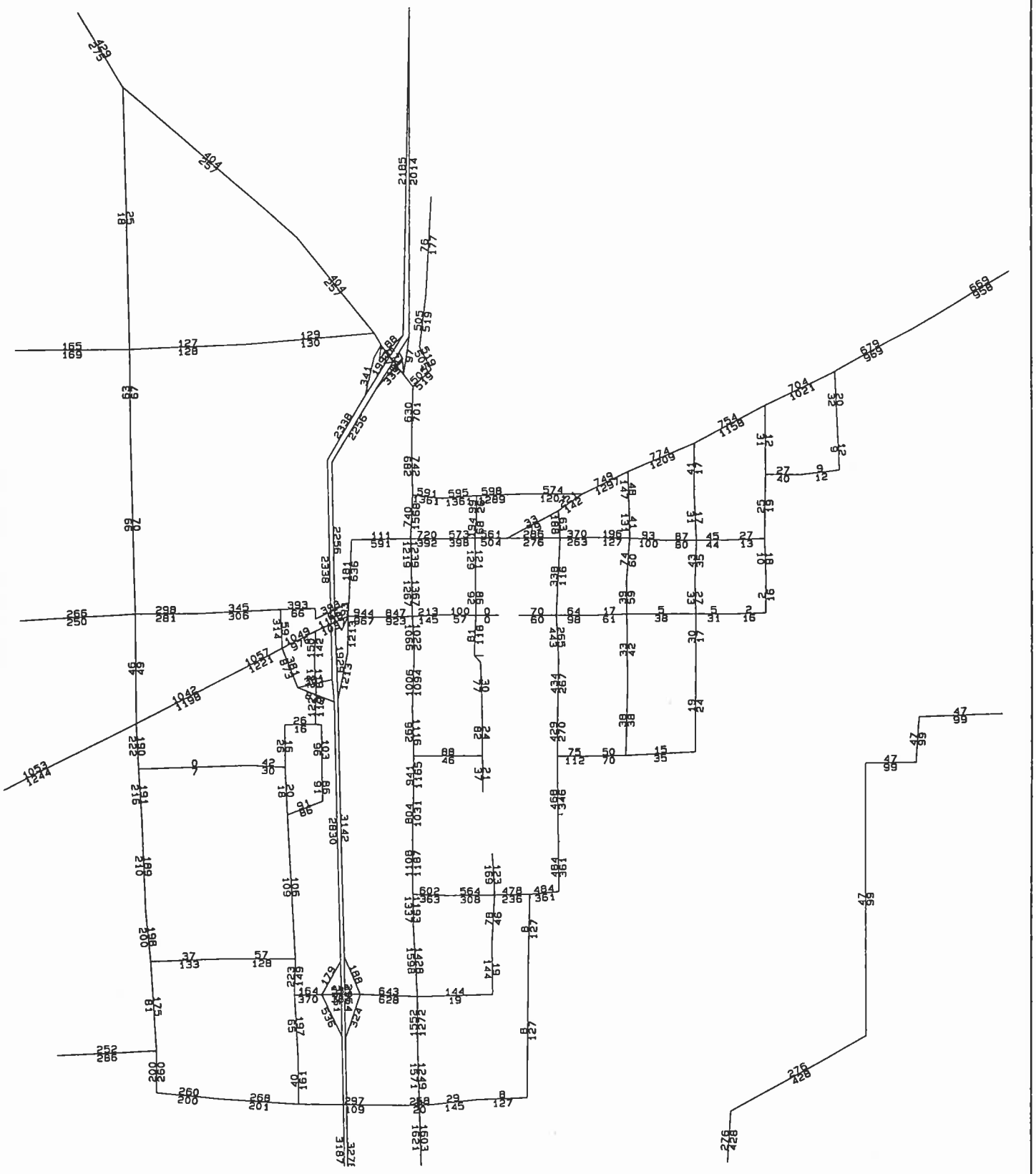
ASSUMPTIONS

	Freeway		Multi-	Principal Arterials			Minor Arterials			One- Way		Collector
	Suburban	CBD	Lane	G-1	G-2	G-3	G-1	G-2	G-3	G-2	G-3	
K	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
D	0.59	0.56	0.57	0.58	0.58	0.54	0.58	0.58	0.54	1.00	1.00	0.58
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Lefts	N/A	N/A	N/A	0.07	0.07	0.07	0.09	0.09	0.09	0.07	0.07	0.12
Class	N/A	N/A	N/A	I	I	II	I	I	II	I	II	N/A
Ln Cap	1900	1850	1850	1700	1700	1650	1650	1650	1650	1700	1650	1600
L Bays	N/A	N/A	N/A	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes
Level	Yes	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Speed	N/A	N/A	50	45	45	35	40	40	35	45	35	N/A
Arrival	N/A	N/A	N/A	4	4	4	4	4	4	5	5	3
Signal***	N/A	N/A	<5	1.5	4	7	1.5	4	7	4	7	N/A
C	N/A	N/A	N/A	120	120	120	120	120	120	120	120	120
g/C	N/A	N/A	N/A	0.50	0.50	0.50	0.45	0.45	0.45	0.55	0.55	0.35

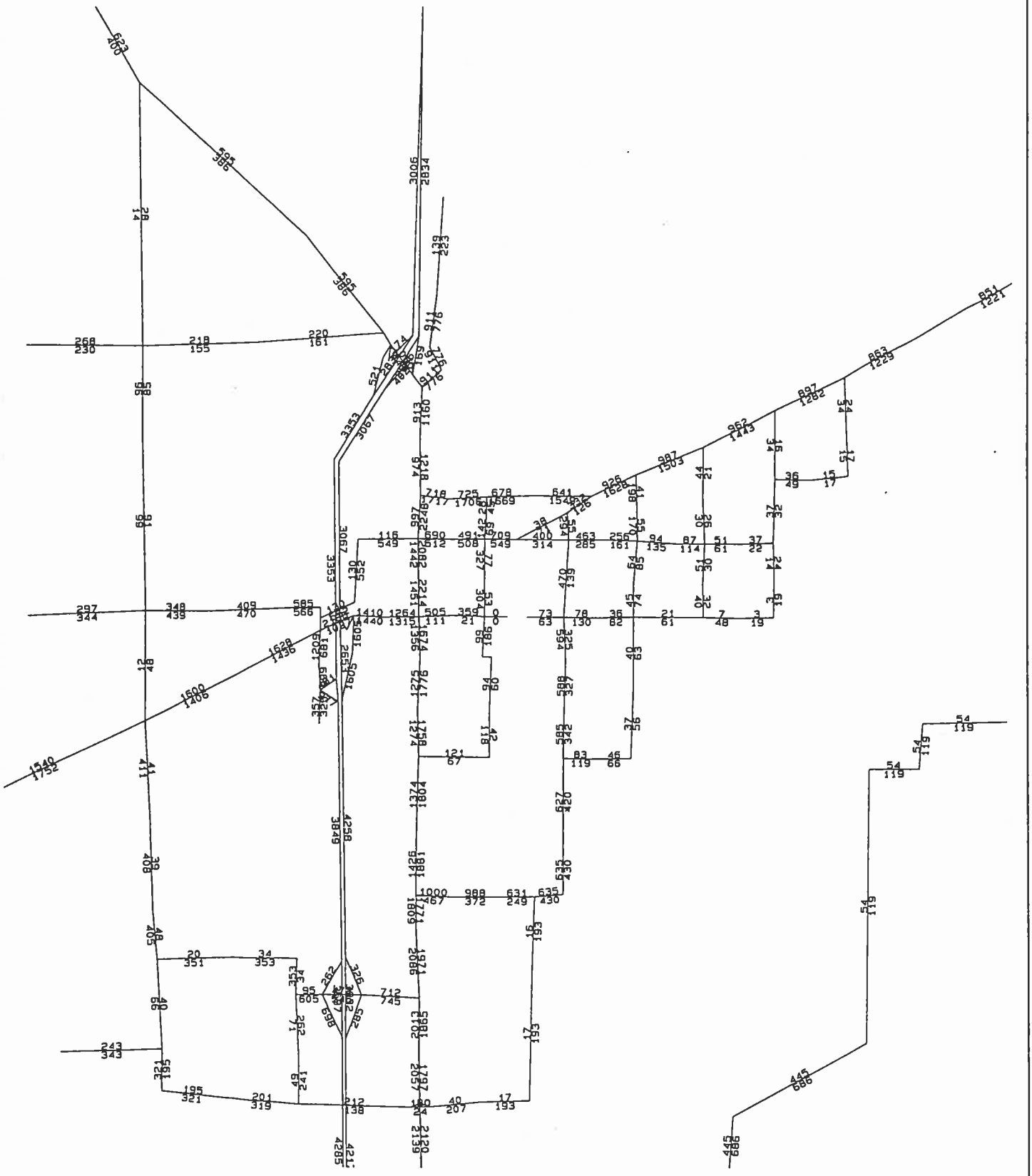
* Values shown are based on the 1985 Highway Capacity Manual
The table does not constitute a standard, but can be used for general planning applications.

** Cannot be achieved

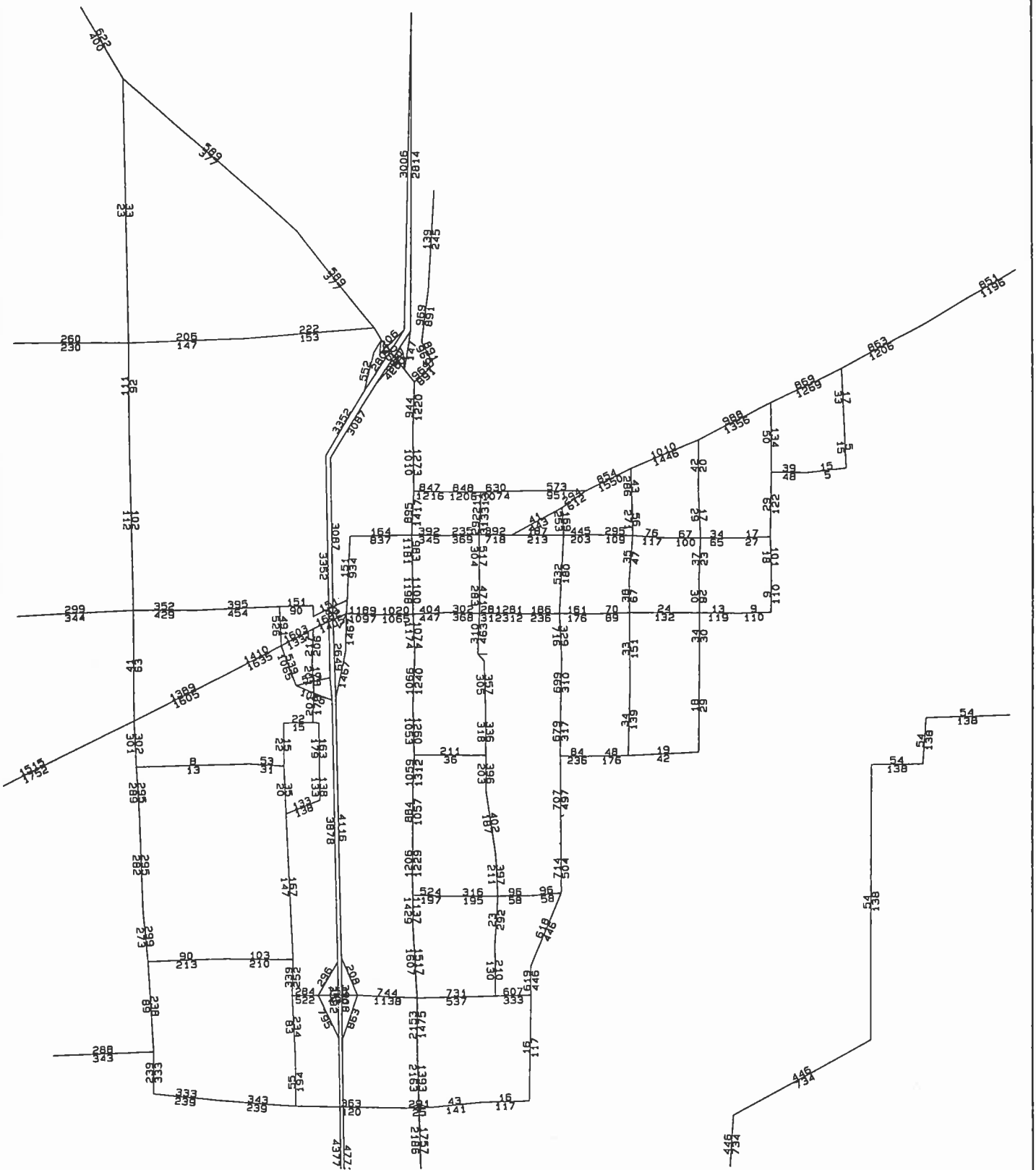
*** Signalized intersections per mile



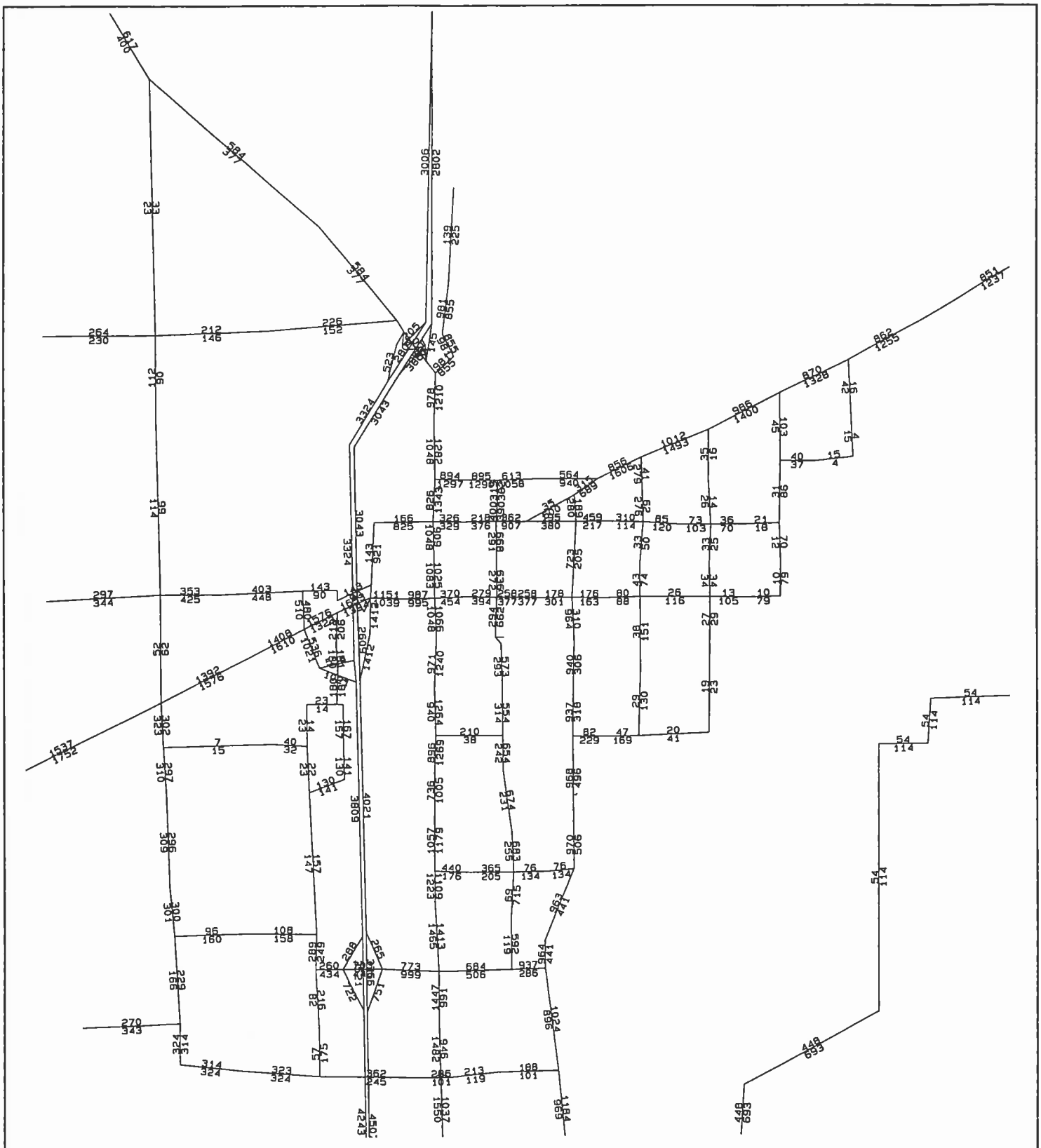
WILLIAM POPP ASSOCIATES	INTERIM YEAR (YEAR 2000) PM PEAK VOLUMES	CITY OF BURLINGTON



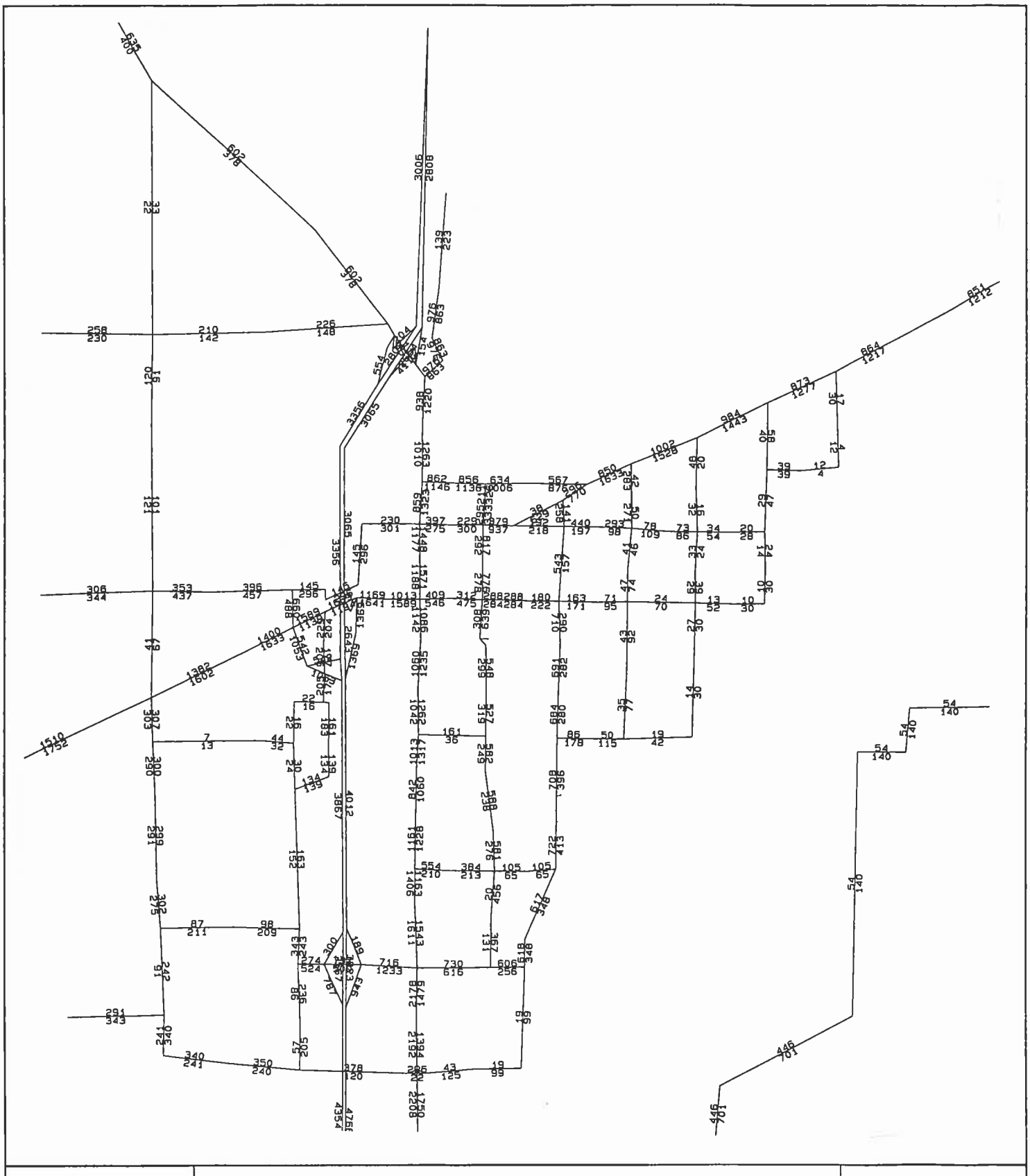
WILLIAM POPP ASSOCIATES	EXISTING NETWORK – 2012 PM PEAK VOLUMES	CITY OF BURLINGTON



