

6 Transportation Element

I. Overview

This Transportation element serves as the executive summary to establish goals, policies, and implementation strategies to guide future decisions affecting the City of Buckley's transportation systems including pedestrian, bicycle, transit and vehicular facilities. This element is intended to reinforce Buckley's overall vision of being a safe and friendly historic small town that is an attractive place to live, work, and play.

Along with other elements in the Comprehensive Plan the Transportation element works to preserve Buckley's small town character, ensure efficient provision of services, support diverse housing opportunities, protect the natural environment, foster a strong economic base, ensure safe access to goods and services and develop high quality public spaces that foster community interaction.

The focus of the transportation element is on ensuring safe and convenient access to goods and services through an efficient and environmentally sensitive multimodal transportation system. Pedestrian, bicycle, transit and vehicular facilities are all considered when answering the following questions:

- What are the strengths and weaknesses of Buckley's current transportation system?
- What is Buckley's projected transportation needs in the future?

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- What is Buckley's overall strategy for meeting its future needs?
- What are Buckley's goals, policies for improving its transportation system?
- What specific actions can Buckley begin to take to implement its vision?

Planning Process

This Transportation Element update was prepared in the following series of steps:

- Historical information was collected including Pierce County Transportation Plans, traffic counts, and street inventory information.
- New traffic counts were taken in April 2003 and intersection approach volumes were determined.
- Both population growth rates and traffic count trends were collected from the Puget Sound Regional Council. Both were reviewed and a 4% per year growth rate was selected. This is a conservative estimate as projections should be slightly high so that needed improvements are not undersized. In addition, future growth volumes were projected for intersections and links.
- Levels of service (LOS) for 2003 and 2013 were calculated and analyzed using traffic model HCM2000 methods combined with Synchro, SIDRA and HCS2000 models for high volume intersections.
- Pedestrian LOS was calculated for 2003 and 2013 using a rating equation that incorporates vehicle volumes, pedestrian use and type, vehicle speeds, shoulder widths, and roadway widths.
- Improvements were developed and tested to ascertain a minimum LOS of "D" in 2013. Cost estimates of the selected improvements were then prepared.

- Fair share mitigation fees were developed for each project using 2013 weekday total volumes.

II. Current Conditions

Street Pattern

Buckley's historic neighborhoods are laid out in a traditional street grid pattern on approximately 320 ft by 550 ft street-blocks with alleys running down their middle. This street pattern provides strong pedestrian and vehicular connectivity within the community facilitating convenient access to goods and services. The alleys also enhance street aesthetics by providing alternative corridors for garbage pick up and utilities.



Figure 2. Bicyclist on Third Street.

Some of Buckley's more recent subdivisions are laid out in a loop and lollipop street pattern. This pattern discourages through traffic by increasing out of direction travel. It consequently does not provide strong pedestrian or vehicular connectivity resulting in long circuitous routes to cover otherwise short distances. This pattern developed after the advent of the automobile when accessibility by foot was thought to be no longer crucial. However as a result of this pattern people's transportation choices become severely limited. Children and the elderly were especially affected by the lack of safe and convenient pedestrian and bicycle access to activities, goods and services. It was also less recognized how automobile dependence could affect our health. Our country's obesity epidemic not to mention environmental and safety concerns over the burning of fossil fuels have all been tied to our nation's heavy reliance upon the automobile.

With the growing awareness of the adverse health, environmental and social impacts of automobile dependence, communities around the country are working to create more walk able and pedestrian friendly neighborhoods to loosen dependence upon the automobile by increasing transportation choices. As residential development continues to occur within Buckley, street patterns will continue to have strong effects upon

accessibility and neighborhood character. Finding ways to ensure safe and convenient multi-modal access and preserve Buckley's small town character is the purpose of this transportation element.

Level of Service (LOS) standards

To evaluate how well a transportation system functions, transportation engineers use what is referred to as Levels of Service (LOS). LOS is a concept developed to quantify the degree of comfort including such elements such as travel time, number of stops, amount of delay, and impediments caused by other vehicles. Six grades are used to denote the various LOS. These six grades are described qualitatively for signalized intersections in Table 2. Grade A denotes the best level of operation and grade F denotes the worst level of operation.

The different levels reflect the amount of time it takes a traveler to move through a different element of the system. Levels range from A to F with A taking the shortest time and F taking the longest time. Cities decide upon the minimum levels of service (LOS) acceptable for each transportation facility in their jurisdiction. These LOS are then adopted as standards which the facility must continue to meet.

Concurrency

Once a city has adopted LOS standards it is then required to ensure that it can maintain those standards over the planning period. New development which may negatively affect LOS is required to make improvements to the facilities to mitigate any adverse effects. This requirement is referred to as the concurrency requirement which is specified in RCW 36.70A.070(6). The statute provides "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 within six years." WAC 365-195-210 also specifies that public transportation facilities are to be in place to meet adopted level of service standards within six years from the time of development.

Pedestrian facilities

Pedestrian facilities include sidewalks, planting strips, crosswalks and trails throughout the town along with pedestrian amenities such as benches, lighting and plantings within Buckley’s historic area. All are intended to provide safe and convenient access to goods and services by foot.

Currently, the sidewalk system in Buckley is discontinuous with many sidewalks existing in the older and more developed neighborhoods and fewer in the less populated areas. Planting strips run along many sidewalks, but not all and they vary in width. Crosswalks are marked in the historic district but intersections in other areas are not as well distinguished. Approximately two miles of the Foothills Trail runs through the middle of the City providing pedestrian and bicycle access to goods and services along the east side of Hwy 410 as well as providing opportunities for recreational walking and biking.

The LOS scale, for the amount of time pedestrians have to wait before crossing a street, can be seen in Table 1 below. Six intersections currently do not meet Buckley’s LOS D standard. Additional information regarding their deficiencies and suggestions for improvements can be found in the sections on projects.

Table 1. Pedestrian Level of Service (LOS) gradations:

Level of Service	Pedestrian Rating (Seconds)
A	< 40
B	40 - 50
C	50 - 70
D	70 - 90
E	90 - 110
F	> 110

Bicycle facilities

Bicycle facilities consist of designated bicycle routes, marked bicycle lanes, trails and bicycle parking facilities. Currently Buckley does not have any designated bicycle routes, bicycle lanes, or bicycle parking facilities however, the street system is used by bicyclists of all ages for various types of trips including commuting to work and school, shopping, visiting

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Bicyclists on the Foothills Trail

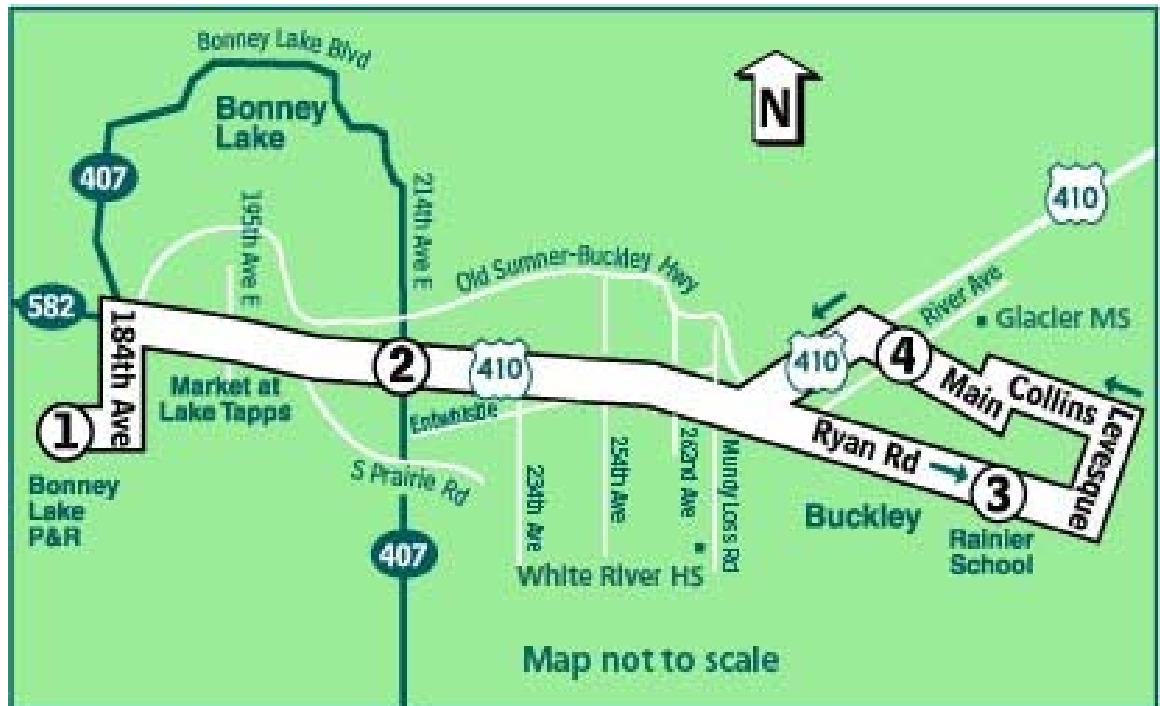
friends and recreation. Low levels of automobile traffic make bicycle travel along most of Buckley's streets relatively safe. Certain streets however, are too dangerous for bicycle travel and require significant improvements to make services along them accessible.

Buckley is especially fortunate to have the Foothills Trail running through the middle of town. The Foothills Trail is a 12-foot wide non-motorized asphalt trail suitable for bicycles, walking, in-line skates and wheel chairs. It also has a soft shoulder path for horses. When completed, the trail will extend through both Pierce and King Counties.

Public transportation facilities

Public Transportation service is provided to Buckley by Pierce Transit who plans and provides service on a regional basis. Route 406 circulates through Buckley connecting it with the Bonney Lake Park and Ride as illustrated in Figure 1.

Figure 1. Pierce Transit Route 406 Map



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The current 2005 River Avenue and Main Street public transportation service schedule to Bonney Lake is:

6:49 am	12:49 pm
8:49 am	3:49 pm
10:49 am	5:51 pm

Vehicular facilities

Vehicular facilities include the City's streets and their intersections. The City of Buckley's streets are classified in accordance with the National Functional Arterial Classification system into Principal Arterials, Minor Arterials, Collector Streets and Local Access Streets. Definitions of each can be found in the glossary in Appendix 1. Currently Buckley has 2.93 miles of Principal Arterials including; 7.66 miles of Minor Arterials; 1.00 mile of Collector Streets; 20.63 miles of Local Access Streets; and 4.31 miles of alleyways within the City limits. An additional 2.13 miles of Local Access Streets exist within the Rainier School property.

The LOS for intersections is determined by measuring the time it takes a vehicle to pass through an intersection. The following table shows the intersection LOS ratings grades (A - F) along with their ranges of time.

Table 2. Highway Capacity Manual 2000 Intersection Level of Service and Delay

Level of Service	Signalized (Seconds)	All-way Stop Control & Two-way Stop Control (Seconds)
LOS A	< 10	< 10
LOS B	10 - 20	10 - 15
LOS C	20 - 35	15 - 25
LOS D	35 - 55	25 - 35
LOS E	55 - 80	35 - 50
LOS F	> 80	> 50

The City of Buckley utilizes the city standard traffic LOS “D”. Any impacts from new development are to be mitigated to meet LOS “D”.

III. Transportation Strategy

Buckley’s strategy for maintaining and improving its transportation system is to ensure cost effective transportation projects are developed that meet the goals of the Transportation Element. Prioritization of projects is as follows:

1. Maintain the existing transportation network.
2. Improve safety of transportation system.
3. Improve system continuity by constructing missing sidewalk, bicycle route and street links.
4. Upgrade existing infrastructure to adopted LOS standards.
5. Extend infrastructure to accommodate new growth.

Future Transportation Safety Strategy

- A. Record and analyze collision reports to identify traffic hazard patterns that can be corrected,
- B. Conduct traffic counts to determine collision rates, capacity needs, and use in designing improvements.

Future Transportation Convenience Strategy

- A. Monitor traffic volumes and LOS to identify capacity deficiencies
- B. Coordinate with Pierce Transit to improve frequency and coverage of public transportation services with Buckley.
- C. Coordinate with WSDOT on plans for improving the SR410 corridor.

Mitigation Fees

Cost estimates are made for improvements and are used to calculate fairshare mitigation fees for new development.

Both vehicular and pedestrian improvements and mitigation fees are identified.

Mitigation improvements and fairshare fees identified in this study are intended to be used with grants and other funding sources for the projects. Mitigation fees provide fairshare funding identified as development's portion of improvement costs.

Pedestrian traffic varies with weather and season and the Pedestrian LOS recognizes this and is based on daily traffic volumes.

Both the vehicle and pedestrian fairshare mitigation fees are determined using 2013 weekday volumes because the improvements provide 24 hour a day capacity.

IV. TRANSPORTATION GOALS AND POLICIES

Goals, Policies and Projects are intended to provide the City of Buckley with a vision and outline for both preserving and improving its transportation facilities. They will also help guide the State's transportation activities (i.e., plans, improvements, and expenditures) within the City. While general in nature, they are sufficiently specific to assist in prioritizing individual transportation projects. During a time when transportation budgets are stretched, these guidelines will be very helpful in selecting what can best be achieved through the City of Buckley's transportation vision.

During development of the Goals, Policies and Projects, City staff identified several overriding guidelines that have helped structure this effort. These comprehensive guidelines are reflected in the city-wide goals, with one of the most important being the fiscal and efficiency concerns of the transportation plan. The Goals, Policies and Projects must recognize the cost-effectiveness and prudence of preserving and improving existing facilities versus the costs and environmental concerns of building new transportation projects.

What follows is the identification and discussion of Goals, Policies, and Projects developed by City staff and the Consultant, with additional input from the City Planning Commission and City Council.

The relationship between Goals, Policies and Projects is defined as follows:

- Goals are broad statements which describe what the City aspires to provide for residents, as well as what they hope to achieve.
- Policies are more specific statements that outline methods of accomplishing goals.
- Projects are specific actions or standards designed to implement Policies.

GOAL 6.1 ENSURE SAFE MULTI-MODAL ACCESS TO GOODS AND SERVICES.

Discussion. Ensuring safe pedestrian, bicycle, bus and automobile travel is essential for enhancing mobility options for all of Buckley’s citizens, young and old alike.



Paving treatments make crosswalks more visible enhancing safety for pedestrians.

POLICY 6.1.1 SIDEWALK SAFETY SHALL BE ENHANCED BY INCORPORATING LIGHTING, SIGNAGE, AND CONNECTIVITY STANDARDS INTO SIDEWALK DESIGN GUIDELINES AND BY ENSURING REPAIRS ARE ADDRESSED IN A TIMELY MANNER.

POLICY 6.1.2 CROSSWALK SAFETY AT MAJOR INTERSECTIONS SHALL BE ENHANCED THROUGH THE ADDITION OF VISUAL CUES SUCH AS PAVING AND PAINTING TREATMENTS, LIGHTING AND/OR SIGNAGE. WHERE CROSSING DISTANCES ARE LONG, I.E. ACROSS SR410, RAISED MEDIANS COULD BE CONSTRUCTED TO SERVE AS PLACES OF REFUGE FOR PEDESTRIANS.

POLICY 6.1.3 THE CITY SHOULD ENHANCE THE SAFETY OF BICYCLE TRAVEL BY DESIGNATING BICYCLE ROUTES AND MARKING THEM ADEQUATE ‘SHARE THE ROAD’ SIGNAGE.

POLICY 6.1.4 THE CITY SHOULD ENSURE SAFE AND SECURE ACCESS TO TRANSIT FACILITIES BY PRIORITIZING AREAS AROUND TRANSIT FACILITIES FOR LIGHTING AND OTHER PEDESTRIAN AMENITY IMPROVEMENTS.

POLICY 6.1.5 THE CITY SHOULD ENSURE ADEQUATE VISIBILITY FOR AUTOMOBILES BY ENFORCING LANDSCAPE AND FENCE HEIGHT STANDARDS.