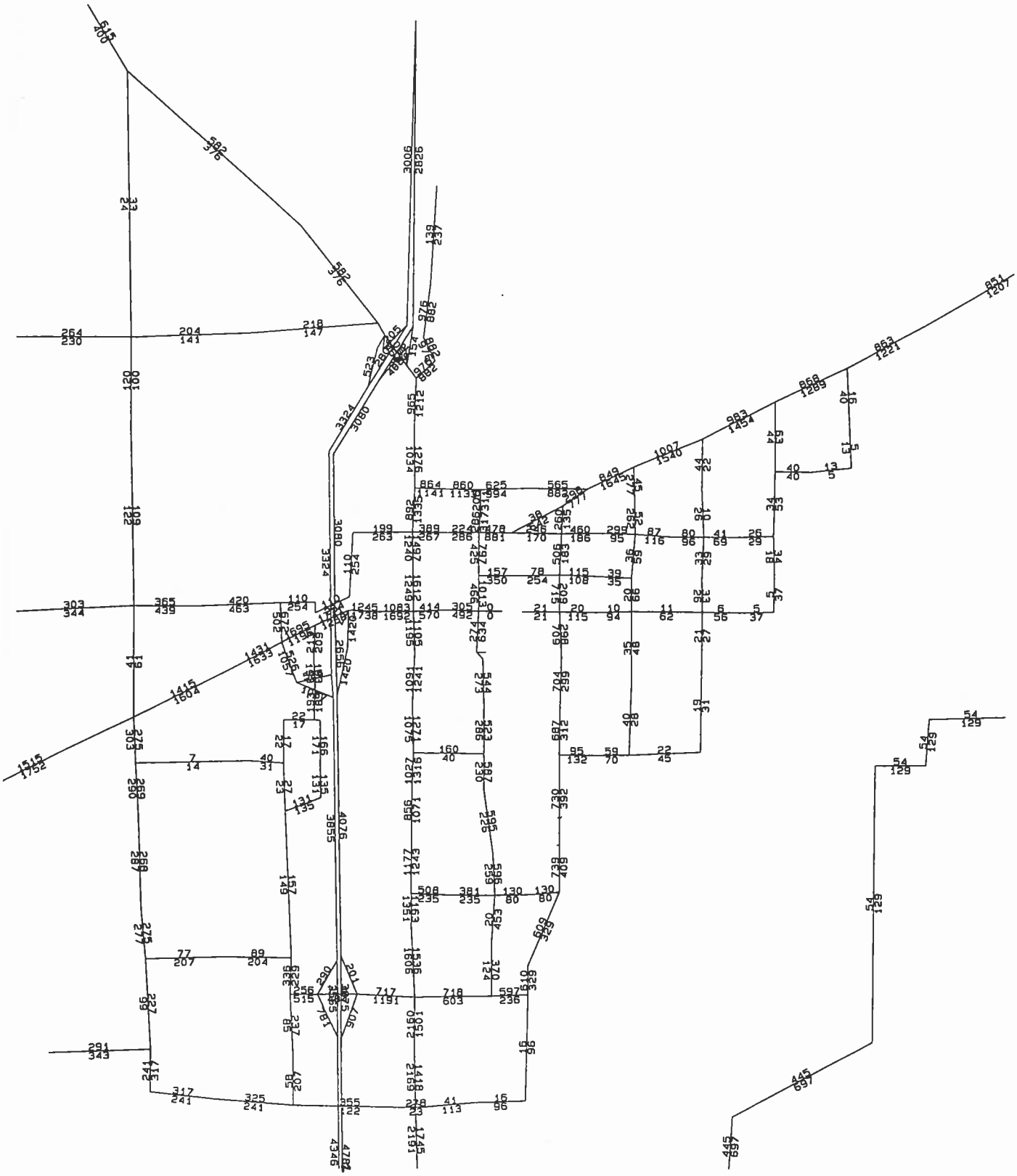
WILLIAM POPP ASSOCIATES	ALTERNATIVE NETWORK 9 2012 PM PEAK	CITY OF BURLINGTON



WILLIAM POPP ASSOCIATES	ALTERNATIVE NETWORK 10	CITY OF BURLINGTON



WILLIAM POPP ASSOCIATES	ALTERNATIVE NETWORK 11	CITY OF BURLINGTON



WILLIAM POPP ASSOCIATES	NETWORK ALTERNATIVE 12 2012 PM PEAK VOLUMES	CITY OF BURLINGTON

APPENDIX D

- Population and employment forecasts

CITY OF BURLINGTON
TRANSPORTATION STUDY

APPENDIX D

POPULATION AND EMPLOYMENT

SUMMARY

Appendix D includes all population and employment land use estimates for existing and future years for the Burlington/Mount Vernon transportation model.

LAND USE ESTIMATES

Land use information for this study was stratified into two general categories: Population and Employment. Population was based on persons per household and household type, and employment was based on employees and employment type.

Population estimates and forecasts were gathered by the City of Burlington for single-family and multi-family categories based on the defined zone structure. All existing and future population and employment data for Mount Vernon was calculated by McConnel/Burke, Inc.

Existing employment estimates for Burlington were gathered by the Department of Employment Securities for the first quarter of 1992 for the aggregated zone structure submitted to DES by Dave Baltz of Skagit County; Table __.

Table __
TAZ Correspondence/Aggegation
City of Burlington

TAZ's	Aggregated TAZ	Non-Aggregated TAZ
1,2	80	3
7,8	81	4
10,11	82	5
14,15	83	6
16,17,35	84	9
25,34	85	12
20-22	86	13
28,30-32	87	18
36,38,40,43-48	88	19
37,39,41,42,50,51	89	23
49,54-57	90	24
68-70	91	26
64-67	92	27
62,63,73	93	29
71,74-76	94	33
58,59,60,61	95	52
		53
		72

In regards to employment forecasts in Burlington, William Popp Associates allocated the covered employment to all TAZ's in the five industry sector groupings (plus two additional services sectors) based on disaggregation of existing control

totals through various statistical processes. Watterson West Group, Inc., then expanded these groupings to include non-covered wage and salary employment, using factors derived from Skagit County data prepared by Scott Bailey, the DES labor market analyst covering the County. Refer to the October 28, 1993 Memorandum from Watterson West Group, Inc. to William Popp Associates, attached with this appendix, which fully details the steps, including the methods and assumptions, followed in the devolepment of the future employment figures.

Also attached to this appendix are Table __ for Burlington 1992 Population and Employment estimates, Table __ for Burlington 2012 Population and Employment estimates, Table __ for Mount Vernon 1992 Population and Employment estimates and Table __ for Mount Vernon 2012 Population and Employment estimates.

CITY OF BURLINGTON
1992 POPULATION & EMPLOYMENT ESTIMATES

TAZ	Single-Family Persons	Multi-Family Persons	Agr Constr Mfg	Whole Retail Trade	Trans Comm Util	Services	Health Services	Hotels (est)	Govt	High School	Elem School
1	9	0	11	4	0	0	0	0	0	0	0
2	4	0	11	9	0	0	0	0	0	0	0
3	116	240	32	20	0	255	0	0	0	77	40
4	85	0	14	45	0	30	28	0	0	0	0
5	24	0	0	22	71	111	0	0	15	0	0
6	14	0	151	139	0	71	18	0	0	0	0
7	270	150	24	0	13	18	0	0	0	0	0
8	347	0	15	0	5	6	0	0	0	0	0
9	110	0	89	63	41	31	0	0	0	0	0
10	48	0	79	23	7	7	0	0	0	0	0
11	94	0	78	23	8	20	2	16	0	0	0
12	2	0	0	3	0-	17	0	0	0	0	0
13	8	0	0	71	14	30	1	17	0	0	0
14	0	0	0	20	0	12	0	0	0	0	0
15	33	0	0	20	0	32	0	0	0	0	0
16	15	0	11	1	0	10	0	0	0	0	0
17	234	0	5	0	0	10	0	0	0	0	0
18	6	250	250	148	19	30	0	17	0	0	0
19	30	0	38	26	12	0	0	0	0	0	0
20	0	0	0	2	0	0	0	0	0	0	0
21	4	0	0	0	0	0	0	0	0	0	0
22	201	0	0	0	0	0	0	0	0	0	0
23	0	0	0	79	0	0	10	0	0	0	0
24	0	0	30	534	0	19	0	0	0	0	0
25	17	0	0	0	0	0	0	0	0	0	0
26	27	0	0	264	0	43	0	0	0	0	0
27	12	0	103	83	0	0	0	0	0	0	0
28	23	0	16	333	0	84	0	0	0	0	0
29	0	0	48	0	21	0	0	0	0	0	0
30	10	0	49	11	0	12	0	0	0	0	0
31	12	0	66	39	0	24	0	0	0	0	0
32	7	0	21	31	0	22	0	0	0	0	0
33	1	0	33	65	0	0	0	0	0	0	0
34	43	0	0	0	0	0	0	0	0	0	0
35	44	0	0	0	0	0	0	0	0	0	0
36	0	0	2	0	0	0	0	0	0	0	0
37	101	0	11	6	0	12	0	0	0	0	0
38	0	0	2	0	0	0	0	0	0	0	0
39	88	0	11	2	0	24	0	0	0	0	0
40	8	0	5	0	0	0	0	0	0	0	0
41	208	0	27	17	0	10	0	0	0	0	0
42	54	0	5	11	0	6	0	0	0	0	0
43	231	0	5	2	0	71	0	0	0	0	55
44	150	0	5	0	0	0	0	0	6	0	0
45	43	0	0	0	0	0	0	0	0	0	0
46	234	0	0	0	0	0	0	0	0	0	0
47	62	0	0	0	0	12	0	0	0	0	0
48	117	50	0	0	0	10	0	0	0	0	0
49	131	15	0	0	21	18	28	0	61	0	0

CITY OF BURLINGTON
1992 POPULATION & EMPLOYMENT ESTIMATES

TAZ	Single-Family Persons	Multi-Family Persons	Agr Constr Mfg	Whole Retail Trade	Trans Comm Util	Services	Health Services	Hotels (est)	Govt	High School	Elem School
50	174	0	22	11	0	6	0	0	0	0	0
51	181	25	0	11	0	6	0	0	0	0	0
52	185	0	213	77	16	36	0	0	0	0	0
53	145	0	57	69	0	160	0	0	5	0	0
54	110	0	20	0	5	18	33	0	34	0	0
55	229	0	23	0	11	18	17	0	0	0	0
56	148	0	22	0	0	2	4	0	0	0	0
57	70	0	11	0	0	0	0	0	0	0	0
58	62	0	0	0	0	0	0	0	0	0	0
59	140	0	11	0	0	0	0	0	0	0	0
60	128	0	5	4	2	7	0	0	0	0	0
61	174	0	5	4	2	6	0	0	0	0	0
62	70	0	16	0	0	10	0	0	0	0	0
63	468	0	9	0	0	7	0	0	0	0	0
64	25	0	5	0	0	0	0	0	0	0	0
65	0	0	16	2	0	2	0	0	0	0	0
66	74	0	17	1	0	2	0	0	0	0	0
67	323	0	13	2	0	2	0	0	0	0	0
68	128	32	5	12	0	0	0	0	0	0	0
69	28	0	7	17	0	0	0	0	0	0	0
70	20	0	3	9	0	0	0	0	25	0	0
71	84	0	0	0	0	0	0	0	0	0	0
72	68	0	87	4	0	0	0	0	0	0	0
73	177	0	12	0	0	6	0	0	0	0	0
74	10	0	0	0	0	0	0	0	0	0	0
75	0	0	0	0	0	0	0	0	0	0	0
76	0	0	0	0	0	0	0	0	0	0	0
Totals	6498	762	1826	2339	268	1345	141	50	146	77	95

CITY OF BURLINGTON
2012 POPULATION & EMPLOYMENT ESTIMATES

TAZ	Single-Family Persons	Multi-Family Persons	Agr Constr Mfg	Whole Retail Trade	Trans Comm Util	Services	Health Services	Hotels (est)	Govt	High School	Elem School
1	15	0	13	5	0	0	0	0	0	0	0
2	8	0	13	10	0	0	0	0	0	0	0
3	243	503	37	25	0	319	0	0	19	77	40
4	149	0	16	53	0	35	32	0	0	0	0
5	38	0	0	26	82	129	0	0	17	0	0
6	21	0	175	162	0	82	21	0	0	0	0
7	607	338	28	0	15	21	0	0	0	0	0
8	535	0	18	0	6	7	0	0	0	0	0
9	164	0	108	79	52	39	0	0	0	0	0
10	52	0	110	33	9	10	0	0	0	0	0
11	84	0	127	45	15	36	4	29	0	0	0
12	3	0	0	4	0	20	0	0	0	0	0
13	15	0	0	244	49	79	3	45	0	0	0
14	0	0	0	27	0	16	0	0	0	0	0
15	58	0	0	23	0	37	0	0	0	0	0
16	25	0	13	1	0	11	0	0	0	0	40
17	264	0	6	0	0	11	0	0	0	0	0
18	15	620	563	435	55	80	0	46	0	0	0
19	35	0	44	89	42	0	0	0	0	0	0
20	0	0	0	3	0	0	0	0	0	0	0
21	4	0	0	0	0	0	0	0	145	0	0
22	230	0	0	0	0	0	0	0	0	0	0
23	0	0	0	355	0	0	45	0	0	0	0
24	0	0	34	620	0	22	0	0	0	0	0
25	17	0	0	0	0	0	0	0	0	0	0
26	280	0	0	438	0	71	0	0	0	0	0
27	12	0	208	168	0	0	0	0	0	0	0
28	25	0	19	536	0	135	0	0	0	0	0
29	0	0	393	0	186	0	0	0	0	0	0
30	15	0	57	13	0	14	0	0	0	0	0
31	13	0	76	203	0	125	0	0	0	0	0
32	7	0	24	269	0	186	0	0	0	0	0
33	3	0	38	76	0	0	0	0	0	0	0
34	58	0	0	0	0	0	0	0	0	0	0
35	44	0	0	0	0	0	0	0	0	0	0
36	0	0	3	0	0	0	0	0	0	0	0
37	175	0	13	6	0	14	0	0	0	0	0
38	0	0	3	0	0	0	0	0	0	0	0
39	387	0	13	3	0	28	0	0	0	0	0
40	208	0	6	0	0	0	0	0	0	0	0
41	270	0	32	19	0	11	0	0	0	0	0
42	188	0	6	13	0	7	0	0	0	0	0
43	196	0	6	3	0	82	0	0	0	0	64
44	166	0	6	0	0	0	0	0	7	0	0
45	62	0	0	0	0	0	0	0	0	0	0
46	238	0	0	0	0	0	0	0	0	0	0
47	65	0	0	0	0	14	0	0	0	0	0
48	158	67	0	0	0	11	0	0	0	0	0
49	206	24	0	0	24	21	33	0	96	0	0
50	194	0	25	13	0	7	0	0	0	0	0

CITY OF BURLINGTON
2012 POPULATION & EMPLOYMENT ESTIMATES

TAZ	Single-Family Persons	Multi-Family Persons	Agr Constr Mfg	Whole Retail Trade	Trans Comm Util	Services	Health Services	Hotels (est)	Govt	High School	Elem School
51	193	27	0	13	0	7	0	0	0	0	0
52	213	0	247	92	20	43	0	0	0	0	0
53	177	0	69	84	0	195	0	0	26	0	0
54	131	0	23	0	6	21	38	0	39	0	0
55	238	0	27	0	13	21	19	0	0	0	0
56	310	0	25	0	0	3	5	0	0	0	0
57	103	0	13	0	0	0	0	0	0	0	0
58	105	0	0	0	0	0	0	0	0	0	0
59	223	0	13	0	0	0	0	0	0	0	0
60	198	0	6	5	3	8	0	0	0	0	0
61	196	0	6	5	3	7	0	0	0	0	0
62	70	0	19	0	0	11	0	0	0	0	0
63	853	0	10	0	0	8	0	0	0	0	0
64	155	0	6	0	0	0	0	0	0	0	0
65	0	0	19	3	0	3	0	0	0	0	0
66	87	0	20	1	0	3	0	0	0	0	0
67	379	0	15	3	0	3	0	0	0	0	0
68	162	41	13	29	0	0	0	0	0	0	0
69	85	0	8	19	0	0	0	0	0	0	0
70	60	0	38	103	0	0	0	0	29	0	0
71	438	0	0	0	0	0	0	0	0	0	0
72	170	0	551	580	66	(300)	(70)	(7)	0	0	0
73	267	0	14	0	0	7	0	0	0	0	0
74	150	0	0	0	0	0	0	0	0	0	40
75	0	0	0	0	0	0	0	0	0	0	0
76	0	0	0	0	0	0	0	0	0	0	0
Totals	10515	1620	3375	4936	646	2320	270	127	378	77	184

CITY OF MOUNT VERNON
1992 POPULATION & EMPLOYMENT ESTIMATES

TAZ	Single-Family Persons	Multi-Family Persons	Agr Constr Mfg	Trade	Trans Comm Util	Office Services	Health Services	Govt
98	0	0	34	227	74	70	5	0
99	0	0	64	418	14	123	0	104
100	0	0	0	1	0	0	15	195
101	235	0	72	465	131	137	0	26
102	19	0	38	248	79	77	6	0
103	346	0	0	0	0	0	0	0
104	929	143	0	0	0	0	0	0
105	89	272	0	0	0	0	0	0
106	526	285	35	0	0	4	0	0
107	52	0	37	315	0	76	8	0
108	0	0	25	283	0	85	6	89
109	81	80	0	13	0	3	0	0
110	233	582	29	1	0	14	33	60
111	471	186	0	0	0	19	4	0
112	34	0	11	15	0	20	0	60
113	361	351	46	152	0	53	0	47
114	563	0	0	0	0	6	3	0
115	201	41	37	21	0	21	10	53
116	252	87	11	0	0	5	20	100
117	1062	235	32	1	0	36	60	0
118	659	161	138	0	0	0	10	0
119	552	161	0	0	0	22	26	0
120	714	0	0	0	0	0	0	0
121	138	0	24	7	0	26	0	0
122	635	0	299	137	15	93	0	35
123	631	0	107	48	0	37	0	0
124	65	21	112	111	0	114	4	281
125	355	69	118	12	0	0	0	0
126	248	0	2	2	0	10	10	0
127	561	0	0	13	0	10	1384	0
128	740	345	0	4	0	0	325	0
129	351	0	0	0	0	0	0	0
130	15	0	0	0	0	0	0	0
131	679	276	0	0	0	0	15	0
132	198	0	0	0	0	0	0	0
133	59	0	0	0	0	0	0	0
134	362	257	53	22	0	41	3	252
135	432	62	238	114	204	248	40	145
136	634	35	0	0	0	0	5	0
137	0	0	0	1	0	0	0	30
138	351	69	0	0	0	0	0	0
139	169	23	0	0	0	0	0	45
140	116	25	26	0	13	21	0	0

CITY OF MOUNT VERNON
1992 POPULATION & EMPLOYMENT ESTIMATES

TAZ	Single-Family Persons	Multi-Family Persons	Agr Constr Mfg	Trade	Trans Comm Util	Office Services	Health Services	Govt
141	168	0	25	16	19	8	0	0
142	335	26	24	11	19	9	0	0
143	253	0	13	5	0	4	0	0
144	89	0	5	5	13	0	0	28
145	386	0	11	11	13	4	0	0
146	63	0	0	0	0	0	0	0
147	138	0	0	0	0	0	0	0
148	78	0	0	0	0	0	0	0
149	23	0	0	0	0	0	0	0
150	232	0	0	0	0	0	0	0
151	92	0	0	0	0	0	0	0
152	196	0	0	0	0	0	0	0
153	415	0	3	2	0	1	0	50
154	761	0	0	2	0	20	20	5
155	0	0	58	27	43	26	0	0
156	27	82	67	37	0	35	0	625
157	564	124	37	22	0	21	20	25
158	310	0	0	0	0	8	0	40
159	191	0	0	0	0	0	2	0
160	4	0	0	0	0	0	0	0
161	32	37	277	520	20	382	20	100
TOTALS	18475	4035	2108	3289	657	1889	2054	2395