POLICY 6.1.6 THE CITY SHOULD RECONFIGURE UNSAFE INTERSECTIONS WHERE WARRANTED AND PREVENT FUTURE INCONGRUITIES BY DESIGNATING LOCATIONS OF FUTURE STREET INTERSECTIONS.

POLICY 6.1.7 PROVIDE CHANNELIZATION AS NEEDED ON ARTERIALS TO MAINTAIN TRAFFIC OPERATION SERVICE LEVELS AND SAFE OPERATION OF FACILITIES.

GOALS 6.2 ENSURE CONVENIENT MULTI-MODAL ACCESS TO GOODS AND SERVICES.

Discussion: Convenience is one of the most significant factors affecting people’s mobility and choice of travel mode. As

convenience wanes people's accessibility to goods and services increasingly declines as their transportation choices become limited. To ensure convenient access to goods and services land use and transportation policies must be highly coordinated. Development should take place only when adequate levels of service for all modes of travel can be provided in a timely manner. Adopting Level of Service (LOS) standards helps specify the capacities needed to ensure convenient access. The City of Buckley has chosen LOS D as the city standard. Route directness and route quality also affect travel convenience by shortening travel distances and making travel more enjoyable; both should be striven for whenever possible.

POLICY 6.2.1 TO ENSURE A CONSISTENT LEVEL OF SERVICE IS PROVIDED, THE CITY SHOULD DEVELOP A CONCURRENCY MANAGEMENT SYSTEM, EXPLORE ALTERNATIVES FOR DEMAND MANAGEMENT, AND SEEK ADEQUATE FINANCING FOR TRANSPORTATION IMPROVEMENTS.

POLICY 6.2.2 TRANSPORTATION IMPROVEMENTS NEEDED TO SUPPORT NEW DEVELOPMENT SHALL BE IN PLACE AT THE TIME OF DEVELOPMENT TO MAINTAIN TRANSPORTATION LOS STANDARDS.

POLICY 6.2.3 WHEN REVIEWING DEVELOPMENT PROPOSALS, REZONING, AND ROAD VACATION PETITIONS, VARIANCES, USE PERMITS, SUBDIVISIONS PLATS, AND RESIDENTIAL AND COMMERCIAL PROJECTS THE CITY SHOULD ENSURE THEY ARE CONSISTENT WITH THE GOALS AND POLICIES IN THIS TRANSPORTATION ELEMENT.

POLICY 6.2.4 CONTINUITY OF THE PEDESTRIAN CIRCULATION SYSTEM SHALL BE IMPROVED BY CONSTRUCTING THE MISSING LINKS LISTED BELOW IN ORDER OF PRIORITY:

- A. Mundy Loss Rd (South of 112th Avenue E)
- B. Mundy Loss Rd (112th Ave E - SR410)
- C. Ryan Road (Spiketon Rd - Lesvesque Rd)
- D. Mundy Loss Rd (North of Hinkleman Rd)
- E. W Mason Ave (Natches - Hinkleman Ext)
- F. 112 Ave E (West of SR165)

POLICY 6.2.5 CONTINUITY OF THE BICYCLE CIRCULATION SYSTEM SHOULD BE IMPROVED BY DESIGNATING CONTINUOUS BICYCLE ROUTES AND LINKING THEM TO THE FOOTHILLS TRAIL.

POLICY 6.2.6 CONNECTIVITY AND ROUTE DIRECTNESS SHOULD BE MAXIMIZED THROUGH ADOPTION OF A FUTURE STREET/INTERSECTION PLAN BASED ON THE GRID PATTERN.

POLICY 6.2.7 THE CITY SHOULD EXAMINE OPPORTUNITIES FOR INCREASING THE FREQUENCY AND COVERAGE OF PUBLIC TRANSPORTATION SERVICE IN COOPERATION WITH PIERCE TRANSIT.

POLICY 6.2.8 THE CITY SHOULD EXAMINE OPPORTUNITIES FOR COMBINING BUS STOP LOCATIONS WITH A VARIETY OF LAND USE ACTIVITIES TO ENHANCE THE CONVENIENCE OF BUS TRAVEL.

POLICY 6.2.9 THE CITY SHOULD ENSURE CONVENIENT ACCESS TO TRANSIT FACILITIES BY PRIORITIZING AREAS AROUND TRANSIT FACILITIES FOR PEDESTRIAN AND BICYCLE FACILITY IMPROVEMENTS.

GOAL 6.3 MINIMIZE NEGATIVE TRANSPORTATION IMPACTS TO THE ENVIRONMENT.

Discussion. Automobile usage has huge impacts upon ecological systems whether it be from the burning of fossil fuels resulting in emissions of carbon monoxide, nitrogen dioxide, and ozone contributing to smog and respiratory problems, and emissions of carbon dioxide contributing to global warming, or from increases in impervious surfaces resulting in water quality degradation from increased turbidity, temperature and pollution. Minimizing transportation's negative impacts to the environment calls for commitment, ingenuity and education.

POLICY 6.3.1 THE CITY OF BUCKLEY SHALL WORK TO REDUCE TOTAL VEHICLE MILES TRAVELED THROUGH IMPLEMENTATION OF TRANSPORTATION DEMAND MANAGEMENT MEASURES WHICH PROVIDE INCENTIVES FOR WALKING, BIKING, AND PUBLIC TRANSPORTATION AND DISINCENTIVES FOR AUTOMOBILE USE.

POLICY 6.3.2 THE CITY SHALL PURSUE LOW-IMPACT STREET AND PARKING LOT DESIGN, CONSTRUCTION AND MAINTENANCE TECHNIQUES TO MINIMIZE IMPERVIOUS SURFACE, WATER POLLUTION AND WATER RUNOFF.

POLICY 6.3.3 NEW ROADS SHOULD BE ROUTED TO AVOID TRANSVERSING NATURAL PRESERVES, PARKS AND RECREATION AREAS,

SIGNIFICANT HISTORICAL AND CULTURAL RESOURCES, AND AREAS IDENTIFIED AS CRITICAL WILDLIFE HABITAT.

GOAL 6.4 TRANSPORTATION SYSTEMS SHOULD ENHANCE THE APPEARANCE, QUALITY AND FUNCTION OF RESIDENTIAL AND COMMERCIAL DISTRICTS.

Discussion. The size and capacity of transportation facilities should be appropriately matched to the types of surrounding land uses and vice versa to enhance the function of these land uses without destroying their appearance or quality. For instance highways are more appropriately located in close proximity to industrial land uses than adjacent to residential neighborhoods.

POLICY 6.4.1 THE CITY SHOULD ENCOURAGE EASY ACCESS TO HIGHWAYS FOR INDUSTRIAL DEVELOPMENT BY ZONING INDUSTRIAL AREAS CLOSE TO HIGHWAYS.

POLICY 6.4.2 THE CITY SHOULD ENCOURAGE MORE INTENSE COMMERCIAL AND RESIDENTIAL DEVELOPMENT ALONG PRINCIPAL AND MINOR ARTERIALS TO EFFICIENTLY UTILIZE THEIR HIGHER CAPACITIES.

POLICY 6.4.3 COMMERCIAL AND HIGH DENSITY RESIDENTIAL DEVELOPMENT SHOULD BE CLUSTED IN NODES AROUND INTERSECTIONS TO MINIMIZE TRIP DISTANCES AND TAKE ADVANTAGE OF SLOWER TRAFFIC SPEEDS.

POLICY 6.4.3 INTERRUPTIONS TO VEHICLE, PEDESTRIAN AND BICYCLE FLOWS SHALL BE LIMITED BY ENCOURAGING SIDE STREET ACCESS TO SHARED PARKING AREAS AND MINIMIZING DRIVEWAY CUTS ALONG ARTERIALS.

POLICY 6.4.4 FUTURE STREETS AND THEIR CLASSIFICATIONS WILL FOLLOW A REGULAR DISTRIBUTION PATTERN THAT ANTICIPATES LAND USE POTENTIAL AND PROVIDES FOR ORDERLY DEVELOPMENT.

GOAL 6.5 BUILD AND OPERATE AN EFFICIENT AND COST-EFFECTIVE TRANSPORTATION SYSTEM.

Discussion. Construction and maintenance of City streets, arterials and other transportation infrastructure typically make up a significant portion of the City's annual budget.

This occurs first, because many improvements are desired, and second, because costs of construction and maintenance are high. Choosing cost effective ways of providing needed infrastructure will help spread limited dollars over a broader range of projects, maximizing the number of improvements that can be made.

POLICY 6.5.1 THE CITY SHOULD CONSIDER THE COSTS AND BENEFITS OF BOTH CONSTRUCTION AND MAINTENANCE WHEN SETTING GUIDELINES FOR STREET DIMENSIONS AND RIGHTS-OF-WAY.

POLICY 6.5.2 THE CITY SHOULD MINIMIZE FUTURE MAINTENANCE COSTS BY UTILIZING TECHNOLOGIES AND TECHNIQUES THAT INCREASE PAVEMENT LONGEVITY.

POLICY 6.5.3 THE CITY SHOULD INVESTIGATE RELINQUISHING STREET FACILITIES THAT ARE NO LONGER NEEDED TO SERVE CITY RESIDENTS.

POLICY 6.5.4 THE CITY SHOULD BALANCE FINANCING OF ROADWAY IMPROVEMENTS BETWEEN EXISTING AND FUTURE USES BASED ON THE PRINCIPLE OF PROPORTIONAL BENEFIT.

POLICY 6.5.5 THE CITY SHOULD USE BOTH TRADITIONAL AND INNOVATIVE METHODS FOR FINANCING ROADWAY IMPROVEMENTS SUCH AS PUBLIC/PRIVATE PARTNERSHIPS, IMPACT FEES, ETC.

POLICY 6.5.6 PIERCE COUNTY AND THE CITY OF BUCKLEY SHOULD WORK TOGETHER TO SHARE TRANSPORTATION RESOURCES AND REDUCE OVERLAP IN TRANSPORTATION EXPENDITURES.

POLICY 6.5.7 THE CITY SHOULD WORK WITH WSDOT, PIERCE COUNTY, AND PIERCE TRANSIT TO JOINTLY COMPETE FOR FUNDS TO SUPPORT TRANSPORTATION IMPROVEMENTS.

POLICY 6.5.8 THE CITY SHOULD EXPLORE FUNDING TOOLS SUCH AS ROAD IMPROVEMENT DISTRICTS (RIDS), LOCAL IMPROVEMENT DISTRICTS (LIDS), AND OTHER LOCAL FUNDING MECHANISMS TO FINANCE PROJECTS THAT PROVIDE A PRIMARY LOCAL BENEFIT.

POLICY 6.5.9 THE CITY SHOULD REQUIRE MAINTENANCE AGREEMENTS FOR PRIVATE ROADS THAT ARE EXECUTED BY THE RESPONSIBLE LANDOWNERS.

V. PROJECTS

This Transportation Element update considers facilities impacted by growth projected to occur within the City of Buckley over the next 20 years. Improvement projects will occur in a sequential manner as funding accrues with development planning, design, right-of-way acquisition, construction mitigations, grants, and other city sources.

The element focuses on pedestrian and vehicle capacity deficiencies and suggests improvements to bring them in line with Buckley's LOS standard of D. Current and future pedestrian and vehicle capacity deficiencies were identified through forecasting and LOS analysis, and they primarily consist of capacity constraints due to a lack of walkways for pedestrians and inadequate intersections for vehicles. Capacity improvement projects were developed and LOS was tested using projected 2013 volumes.

Three areas for improvement have been prioritized as follows:

1. Walkway improvements; and
2. Intersection improvements; and
3. SR410 improvements

Walkway Improvements

Six pedestrian routes are projected to fall below LOS "D" in 2013 with pedestrian ratings exceeding 90. Figure 2 illustrated below identifies these routes and Table 3 identifies the Pedestrian Level of Service and Ratings for each.

Figure 2. Pedestrian Segment Ratings Map

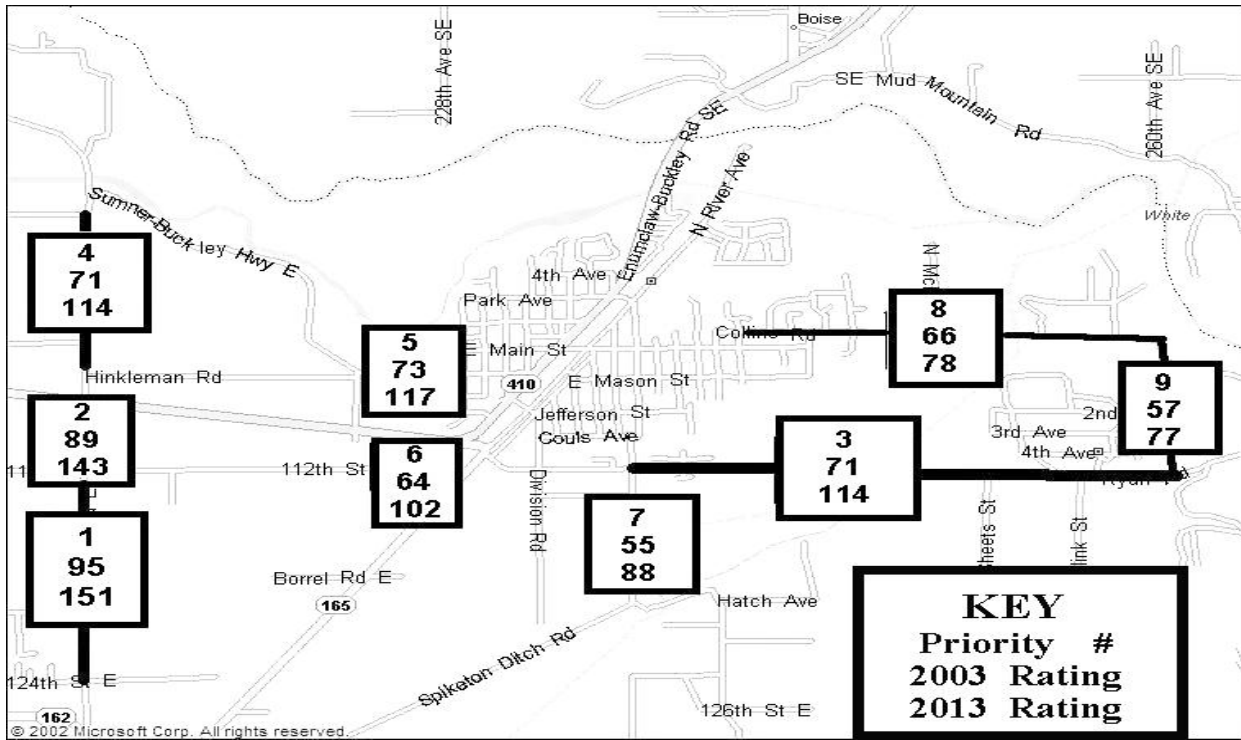


Table 3. Pedestrian Level of Service and Ratings

Road Segment	2003 LOS Rating	2013 LOS Rating	2013 Mitigated LOS Rating
1. Mundy Loss Rd (South of 112 th Avenue E)	E (95)	F (151)	D (76)
2. Mundy Loss Rd (112 Ave E - SR410)	D (89)	F (143)	D (71)
3. Ryan Road (Spiketon Rd - Levesque Rd)	D (80)	F (129)	C (64)
4. Mundy Loss Rd (North of Hinkleman Rd)	D (71)	F (114)	C (57)
5. W Mason R (Natches - Hinkleman Ext)	C (73)	F (117)	C (58)
6. 112 Ave E (West of SR165)	C (64)	E (102)	C (51)
7. Spiketon Rd (South of Mt View Avenue)	C (53)	D (84)	B (42)
8. Collins Rd (Sergeant - Levesque Rd)	D (66)	D (78)	A (38)
9. Levesque Rd (Collins Rd - Ryan Rd)	D (57)	D (77)	A (32)

Spiketon Road, Collins Road and Levesque Road listed as segments 7, 8 and 9, meet LOS "D" with ratings less than 90 in 2013.