CITY OF MOUNT VERNON
2012 POPULATION & EMPLOYMENT ESTIMATES

TAZ	Single-Family Persons	Multi-Family Persons	Agr Constr Mfg	Trade	Trans Comm Util	Office Services	Health Services	Govt
98	0	0	51	316	100	140	10	0
99	0	0	74	435	15	140	0	119
100	0	0	0	2	0	0	22	365
101	255	75	132	643	246	175	0	30
102	40	75	50	419	96	147	11	0
103	602	75	0	0	0	0	0	0
104	1555	413	0	0	0	0	0	0
105	304	452	0	0	0	0	0	0
106	1205	660	109	160	0	105	0	0
107	0	0	43	408	0	86	9	0
108	0	0	64	294	0	96	7	98
109	95	110	0	33	0	3	0	0
110	472	1032	29	42	0	59	160	60
111	1342	715	0	41	0	106	25	110
112	0	0	13	20	0	23	0	110
113	667	665	167	199	0	159	0	55
114	592	197	0	0	0	72	47	0
115	208	77	43	28	0	156	90	55
116	253	123	11	5	0	7	26	115
117	1285	396	32	5	0	53	273	0
118	1272	193	224	21	0	0	23	0
119	687	393	0	0	0	72	116	0
120	1116	235	0	22	0	53	0	0
121	578	160	166	647	0	126	135	5
122	885	85	410	157	19	143	0	50
123	1035	172	267	56	0	70	0	0
124	65	139	146	111	0	133	5	431
125	381	170	136	17	0	27	0	0
126	268	23	3	2	0	10	10	0
127	591	41	0	14	0	11	1849	0
128	1050	630	0	24	0	0	595	0
129	1382	563	5	160	4	100	0	0
130	690	170	0	42	0	40	5	0
131	774	312	0	20	0	0	22	0
132	356	0	0	0	0	0	0	0
133	408	131	0	0	0	75	40	5
134	527	420	61	32	0	52	4	302
135	433	62	238	111	204	248	40	195
136	706	35	0	0	0	0	5	0
137	0	0	0	0	0	0	0	54
138	374	87	0	5	0	0	0	2
139	1325	298	0	0	0	0	0	50
140	336	79	170	10	66	44	0	0

CITY OF MOUNT VERNON
2012 POPULATION & EMPLOYMENT ESTIMATES

TAZ	Single-Family Persons	Multi-Family Persons	Agr Constr Mfg	Trade	Trans Comm Util	Office Services	Health Services	Govt
141	0	0	109	18	68	10	0	0
142	928	202	67	331	45	89	70	0
143	443	0	345	5	0	28	0	0
144	153	0	63	325	121	69	85	50
145	1380	115	158	11	151	28	0	55
146	63	0	0	0	0	0	0	0
147	138	0	0	0	0	0	0	0
148	760	170	0	0	0	0	0	0
149	23	0	0	0	0	0	0	0
150	232	0	0	0	0	0	0	0
151	92	0	0	0	0	0	0	0
152	450	0	0	0	0	0	0	0
153	646	180	5	7	0	14	0	50
154	1057	285	0	43	0	26	25	5
155	0	0	67	29	47	29	0	0
156	0	50	51	37	0	20	0	1025
157	687	124	37	27	0	26	26	35
158	377	0	0	0	0	8	0	45
159	252	72	0	0	0	0	2	45
160	77	0	0	0	0	0	0	0
161	0	65	316	691	22	382	26	120
TOTALS	31872	10726	3862	6025	1204	3460	3763	3641

WATTERSON WEST GROUP, INC. 1121 23rd Avenue East • Seattle, WA 98112
Tel. (206) 322-0522 • FAX (206) 860-9077

MEMORANDUM

October 28, 1993

TO: Bill Popp, William Popp Associates

FROM: Tim Watterson

SUBJECT: Burlington Employment Projections

The attached tables contain the employment estimates and projections for traffic analysis zones in the Burlington urban growth area which you requested me to prepare. This memo describes the steps, including the methods and assumptions, followed in the development of the figures in the tables.

The tables attached with this memo include:

- Table 1: Estimates of total employment for the Burlington TAZs for 1992;
- Table 2: Buildout projections of total employment by TAZ;
- Table 3: Projections of total employment by TAZ to 2012.

The following were the steps in developing the estimates and projections:

1. Starting from the tables of covered employment for the first quarter of 1992, obtained from the Washington State Department of Employment Security, your staff allocated the covered employment to all TAZs in the five industry sector groupings (plus two additional services sectors). I first expanded these to include non-covered wage and salary employment, using factors derived from Skagit County data prepared by Scott Bailey, the DES labor market analyst covering the County. The major missing employment is in corporate officers (excluded by election), railroad workers, and religious institution employees. The final expansion was to include non-wage and salary workers, such as self-employed, proprietors, and partners. To do so, I used statewide ratios, but adjusted to a conservative end to reflect the likelihood that the proportions of such workers in Burlington is at the low end of the range. Margaret Fleek surveyed governmental agencies in Burlington to ascertain the actual levels and locations of government and public education employment. The results of these adjustments are shown in Table 1. DES makes no distinction between full and part-time employees.

2. Margaret Fleek supplied tables of current surveyed land use by zoned land by TAZ, including overall fully developed, underutilized, and vacant land acreages in commercial and industrial zones by TAZ and for fully developed and underutilized land a breakdown of type of use Using the fully developed land uses by TAZ, I estimated some employment densities for commercially and industrially zoned land. This consisted of dividing different

groupings of 1992 employment by each TAZ developed land. For commercial land, the most reasonable set of employment was wholesale/retail, TCU, and all services. For industrial land, the manufacturing, construction, and TCU employment set was chosen. Since there was extreme variation in these densities across TAZs, the citywide density was adopted as a reasonable average with which to build out the vacant land. These citywide densities are 18.02 employees per acre for commercially zoned land, and 25.41 employees per acre for industrially zoned land.

3. These average densities were applied to all vacant and underutilized land in each TAZ to obtain a total of new employment at full buildout. Most of the underutilized land in commercial and industrial zones is currently in residential uses. Therefore, all of the underutilized land was assumed to be available for full development. The only exceptions to this application of average densities was for the large concentrations of industrial land in TAZ 29 and 72. For these, the lower average density for commercial land was applied.

4. For purposes of estimating the newly developed land employment by the horizon year of 2012, an assumption that 55 percent of the vacant and underutilized land capacity would be developed by that year, or an approximate absorption rate of 2.75 percent per year.

5. The new employment in each TAZ by 2012 and at buildout was distributed into the four non-government industry groupings. For commercially zoned land, the new employment was allocated according to the relative proportions of 1992 employment in the TAZ in wholesale and retail trade, TCU, and all services. For industrially zoned land, the new employment was allocated according to the relative proportions of 1992 employment in the TAZ in manufacturing, construction, wholesale and retail trade, TCU, and all services.

6. Since the existing employment base in the City will also change over the 20 years and beyond, it was necessary to apply a factor to the 1992 employment to reflect redevelopment and additional density for what is now considered fully developed land. This can occur not only in older areas and structures, but also in and around new commercial centers. Government centers like schools and police stations can also expand somewhat in their existing sites. To accommodate this type of expansion as the City gains thousands of new population and employment from new development, a modest factor of 0.75 percent growth per year was applied to the 1992 employment base by TAZ. This amounts to an increase of 16.1 percent over 20 years, and 31.2 percent by the hypothesized buildout horizon of approximately 36 years (if the 20-year development rate continues). Extending this growth rate to buildout is consistent with the approach applied in the 20-year projections, which assumes some continuing redevelopment of full developed sites over time.

7. For government employment, the same general growth rate was applied for the TAZs currently containing government facilities. In addition, City staff assisted in identifying likely TAZs for new facilities, for purposes of the travel modeling. These are as follows:

TAZ 16:	Elementary school (40 emp.)
TAZ 21:	Regional court complex (100-150 emp.)
TAZ 21:	Professional fire station (20 emp.)
TAZ 49:	Planned expansion of police and library facilities (25 emp.)
TAZ 53:	Expansion of city and school facilities (20 emp.)
TAZ 74:	Elementary school (40 emp.)

These figures were applied directly for 2012 and expanded slightly for the buildout year.

Table 2 contains the summary of TAZ employment projections to full buildout, and Table 3 shows the projections to 2012. In addition, the worksheets used to prepare the buildout projections are enclosed—one for commercial land, the other for industrial land—in order to document the application of the land buildout steps described above. A diskette with all tables and worksheets in Excel format is also enclosed.

Table 1
City of Burlington 1992 Total Employment Estimates

TAZ	Agric Constr Mfg	Whlsle/ Retail Trade	Trans Comm Utilities	Services	Health Serv	Hotels (est.)	Govt Educ	TOTAL
1	11	4	0	0	0	0	0	15
2	11	9	0	0	0	0	0	20
3	32	20	0	255	0	0	117	423
4	14	45	0	30	28	0	0	117
5	0	22	71	111	0	0	15	219
6	151	139	0	71	18	0	0	378
7	24	0	13	18	0	0	0	55
8	15	0	5	6	0	0	0	27
9	89	63	41	31	0	0	0	224
10	79	23	7	7	0	0	0	116
11	78	23	8	20	2	16	0	147
12	0	3	0	17	0	0	0	20
13	0	71	14	30	1	17	0	133
14	0	20	0	12	0	0	0	32
15	0	20	0	32	0	0	0	52
16	11	1	0	10	0	0	0	22
17	5	0	0	10	0	0	0	15
18	250	148	19	30	0	17	0	463
19	38	26	12	0	0	0	0	76
20	0	2	0	0	0	0	0	2
21	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0
23	0	79	0	0	10	0	0	89
24	30	534	0	19	0	0	0	582
25	0	0	0	0	0	0	0	0
26	0	264	0	43	0	0	0	307
27	103	83	0	0	0	0	0	186
28	16	333	0	84	0	0	0	433
29	48	0	21	0	0	0	0	69
30	49	11	0	12	0	0	0	72
31	66	39	0	24	0	0	0	128
32	21	31	0	22	0	0	0	73
33	33	65	0	0	0	0	0	98
34	0	0	0	0	0	0	0	0
35	0	0	0	0	0	0	0	0
36	2	0	0	0	0	0	0	2
37	11	6	0	12	0	0	0	28
38	2	0	0	0	0	0	0	2
39	11	2	0	24	0	0	0	37
40	5	0	0	0	0	0	0	5
41	27	17	0	10	0	0	0	54
42	5	11	0	6	0	0	0	23
43	5	2	0	71	0	0	55	133
44	5	0	0	0	0	0	6	11
45	0	0	0	0	0	0	0	0
46	0	0	0	0	0	0	0	0

Table 1
City of Burlington 1992 Total Employment Estimates

TAZ	Agric Constr Mfg	Whlsle/ Retail Trade	Trans Comm Utilities	Services	Health Serv	Hotels (est.)	Govt Educ	TOTAL
47	0	0	0	12	0	0	0	12
48	0	0	0	10	0	0	0	10
49	0	0	21	18	28	0	61	127
50	22	11	0	6	0	0	0	39
51	0	11	0	6	0	0	0	17
52	213	77	16	36	0	0	0	342
53	57	69	0	160	0	0	5	291
54	20	0	5	18	33	0	34	110
55	23	0	11	18	17	0	0	68
56	22	0	0	2	4	0	0	29
57	11	0	0	0	0	0	0	11
58	0	0	0	0	0	0	0	0
59	11	0	0	0	0	0	0	11
60	5	4	2	7	0	0	0	19
61	5	4	2	6	0	0	0	18
62	16	0	0	10	0	0	0	26
63	9	0	0	7	0	0	0	16
64	5	0	0	0	0	0	0	5
65	16	2	0	2	0	0	0	21
66	17	1	0	2	0	0	0	21
67	13	2	0	2	0	0	0	18
68	5	12	0	0	0	0	0	18
69	7	17	0	0	0	0	0	23
70	3	9	0	0	0	0	25	37
71	0	0	0	0	0	0	0	0
72	87	4	0	0	0	0	0	92
73	12	0	0	6	0	0	0	18
74	0	0	0	0	0	0	0	0
75	0	0	0	0	0	0	0	0
76	0	0	0	0	0	0	0	0
CITY	1829	2341	268	1343	140	49	318	6289

Table 2
City of Burlington Employment Projections at Buildout

TAZ	Agric Constr Mfg	Whsle/ Retail Trade	Trans Comm Utilities	Total Serv	Govt Educ	TOTAL
1	14	6	0	0	0	20
2	14	12	0	0	0	26
3	42	29	0	376	154	601
4	19	60	0	76	0	154
5	0	29	93	146	20	288
6	198	184	0	117	0	499
7	32	0	17	24	0	72
8	20	0	7	8	0	35
9	126	93	61	46	0	326
10	138	41	11	13	0	203
11	169	62	20	95	0	347
12	0	5	0	24	0	28
13	0	387	77	191	0	655
14	0	32	0	19	0	52
15	0	26	0	42	0	69
16	14	1	0	13	40	68
17	7	0	0	13	0	20
18	825	673	85	192	0	1774
19	50	142	67	0	0	259
20	0	3	0	0	0	3
21	0	0	0	0	175	175
22	0	0	0	0	0	0
23	0	582	0	74	0	656
24	39	700	0	25	0	764
25	0	0	0	0	0	0
26	0	585	0	95	0	680
27	295	239	0	0	0	535
28	22	709	0	178	0	909
29	676	0	321	0	0	997
30	65	15	0	16	0	95
31	86	338	0	208	0	632
32	27	464	0	322	0	813
33	43	86	0	0	0	129
34	0	0	0	0	0	0
35	0	0	0	0	0	0
36	3	0	0	0	0	3
37	14	7	0	16	0	37
38	3	0	0	0	0	3
39	14	3	0	31	0	49
40	7	0	0	0	0	7
41	36	22	0	13	0	70
42	7	15	0	8	0	30
43	7	3	0	93	72	175
44	7	0	0	0	8	15
45	0	0	0	0	0	0
46	0	0	0	0	0	0
47	0	0	0	16	0	16

Table 2
City of Burlington Employment Projections at Buildout

TAZ	Agric Constr Mfg	Whsle/ Retail Trade	Trans Comm Utilities	Total Serv	Govt Educ	TOTAL
48	0	0	0	13	0	13
49	0	0	28	61	115	204
50	29	15	0	8	0	51
51	0	15	0	8	0	22
52	280	106	23	49	0	457
53	81	98	0	227	32	437
54	26	0	7	67	45	145
55	30	0	14	45	0	90
56	29	0	0	9	0	38
57	14	0	0	0	0	14
58	0	0	0	0	0	0
59	14	0	0	0	0	14
60	7	6	3	9	0	25
61	7	6	3	8	0	24
62	22	0	0	13	0	34
63	11	0	0	9	0	21
64	7	0	0	0	0	7
65	22	3	0	3	0	28
66	23	1	0	3	0	28
67	17	3	0	3	0	23
68	19	43	0	0	0	63
69	9	22	0	0	0	30
70	67	180	0	0	33	279
71	0	0	0	0	0	0
72	932	1052	120	685	0	2788
73	16	0	0	8	0	24
74	0	0	0	0	40	40
75	0	0	0	0	0	0
76	0	0	0	0	0	0
CITY	4679	7102	957	3715	732	17185

Table 3
City of Burlington Employment Projections to 2012

TAZ	Agric Constr Mfg	Whsle/ Retail Trade	Trans Comm Utilities	Total Serv	Govt Educ	TOTAL
1	13	5	0	0	0	18
2	13	10	0	0	0	23
3	37	25	0	319	136	516
4	16	53	0	67	0	136
5	0	26	82	129	17	255
6	175	162	0	103	0	440
7	28	0	15	21	0	64
8	18	0	6	7	0	31
9	108	79	52	39	0	278
10	110	33	9	10	0	162
11	127	45	15	69	0	255
12	0	4	0	20	0	24
13	0	244	49	126	0	419
14	0	27	0	16	0	43
15	0	23	0	37	0	61
16	13	1	0	11	40	65
17	6	0	0	11	0	17
18	563	435	55	126	0	1179
19	44	89	42	0	0	175
20	0	3	0	0	0	3
21	0	0	0	0	145	145
22	0	0	0	0	0	0
23	0	355	0	45	0	400
24	34	620	0	22	0	676
25	0	0	0	0	0	0
26	0	438	0	71	0	509
27	208	168	0	0	0	376
28	19	536	0	135	0	690
29	393	0	186	0	0	578
30	57	13	0	14	0	84
31	76	203	0	125	0	404
32	24	269	0	186	0	480
33	38	76	0	0	0	114
34	0	0	0	0	0	0
35	0	0	0	0	0	0
36	3	0	0	0	0	3
37	13	6	0	14	0	33
38	3	0	0	0	0	3
39	13	3	0	28	0	43
40	6	0	0	0	0	6
41	32	19	0	11	0	62
42	6	13	0	7	0	26
43	6	3	0	82	64	155
44	6	0	0	0	7	13
45	0	0	0	0	0	0
46	0	0	0	0	0	0
47	0	0	0	14	0	14

Table 3
City of Burlington Employment Projections to 2012

TAZ	Agric Constr Mfg	Whsle/ Retail Trade	Trans Comm Utilities	Total Serv	Govt Educ	TOTAL
48	0	0	0	11	0	11
49	0	0	24	54	96	174
50	25	13	0	7	0	45
51	0	13	0	7	0	20
52	247	92	20	43	0	402
53	69	84	0	195	26	374
54	23	0	6	59	39	128
55	27	0	13	40	0	79
56	25	0	0	8	0	33
57	13	0	0	0	0	13
58	0	0	0	0	0	0
59	13	0	0	0	0	13
60	6	5	3	8	0	22
61	6	5	3	7	0	21
62	19	0	0	11	0	30
63	10	0	0	8	0	18
64	6	0	0	0	0	6
65	19	3	0	3	0	24
66	20	1	0	3	0	24
67	15	3	0	3	0	21
68	13	29	0	0	0	42
69	8	19	0	0	0	27
70	38	103	0	0	29	170
71	0	0	0	0	0	0
72	551	580	66	377	0	1574
73	14	0	0	7	0	21
74	0	0	0	0	40	40
75	0	0	0	0	0	0
76	0	0	0	0	0	0
CITY	3377	4935	644	2717	639	12312

TAZ	TOTAL	Agr, Constr, & Manu	Wholesale & Retail Trade	T-C-U	Services	Health Services	Hotels (estimate)	Government (estimate)	"accountable" totals
All	3993	1089	1850	129	661	127	(37)	(100)	3993
3	176	*	*	0	137	0	0	0	137
4	90	10	39	0	16	25	0	0	90
5	113	0	19	*	*	0	0	0	19
6	279	*	118	0	38	*	0	0	156
9	206	*	*	*	17	0	0	*	17
12	12	0	*	0	9	*	0	0	9
13	98	0	60	*	*	*	*	0	60
18	340	176	126	*	*	0	*	0	302
19	55	*	*	*	0	0	0	0	0
23	75	0	*	0	0	*	0	0	0
24	485	*	454	0	*	0	0	0	454
26	248	0	225	0	23	0	0	0	248
29	44	*	0	*	0	0	0	0	0
52	242	150	65	*	*	0	0	0	215
53	185	40	59	0	86	0	0	0	185
81	50	*	0	*	*	0	0	0	0
82	187	110	40	*	15	*	*	0	165
83	57	0	*	0	*	0	0	0	0
85	0	0	0	0	0	0	0	0	0
87	535	*	352	0	*	0	0	0	352
89	137	*	49	0	*	0	0	0	49
90	221	*	0	*	*	74	0	*	74
91	43	*	32	*	0	0	0	0	32
92	46	37	*	0	*	*	0	0	37
93	38	*	0	0	*	0	0	0	0
94	0	0	0	0	0	0	0	0	0
95	31	*	*	*	*	0	0	0	0
subtotal 1	3993	523	1638	0	341	99	0	0	2601
97	222	*	*	0	0	0	0	0	0
98	92	*	*	0	0	0	0	0	0
99	91	*	*	0	*	0	0	0	0
subtotal 2	4398	523	1638	0	341	99	0	0	2601
uncoded	1069	389	117	119	401	0	*	*	1026
grand	5467	912	1755	119	742	99	#VALUE!	#VALUE!	