The following table lists the street segments needing improvement, the mitigation costs, and the fairshare trip fees.

Table 4. Pedestrian Mitigations and Costs

Street	Improvement	Mitigation Cost	2013 AWDT	Cost per AWDT
Mundy Loss (112 Ave E - SR410)	Curb, gutter, sidewalk one side	\$264,000	8,386	\$31
Ryan Road (Spiketon - Levesque)	Curb, gutter, sidewalk one side	\$1,584,000	4,392	\$361
Mason Ave (Naches - Hinkleman Ext)	Curb, gutter, sidewalk one side	\$338,000	3,268	\$103
Spiketon Rd (South of Mountain View Ave)	Curb, gutter, sidewalk one side	\$422,400	1,237	\$341
Total		\$4,192,400		\$836

The high pedestrian mitigation costs are a concern for being disproportionate compared to the intersection mitigation costs. The mitigation fee needs to be economically feasible. Pedestrian improvements are to provide walking capacity and safety but their construction provides a substantial portion of the roadway improvement.

Establishing a pedestrian (walkway) mitigation fee should consider that pedestrian collisions are 2 - 4% of the total number of collisions, the disproportionate cost of walkways, and the mitigation fee strategy needs to consider the total transportation (as well as entire city) needs and costs.

The costs for sidewalks are disproportionate compared to intersection and roadway improvement costs for vehicular traffic. Pedestrian curb, gutter, and sidewalk improvements require drainage, generally provide a completed "half street section", and typically require significant grading, relocation of utilities (electric, water, sewer, gas, and telecommunications), driveway adjustments, and they may involve property lot line adjustments. A significant portion

of the roadway improvement project is completed upon sidewalk construction. Experience has shown soil conditions in the City of Buckley can be challenging and have higher than usual costs.

The combination of project unit costs, relatively long lengths of improvements and low volumes result in a mathematically calculated pedestrian trip fee that is about twice that of the vehicle trip fee and should be adjusted. The adjustment recognizes that the actual sidewalk cost is a small portion of the improvement cost, that sidewalk improvement projects are being made throughout the state via grant funding, and that the pedestrian level-of-service does not have an equal impact in the community as vehicle level-of-service. For example, state traffic records indicate that out of 52,000 total statewide collisions less than 2,000 involve pedestrians.

A strategy for a pedestrian mitigation fee with the afore described considerations is to adopt a fee that would provide local match for grant funding, developer improvement mitigations, and constructing segments as other opportunities occur.

Each of the streets listed for pedestrian improvements will be improved as arterial streets in the future and will include the sidewalk improvements. Taking into consideration the high costs of curb, gutter and sidewalk construction and that pedestrian collisions are a small portion of the total collisions, the pedestrian mitigation fee is suggested to be \$20 per average weekday trip.

Intersection Improvements

Five intersections within the City of Buckley are projected to exceed LOS "D" in 2013 not including intersections along the SR410 corridor. The following map and table identify the failing intersections along with the improvements needed to maintain them at a LOS of D or higher.

These intersection improvements include signalization, turn lanes, and traffic operational improvements. The improvements frequently result in LOS higher than level D

since half a lane or half a signal can not be constructed to exactly achieve LOS D.

Figure 3. Intersections LOS Map

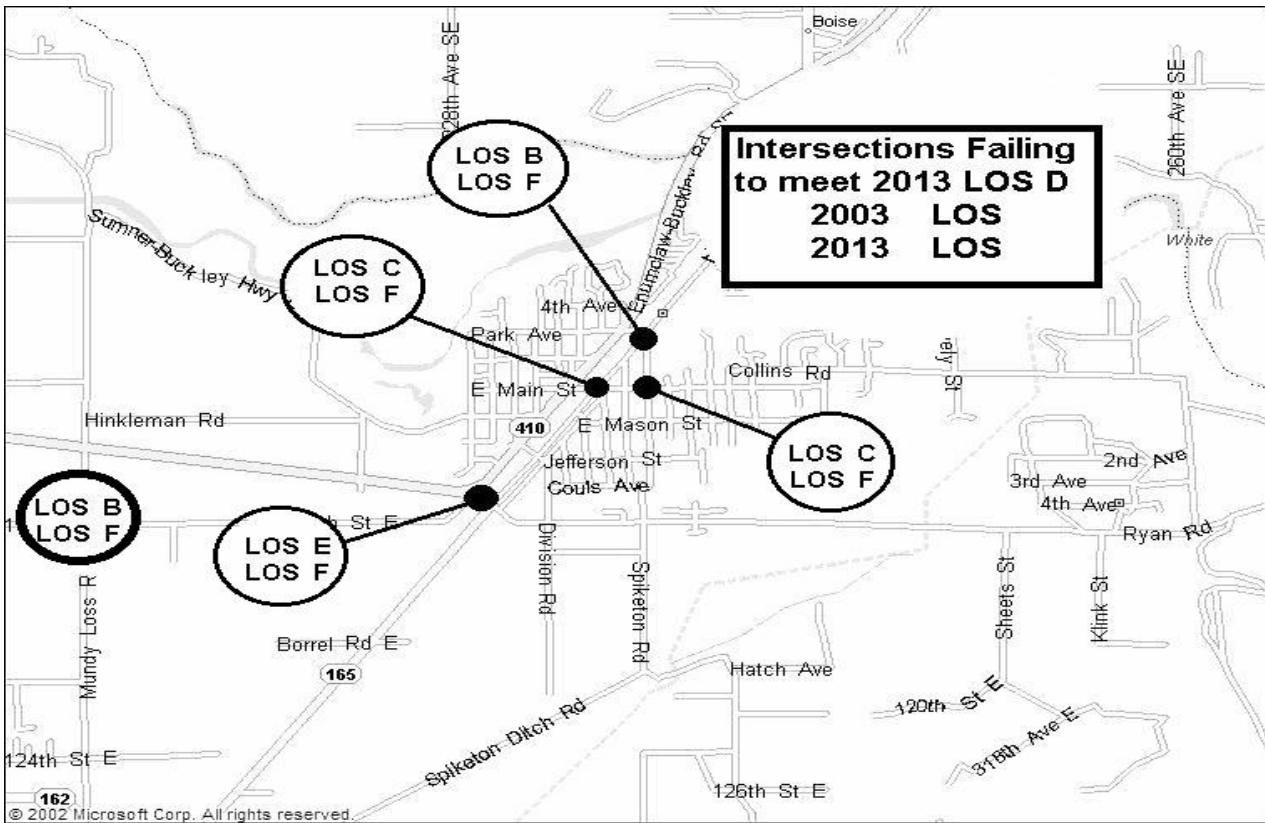


Table 5. Intersection LOS and Improvements

Intersection	2003 LOS	2013 LOS	Improvements	Mitigated LOS
Mundy Loss & 112 Ave E	B	F	Signal, turn lanes, sidewalks	C
SR165/Ryan/River/112 Ave E	E	F	Signal or Roundabout & realign 112 Ave E & Ryan	C or B
River Ave & A St	B	F	Signal, turn lanes, sidewalks	B
River Ave & Main St	C	F	Signal, turn lanes, sidewalks	C
Main St & A St	C	F	Signal, turn lanes, sidewalks	B
SR410 & Mundy Loss	B	F	Widen to 5 lanes, signal	B
SR410 & Main	B	F	Widen to 5 lanes, signal	A
SR410 & SR165	F	F	Widen to 5 lanes, signal	C
SR410 & Chamberlin, Butler, Hinkleman Extension, Jefferson, or Wickersham			New or existing stop controlled streets will require signalization and 5 lanes to meet LOS "D".	

The identified intersection improvements were determined using PM Peak capacity; however, the school hours, the noon hour, the AM Peak hour and other hours of the day, as well as weekends all have capacity constraints that the improvements will serve. Improvements include traffic signals that provide capacity 24 hours a day. They will serve existing traffic and increasing “through” traffic as well as new traffic associated with growth. Mitigation fairshare fee estimates were prepared for the improvements as listed in the table below.

Table 6. Intersection Mitigations and Costs

Intersection	Improvements	Mitigation Cost	2013 AWDT	Cost per AWDT
Mundy Loss & 112 Ave E	Signal, turn lanes, sidewalks	\$773,000	11,074	\$70
SR165/Ryan/River/112 Ave E including improvements to 112 th Ave SE , Ryan Road, & signalizing SR410 & SR165 (STP Grant App)	Roundabout or signalization & realign 112 Ave E & Ryan including 2,600' of new roadway	\$3,200,00	23,588	\$136
River Ave & “A” St	Signal, turn lanes, sidewalks	\$797,000	8,997	\$89
River Ave & Main St	Signal, turn lanes, sidewalks	\$763,000	11,319	\$67
Main St & “A” St	Signal, turn lanes, sidewalks	\$345,000	8,887	\$39
SR410 & Mundy Loss	Widen to 5 lanes, signal	\$1,170,000	36,892	\$32
SR410 & Main	Widen to 5 lanes, signal	\$1,006,000	38,686	\$26
Total		\$8,054,000		\$459

The intersection trip fee was calculated by dividing the project improvement cost by the total 2013 Average Weekday Daily traffic (AWDT) volume. Utilizing the AWDT as the fairshare fee calculation denominator recognizes the multiple service capacities provided by the improvements

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since all traffic will be using the improvement and other sources such as grants will be funding portions of the improvements. Development traffic is to be charged for their fair share of traffic improvements based on traffic generated by the development.

The projects on SR165 and on SR410 are expected to include WSDOT state funding and will require their approval and could be projects managed by the state. The SR410 & Mundy Loss Road intersection improvement was a state project with the City providing a funding portion. Reducing the mitigation fees for the SR165 and SR410 projects would be consistent with the previous project, and that these are projects that serve a higher amount of increasing regional traffic than local increased traffic. Using three-fourths of the total mitigation fee for these projects would recognize the previously described considerations and result in the total fee being reduced from \$198/AWDT to \$153/AWDT. This would reduce the \$459 to \$414/AWDT.

The total mitigation fee would be the sum of the pedestrian and intersection improvement fees:

Intersections:	\$414
Pedestrian improvements:	\$ 20
Total:	\$434
	(\$4,153/single family residence)

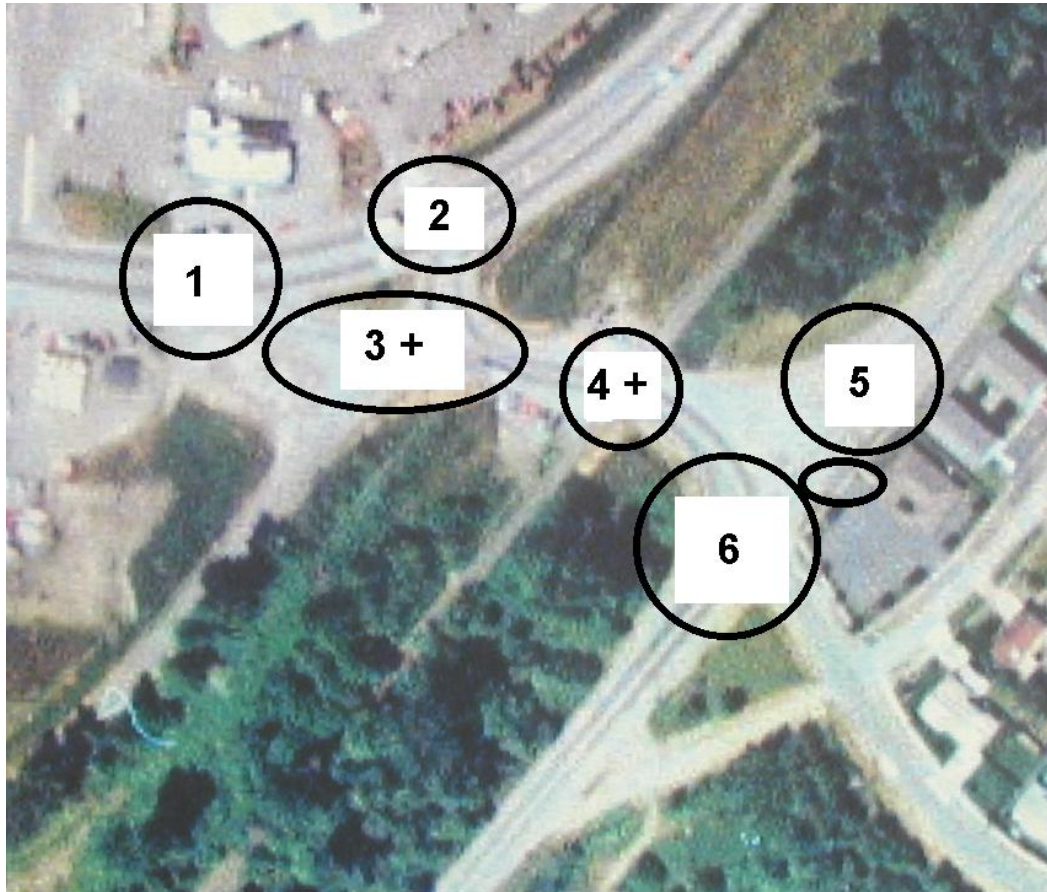
Traffic mitigation fees for a single family residence of other jurisdictions are provided for reference:

Maple Valley	\$3,922
Covington	\$5,758
Pierce County via SEPA range	\$0 - \$4,000
Puyallup	\$2,000 - \$5,000

SR410/SR165/Ryan Rd/River Rd/E 112th St Improvements

The area around the SR410/SR165/Ryan Rd/River Rd/E 112th St node consists of a complex series, of not one or two, but six overlapping intersections with major driveways that further complicate traffic safety and capacity.

Figure 4. SR165-112th Avenue E-River Rd-Ryan Rd intersections.



Map Legend

Number	Street(s)
1	SR 410 - SR 165
2	SR 410 Access
3	112 th St - SR 165
4	Foothills Trail - SR 165
5	River Rd
6	Ryan Rd - SR 165

Three realignment alternatives were developed for SR165, 112th and Ryan Road and compared in terms of their costs and benefits. The three alternatives were all similar in cost however the roundabout alternative had higher safety and LOS benefits. Roundabouts in general have 30 – 50% fewer collisions than traffic signals. A roundabout typically provides one grade of LOS higher than a signal would for comparable intersections. Performance differences between a roundabout and a traffic signal are even greater however, for multi-leg intersections (5 or more legs) like the Ryan Road complex.

Following is a picture of Alternative 2 which is the conceptual roundabout realignment design. The roundabout will produce substantial performance improvements by reducing the number of intersections cars will have to pass through. For example, traveling north to south or east to west through the existing configuration involves passing through four or more intersections. For every intersection 32 conflicting movements exist where vehicles can collide. With the roundabout, cars will only have to move through two intersections. Removing two intersections eliminates 64 conflicting movements. The roundabout realignment will operate at LOS B compared to LOS C or D depending on the signal version chosen for the alternative.

Figure 5. Alternative 2- Ryan Road-112 Ave E-SR165-River Ave Improvement Concept



Figure 6. Alternative 1- Ryan Road-112 Ave E-SR165-River Ave Improvement Concept

Buckle
In colla



Figure 7. Alternative 3- Ryan Road-112 Ave E-SR165-River Ave Improvement Concept



Buckle
In colla

Other SR410 Corridor Improvements

SR410 & Chamberlin, Butler, Hinkleman Extension, Jefferson, and/or Wickersham are facilities where additional planning, design, development, and regional corridor evaluation are needed to determine future improvements. Since the SR410 corridor is controlled by WSDOT and serves predominantly regional traffic, and since regional traffic impacts substantially exceed those of the City of Buckley, improvements along the SR410 corridor will be administered by WSDOT with the City of Buckley being a participant along with other jurisdictions in the planning process. The SR 410 Corridor Plan is located in Appendix 5.