	suppressed totals	Agr, Constr, & Manu	Wholesale & Retail Trade	T-C-U	Services	Health Services	Hotels	Government
TAZ	0	(THIS DATA TO INPUTTED IN TMODEL TRIP TABLE AND FRATARED TO SUPPRESSED TOTALS) (SEE EMPTBLE.XL2 FOR FRATARED RESULTS)						
3	39	10	10	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	94	0	0	10	10	0	0	0
6	123	10	0	0	0	10	0	0
9	189	10	10	10	0	0	0	10
12	3	0	10	0	0	10	0	0
13	38	0	0	10	10	10	10	0
18	38	0	0	10	10	0	10	0
19	55	10	10	10	0	0	0	0
23	75	0	10	0	0	10	0	0
24	31	10	0	0	10	0	0	0
26	0	0	0	0	0	0	0	0
29	44	10	0	10	0	0	0	0
52	27	0	0	10	10	0	0	0
53	0	0	0	0	0	0	0	0
81	50	10	0	10	10	0	0	0
82	22	0	0	10	0	10	10	0
83	57	0	10	0	10	0	0	0
85	0	0	0	0	0	0	0	0
87	183	10	0	0	10	0	0	0
89	88	10	0	0	10	0	0	0
90	147	10	0	10	10	0	0	10
91	11	10	0	10	0	0	0	0
92	9	0	10	0	10	10	0	0
93	38	10	0	0	10	0	0	0
94	0	0	0	0	0	0	0	0
95	31	10	10	10	10	0	0	0
subtotal 1	1392	566	212	129	320	28	37	100
97	222							
98	92							
99	91							
subtotal 2	1797							
uncoded								

EMPTBLE.XL1 MUST BE LOADED; FRATARED "UNKNOWNS" ARE TO THE RIGHT

TAZ	TOTAL	Agr, Constr, & Manu	Wholesale & Retail Trade	T-C-U	Services	Health Services	Hotels (estimate)	Government (estimate)	Totals Check
All	3993	1089	1850	129	661	127	(37)	(100)	3993
3	176	22	17	0	137	0	0	0	176
4	90	10	39	0	16	25	0	0	90
5	113	0	19	34	60	0	0	0	113
6	279	106	118	0	38	16	0	0	278
9	206	62	54	20	17	0	0	54	207
12	12	0	3	0	9	0	0	0	12
13	98	0	60	7	16	1	13	0	97
18	340	176	126	9	16	0	13	0	340
19	55	27	22	6	0	0	0	0	55
23	75	0	67	0	0	9	0	0	76
24	485	21	454	0	10	0	0	0	485
26	248	0	225	0	23	0	0	0	248
29	44	34	0	10	0	0	0	0	44
52	242	150	65	8	19	0	0	0	242
53	185	40	59	0	86	0	0	0	185
81	50	28	0	9	13	0	0	0	50
82	187	110	40	7	15	2	12	0	186
83	57	0	34	0	24	0	0	0	58
85	0	0	0	0	0	0	0	0	0
87	535	107	352	0	76	0	0	0	535
89	137	54	49	0	34	0	0	0	137
90	221	53	0	18	30	74	0	46	221
91	43	11	32	0	0	0	0	0	43
92	46	37	5	0	4	0	0	0	46
93	38	26	0	0	12	0	0	0	38
94	0	0	0	0	0	0	0	0	0
95	31	15	8	2	7	0	0	0	32
subtotal 1	3993	1089	1848	130	662	127	38	100	3994
These values derived from right									
97	222	95	127	0	0	0	0	0	222
98	92	77	15	0	0	0	0	0	92
99	91	26	5	0	60	0	0	0	91
subtotal 2	4398	1287	1995	130	722	127	38	100	4399
Uncoded	1069	389	117	119	401	0	(10)	(33)	1069
grand	5467	1676	2112	249	1123	127	48	133	5468

xt Step: Factor up column totals based on Grand Total divided by Subtotal 2 per each column

tors >	1.24 N/A	1.30	1.06	1.92	1.56	1.00	1.26	1.33

TAZ	TOTAL	Agr, Constr, & Manu	Wholesale & Retail Trade	T-C-U	Services	Health Services	Hotels (estimate)	Government (estimate)
3	260	29	18	0	213	0	0	0
4	104	13	41	0	25	25	0	0
5	178	0	20	65	93	0	0	0
6	338	138	125	0	59	16	0	0
9	274	81	57	38	26	0	0	72
12	17	0	3	0	14	0	0	0
13	119	0	64	13	25	1	16	0
18	420	229	133	17	25	0	16	0
19	69	35	23	11	0	0	0	0
23	80	0	71	0	0	9	0	0
24	524	27	481	0	16	0	0	0
26	274	0	238	0	36	0	0	0
29	63	44	0	19	0	0	0	0
52	309	195	69	15	30	0	0	0
53	248	52	62	0	134	0	0	0
81	73	36	0	17	20	0	0	0
82	238	143	42	13	23	2	15	0
83	73	0	36	0	37	0	0	0
85	0	0	0	0	0	0	0	0
87	630	139	373	0	118	0	0	0
89	175	70	52	0	53	0	0	0
90	285	69	0	34	47	74	0	61
91	48	14	34	0	0	0	0	0
92	59	48	5	0	6	0	0	0
93	53	34	0	0	19	0	0	0
94	0	0	0	0	0	0	0	0
95	43	20	8	4	11	0	0	0
97	258	124	134	0	0	0	0	0
98	116	100	16	0	0	0	0	0
99	132	34	5	0	93	0	0	0
Grand Tot	5460	1674	2110	246	1123	127	47	133
Check Tot	(5,467)	(1,676)	(2,112)	(249)	(1,123)	(127)	(48)	(133)

TAZ	suppressed totals	Fratared Totals	Agr, Constr, & Manu	Wholesale & Retail Trade	T-C-U	Services	Health Services	Hotels	Government
	0		FRATARED SUPPRESSED "UNKNOWNS" FROM TMODEL2						
3	39	39	22	17	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0
5	94	94	0	0	34	60	0	0	0
6	123	122	106	0	0	0	16	0	0
9	189	190	62	54	20	0	0	0	54
12	3	3	0	3	0	0	0	0	0
13	38	37	0	0	7	16	1	13	0
18	38	38	0	0	9	16	0	13	0
19	55	55	27	22	6	0	0	0	0
23	75	76	0	67	0	0	9	0	0
24	31	31	21	0	0	10	0	0	0
26	0	0	0	0	0	0	0	0	0
29	44	44	34	0	10	0	0	0	0
52	27	27	0	0	8	19	0	0	0
53	0	0	0	0	0	0	0	0	0
81	50	50	28	0	9	13	0	0	0
82	22	21	0	0	7	0	2	12	0
83	57	58	0	34	0	24	0	0	0
85	0	0	0	0	0	0	0	0	0
87	183	183	107	0	0	76	0	0	0
89	88	88	54	0	0	34	0	0	0
90	147	147	53	0	18	30	0	0	46
91	11	11	11	0	0	0	0	0	0
92	9	9	0	5	0	4	0	0	0
93	38	38	26	0	0	12	0	0	0
94	0	0	0	0	0	0	0	0	0
95	31	32	15	8	2	7	0	0	0
subtotal 1	-	1393	566	210	130	321	28	38	100
Check total	(1,392)	-	(566)	(212)	(129)	(320)	(28)	(37)	(100)
97	222	222	[95]	[127]	0	0	0	0	0
98	92	92	[77]	[15]	0	0	0	0	0
99	91	91	[26]	[5]	0	[60]	0	0	0
	Note: [xxx] is an estimate of category total; row and column totals are known								
subtotal 2	-		198	147	0	60	0	0	0
Check total	(405)	-							
Uncoded									

Aggregate TAZ	TAZ	TOTAL	Agr, Constr, & Manu	Wholesale & Retail Trade	T-C-U	Services	Health Services	Hotels (estimate)	Government (estimate)
n/a	3	260	29	18	0	213	0	0	0
n/a	4	104	13	41	0	25	25	0	0
n/a	5	178	0	20	65	93	0	0	0
n/a	6	338	138	125	0	59	16	0	0
n/a	9	274	81	57	38	26	0	0	72
n/a	12	17	0	3	0	14	0	0	0
n/a	13	119	0	64	13	25	1	16	0
n/a	18	420	229	133	17	25	0	16	0
n/a	19	69	35	23	11	0	0	0	0
n/a	23	80	0	71	0	0	9	0	0
n/a	24	524	27	481	0	16	0	0	0
n/a	26	274	0	238	0	36	0	0	0
n/a	29	63	44	0	19	0	0	0	0
n/a	52	309	195	69	15	30	0	0	0
n/a	53	248	52	62	0	134	0	0	0
81		73	36	0	17	20	0	0	0
	7	49	22	0	12	15	0	0	0
	8	24	14	0	5	5	0	0	0
	Total Check	OK	OK	OK	OK	OK	OK	OK	OK
82		238	143	42	13	23	2	15	0
	10	105	72	21	6	6	0	0	0
	11	133	71	21	7	17	2	15	0
	Total Check	OK	OK	OK	OK	OK	OK	OK	OK
83		73	0	36	0	37	0	0	0
	14	28	0	18	0	10	0	0	0
	15	45	0	18	0	27	0	0	0
	Total Check	OK	OK	OK	OK	OK	OK	OK	OK
85		0	0	0	0	0	0	0	0
	25	0	0	0	0	0	0	0	0
	34	0	0	0	0	0	0	0	0
	Total Check	OK	OK	OK	OK	OK	OK	OK	OK
87		630	139	373	0	118	0	0	0
	28	385	15	300	0	70	0	0	0
	30	65	45	10	0	10	0	0	0
	31	115	60	35	0	20	0	0	0
	32	65	19	28	0	18	0	0	0
	Total Check	OK	OK	OK	OK	OK	OK	OK	OK
89		175	70	52	0	53	0	0	0
	37	25	10	5	0	10	0	0	0
	39	32	10	2	0	20	0	0	0
	41	48	25	15	0	8	0	0	0
	42	20	5	10	0	5	0	0	0
	50	35	20	10	0	5	0	0	0
	51	15	0	10	0	5	0	0	0

Total Check	OK	OK	OK	OK	OK	OK	OK	OK
90	285	69	0	34	47	74	0	61
49	120	0	0	19	15	25	0	61
54	68	18	0	5	15	30	0	0
55	61	21	0	10	15	15	0	0
56	26	20	0	0	2	4	0	0
57	10	10	0	0	0	0	0	0
Total Check	OK	OK	OK	OK	OK	OK	OK	OK
91	48	14	34	0	0	0	0	0
68	16	5	11	0	0	0	0	0
69	21	6	15	0	0	0	0	0
70	11	3	8	0	0	0	0	0
Total Check	OK	OK	OK	OK	OK	OK	OK	OK
92	59	48	5	0	6	0	0	0
64	5	5	0	0	0	0	0	0
65	19	15	2	0	2	0	0	0
66	19	16	1	0	2	0	0	0
67	16	12	2	0	2	0	0	0
Total Check	OK	OK	OK	OK	OK	OK	OK	OK
93	53	34	0	0	19	0	0	0
62	23	15	0	0	8	0	0	0
63	14	8	0	0	6	0	0	0
73	16	11	0	0	5	0	0	0
Total Check	OK	OK	OK	OK	OK	OK	OK	OK
94	0	0	0	0	0	0	0	0
71	0	0	0	0	0	0	0	0
74	0	0	0	0	0	0	0	0
75	0	0	0	0	0	0	0	0
76	0	0	0	0	0	0	0	0
Total Check	OK	OK	OK	OK	OK	OK	OK	OK
95	43	20	8	4	11	0	0	0
58	0	0	0	0	0	0	0	0
59	10	10	0	0	0	0	0	0
60	17	5	4	2	6	0	0	0
61	16	5	4	2	5	0	0	0
Total Check	OK	OK	OK	OK	OK	OK	OK	OK
97	258	124	134	0	0	0	0	0
27	169	94	75	0	0	0	0	0
33	89	30	59	0	0	0	0	0
Total Check	OK	OK	OK	OK	OK	OK	OK	OK
98	116	100	16	0	0	0	0	0
1	14	10	4	0	0	0	0	0
2	18	10	8	0	0	0	0	0
72	84	80	4	0	0	0	0	0
Total Check	OK	OK	OK	OK	OK	OK	OK	OK
99	132	34	5	0	93	0	0	0
16	19	10	1	0	8	0	0	0
17	13	5	0	0	8	0	0	0
20	2	0	2	0	0	0	0	0
21	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0

35	0	0	0	0	0	0	0	0
36	2	2	0	0	0	0	0	0
38	2	2	0	0	0	0	0	0
40	5	5	0	0	0	0	0	0
43	66	5	2	0	59	0	0	0
44	5	5	0	0	0	0	0	0
45	0	0	0	0	0	0	0	0
46	0	0	0	0	0	0	0	0
47	10	0	0	0	10	0	0	0
48	8	0	0	0	8	0	0	0
Total Check	OK	OK	OK	OK	OK	OK	OK	OK
TOTAL	5460	1674	2110	246	1123	127	47	133
Grand Check	5460	1674	2110	246	1123	127	47	133

10/13/93

CITY OF BURLINGTON
1992 EMPLOYMENT ALLOCATION

NEW ADDTL GOVRN FROM CARTERSON 10/20/93

TAZ	TOTAL	Agr, Constr, & Manu	Wholesale & Retail Trade	T-C-U	Services	Health Services	Hotels (estimate)	Government (estimate)	
1	14	10	4	0	0	0	0	0	
2	18	10	8	0	0	0	0	0	
3	260	29	18	0	213	0	0	0	117
4	104	13	41	0	25	25	0	0	
5	178	0	20	65	93	0	0	0	15
6	338	138	125	0	59	16	0	0	
7	49	22	0	12	15	0	0	0	
8	24	14	0	5	5	0	0	0	
9	274	81	57	38	26	0	0	72	
10	105	72	21	6	6	0	0	0	
11	133	71	21	7	17	2	15	0	
12	17	0	3	0	14	0	0	0	
13	119	0	64	13	25	1	16	0	
14	28	0	18	0	10	0	0	0	
15	45	0	18	0	27	0	0	0	
16	19	10	1	0	8	0	0	0	
17	13	5	0	0	8	0	0	0	
18	420	229	133	17	25	0	16	0	
19	69	35	23	11	0	0	0	0	
20	2	0	2	0	0	0	0	0	
21	0	0	0	0	0	0	0	0	
22	0	0	0	0	0	0	0	0	
23	80	0	71	0	0	9	0	0	
24	524	27	481	0	16	0	0	0	
25	0	0	0	0	0	0	0	0	
26	274	0	238	0	36	0	0	0	
27	169	94	75	0	0	0	0	0	
28	385	15	300	0	70	0	0	0	
29	63	44	0	19	0	0	0	0	
30	65	45	10	0	10	0	0	0	
31	115	60	35	0	20	0	0	0	
32	65	19	28	0	18	0	0	0	
33	89	30	59	0	0	0	0	0	
34	0	0	0	0	0	0	0	0	
35	0	0	0	0	0	0	0	0	
36	2	2	0	0	0	0	0	0	
37	25	10	5	0	10	0	0	0	
38	2	2	0	0	0	0	0	0	
39	32	10	2	0	20	0	0	0	
40	5	5	0	0	0	0	0	0	
41	48	25	15	0	8	0	0	0	
42	20	5	10	0	5	0	0	0	
43	66	5	2	0	59	0	0	0	55
44	5	5	0	0	0	0	0	0	6

45	0	0	0	0	0	0	0	0	
46	0	0	0	0	0	0	0	0	
47	10	0	0	0	10	0	0	0	
48	8	0	0	0	8	0	0	0	
49	120	0	0	19	15	25	0	61	
50	35	20	10	0	5	0	0	0	
51	15	0	10	0	5	0	0	0	
52	309	195	69	15	30	0	0	0	
53	248	52	62	0	134	0	0	0	5
54	68	18	0	5	15	30	0	0	34
55	61	21	0	10	15	15	0	0	
56	26	20	0	0	2	4	0	0	
57	10	10	0	0	0	0	0	0	
58	0	0	0	0	0	0	0	0	
59	10	10	0	0	0	0	0	0	
60	17	5	4	2	6	0	0	0	
61	16	5	4	2	5	0	0	0	
62	23	15	0	0	8	0	0	0	
63	14	8	0	0	6	0	0	0	
64	5	5	0	0	0	0	0	0	
65	19	15	2	0	2	0	0	0	
66	19	16	1	0	2	0	0	0	
67	16	12	2	0	2	0	0	0	
68	16	5	11	0	0	0	0	0	
69	21	6	15	0	0	0	0	0	
70	11	3	8	0	0	0	0	0	25
71	0	0	0	0	0	0	0	0	
72	84	80	4	0	0	0	0	0	
73	16	11	0	0	5	0	0	0	
74	0	0	0	0	0	0	0	0	
75	0	0	0	0	0	0	0	0	
76	0	0	0	0	0	0	0	0	
TOTAL	5460	1674	2110	246	1123	127	47	133	
Check	5460	1674	2110	246	1123	127	47	133	

APPENDIX E

- 1999-2004 - 6 year Transportation Improvement Program

- 1996 - Roadway improvement cost estimates based on 2015 Transportation System Needs

- 1999 Update - Transportation Capital Improvement Plan

CITY OF BURLINGTON

PUBLIC WORKS ENGINEERING

820 Washington Avenue Burlington WA 98233
(360) 755-9715

1999 - 2004 Six Year TRANSPORTATION Improvement PROGRAM

RESOLUTION NO. 12-98

A RESOLUTION ADOPTING A REVISED SIX YEAR TRANSPORTATION IMPROVEMENT PROGRAM FOR THE CITY OF BURLINGTON

WHEREAS, RCW 37.77.010 requires annual one-year extensions and revision to the Burlington Six Year Transportation Improvement Program, and

WHEREAS, a revised Six Year Transportation Improvement Program, containing the necessary extensions and revisions, has been prepared and submitted to the Burlington City Council, and

WHEREAS, the City Council fixed 7:00 o'clock p.m., Thursday, August 27, 1998, in the Council Chambers in the Burlington City Hall, as the time and place for a public hearing on the revised plan, and has caused such notices of said hearing to be published as required by law, and

WHEREAS, said hearing was duly held at the time and place fixed, and all persons appearing and desiring to be heard were duly heard,

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF BURLINGTON, WASHINGTON:

1. That the attached extended and revised Burlington Six Year Transportation Improvement Program 1999 to 2004 be and hereby is adopted by the City Council of the City of Burlington, Washington, and is hereby made a part of this Resolution.

2. That the said Six Year Transportation Improvement Program supersedes the Burlington Six Year Street Program adopted under Resolution No. 17-97.

INTRODUCED, passed, and approved at a regular meeting of the Burlington City Council the twenty-seventh day of August, 1998.

THE CITY OF BURLINGTON

Roger Tjeerdsma

Roger A. Tjeerdsma, Mayor

Washington State Department of Transportation

Six Year Transportation Improvement Program

Agency Burlington
County No. 29
City No. 0140
MPO NON

From 1999 to 2004

Hearing Date 8/27/98
Adoption Date 8/27/98
Resolution No. 12-98

Functional Class	Priority Number	Project Identification A. Federal Aid No. B. Bridge No. C. Project Title D. Street/County Road Name or Number E. Terminal Beginning and End F. Describe Work to be Done	Improvement Type(s)	Status	Total Length	Utility Codes	Project Costs in Thousands of Dollars								Expenditure Schedule (*Local Agency*)				Federally Funded Projects Only	
									Fund Source Information										Envir. Type	R/W Required Date (*MM/YY*)
									Federal Funding											
							Project Phase	Phase Start (*mm/dd/yyyy*)	Federal Fund Code	Federal Cost by Phase	State Fund Code	State Funds	Local Funds	Total Funds	1st	2nd	3rd	4th Thru 6th		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
02	1	*4 Phases in Project* BURLINGTON BOULEVARD IMPROVEMENTS Burlington Boulevard George Hopper to S. City Limits Widen, curb & gutter, sidewalks, drainage, bridge	08	S	0.530	W T G C P	PE PE CN CN	09/01/1996 09/01/1996 6/01/2000 6/01/2000	STP(C) STP(U) BR	1537 804 4472	 PWTF	 	307 1050 2330	1844 804 5522 2330	1000	250 3500	 3500	 2250	EA	Yes
							Totals			6813			3687	10500	1000	3750	3500	2250		
06	2	*2 Phases in Project* PETERSON ROAD RECONSTRUCTION Peterson Road SR 20 to West City Limits Widen, curb & gutter, drainage, sidewalk	02	P	0.600	W T G C P	PE CN	06/01/1999 04/01/2000	 	 	UATA UATA	196 629	65 210	261 839	261	 839	 	 		No
							Totals			0		825	275	1100	261	839				
07	3	*2 Phases in Project* GOLDENROD ROAD CONSTRUCTION Goldenrod Road McCorquedale to Stevens Road Construct new road on new alignment, curb & gutter, bridge	01	P	.300	W T G P	PE CN	02/01/2000 08/01/2000	 	 	 UATA	 1605	165 	165 1605	 	 	 	165 1605		No
							Totals			0		1605	165	1770				1770		
07	4	*2 Phases in Project* GREENLEAF AVENUE RECONSTRUCTION Greenleaf Avenue Spruce Street to Anacortes Avenue Curb & gutter, sidewalks, AC pavement, drainage	03	P	.270	W T G P	PE CN	02/01/2000 08/01/2000	 	 	 	 	107 324	107 324	 	 	 	107 324		No
							Totals			0			431	431				431		

Washington State Department of Transportation

Six Year Transportation Improvement Program

From 1999 to 2004

Agency Burlington
County No. 29
City No. 0140
MPO NON

Hearing Date 8/27/98
Adoption Date 8/27/98
Resolution No. 12-98

Functional Class	Priority Number	Project Identification A. Federal Aid No. B. Bridge No. C. Project Title D. Street/County Road Name or Number E. Terminal Beginning and End F. Describe Work to be Done	Improvement Type(s)	Status	Total Length	Utility Codes	Project Costs In Thousands of Dollars								Expenditure Schedule (*Local Agency*)				Federally Funded Projects Only	
									Fund Source Information											
									Federal Funding										Envir. Type	R/W Required Date (*MM/YY*)
							Project Phase	Phase Start (*mm/dd/yyyy*)	Federal Fund Code	Federal Cost by Phase	State Fund Code	State Funds	Local Funds	Total Funds	1st	2nd	3rd	4th Thru 6th		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
09	5	*2 Phases in Project* CHERRY STREET IMPROVEMENTS Cherry Street Rio Vista Avenue to Greenleaf Ave. Curb & gutter, sidewalks, drainage	03	P	.13	W T G P	PE CN	02/01/1999 08/01/1999					10 90	10 90	10 90					No
							Totals			0			100	100	100					
07	6	*2 Phases in Project* FAIRHAVEN AVENUE IMPROVEMENTS Fairhaven Avenue Burlington Boulevard to Anacortes Street Reconstruct, drainage, curb & gutter, sidewalks	03	P	.500	W T G P	PE CN	02/01/2000 09/01/2000					50 1050	50 1050	200	50 250		600		No
							Totals			0			1100	1100	200	300		600		
06	7	*2 Phases in Project* RIO VISTA RECONSTRUCTION Rio Vista Avenue Anacortes Avenue to Skagit Street Widen, curb & gutter, sidewalk, drainage	03	P	.250	W T G P	PE CN	02/01/2001 07/01/2001					64 259	64 259			64 259			No
							Totals			0			323	323			323			
09	8	*2 Phases in Project* GREENLEAF AVENUE RECONSTRUCTION Greenleaf Ave. Anacortes Avenue to Skagit Street Curb & gutter, AC, siewalks, pavement, drainage	03	P	.270	W T G P	PE CN	03/01/2001 09/01/2001					84 252	84 252				84 252		No
							Totals			0			336	336				336		

Washington State Department of Transportation

Six Year Transportation Improvement Program

From 1999 to 2004

Agency Burlington
County No. 29
City No. 0140
MPO NON

Hearing Date 8/27/98
Adoption Date 8/27/98
Resolution No. 12-98

Functional Class	Priority Number	Project Identification A. Federal Aid No. B. Bridge No. C. Project Title D. Street/County Road Name or Number E. Terminal Beginning and End F. Describe Work to be Done	Improvement Type(s)	Status	Total Length	Utility Codes	Project Costs In Thousands of Dollars								Expenditure Schedule (*Local Agency*)				Federally Funded Projects Only	
									Fund Source Information											
									Federal Funding											
							Project Phase	Phase Start (*mm/dd/yyyy*)	Federal Fund Code	Federal Cost by Phase	State Fund Code	State Funds	Local Funds	Total Funds	1st	2nd	3rd	4th Thru 6th	Envir. Type	R/W Required Date (*MM/YY*)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
06	9	*2 Phases in Project* RIO VISTA RECONSTRUCTION Rio Vista Avenue Skagit Street to Section Street Widen, curb & gutter, sidewalk, drainage	03	P	.250	W T G P	PE CN	02/01/2002 07/01/2002			UATA UATA	120 362	13 39	133 401			133 401			No
							Totals			0		482	52	534			534			
07	10	*2 Phases in Project* SECTION STREET IMPROVEMENTS Section Street Rio Vista Avenue to Fairhaven Avenue Curb & gutter, sidewalk, widening	05	P	.270	W T G P	PE CN	03/01/2003 09/01/2003					66 198	66 198				66 198		No
							Totals			0			264	264				264		
07	11	*2 Phases in Project* SECTION STREET IMPROVEMENTS Section Str. Fairhaven Avenue to SR 20 Curb, gutter, sidewalk, widening	05	P	.350	W T G P	PE CN	02/01/2003 09/01/2003			UATA	339	85	85 339				85 339		No
							Totals			0		339	85	424				424		
02	12	*2 Phases in Project* BURLINGTON BOULEVARD IMPROVEMENTS Burlington Boulevard Avon to SR 11 Widen, curb & gutter, AC pavement, drainage, sidewalks	02	P	.380	W T G P	PE CN	02/01/2004 09/01/2004					90 410	90 410				90 410		No
							Totals			0			500	500				500		

Washington State Department of Transportation

Six Year Transportation Improvement Program

Agency Burlington
County No. 29
City No. 0140
MPO NON

From 1999 to 2004

Hearing Date 8/27/98
Adoption Date 8/27/98
Resolution No. 12-98

Functional Class	Priority Number	Project Identification A. Federal Aid No. B. Bridge No. C. Project Title D. Street/County Road Name or Number E. Terminal Beginning and End F. Describe Work to be Done	Improvement Type(s)	Status	Total Length	Utility Codes	Project Costs in Thousands of Dollars								Expenditure Schedule (*Local Agency*)				Federally Funded Projects Only	
									Fund Source Information											
									Federal Funding										Envir. Type	R/W Required Date (*MM/YY*)
							Project Phase	Phase Start (*mm/dd/yyyy*)	Federal Fund Code	Federal Cost by Phase	State Fund Code	State Funds	Local Funds	Total Funds	1st	2nd	3rd	4th Thru 6th		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
07	13	*2 Phases in Project* ANACORTES AVENUE RECONSTRUCTION Anacortes Avenue Fairhaven Avenue to Cascade Highway Curb & gutter, sidewalks, drainage	03	P	.110	W T G P	PE CN	02/01/2004 09/01/2004					33 99	33 99				33 99		No
							Totals			0			132	132				132		
08	14	*2 Phases in Project* GARDNER ROAD RECONSTRUCTION Gardner Road R/R Tracks to 500' south of Lafayette Rd Widen, curb & gutter, drainage, sidewalk	03	P	.330	W G	PE CN	02/01/2005 09/01/2005					153 459	153 459				153 459		No
							Totals			0			612	612				612		
09	15	*2 Phases in Project* REGENT STREET IMPROVEMENTS Regent Street Fairhaven Avenue to Avon Avenue Curb & gutter, sidewalks, drainage	03	P	.160	W T G P	PE CN	02/01/2005 09/01/2005					45 137	45 137				45 137		No
							Totals			0			182	182				182		
09	16	*1 Phases in Project* MISC. STREET RESURFACING & CONSTRUCTION Miscellaneous Miscellaneous Curb & gutter, slewalks, AC pavement, drainage, sewer	04	P	.300	W T G P	CN	09/01/1998					300	300	100	100	100			No
							Totals			0			300	300	100	100	100			

Washington State Department of Transportation

Six Year Transportation Improvement Program

Agency Burlington
County No. 29
City No. 0140
MPO NON

From 1999 to 2004

Hearing Date 8/27/98
Adoption Date 8/27/98
Resolution No. 12-98

Functional Class	Priority Number	Project Identification A. Federal Aid No. B. Bridge No. C. Project Title D. Street/County Road Name or Number E. Terminal Beginning and End F. Describe Work to be Done	Improvement Type(s)	Status	Total Length	Utility Codes	Project Costs in Thousands of Dollars								Expenditure Schedule (*Local Agency*)				Federally Funded Projects Only	
									Fund Source Information											
									Federal Funding											
							Project Phase	Phase Start (*mm/dd/yyyy*)	Federal Fund Code	Federal Cost by Phase	State Fund Code	State Funds	Local Funds	Total Funds	1st	2nd	3rd	4th Thru 6th	Envir. Type	R/W Required Date (*MM/YY*)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
06	17	*2 Phases in Project* PINE STREET IMPROVEMENTS Pine Street Greenleaf Avenue to Avon Avenue Construct curb & gutter, drainage, sidewalks	01	P	.320	W T G P	PE CN	02/01/2006 08/01/2006					40 344	40 344				40 344		No
							Totals			0		384	384					384		
07	18	*2 Phases in Project* GEORGE HOPPER INTERCHANGE IMPR. George Hopper I-5 to Burlington Boulevard Widen, curb & gutter, sidewalks, drainage	03	P	.220	W T G P	PE CN	02/01/2006 08/01/2006					64 192	64 192				64 192		No
							Totals			0		256	256					256		
06	19	*2 Phases in Project* RIO VISTA RECONSTRUCTION Rio Vista Ave. Section Street to Gardner Road Widen, gutter & curb, sidewalk, drainage	03	P	.250	W T G P	PE CN	02/01/2006 07/01/2006			UATA	327	108	108 327				108 327		No
							Totals			0		327	108	435				435		
06	20	*2 Phases in Project* GEORGE HOPPER IMPROVEMENTS George Hopper Road 800' east of Burlington Blvd. to Port Dr Construct new road on the new alignment, curb & gutter,	01	P	.510	W T G P	PE CN	02/01/2007 08/01/2007			UATA	1101	122	122 1101				122 1101		No
							Totals			0		1101	122	1223				1223		
					Grand Totals for Burlington					6813		4679	9414	20906	1661	4989	4457	9799		

Six Year Transportation Improvement Program
Instructions for Preparing the Form

Include all projects regardless of location or source of funds.
Complete the form for the six year program in accordance with the following instructions.

Heading

Agency	Enter name of the sponsoring agency.
County Number	Enter the OFM assigned number. (See LAG Appendix 21.37.)
City Number	Enter the OFM assigned Number. (See LAG Appendix 21.38.)
MPO	Enter the name of the associated MPO (if located within urbanized area).
Hearing Date	Enter the date of public hearing.
Adoption Date	Enter the date this program was adopted by council or commission.

Resolution Number Enter Legislative Authority resolution number if applicable.

Column Number

1. **Functional Classification.** Enter the appropriate two-digit code denoting the Federal Functional Classification. (Note: The Federal Functional Classification must be approved by FHWA.)

	Description		Description
Rural (under 5,000 area)		Urban (over 5,000 areas)	
01	Interstate	11	Interstate
02	Principal Arterial	12	Freeways & Expressways
06	Minor Arterials	14	Other Principal Arterials
07	Major Collector	16	Minor Arterial
08	Minor Collector	17	Collector
09	Local Access	19	Local Access
00	No Classification	00	No Classification

2. **Priority Number.** Enter local agency number identifying agency project priority (optional).

3. **Project Identification.** Enter (a) Federal Aid Number if previously assigned; (b) Bridge Number; (c) Project title; (d) Street/Road Name or Number/Federal Route Number; (e) Beginning and Ending Termini (mile post or street names); and (f) Describe the Work to be Completed.

4. **Improvement Type Codes.** Enter the appropriate federal code number(s).

	Description		Description
01	New construction on new alignment	11	Minor Bridge Rehabilitation
02	Relocation	12	Safety/Traffic Operation/TSM
03	Reconstruction	13	Environmentally Related
04	Major Widening	14	Bridge Program Special
05	Minor Widening	21	Transit Capital Project
06	Other Enhancements	22	Transit Operational Project
07	Resurfacing	23	Transit Planning
08	New Bridge Construction	24	Transit Training /Administration
09	Bridge Replacement	31	Non Capital Improvement
10	Bridge Rehabilitation	32	Non Motor Vehicle Project

5. **Funding Status.** Enter the funding status for the entire project which describes the current status.

F	Project is selected and funding has been secured by the lead agency.
S	Project is subject to selection by an agency other than the lead.
P	Project is listed for planning purpose and funding is not secured.

6. **Total Length.** Enter project length to the nearest hundredth (or code "00" if not applicable).

7. **Utility Code(s).** Enter the appropriate code letter(s) for the utilities that would need to be relocated or are impacted by the construction project.

C	Cable TV	S	Sewer (other than agency owned)	G	Gas
P	Power	T	Telephone	W	Water
O	Other				

8. **Project Phase.** Select the appropriate phase code of the project.

PE	Preliminary Engineering only (or planning)
RW	Right of Way or land acquisition only (or equipment purchase)
CN	Construction only (or transit operating)
ALL	All Phases from Preliminary Engineering through Construction

9. **Phase Start Date.** Enter the month/day/year in MM/DD/YY format that the selected phase of the project is actually excepted to start.

10. **Federal Funds Source.** Enter the Federal Fund Source code from the table.

BR	Bridge Replacement or Rehab.	S9	FTA Urban Areas
CMAQ	Congestion Mitigation Air Quality	STP(C)	STP Statewide Competitive Program
DEMO	ISTEA Demo Projects (Selected)	STP(E)	STP Transportation Enhancements
IC	Interstate Construction	STP(S)	STP Safety including Hazard & RR
IM	Interstate Maintenance	STP(R)	STP Rural regionally selected
NHS	National Highway System	STP(U)	STP Urban regionally selected
S16	FTA Elderly & Disabled Persons	STP	STP all other STP project not listed
S18	FTA Rural Areas	Other	All other Federal Funds Sources
S3	FTA Discretionary for Capital Expenditure		

11. **Federal Cost.** Enter the total federal cost (in thousands) of the phase regardless of when the funds will be spent.

12. **State Funds Code.** Enter appropriate for any of the listed funds to be used on this project.

CAPP	County Arterial Preservation Program	RAP	Rural Arterial Program
TIA	Transportation Improvement Account	UATA	Urban Arterial Trust Account
PWTF	Public Works Trust Fund	Other	i.e. WSDOT

13. **State Funds.** Enter all funds from State Agencies (in thousands) of the phase regardless of when the funds will be spent.

14. **Local Funds.** Enter all funds from local Agencies (in thousands) of the phase regardless of when the funds will be spent.

15. **Total Funds.** Enter the Sum of columns 10, 12, and 14.

16-19. **Expenditure Schedule - (1st, 2nd, 3rd, 4th thru 6th years).** Enter the estimated expenditures (in thousands) of dollars by year. This data is for Local Agency use.

20. **Environmental Data Type.** Enter the type of environmental assessment that will be required for this project. This is required for Federally Funded projects only.

EIS	Environmental Impact Statement	CE	Categorical Exclusion
EA	Environmental Assessment	NA	Not Applicable/Unknown

21. **R/W Certification.** Circle Y if Right of Way acquisition is required. If yes, Enter R/W Certification Date if known. This is required for Federally Funded projects only.

TABLE 6
CITY OF BURLINGTON
ROAD IMPROVEMENT COSTS
BASED ON 2015 TRANSPORTATION SYSTEM NEEDS

Road Segment No.	Road Segment (From - To)	Major Class of Work	Existing Width	Recmnd Width	Work Descriptions	Project Cost (000's)	Amount Assigned to Dev. Extension
(401)	Old SR 99 Burlington Blvd to 0.61 mi. n/o Burlington Blvd.	Major Widening	24'	52'	SH, B, Pvg Lighting, ROW	1,077	1,077
(402)	Burlington Blvd North of City Limits to I-5 NB Ramps	Major Widening	24'	52'	C, G, SW, DR, B, Pvg, Signal, Lighting, ROW	1,063	
403	Pulver Road McCorquedale to SR 20	Minor Widening	22'	30'	SH, B, Pvg	89	
404	McCorquedale Road Pulver to Goldenrod	Minor Widening	18'	36'	C, G, SW, DR, Pvg, Signal	496	
(405)	Goldenrod Road McCorquedale to Andis	New Construction	0' - 22'	36'	C, G, SW, DR, Pvg, Bridge, Lighting, ROW	2,049	2,049
406A	George Hopper IC Rd Bouslog to I-5 NB Ramp	Traffic Control	36'	36'	Channelization Signal	203	
(406B)	George Hopper IC Rd I-5 NB Ramps to Burlington Blvd	Major Widening	36'	64'	C, G, SW, DR, B Pvg, Signal, Lighting	200	
407A	George Hopper IC Rd Burlington Blvd to Port Dr	New Construction	0'	52'	C, G, SW, DR, B, Pvg Signal, Lighting, ROW	1,043	499
(407B)	George Hopper IC Rd Burlington Blvd to Port Dr	New Construction	0'	36'	C, G, SW, DR, Pvg Signal, Lighting, ROW	1,255	602
408	Anacortes Str Pease to Gilkey	Major Widening	22'	42'	SH, B Lighting, ROW	414	
501	E Frontage Burlington Blvd to Andis Rd	New Construction	0'	28'	C, G, SW, DR, Pvg, Signal, ROW	608	
503	Pulver Rd SR 20 to Peterson Rd	Minor Widening	24'	32'	SH, B, Pvg	90	
504	Pulver/Hopper Rd McCorquedale to Bouslog	Minor Widening	18'	30'	SH, B, Pvg	230	
505	Andis Rd Pulver to 0.25 mi. e/o Pulver	New Construction	0'	28'	C, G, SW, DR, Pvg, Lighting, ROW	466	466
* 506	George Hopper IC Rd Port Dr to Whitmarsh	New Construction	0'	44'	C, G, SW, DR, Pvg, ROW	551	
* 507	Whitmarsh Burlington Blvd to Walnut	Minor Widening	18'	30'	SH, B, Pvg	39	
508	Walnut Whitmarsh to Pease	New Construction	0'	52'	C, G, SW, DR, B Pvg, Lighting, ROW	3,418	3,418
(509)	Port Dr Pease to George Hopper Rd	New Construction	0'	36'	C, G, SW, DR, Pvg, Lighting, ROW	1,445	
* 510A	Whitmarsh 800' s/o Pease to George Hopper Rd	Major Widening	20'	52'	SH, B, DR Pvg, ROW	113	