VI. Capital Improvement Plan

Implementation of this transportation plan entails the development of a scheduled list of improvements with planned expenditures identifying and listing the projects based on priority, need based on LOS standards, policies and goals of this plan, concurrency and funding availability. Development of the capital improvement plan looks at projects based on those factors mentioned above and breaks the projects down into three categories; *short-range* projects which follows the six year capital improvement cycle that either has received funding or has funding identified with a high likelihood for success of obtaining; *intermediate-range* projects that the City plans to actively pursue funding for over the next 8 to 10 years and; *long-range* projects which includes a list of potential projects and known needs.

Appendix 6-D, Table 7 identifies and breaks these projects down based on the three categories.

Six Year Capital Improvement Plan

The six year capital improvement plan identifies those transportation related projects that are short term in nature for which funding has been obtained/identified and that demonstrates the highest priority for completion. Appendix 6-D, Table 7A identifies these projects and lists preliminary cost estimates of the projects, tentative dates of construction,

a brief project scope, the location of the improvement and funding source.

Intermediate Transportation Improvement Plan

The intermediate transportation improvement plan identifies those transportation related projects that are intermediate-range in which either has a known need or for which the City plans to actively pursue funding for over the next 8 to 10 years. Appendix 6-D, Table 7B identifies these projects and lists preliminary cost estimates of the projects, tentative dates of construction, a brief project scope, the location of the improvement and potential funding sources.

Long-range Transportation Improvement Plan

The long-range transportation improvement plan lists those transportation related projects that the City has identified as being potential projects and those with known needs. Appendix 6-D, Table 7C identifies these projects and lists preliminary cost estimates of the projects, tentative dates of construction, a brief project scope, the location of the improvement and potential funding sources.

VII. FUNDING

The development of a *short-range* transportation development plan (STIP) identifies a schedule for planned expenditures over a six-year period. Appendix 6-D, Table 7A identifies these recommended projects and lists preliminary cost estimates of the projects, tentative dates of construction, a brief project scope, the location of the improvement and potential funding source. These projects recommended within the STIP are those that are of the highest priority for completion to improve safety conditions, implement policies and goals of this plan or to mitigate LOS deficiencies as discussed in Section V of this Transportation Plan.

Funding for the projects identified in the STIP will come primarily from a combination of local and State funding sources, except for the SR410/SR165/Ryan Rd/River Rd/E 112th Street Project which is extensive enough that Federal

funding will be required for completion. State and Federal grants, as well as contributions from WSDOT for highway-related projects, will need to be aggressively pursued to secure adequate funding for studies and construction improvements.

The implementation of the 6-year and 20-year plans depends on the availability of transportation funds. Potential funding sources include General Funds, Gas Tax Distribution Allocations, Grants, General Obligation Bonds, Developer Contributions, Impact Fees, Local Improvement Districts, and User Fees.

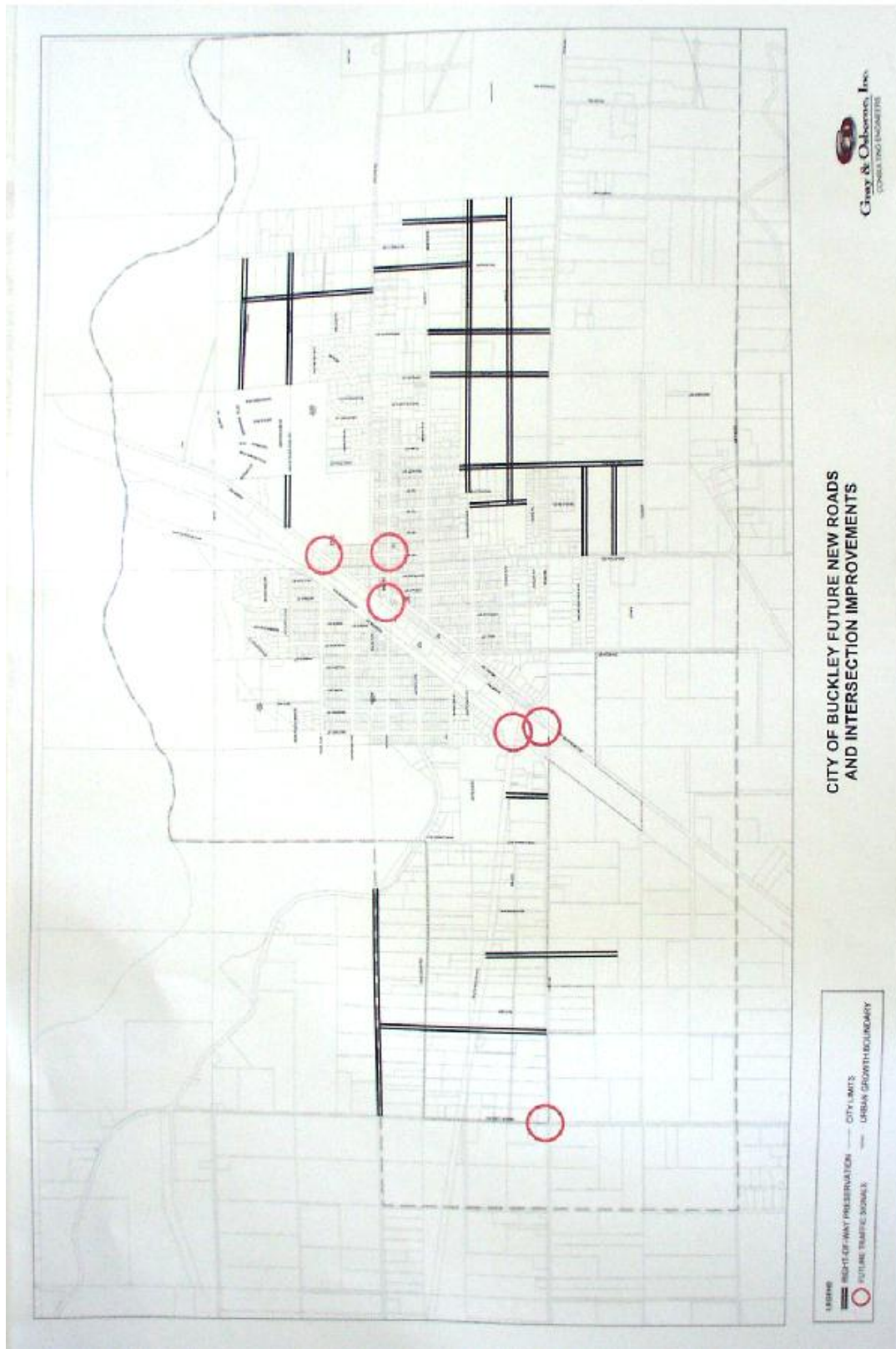
VIII. REASSESSMENT STRATEGY

The Growth Management Act requires that jurisdictions develop a reassessment strategy in the event that funding shortfalls occur that limit the City's ability to carry out the transportation improvement plan. In the event that the City cannot fund the transportation capital improvements needed to maintain the adopted roadway LOS standards (as identified in the Level of Service Section II.), then the City shall take one or a combination of the three following actions as directed by the City Council:

1. Phase proposed land developments that are consistent with the City's land use plan until such time as adequate resources can be identified to provide adequate transportation improvements.
2. Reassess the City's transportation financing strategy to identify additional funding opportunities with federal and regional grants and funding programs, and through the development of new partnerships with WSDOT, Pierce County, and the private sector.
3. Reassess the City's adopted roadway LOS standards to reflect service levels that can be maintained under the known financial resources.