TABLE 6 - Continued
CITY OF BURLINGTON
ROAD IMPROVEMENT COSTS
BASED ON 2015 TRANSPORTATION SYSTEM NEEDS

Road Segment No.	Road Segment (From - To)	Major Class of Work	Existing Width	Recmnd Width	Work Descriptions	Project Cost (000's)	Amount Assigned to Dev. Extension
* 510B	Whitmarsh Alignment Reconstr. Pease to 800' south	New Construction	0'	52'	SH, B, DR Pvg, ROW	125	
* 511A	Whitmarsh Rd Skagit River (RR Bridge Abutment) to George Hopper	Major Widening	20'	52'	SH, B, DR Pvg, ROW	187	
* 511 B	Whitmarsh Rd Skagit River to center of river	New Construction	0'	52'	C, G, SW Bridge	3,094	
512A	Spruce Ext Pease to 350' n/o Pease	New Construction	0'	42'	SW, B Pvg, ROW	188	
512B	Spruce Ext 350' n/o Pease to Existing end of Spruce	New Construction	0'	30'	SW, B, Pvg Bridge, ROW	222	
513	Spruce Existing south end of Spruce to Gilkey	Minor Widening	22'	42'	C, G, SW, DR, B, Pvg	200	
514	Gilkey Anacortes to Skagit 720' n/o Gilkey on Skagit	Minor Widening	22'	36'	C, G, SW, DR, Pvg	244	
515	Rio Vista Spruce to Anacortes	New Construction	0' - 22'	30' on Br 36' @ grde	C, G, SW, DR, Pvg Bridge, ROW	1,775	
517	Norris Str Connection SR 20 to Norris Str	New Construction	0'	20'	Pvg, Signals RR crossing	213	
518	Walnut Str - Urban Ave Bridge Skagit River (RR Bridge Abutment) to Whitmarsh	New Construction	0'	52'	C, G, SW Bridge	3,094	
					Subtotal	**24,191**	

(xxx) - Projects which overlap with adopted 6-Year TIP
*xxx - Projects deleted from Recommended Plan

Less Amount Assigned to Development Extensions	8,111
Less Projects deleted from Recommended Plan	4,109
Subtotal	**11,971**
	(Assign to Capital Cost)
Plus 6 Year TIP Proje	14,489
GRAND TOTAL	**26,460**

PLANNED AND/OR RECOMMENDED WSDOT PROJECTS

SR 20 I-5 to SR 536	Widen to 4 lanes interchange improvements 6/7 lanes in vicinity of interchange
SR 20 Burlington Blvd to east of City Limits	Widen to 4 - 7 lanes
I-5 south of SR 20	Widen to 6 lanes

Table 7
CITY OF BURLINGTON
HISTORICAL & PROJECTED REVENUES & EXPENDITURES

Revenues for Streets and Related Activities
in 000's of $

Foot Notes		Historical				Projected											Grand Totals
		92	93	94	95	1996	97	98	99	2000	01	02	03	04	05-14	15	1996-2015
1	Property Taxes				96	100	100	105	105	110	110	115	115	120	1,300	160	2,440
1	Sales Tax	1,151	1,279	1,121	886	812	815	820	820	830	830	840	840	850	8,800	890	17,147
1	Street Permits	1	1	3	2	2	2	2	2	2	3	3	3	3	35	4	61
	FAUS, STP					100	2,000	2,000	2,000	2,000	100	100	100	100	1,000	1,000	10,500
	WSDOT		7	157		0	0	400	0	600	0	400	0	0	3,000	400	4,800
	TIB	1	15	365	82	306	500	0	500	0	500	0	500	0	2,500	0	4,806
2	MV Fuel Tax - Art	37	34	35	39	37	38	38	39	39	40	40	41	41	440	44	837
2	MV Fuel Tax- City	79	72	75	83	79	80	80	81	81	83	83	85	85	890	95	1,722
1	Interest	46	46	52	58	76	50	50	50	50	50	50	50	50	500	50	1,026
1	Misc, include Mitigation Fees	21	7	20	178	9	10	10	10	10	15	15	15	15	170	18	297
	Loan Repayment	82	77	75	71	70	61	57	54								242
	FEMA					18	0	50	0	50	0	50	0	50	300	50	568
1	Sale of Fixed Assets		5	9			10		10		10		15		75	10	130
	Revenue Totals	**1,418**	**1,543**	**1,912**	**1,495**	**1,609**	**3,666**	**3,612**	**3,671**	**3,772**	**1,741**	**1,696**	**1,764**	**1,314**	**19,010**	**2,721**	**44,576**

Sources, Assumptions

1 From City Finance Director

2 From City Finance Director (based on revenue forecast from WSDOT).

3 Assume growth in proportion to Burlington's internal trip end growth factor, i.e. 1.95 over twenty years.

Table 7 - *continued*

Expenditures

Foot Notes		Historical				Projected											Grand Total
		92	93	94	95	1996	97	98	99	2000	01	02	03	04	05-14	15	1996-2015
	CONSTRUCTION																
	Engineering	159	300	142	118	Dependent on projected expenditures, adopted plan and net revenues including mitigation fee programs See "Net Funds Available for Construction" below											
	ROW	16	25	193													
	Roadway	120	487	696	202												
	Storm Drain	5	457	517	5												
	Construction Subtotal	*300*	*1,269*	*1,548*	*325*												
	MAINTENANCE, ADMINISTRATION																
	Roadway	222	239	110	110	See subtotal below											
	Storm Drain	89	77	24	18												
	Structures	0	0		8												
	Lighting	49	55	58	59												
	Traffic Control	37	51	27	30												
	Snow & Ice	3	4														
	Street Cleaning	10	20	4	5												
	Roadside Dev.	7	14	2	6												
	Administration	109	138	151	355												
	Sidewalks	25	25	34	34												
	Maintenance Subtotal	*551*	*623*	*410*	*625*	*644*	*643*	*665*	*666*	*689*	*689*	*715*	*716*	*742*	*7,875*	*890*	*14,934*
	DEBT SERVICE																
	Other	142	75	20	20												
	Debt Service	168	166	149	142	314	64	61	57	54							550
	Debt Service Subtotal	*310*	*241*	*169*	*162*	*314*	*64*	*61*	*57*	*54*	*0*	*0*	*0*	*0*	*0*	*0*	*550*
	CAPITAL OUTLAY																
	Capital Outlay	84	65	63	42	50	60	50	80	50	80	50	80	50	650	80	1,280
	Capital Outlay Subtotal	*84*	*65*	*63*	*42*	*50*	*60*	*50*	*80*	*50*	*80*	*50*	*80*	*50*	*650*	*80*	*1,280*
	EXPENDITURE TOTAL	**1,245**	**2,198**	**2,190**	**1,154**	**1,008**	**767**	**776**	**803**	**793**	**769**	**765**	**796**	**792**	**8,525**	**970**	**16,764**

Net Funds Available for Const. (Revenue less Expenditures)	**27,812**
Funds Required for Construction of Recommended Plan	**26,460**
Surplus, (Shortfall)	***1,352***

Capital Improvement Plan – 1999 UPDATE										
Program Category: *Transportation*										
Equipment										
CIP #	EXPENDITURES	FUND	1999	2000	2001	2002	2003	2004	TOTAL	STATUS
T-002	Rubber Tire Loader	Street		40,000					40,000	
	EQUIPMENT TOTAL:		0	40,000	0	0	0	0	40,000	
Street Projects										
T-100	Asphalt Overlay & Recon. Program	Street	30,000	30,000	30,000	30,000	30,000	30,000	180,000	
T-101	Fairhaven Overlay	Street		150,000					150,000	
T-102	Miscellaneous Street Projects	Street	50,000	50,000	50,000	50,000	50,000	50,000	300,000	
T-103	Rio Vista Improvements	Street		359,000					359,000	
T-104	Greenleaf Avenue	Street				336,000			336,000	
T-105	Clean Up Old Shop Site	Street			40,000				40,000	
T-106	Wheelchair Ramps	Street	10,000	10,000	10,000	10,000	10,000	10,000	60,000	
T-107	Skagit River Bridge	Street	500,000	150,000	600,000	600,000	600,000	600,000	3,050,000	
T-108	Construct Sidewalk on Burlington Blv	Street	16,000						16,000	
	T-108 continued	Grants	49,000							
T-109	Cherry Street Improvements	Street	89,115						89,115	
T-110	Fairhaven Box Culvert	Street		100,000					100,000	
T-111	Fairhaven Reconstruction	Street	355,000		355,000		355,000		1,065,000	
T-112	Peterson Road Improvements	Street	15,500	244,000					259,500	
	T-112 continued	Grants	48,000	729,000					777,000	
T-113	Downtown Street Lights	Street	390,000						390,000	
T-114	Traffic Signal Coord. On Burl Blvd.	Street	100,000						100,000	
	STREET PROJECT TOTAL:		1,652,615	1,822,000	1,085,000	1,026,000	1,045,000	690,000	7,320,615	
Storm Drainage										
SD-100	Drainage Projects	Bonds	1,201,500		0	0	0	0	1,201,500	
									0	
	STORM DRAINAGE TOTAL:		1,201,500	0	0	0	0	0	1,201,500	
	TOTAL EXPENSE:		2,854,115	1,862,000	1,085,000	1,026,000	1,045,000	690,000	8,562,115	

Capital Improvement Plan -- 1999 UPDATE

Program Category: *Transportation*

REVENUES	1999	2000	2001	2002	2003	2004	TOTAL
Street	1,555,615	1,133,000	1,085,000	1,026,000	1,045,000	690,000	6,534,615
Grant	97,000	729,000	0	0	0	0	826,000
Bonds	1,201,500	0	0	0	0	0	1,201,500
Hotel/Motel Tax							
TOTAL REVENUES:	2,854,115	1,862,000	1,085,000	1,026,000	1,045,000	690,000	8,562,115

CIP PROJECT

1. CIP #: T-002 2. YEAR: 2000
3. FUND #: 101
4. PROJECT NAME: Rubber Tire Loader
5. PROJECT LOCATION: City Shop Complex
6. PROJECT DESCRIPTION: As the capacity of the Street Department grows to handle larger and more complex projects, more heavy duty equipment is required to make efficient use of staff time and minimize the need for equipment rental.
7. PROJECT JUSTIFICATION: This is part of the long range plan to fully equip the street department for a wide variety of street maintenance and improvement projects.
8. PROJECT BENEFIT/ RELATION TO COMPREHENSIVE PLAN: A good rubber tire loader is a key part of almost any street project. Increased capacity alleviate the need for equipment rental and increases efficiency of staff utilization. Ability to respond quickly and effectively to service requests is more cost effective.
9. ENVIRONMENTAL REVIEW REQUIRED: YES _____ NO X
10. PROJECT STATUS:
    New CIP Project _____
    In Prior Plan & Appropriated _____ Year: _____
    Previous Submittal Denied _____ Year: _____
    Carried Over from Prior CIP X Year: 1993-97
11. OPERATION & MAINTENANCE COSTS: Annual $ _____
    Additional Personnel: _____ Annual Cost $ _____
12. FUNDING APPROVED FOR: *(check applicable)*
    Planning: Feasibility _____ Preliminary Engineering _____
    Implementation: Final Design _____ Purchase _____ Construction _____
    Funding Amount: Approved $ _____

CIP FINANCING PLAN

PROJECT NAME: Rubber Tire Loader

CIP #: T-002

13. CIP PROJECT EXPENDITURES

	1999	2000	2001	2002	2003	2004	TOTAL COSTS
Planning							
Purchase/ Construction		40,000					40,000
Operation & Maintenance							

14. REVENUES

	1999	2000	2001	2002	2003	2004	TOTAL REVENUE
Current Expense							
Reserve Fund ★							
Other Fund (Str) 101		40,000					40,000
Grants							
Loans							
Bonds							
Other							
TOTAL:		40,000					40,000

★
- Current Expense (001)
- Current Capital Reserve (002)
- Fire Cumulative Reserve (010)
- Library (104)
- Library Cumulative Reserve (105)
- Cemetery Cumulative Reserve (117)
- Capital Improvement Fund (301)
- Sewer Capital Reserve (402)
- Garbage Cumulative Reserve (412)
- Street (101)

CIP PROJECT

1. CIP #: T-100 2. YEAR: 1999-2004
3. FUND #: 101
4. PROJECT NAME: Asphalt Overlay & Reconstruction Program
5. PROJECT LOCATION: Streets in Burlington
6. PROJECT DESCRIPTION: Annual program to overlay streets with asphalt.
7. PROJECT JUSTIFICATION: Streets are in disrepair. A good overlay will improve the streets substantially and cut maintenance costs at a minimal cost to the City.
8. PROJECT BENEFIT/ RELATION TO COMPREHENSIVE PLAN: The City cannot afford to rebuild all the streets. This provides many benefits, reducing potholes, complaints and maintenance costs.
9. ENVIRONMENTAL REVIEW REQUIRED: YES _____ NO X
10. PROJECT STATUS:
    - New CIP Project _____
    - In Prior Plan & Appropriated X Year: 1994-98
    - Previous Submittal Denied _____ Year: _____
    - Carried Over from Prior CIP _____ Year: _____
11. OPERATION & MAINTENANCE COSTS: Annual $ _____
    - Additional Personnel: _____ Annual Cost $ _____
12. FUNDING APPROVED FOR: *(check applicable)*
    - Planning: Feasibility _____ Preliminary Engineering _____
    - Implementation: Final Design _____ Purchase _____ Construction _____
    - Funding Amount: Approved $ _____

CIP FINANCING PLAN

PROJECT NAME: Asphalt Overlay & Reconstruction Program

CIP #: T-100

13. CIP PROJECT EXPENDITURES

	1999	2000	2001	2002	2003	2004	TOTAL COSTS
Planning							
Purchase/ Construction	30,000	30,000	30,000	30,000	30,000	30,000	180,000
Operation & Maintenance							

14. REVENUES

	1999	2000	2001	2002	2003	2004	TOTAL REVENUE
Current Expense							
Reserve Fund ★							
Other Fund (Str.) 101	30,000	30,000	30,000	30,000	30,000	30,000	180,000
Grants							
Loans							
Bonds							
Other							
TOTAL:	30,000	30,000	30,000	30,000	30,000	30,000	180,000

★
- Current Expense (001)
- Current Capital Reserve (002)
- Fire Cumulative Reserve (010)
- Library (104)
- Library Cumulative Reserve (105)
- Cemetery Cumulative Reserve (117)
- Capital Improvement Fund (301)
- Sewer Capital Reserve (402)
- Garbage Cumulative Reserve (412)
- Street (101)

CIP PROJECT

1. CIP #: T-101 2. YEAR: 2000
3. FUND #: 101
4. PROJECT NAME: Fairhaven Overlay
5. PROJECT LOCATION: Burlington Boulevard to Oak Street
6. PROJECT DESCRIPTION: Asphalt overlay.
7. PROJECT JUSTIFICATION: Street is in poor condition.
8. PROJECT BENEFIT/ RELATION TO COMPREHENSIVE PLAN: A smoother riding street.
9. ENVIRONMENTAL REVIEW REQUIRED: YES _____ NO X
10. PROJECT STATUS:
    - New CIP Project _____
    - In Prior Plan & Appropriated _____ Year: _____
    - Previous Submittal Denied _____ Year: _____
    - Carried Over from Prior CIP X Year: 1994-97
11. OPERATION & MAINTENANCE COSTS: Annual $ 250
    - Additional Personnel: _____ Annual Cost $ _____
12. FUNDING APPROVED FOR: *(check applicable)*
    - Planning: Feasibility _____ Preliminary Engineering _____
    - Implementation: Final Design _____ Purchase _____ Construction _____
    - Funding Amount: Approved $ _____

CIP FINANCING PLAN

PROJECT NAME: Fairhaven Overlay

CIP #: T-101

13. CIP PROJECT EXPENDITURES

	1999	2000	2001	2002	2003	2004	TOTAL COSTS
Planning							
Purchase/ Construction		150,000					150,000
Operation & Maintenance							

14. REVENUES

	1999	2000	2001	2002	2003	2004	TOTAL REVENUE
Current Expense							
Reserve Fund ★							
Other Fund (Str.) 101		150,000					150,000
Grants							
Loans							
Bonds							
Other							
TOTAL:		150,000					150,000

★
- Current Expense (001)
- Current Capital Reserve (002)
- Fire Cumulative Reserve (010)
- Library (104)
- Library Cumulative Reserve (105)
- Cemetery Cumulative Reserve (117)
- Capital Improvement Fund (301)
- Sewer Capital Reserve (402)
- Garbage Cumulative Reserve (412)
- Street (101)

CIP PROJECT

1. CIP #: T-102 2. YEAR: 1999-2004
3. FUND #: 101
4. PROJECT NAME: Miscellaneous Street Projects
5. PROJECT LOCATION: City Limits of Burlington
6. PROJECT DESCRIPTION: Miscellaneous street projects, details developed during the year.
7. PROJECT JUSTIFICATION: There is an on-going demand for street work, which ranges from alleys, to sidewalks, to drainage, to a variety of other elements. Flexibility in funding provides optimal potential for getting the most out of the street improvement dollar.
8. PROJECT BENEFIT/ RELATION TO COMPREHENSIVE PLAN: With streets that have been neglected for 50 years or more in many cases, the obvious aesthetic and transportation benefits are very visible.
9. ENVIRONMENTAL REVIEW REQUIRED: YES _____ NO X
10. PROJECT STATUS:
    - New CIP Project _____
    - In Prior Plan & Appropriated X Year: 1994-98
    - Previous Submittal Denied _____ Year: _____
    - Carried Over from Prior CIP _____ Year: _____
11. OPERATION & MAINTENANCE COSTS: Annual $ _____
    - Additional Personnel: _____ Annual Cost $ _____
12. FUNDING APPROVED FOR: *(check applicable)*
    - Planning: Feasibility _____ Preliminary Engineering _____
    - Implementation: Final Design _____ Purchase _____ Construction _____
    - Funding Amount: Approved $ _____

CIP FINANCING PLAN

PROJECT NAME: Miscellaneous Street Projects

CIP #: T-102

13. CIP PROJECT EXPENDITURES

	1999	2000	2001	2002	2003	2004	TOTAL COSTS
Planning							
Purchase/ Construction	50,000	50,000	50,000	50,000	50,000	50,000	300,000
Operation & Maintenance							

14. REVENUES

	1999	2000	2001	2002	2003	2004	TOTAL REVENUE
Current Expense							
Reserve Fund ★							
Other Fund (Str) 101	50,000	50,000	50,000	50,000	50,000	50,000	300,000
Grants							
Loans							
Bonds							
Other							
TOTAL:	50,000	50,000	50,000	50,000	50,000	50,000	300,000

★
- Current Expense (001)
- Current Capital Reserve (002)
- Fire Cumulative Reserve (010)
- Library (104)
- Library Cumulative Reserve (105)
- Cemetery Cumulative Reserve (117)
- Capital Improvement Fund (301)
- Sewer Capital Reserve (402)
- Garbage Cumulative Reserve (412)
- Street (101)

CIP PROJECT

1. CIP #: T-103 2. YEAR: 2000
3. FUND #: 101
4. PROJECT NAME: Rio Vista Improvements
5. PROJECT LOCATION: Anacortes Street to Skagit Street
6. PROJECT DESCRIPTION: New 40 foot wide street with curb and gutter, sidewalks and drainage.
7. PROJECT JUSTIFICATION: Existing street has no drainage and has broken sidewalks.
8. PROJECT BENEFIT/ RELATION TO COMPREHENSIVE PLAN: It will provide a safer and better drained street.
9. ENVIRONMENTAL REVIEW REQUIRED: YES _____ NO X
10. PROJECT STATUS:
    - New CIP Project _____
    - In Prior Plan & Appropriated _____ Year: _____
    - Previous Submittal Denied _____ Year: _____
    - Carried Over from Prior CIP X Year: 94,95,98
11. OPERATION & MAINTENANCE COSTS: Annual $ _____
    - Additional Personnel: _____ Annual Cost $ _____
12. FUNDING APPROVED FOR: *(check applicable)*
    - Planning: Feasibility _____ Preliminary Engineering _____
    - Implementation: Final Design _____ Purchase _____ Construction _____
    - Funding Amount: Approved $ _____

CIP FINANCING PLAN

PROJECT NAME: Rio Vista Improvements

CIP #: T-103

13. CIP PROJECT EXPENDITURES

	1999	2000	2001	2002	2003	2004	TOTAL COSTS
Planning							
Purchase/ Construction		359,000					359,000
Operation & Maintenance							

14. REVENUES

	1999	2000	2001	2002	2003	2004	TOTAL REVENUE
Current Expense							
Reserve Fund ★							
Other Fund (Str.) 101		359,000					359,000
Grants							
Loans							
Bonds							
Other							
TOTAL:		359,000					359,000

★
- Current Expense (001)
- Current Capital Reserve (002)
- Fire Cumulative Reserve (010)
- Library (104)
- Library Cumulative Reserve (105)
- Cemetery Cumulative Reserve (117)
- Capital Improvement Fund (301)
- Sewer Capital Reserve (402)
- Garbage Cumulative Reserve (412)
- Street (101)

CIP PROJECT

1. CIP #: T-104 2. YEAR: 2002
3. FUND #: 101
4. PROJECT NAME: Greenleaf Avenue
5. PROJECT LOCATION: Spruce Street to Anacortes Street
6. PROJECT DESCRIPTION: New 40 foot wide street with curb and gutter, sidewalks and drainage.
7. PROJECT JUSTIFICATION: Existing street is rough with no drainage.
8. PROJECT BENEFIT/ RELATION TO COMPREHENSIVE PLAN: It will provide a safer and better drained street.
9. ENVIRONMENTAL REVIEW REQUIRED: YES _____ NO X
10. PROJECT STATUS:
    - New CIP Project _____
    - In Prior Plan & Appropriated _____ Year: _____
    - Previous Submittal Denied _____ Year: _____
    - Carried Over from Prior CIP X Year: 1996-97
11. OPERATION & MAINTENANCE COSTS: Annual $ _____
    - Additional Personnel: _____ Annual Cost $ _____
12. FUNDING APPROVED FOR: *(check applicable)*
    - Planning: Feasibility _____ Preliminary Engineering _____
    - Implementation: Final Design _____ Purchase _____ Construction _____
    - Funding Amount: Approved $ _____

CIP FINANCING PLAN

PROJECT NAME: Greenleaf Avenue

CIP #: T-104

13. CIP PROJECT EXPENDITURES

	1999	2000	2001	2002	2003	2004	TOTAL COSTS
Planning							
Purchase/ Construction				336,000			336,000
Operation & Maintenance							

14. REVENUES

	1999	2000	2001	2002	2003	2004	TOTAL REVENUE
Current Expense							
Reserve Fund ★							
Other Fund (Str.) 101				336,000			336,000
Grants							
Loans							
Bonds							
Other							
TOTAL:				336,000			336,000

★
- Current Expense (001)
- Current Capital Reserve (002)
- Fire Cumulative Reserve (010)
- Library (104)
- Library Cumulative Reserve (105)
- Cemetery Cumulative Reserve (117)
- Capital Improvement Fund (301)
- Sewer Capital Reserve (402)
- Garbage Cumulative Reserve (412)
- Street (101)

CIP PROJECT

1. CIP #: T-105 2. YEAR: 2001
3. FUND #: 101
4. PROJECT NAME: Clean up old City Shop site
5. PROJECT LOCATION: Railroad Avenue
6. PROJECT DESCRIPTION: Remove old building structures and level and clean up site.
7. PROJECT JUSTIFICATION: This site could be used for a future park.
8. PROJECT BENEFIT/ RELATION TO COMPREHENSIVE PLAN: Public could use this site for recreation.
9. ENVIRONMENTAL REVIEW REQUIRED: YES _____ NO X
10. PROJECT STATUS:
    - New CIP Project _____
    - In Prior Plan & Appropriated _____ Year: _____
    - Previous Submittal Denied _____ Year: _____
    - Carried Over from Prior CIP X Year: 1994-98
11. OPERATION & MAINTENANCE COSTS: Annual $ _____
    - Additional Personnel: _____ Annual Cost $ _____
12. FUNDING APPROVED FOR: *(check applicable)*
    - Planning: Feasibility _____ Preliminary Engineering _____
    - Implementation: Final Design _____ Purchase _____ Construction _____
    - Funding Amount: Approved $ _____

CIP FINANCING PLAN

PROJECT NAME: Clean Up Old City Shop Complex

CIP #: T-105

13. CIP PROJECT EXPENDITURES

	1999	2000	2001	2002	2003	2004	TOTAL COSTS
Planning							
Purchase/ Construction			40,000				40,000
Operation & Maintenance							

14. REVENUES

	1999	2000	2001	2002	2003	2004	TOTAL REVENUE
Current Expense							
Reserve Fund ★							
Other Fund (Str.) 101			40,000				40,000
Grants							
Loans							
Bonds							
Other							
TOTAL:			40,000				40,000

★
- Current Expense (001)
- Current Capital Reserve (002)
- Fire Cumulative Reserve (010)
- Library (104)
- Library Cumulative Reserve (105)
- Cemetery Cumulative Reserve (117)
- Capital Improvement Fund (301)
- Sewer Capital Reserve (402)
- Garbage Cumulative Reserve (412)
- Street (101)

CIP PROJECT

1. CIP #: T-106 2. YEAR: 1999-2004
3. FUND #: 101
4. PROJECT NAME: Wheelchair Ramps
5. PROJECT LOCATION: Various locations throughout the city.
6. PROJECT DESCRIPTION: Replace existing non-complying wheelchair ramps.
7. PROJECT JUSTIFICATION: Provide better pedestrian safety.
8. PROJECT BENEFIT/ RELATION TO COMPREHENSIVE PLAN: Fulfills needs of handicap community.
9. ENVIRONMENTAL REVIEW REQUIRED: YES _____ NO X
10. PROJECT STATUS:
    - New CIP Project _____
    - In Prior Plan & Appropriated _____ Year: _____
    - Previous Submittal Denied _____ Year: _____
    - Carried Over from Prior CIP X Year: 1998
11. OPERATION & MAINTENANCE COSTS: Annual $ _____
    - Additional Personnel: _____ Annual Cost $ _____
12. FUNDING APPROVED FOR: *(check applicable)*
    - Planning: Feasibility _____ Preliminary Engineering _____
    - Implementation: Final Design _____ Purchase _____ Construction _____
    - Funding Amount: Approved $ _____

CIP FINANCING PLAN

PROJECT NAME: Wheelchair Ramps

CIP #: T-106

13. CIP PROJECT EXPENDITURES

	1999	2000	2001	2002	2003	2004	TOTAL COSTS
Planning							
Purchase/ Construction	10,000	10,000	10,000	10,000	10,000	10,000	60,000
Operation & Maintenance							

14. REVENUES

	1999	2000	2001	2002	2003	2004	TOTAL REVENUE
Current Expense							
Reserve Fund ★							
Other Fund (Str.) 101	10,000	10,000	10,000	10,000	10,000	10,000	60,000
Grants							
Loans							
Bonds							
Other							
TOTAL:	10,000	10,000	10,000	10,000	10,000	10,000	60,000

★
- Current Expense (001)
- Current Capital Reserve (002)
- Fire Cumulative Reserve (010)
- Library (104)
- Library Cumulative Reserve (105)
- Cemetery Cumulative Reserve (117)
- Capital Improvement Fund (301)
- Sewer Capital Reserve (402)
- Garbage Cumulative Reserve (412)
- Street (101)

CIP PROJECT

1. CIP #: T-107 2. YEAR: 1999-2004
3. FUND #: 101
4. PROJECT NAME: Skagit River Bridge
5. PROJECT LOCATION: S. Burlington Boulevard
6. PROJECT DESCRIPTION: Design and construct a parallel bridge span and improvements to Burlington Boulevard.
7. PROJECT JUSTIFICATION: To provide more traffic capacity.
8. PROJECT BENEFIT/ RELATION TO COMPREHENSIVE PLAN: Improve traffic flows.
9. ENVIRONMENTAL REVIEW REQUIRED: YES X NO _____
10. PROJECT STATUS:
    - New CIP Project _____
    - In Prior Plan & Appropriated _____ Year: _____
    - Previous Submittal Denied _____ Year: _____
    - Carried Over from Prior CIP X Year: 1995-98
11. OPERATION & MAINTENANCE COSTS: Annual $ _____
    - Additional Personnel: _____ Annual Cost $ _____
12. FUNDING APPROVED FOR: *(check applicable)*
    - Planning: Feasibility _____ Preliminary Engineering _____
    - Implementation: Final Design _____ Purchase _____ Construction _____
    - Funding Amount: Approved $ _____

CIP FINANCING PLAN

PROJECT NAME: Design of Skagit River Bridge

CIP #: T-107

13. CIP PROJECT EXPENDITURES

	1999	2000	2001	2002	2003	2004	TOTAL COSTS
Planning							
Purchase/ Construction	500,000	150,000	575,000	575,000	575,000	575,000	2,950,000
Operation & Maintenance			25,000	25,000	25,000	25,000	100,000

14. REVENUES

	1999	2000	2001	2002	2003	2004	TOTAL REVENUE
Current Expense							
Reserve Fund ★							
Other Fund (Str.) 101	500,000	150,000	600,000	600,000	600,000	600,000	3,050,000
Grants							
Loans							
Bonds							
Other							
TOTAL:	500,000	150,000	600,000	600,000	600,000	600,000	3,050,000

★
- Current Expense (001)
- Current Capital Reserve (002)
- Fire Cumulative Reserve (010)
- Library (104)
- Library Cumulative Reserve (105)
- Cemetery Cumulative Reserve (117)
- Capital Improvement Fund (301)
- Sewer Capital Reserve (402)
- Garbage Cumulative Reserve (412)
- Street (101)

CIP PROJECT

1. CIP #: T-108 2. YEAR: 1999
3. FUND #: 101
4. PROJECT NAME: Construct sidewalk on Burlington Boulevard
5. PROJECT LOCATION: at Gages Slough
6. PROJECT DESCRIPTION: 700 feet of 6 foot wide new concrete sidewalk
7. PROJECT JUSTIFICATION: Improve pedestrian safety.
8. PROJECT BENEFIT/ RELATION TO COMPREHENSIVE PLAN: Fulfils needs of handicap community.
9. ENVIRONMENTAL REVIEW REQUIRED: YES _____ NO X
10. PROJECT STATUS:
    New CIP Project X
    In Prior Plan & Appropriated _____ Year: _____
    Previous Submittal Denied _____ Year: _____
    Carried Over from Prior CIP _____ Year: _____
11. OPERATION & MAINTENANCE COSTS: Annual $ _____
    Additional Personnel: _____ Annual Cost $ _____
12. FUNDING APPROVED FOR: *(check applicable)*
    Planning: Feasibility _____ Preliminary Engineering _____
    Implementation: Final Design _____ Purchase _____ Construction _____
    Funding Amount: Approved $ _____

CIP FINANCING PLAN

PROJECT NAME: Construct Sidewalk on Burlington Boulevard @ Gages Slough

CIP #: T-108

13. CIP PROJECT EXPENDITURES

	1999	2000	2001	2002	2003	2004	TOTAL COSTS
Planning							
Purchase/ Construction	65,000						65,000
Operation & Maintenance							

14. REVENUES

	1999	2000	2001	2002	2003	2004	TOTAL REVENUE
Current Expense							
Reserve Fund ★							
Other Fund (Str.) 101	16,000						16,000
Grants	49,000						49,000
Loans							
Bonds							
Other							
TOTAL:	65,000						65,000

★
Current Expense	(001)	Cemetery Cumulative Reserve	(117)
Current Capital Reserve	(002)	Capital Improvement Fund	(301)
Fire Cumulative Reserve	(010)	Sewer Capital Reserve	(402)
Library	(104)	Garbage Cumulative Reserve	(412)
Library Cumulative Reserve	(105)	Street	(101)

CIP PROJECT

1. CIP #: T-109 2. YEAR: 1999
3. FUND #: 101
4. PROJECT NAME: Cherry Street Improvements
5. PROJECT LOCATION: Greenleaf to Rio Vista
6. PROJECT DESCRIPTION: Provide a smoother riding and better draining street.
7. PROJECT JUSTIFICATION: Fulfills plan goal of proving a better street system.
8. PROJECT BENEFIT/ RELATION TO COMPREHENSIVE PLAN:
9. ENVIRONMENTAL REVIEW REQUIRED: YES _____ NO X
10. PROJECT STATUS:
    - New CIP Project X
    - In Prior Plan & Appropriated _____ Year: _____
    - Previous Submittal Denied _____ Year: _____
    - Carried Over from Prior CIP _____ Year: _____
11. OPERATION & MAINTENANCE COSTS: Annual $ _____
    - Additional Personnel: _____ Annual Cost $ _____
12. FUNDING APPROVED FOR: *(check applicable)*
    - Planning: Feasibility _____ Preliminary Engineering _____
    - Implementation: Final Design _____ Purchase _____ Construction _____
    - Funding Amount: Approved $ _____

CIP FINANCING PLAN

PROJECT NAME: Cherry Street Improvements

CIP #: T-109

13. CIP PROJECT EXPENDITURES

	1999	2000	2001	2002	2003	2004	TOTAL COSTS
Planning							
Purchase/ Construction	89,115						89,115
Operation & Maintenance							

14. REVENUES

	1999	2000	2001	2002	2003	2004	TOTAL REVENUE
Current Expense							
Reserve Fund ★							
Other Fund (Str.) 101	89,115						89,115
Grants							
Loans							
Bonds							
Other							
TOTAL:	89,115						89,115

★
- Current Expense (001)
- Current Capital Reserve (002)
- Fire Cumulative Reserve (010)
- Library (104)
- Library Cumulative Reserve (105)
- Cemetery Cumulative Reserve (117)
- Capital Improvement Fund (301)
- Sewer Capital Reserve (402)
- Garbage Cumulative Reserve (412)
- Street (101)

CIP PROJECT

1. CIP #: T-110 2. YEAR: 2000
3. FUND #: 101
4. PROJECT NAME: Fairhaven Box Culvert
5. PROJECT LOCATION: Gages Slough
6. PROJECT DESCRIPTION: Replace existing 8' x 10' box culvert.
7. PROJECT JUSTIFICATION: Existing culvert is failing.
8. PROJECT BENEFIT/ RELATION TO COMPREHENSIVE PLAN: This project will provide a safer route for the public.
9. ENVIRONMENTAL REVIEW REQUIRED: YES _____ NO X
10. PROJECT STATUS:
    - New CIP Project _____
    - In Prior Plan & Appropriated _____ Year: _____
    - Previous Submittal Denied _____ Year: _____
    - Carried Over from Prior CIP X Year: 1997-98
11. OPERATION & MAINTENANCE COSTS: Annual $ _____
    - Additional Personnel: _____ Annual Cost $ _____
12. FUNDING APPROVED FOR: *(check applicable)*
    - Planning: Feasibility _____ Preliminary Engineering _____
    - Implementation: Final Design _____ Purchase _____ Construction _____
    - Funding Amount: Approved $ _____

CIP FINANCING PLAN

PROJECT NAME: Fairhaven Box Culvert

CIP #: T-110

13. CIP PROJECT EXPENDITURES

	1999	2000	2001	2002	2003	2004	TOTAL COSTS
Planning							
Purchase/ Construction		100,000					100,000
Operation & Maintenance							

14. REVENUES

	1999	2000	2001	2002	2003	2004	TOTAL REVENUE
Current Expense							
Reserve Fund ★							
Other Fund (Str.) 101		100,000					100,000
Grants							
Loans							
Bonds							
Other							
TOTAL:		100,000					100,000

★

Current Expense	(001)	Cemetery Cumulative Reserve	(117)
Current Capital Reserve	(002)	Capital Improvement Fund	(301)
Fire Cumulative Reserve	(010)	Sewer Capital Reserve	(402)
Library	(104)	Garbage Cumulative Reserve	(412)
Library Cumulative Reserve	(105)	Street	(101)

CIP PROJECT

1. CIP #: T-111 2. YEAR: 1999, 2001, 2003
3. FUND #: Grants
4. PROJECT NAME: Fairhaven Reconstruction
5. PROJECT LOCATION: Burlington Boulevard to Anacortes Street
6. PROJECT DESCRIPTION: New street drainage and underground utilities. This project would be done in three phases.
7. PROJECT JUSTIFICATION: Street is in poor condition.
8. PROJECT BENEFIT/ RELATION TO COMPREHENSIVE PLAN: A smoother riding street.
9. ENVIRONMENTAL REVIEW REQUIRED: YES _____ NO X
10. PROJECT STATUS:
    - New CIP Project _____
    - In Prior Plan & Appropriated _____ Year: _____
    - Previous Submittal Denied _____ Year: _____
    - Carried Over from Prior CIP X Year: 1998
11. OPERATION & MAINTENANCE COSTS: Annual $ _____
    - Additional Personnel: _____ Annual Cost $ _____
12. FUNDING APPROVED FOR: *(check applicable)*
    - Planning: Feasibility _____ Preliminary Engineering _____
    - Implementation: Final Design _____ Purchase _____ Construction _____
    - Funding Amount: Approved $ _____

CIP FINANCING PLAN

PROJECT NAME: Fairhaven Reconstruction

CIP #: T-111

13. CIP PROJECT EXPENDITURES

	1999	2000	2001	2002	2003	2004	TOTAL COSTS
Planning							
Purchase/ Construction	355,000		355,000		355,000		1,065,000
Operation & Maintenance							

14. REVENUES

	1999	2000	2001	2002	2003	2004	TOTAL REVENUE
Current Expense							
Reserve Fund ★							
Other Fund (Str.) 101							
Grants	355,000		355,000		355,000		1,065,000
Loans							
Bonds							
Other							
TOTAL:	355,000		355,000		355,000		1,065,000

★
- Current Expense (001)
- Current Capital Reserve (002)
- Fire Cumulative Reserve (010)
- Library (104)
- Library Cumulative Reserve (105)
- Cemetery Cumulative Reserve (117)
- Capital Improvement Fund (301)
- Sewer Capital Reserve (402)
- Garbage Cumulative Reserve (412)
- Street (101)

CIP PROJECT

1. CIP #: T-112 2. YEAR: 1999-2000
3. FUND #: 101 & Grants
4. PROJECT NAME: Peterson Road Improvements
5. PROJECT LOCATION: SR 20 to W. City Limits
6. PROJECT DESCRIPTION: Rebuild street
7. PROJECT JUSTIFICATION: Make room for more capacity.
8. PROJECT BENEFIT/ RELATION TO COMPREHENSIVE PLAN: Provide a safer street.
9. ENVIRONMENTAL REVIEW REQUIRED: YES _____ NO X
10. PROJECT STATUS:
    New CIP Project _____
    In Prior Plan & Appropriated _____ Year: _____
    Previous Submittal Denied _____ Year: _____
    Carried Over from Prior CIP X Year: 1997-98
11. OPERATION & MAINTENANCE COSTS: Annual $ 400
    Additional Personnel: _____ Annual Cost $ _____
12. FUNDING APPROVED FOR: *(check applicable)*
    Planning: Feasibility _____ Preliminary Engineering _____
    Implementation: Final Design _____ Purchase _____ Construction _____
    Funding Amount: Approved $ _____

CIP FINANCING PLAN

PROJECT NAME: Peterson Road Improvements

CIP #: T-112

13. CIP PROJECT EXPENDITURES

	1999	2000	2001	2002	2003	2004	TOTAL COSTS
Planning							
Purchase/ Construction	63,500	973,000					1,036,500
Operation & Maintenance							

14. REVENUES

	1999	2000	2001	2002	2003	2004	TOTAL REVENUE
Current Expense							
Reserve Fund ★							
Other Fund (Str.) 101	15,500	244,000					259,500
Grants	48,000	729,000					777,000
Loans							
Bonds							
Other							
TOTAL:	63,500	973,000					1,036,500

★ Current Expense (001)
Current Capital Reserve (002)
Fire Cumulative Reserve (010)
Library (104)
Library Cumulative Reserve (105)
Cemetery Cumulative Reserve (117)
Capital Improvement Fund (301)
Sewer Capital Reserve (402)
Garbage Cumulative Reserve (412)
Street (101)

CIP PROJECT

1. CIP #: T-113 2. YEAR: 1999 – 2004
3. FUND #: Street
4. PROJECT NAME: Downtown Street Lights
5. PROJECT LOCATION: Fairhaven Avenue – Burlington Boulevard to Anacortes Street
6. PROJECT DESCRIPTION: Construct new decorative street lights.
7. PROJECT JUSTIFICATION: To promote business activity and provide a safer environment.
8. PROJECT BENEFIT/ RELATION TO COMPREHENSIVE PLAN: This is a component of the Downtown Revitalization Coalition Plan.
9. ENVIRONMENTAL REVIEW REQUIRED: YES _____ NO X
10. PROJECT STATUS:
    - New CIP Project X
    - In Prior Plan & Appropriated _____ Year: _____
    - Previous Submittal Denied _____ Year: _____
    - Carried Over from Prior CIP _____ Year: _____
11. OPERATION & MAINTENANCE COSTS: Annual $ _____
    - Additional Personnel: 0 Annual Cost $ _____
12. FUNDING APPROVED FOR: *(check applicable)*
    - Planning: Feasibility _____ Preliminary Engineering _____
    - Implementation: Final Design _____ Purchase _____ Construction _____
    - Funding Amount: Approved $ _____

CIP FINANCING PLAN

PROJECT NAME: Downtown Street Lights

CIP #: T-113

13. CIP PROJECT EXPENDITURES

	1999	2000	2001	2002	2003	2004	TOTAL COSTS
Planning							
Purchase/ Construction	390,000						390,000
Operation & Maintenance							

14. REVENUES

	1999	2000	2001	2002	2003	2004	TOTAL REVENUE
Current Expense							
Reserve Fund ★101	390,000						390,000
Other Fund							
Grants							
Loans							
Bonds							
Other							
TOTAL:	390,000						390,000

★ Current Expense (001)
Current Capital Reserve (002)
Fire Cumulative Reserve (010)
Library (104)
Library Cumulative Reserve (105)
Cemetery Cumulative Reserve (117)
Capital Improvement Fund (301)
Sewer Capital Reserve (402)
Garbage Cumulative Reserve (412)
Street (101)

CIP PROJECT

1. CIP #: T-114 2. YEAR: 1999
3. FUND #: STR 101
4. PROJECT NAME: Traffic Signal Coordination on Burlington Boulevard
5. PROJECT LOCATION: Burlington Boulevard – Skagit River to Avon Avenue
6. PROJECT DESCRIPTION: Interconnect traffic signals.
7. PROJECT JUSTIFICATION: To help relieve traffic congestion by improving signal efficiency.
8. PROJECT BENEFIT/ RELATION TO COMPREHENSIVE PLAN: Improves traffic capacity.
9. ENVIRONMENTAL REVIEW REQUIRED: YES _____ NO X
10. PROJECT STATUS:
    - New CIP Project X
    - In Prior Plan & Approprinted _____ Year: _____
    - Previous Submittal Denied _____ Year: _____
    - Carried Over from Prior CIP _____ Year: _____
11. OPERATION & MAINTENANCE COSTS: Annual $ _____
    - Additional Personnel: 0 Annual Cost $ 0
12. FUNDING APPROVED FOR: *(check applicable)*
    - Planning: Feasibility _____ Preliminary Engineering _____
    - Implementation: Final Design _____ Purchase _____ Construction _____
    - Funding Amount: Approved $ _____

CIP FINANCING PLAN

PROJECT NAME: Traffic Signal Coordination on Burlington Boulevard

CIP #: T-114

13. CIP PROJECT EXPENDITURES

	1999	2000	2001	2002	2003	2004	TOTAL COSTS
Planning							
Purchase/ Construction	100,000						100,000
Operation & Maintenance							

14. REVENUES

	1999	2000	2001	2002	2003	2004	TOTAL REVENUE
Current Expense							
Reserve Fund ★							
Other Fund (Str.) 101	100,000						100,000
Grants							
Loans							
Bonds							
Other							
TOTAL:	100,000						100,000

★
- Current Expense (001)
- Current Capital Reserve (002)
- Fire Cumulative Reserve (010)
- Library (104)
- Library Cumulative Reserve (105)
- Cemetery Cumulative Reserve (117)
- Capital Improvement Fund (301)
- Sewer Capital Reserve (402)
- Garbage Cumulative Reserve (412)
- Street (101)

CIP PROJECT

1. CIP #: SD-100 2. YEAR: 1999
3. FUND #: Bonds
4. PROJECT NAME: Drainage Projects
5. PROJECT LOCATION: City of Burlington
6. PROJECT DESCRIPTION: The Comprehensive Surface Water Management Plan was adopted in the fall of 1992. Drainage Utility was formed in 1997, followed by implementation of the Capital Improvement Plan for Surface Water Management.
7. PROJECT JUSTIFICATION: The need for surface water management in Burlington is very great.
8. PROJECT BENEFIT/ RELATION TO COMPREHENSIVE PLAN: Improved drainage citywide will result along with a decrease in impact on surrounding farmlands.
9. ENVIRONMENTAL REVIEW REQUIRED: YES _____ NO X
10. PROJECT STATUS:
    New CIP Project _____
    In Prior Plan & Appropriated X Year: 1994-98
    Previous Submittal Denied _____ Year: _____
    Carried Over from Prior CIP _____ Year: _____
11. OPERATION & MAINTENANCE COSTS: Annual $ _____
    Additional Personnel: _____ Annual Cost $ _____
12. FUNDING APPROVED FOR: *(check applicable)*
    Planning: Feasibility _____ Preliminary Engineering _____
    Implementation: Final Design _____ Purchase _____ Construction _____
    Funding Amount: Approved $ _____

CIP FINANCING PLAN

PROJECT NAME: Miscellaneous Drainage Projects

CIP #: SD-100

13. CIP PROJECT EXPENDITURES

	1999	2000	2001	2002	2003	2004	TOTAL COSTS
Planning							
Purchase/ Construction	1,201,500						1,201,500
Operation & Maintenance							

14. REVENUES

	1999	2000	2001	2002	2003	2004	TOTAL REVENUE
Current Expense							
Reserve Fund ★							
Other Fund (Str.) 101							
Grants							
Loans							
Bonds	1,201,500						1,201,500
Other							
TOTAL:	1,201,500						1,201,500

★ Current Expense (001)
Current Capital Reserve (002)
Fire Cumulative Reserve (010)
Library (104)
Library Cumulative Reserve (105)
Cemetery Cumulative Reserve (117)
Capital Improvement Fund (301)
Sewer Capital Reserve (402)
Garbage Cumulative Reserve (412)
Street (101)

APPENDIX F

- Street Code

Chapter 12.28

CONSTRUCTION OF STREETS, SIDEWALKS AND STORM DRAINS

Sections:

12.28.010 Application.

This chapter sets forth the specifications and requirements for the construction of public works including streets, sidewalks, sanitary sewers and storm drains within the city.

A. Improved right-of-way is required for access to all new construction projects.

B. Improved right-of-way for new single-family and duplex buildings on existing lots of record is defined as grading to a minimum of 20 feet and installing six inches of crushed rock. An additional three-inch lift of crushed rock is required if the roadbed is destroyed by trucks during the construction process.

C. All other new construction shall meet the right-of-way improvement standards specified in this code, unless, in the opinion of the city engineer, improvements are not warranted at the time of development. In that case, the property owner shall be required to do one of the following, as specified by the city engineer:

1. Enter into a binding agreement to participate in any street improvement, local improvement district (LID) affecting the described right-of-way which LID may be formed now or in the future;

2. Enter into a binding agreement to construct specified right-of-way improvements by a specified date;

3. Construct improvements which conform to existing improvements in the immediate area. (Ord. 1188 § 1, 1991; Ord. 959 § 1, 1980).

12.28.020 Standard specifications.

Construction and maintenance of all public works, including streets, sidewalks, storm drains and all associated appurtenances shall be in conformance with, and comply with, the 1984 Washington State Department of Transportation/American Public Works Association (WSDOT/APWA) standard specifications, WSDOT amendments and General Special Provisions (GSPs), and the APWA amendments, and as hereafter amended, unless different standards or specifications are required by the city engineer, or are provided for in the applicable public works contract. (Ord. 1059 § 2, 1985; Ord. 959 § 2, 1980).

I. Street Classifications

12.28.030 Generally.

All streets in the city shall be functionally classified in one of the categories specified in BMC 12.28.040 through 12.28.070. (Ord. 959 § 3, 1980).

12.28.040 Major arterial (Principal).

Major arterials provide for the movement of traffic across and between large subparts of the urban region and serve predominately "through" trips with minimum direct service to abutting land uses. Major arterial service is required by the central business district, large shopping centers, large industrial plants, major governmental centers, large hospitals, important secondary business districts and similar land uses which comprise the top layer of hierarchy of trip generators. Major arterials shall form a closed, interconnected system linking together major traffic generators in the urban region, and functioning to collect and distribute traffic from freeways and state highways to less important arterial streets. (Ord. 959 § 3, 1980).

12.28.050 Secondary arterial (Minor).

Secondary arterials provide for movement within the large subparts prescribed by major arterials. Secondary arterials may also serve "through" traffic, but provide more direct service to abutting land uses than do major arterials. Secondary arterial service is required by small central business districts, tourist districts with motels and restaurants, high schools and some grade schools, strip commercial development, parks and recreational areas, warehousing areas and similar land uses which comprise the middle layer of the trip generator hierarchy. Secondary arterials shall, whenever possible, be long, continuous streets with direct rather than meandering alignments. (Ord. 959 § 3, 1980).

12.28.060 Collector arterial (Collector).

Collector arterials provide for movement within the smaller areas, which are often definable neighborhoods and may be bounded by higher class arterials. Collector arterials serve very little "through" traffic but serve a high proportion of local traffic requiring direct access to abutting land uses. Collector arterial service is required for the majority of land uses which generate measurably important traffic volumes such as plats, churches, small parks and recreation areas, convenience shopping centers and other areas which are not served by major or secondary arterials. Collector arterials need not be particularly long or continuous since this would tend to attract through trips. (Ord. 959 § 3, 1980).

12.28.070 Access street (Access).

Access streets provide for movement within residential neighborhoods, light commercial areas, and the residential agricultural districts. Access streets serve no through traffic and may terminate in cul-de-sacs. (Ord. 959 § 3, 1980).

12.28.080 Street designations.

The city council shall designate a comprehensive arterial street plan. Classification of new streets shall be made by the city supervisor according to the comprehensive street plan. Every effort shall be made to incorporate new streets into the existing street grid pattern, and to provide for systematic naming and numbering of streets. (Ord. 959 § 3, 1980).

II. Street and Sidewalk Design Criteria

12.28.090 Plans required.

Street and sidewalk improvements or new street and sidewalk construction shall require engineering plans with the following information:

A. Vicinity map showing the location of existing arterial streets adjoining the proposed improvement or within the immediate vicinity of the improvement;

B. Street plans for individual street sections shall contain at least the following information:

1. Width and location of existing streets adjoining the improvement,

2. Property lines, right-of-way lines and easement lines with dimensions and north arrow,

3. Location of street improvement and appurtenances including driveways, properly dimensioned and stationed along the centerline and location and stationing of all horizontal angle points and horizontal curve data,

4. Location of all existing and proposed overhead and underground utilities, including storm and sanitary sewers, water courses, rail-

road crossings, structures within the right-of-way, trees, and all pertinent topographic features, including location and elevations of all survey bench marks,

5. Suitable title plate on each drawing with street name, name and address of developer, scale, date and the name, address and telephone number and stamp of the registered engineer or land surveyor responsible for the plan preparation;

C. Street profiles for individual street sections shall contain at least the following information:

1. Street centerline stationing and vertical elevations,

2. A two or three line profile showing the existing ground surface along the street centerline and proposed top of curb and street centerline profiles,

3. Slope of the street between grade changes and vertical curve information,

4. Centerline profile of intersecting streets a minimum of 100 feet each side of street improvement and profile of all driveways with grades greater than eight percent,

5. Suitable title plate on each drawing with street name, name and address of developer, vertical and horizontal scale, date and the name, address, telephone number and stamp of the registered engineer or land surveyor responsible for the plan preparation;

D. Structural details shall include properly dimensioned details of curbs and gutters, street cross sections, drainage facilities, retaining walls and all major structures to be constructed within the right-of-way. (Ord. 959 § 4, 1980).

12.28.100 Geometric design standards – Generally.

Streets shall be designed and constructed in accordance with the requirements set out in BMC 12.28.110 through 12.28.150. (Ord. 959 § 5, 1980).

12.28.110 Geometric design standards – General requirements.

Streets shall be designed and constructed in accordance with the following general requirements:

A. Streets shall be designed to provide vehicular access according to the street classification to, from and through the service area;

B. Street widths shall be adequate to provide access for emergency vehicles, firefighting equipment, garbage trucks and city service vehicles;

C. Whenever possible streets shall be used to collect runoff from adjacent properties in the service area and divert it into storm drain systems;

D. Whenever possible new streets shall align with the existing street grid. New streets shall intersect existing streets at an approximate 90-degree angle;

E. Vertical clearance of structures or vegetation above a paved roadway shall be 16-1/2 feet. Vertical clearance of structures or vegetation above a sidewalk or walkway surface shall be eight feet;

F. Lateral clearance between the curb or edge of street shoulder and the closest part of any fixed object (excluding traffic control signs and breakaway supports) shall be at least three feet;

G. Traffic control devices shall conform to the Washington State Department of Transportation Manual on Uniform Traffic Control Devices, latest edition;

H. Ramps for Handicapped. Curb ramps for physically handicapped persons shall be included in all construction in accordance with the laws of the state of Washington;

I. Roadway Geometrics. Street designs shall be based on accepted engineering practices and current standards of the American Association of State Highway and Transportation Officials;

J. Design Year. Twenty years after the year construction is completed;

K. Street Intersections. Gutter drainage should not be allowed to cross any intersections on major, secondary or collector arterials. (Ord. 959 § 5, 1980).

12.28.120 Geometric design standards – Major arterials.

Major arterials shall be designed and constructed in accordance with the following requirements:

A. Access conditions; intersections at grade with traffic signals at all major intersections; traffic channelization at all major intersections or driveways; parking restricted within road right-of-way; access control to adjoining properties according to the following conditions:

1. One driveway per lot or driveways spaced a minimum of 150 lineal feet apart,

2. No driveways within 150 lineal feet of street intersections,

3. Driveway width 24 feet minimum, 36 feet maximum;

B. Average daily traffic. 5,000 to 25,000 vehicles per day;

C. Right-of-way width: 80 feet minimum;

D. Traffic lane width criteria:

Two-way traffic	12 feet minimum
Turn lane	12 feet minimum
Shoulders	8 feet minimum
Bus lane	12 feet minimum

E. Pavement width (two-way traffic):

With curbs	48 feet measured to face of curb
With shoulders	56 feet

F. Horizontal curvature: minimum centerline radius = 955 feet;

G. Maximum grade = 6 percent; minimum grade = 0.5 percent;

H. Road surface cross slope: 2.5 percent minimum;

I. Curb radii at intersections = 25 feet minimum;

J. Curb type: APWA Type A;

K. Five-foot wide sidewalks each side required unless exempted by city council. (Ord. 959 § 5, 1980).

12.28.130 Geometric design standards – Secondary arterials.

Secondary arterials shall be designed and constructed in accordance with the following requirements:

A. Access conditions: intersections at grade with traffic channelization at major intersections; driveways within 150 feet of an intersection may be prohibited if there are potential traffic hazards. The extent of the potential traffic hazard shall be determined by the city engineer in his sole discretion;

B. Average daily traffic: 1,500 to 10,000 vehicles per day;

C. Right-of-way width: 60 feet minimum;

D. Traffic lane width criteria:

Two way traffic	11 feet minimum
Turn lane	12 feet minimum
Shoulders	8 feet minimum
Parking lane	10 feet minimum
Bus lane	12 feet minimum

E. Pavement width (two-way traffic):

With curbs	44 feet measured to face of curb
With shoulders	52 feet

F. Horizontal curvature: minimum centerline radius = 820 feet;

G. Maximum grade = 6 percent; minimum grade = 0.5 percent;

H. Road surface cross slope: 2.5 percent minimum;

I. Curb radius at intersections = 20 feet minimum;

J. Curb type: APWA Type A;

K. Five-foot wide sidewalks required each side of street unless exempted by the city council. (Ord. 1326 § 1, 1996; Ord. 959 § 5, 1980).

12.28.140 Geometric design standards – Collector arterials.

Collector arterials shall be designed and constructed in accordance with the following requirements:

A. Access conditions: intersections at grade with stop signs at major cross streets; driveways within 150 feet of an intersection may be prohibited if there are potential traffic hazards. The extent of the potential traffic hazard shall be determined by the city engineer in his sole discretion;

B. Average daily traffic: 1,000 to 5,000 vehicles per day;

C. Right-of-way width: 60 feet minimum;

D. Traffic lane width criteria:

Two-way traffic	11 feet minimum
Parking lane	8 feet minimum
Bus lane	12 feet minimum

E. Pavement width (two-way traffic):

With curbs	36 feet measured to face of curb
With shoulders	44 feet

F. Horizontal curvature: minimum centerline radius = 715 feet;

G. Maximum grade = 7 percent; minimum grade = 0.4 percent;

H. Road surface cross slope = 2.78 percent minimum;

I. Curb radius at intersections = 20 feet minimum;

J. Curb type: APWA Type A or D;

K. Five-foot wide sidewalks each side of street required. (Ord. 1326 § 2, 1996; Ord. 959 § 5, 1980).

12.28.150 Geometric design standards – Access streets.

Access streets shall be designed and constructed in accordance with the following requirements:

A. Access conditions: intersections at grade with stop signs at all major cross streets; driveways within 150 feet of an intersection may be prohibited if there are potential traffic hazards. The extent of the potential traffic hazard shall be determined by the city engineer in his sole discretion;

B. Average daily traffic: 500 vehicles per day or less;

C. Right-of-way width: 50 feet minimum;

D. Traffic lane width criteria:

Two-way traffic	10 feet minimum
Parking lane	8 feet minimum;

E. Pavement width (two-way traffic):

With curbs and parking both sides	36 feet measured to face of crubs
With curbs and parking one side	32 feet
With shoulders (five feet each side)	34 feet total width

F. Horizontal curvature: minimum centerline radius = 410 feet;

G. Maximum grade = 12 percent; minimum grade = 0.4 percent;

H. Road surface cross slope = 2.78 percent;

I. Curb radius at intersections = 10 feet minimum;

J. Curb type: APWA Type A or D;

K. Cul-de-sacs:

Length	300 feet maximum
Diameter	90 feet – residential zone 100 feet – commercial zone

L. Sidewalks optional at discretion of the city council. (Ord. 1326 § 3, 1996; Ord. 959 § 5, 1980).

12.28.160 Structural design standards.

A. All streets shall be designed to provide a useful life span of 20 years without excessive maintenance. Major, secondary and collector arterials shall be designed and stamped by a civil engineer registered in the state of Washington. Accepted engineering practices shall be employed in the street designs. Soil, drainage and traffic conditions shall be considered in the design.

B. Access streets will not require design by a registered engineer but shall be submitted to the city according to the format described in BMC 12.28.090. The following minimum pavement cross-sections shall apply to access streets:

1. Asphalt concrete surfacing:

a. Three inches Class B asphalt concrete placed in two lifts of one and one-half inches;

b. One and one-half inches crushed rock base;

c. Eight inches pit run gravel ballast.

2. Portland cement concrete pavement:

a. Five inches 4,000 psi PC concrete on compacted subgrade.

C. Adequate storm sewers shall be provided for all streets. (Ord. 959 § 5, 1980).

III. Storm Sewers

12.28.170 Definitions. *Repealed by Ord. 1273.* (Ord. 959 § 6, 1980).

12.28.180 Plans required. *Repealed by Ord. 1273.* (Ord. 959 § 6, 1980).

12.28.190 Design criteria. *Repealed by Ord. 1273.* (Ord. 959 § 6, 1980).