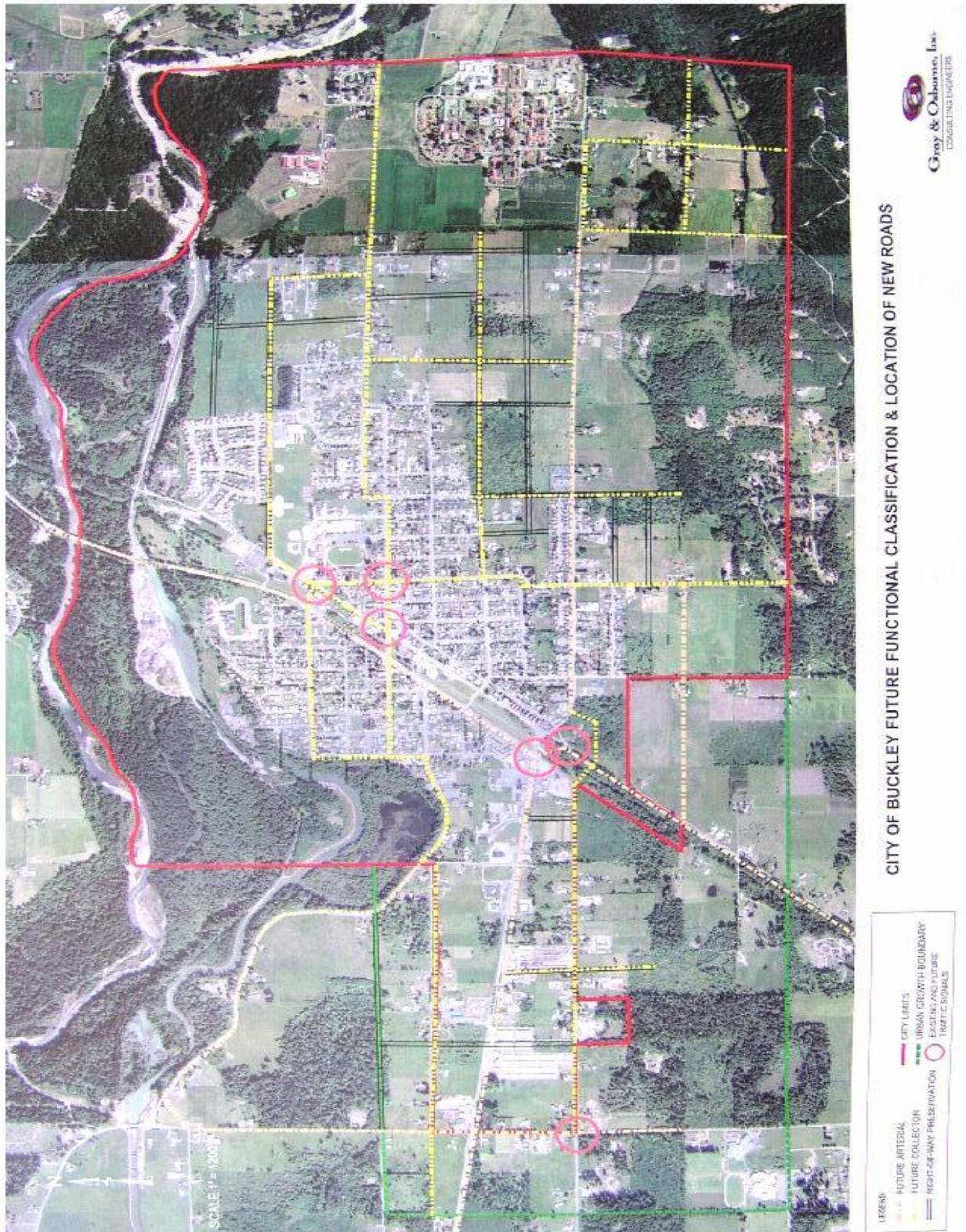
6. Transportation

Figure 8. Picture of Future Streets and Intersection Improvements Map



6. Transportation

Figure 9. Picture of Future Streets Aerial Map



Appendix 6 - A. Functional Street Classifications

City streets are divided into major (or principal) arterial, minor (or secondary) arterials, collectors and local access streets in accordance with regional transportation needs and the functional use each serves. Function is the controlling element for classification and shall govern right-of-way, road width, and road geometrics. The following list is provided to assist the developer in determining the classification of a particular street. New streets will be classified by the City.

A. Major (Principal) Arterials:

1. SR 410
2. SR165

B. Minor (Secondary) Arterials:

1. 112th Street East (SR165 to Mundy Loss)
2. "A" Street (Park Avenue to Spiketon Road)
3. Cedar Street (Main Street to Coul Avenue)
4. Collins Road (Levesque Road to Spruce Street)
5. Coul Avenue (Cedar Street to Spiketon Road)
6. Jefferson Avenue ("A" Street to Hwy SR 410)
7. Levesque Road (Ryan Road to Collins Road)
8. Main Street (Spruce Street to Naches Street)
9. Mason Avenue (Hwy SR 410 to Hinkleman Extension)
10. Mundy Loss Road (Hinkleman Road to 112th Street East)
11. Naches Street (Park Avenue to W. Mason Avenue)
12. Park Avenue (River Avenue to Naches Street)
13. River Avenue (Park Avenue to Ryan Road)
14. Ryan Road (Hwy 165 to Levesque Road)

C. Collector Streets:

1. Davis Street (Ryan Road to Spaulding Circle)
2. Division Street (Jefferson Street to End/City Limits)
3. Dieringer Avenue (River Road to End/City Limits)
4. Hinkleman Extension (Mason Ave to 112th Street East)
5. Jefferson Street ("A" Street to Franklin Street)
6. Mason Avenue (SR410 to McNeely Street)
7. River Avenue (Park Avenue to Dieringer Street)
8. Sergeant Street (Ryan Road to End)
9. Sheets Road (Ryan Road to End/City Limits)
10. Spiketon Road (Ryan Road to LaPierre Avenue /City Limits)

D. Local Access Streets: Streets not listed are classified as local access streets.

Appendix 6 – B. Street Traffic Counts

Table 7. Street Traffic Volumes.				
	Street	April 2003 - 24 Hour Total	2013 (4%/yr)	2023 (4%/yr)
1	Mundy Loss S/O 112th Avenue NB	2,380	3,523	5,215
	SB	2,455	3,634	5,379
	Total	4,835	7,157	10,594
2	112th St E W/O Mundy Loss Rd EB	1,377	2,038	3,017
	WB	1,426	2,111	3,125
	Total	2,803	4,149	6,142
3	Mundy Loss N/O 112th Avenue SB	2,856	4,228	6,258
	NB	2,809	4,158	6,155
	Total	5,665	8,386	12,413
4	112th St E E/O Mundy Loss Rd WB	868	1,285	1,902
	EB	828	1,226	1,814
	Total	1,696	2,510	3,716
5	Mundy Loss N/O SR410 SB	1,114	1,649	2,441
	NB	1,168	1,729	2,559
	Total	2,282	3,378	5,000
6	Mundy Loss S/O 86 St E NB	941	1,393	2,062
	SB	1,130	1,673	2,476
	Total	2,071	3,066	4,538
7	Sumner-Buckley Hwy W/O hinkleman Ext WB	823	1,218	1,803
	EB	1,057	1,565	2,316
	Total	1,880	2,783	4,119
8	Hinkleman Rd Ext S/O Hinkleman Rd NB	260	385	570
	SB	202	299	443
	Total	462	684	1,012

6. Transportation

9	Sumner-Buckley Hwy E/O Hinkleman Rd Ext WB	944	1,397	2,068
	SB	1,264	1,871	2,770
	Total	2,208	3,268	4,838
		4%		
	SR410 E/O Hinkleman Rd Ext (estimated) WB	10,600	15,691	23,226
	SR410 W/O Hinkleman Rd Ext (estimated) EB	10,400	15,395	22,788
	Total	21,000	31,085	46,014
10	112th St E W/O SR 410 WB	757	1,121	1,659
	EB	738	1,092	1,617
	Total	1,495	2,213	3,276
11	SR 165 S/O Ryan Rd NB	3,021	4,472	6,619
	SB	2,880	4,263	6,310
	Total	5,901	8,735	12,930
12	SR165 S/O 112 St Wy East Bound	4,290	6,350	9,400
	WB	4,284	6,341	9,387
	Total	8,574	12,692	18,787
		5%		
13	Ryan Rd W/O Division Rd WB	2,056	3,043	4,505
	EB	2,016	2,984	4,417
	Total	4,072	6,028	8,922
14	S River Ave S/O Jefferson St WB	1,414	2,093	3,098
	EB	1,613	2,388	3,534
	Total	3,027	4,481	6,633
15	Pearl St S/O Jefferson St WB	127	188	278
	EB	142	210	311
	Total	269	398	589
16	Division Rd S/O Jefferson St NB	207	306	454
	SB	224	332	491
	Total	431	638	944

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17	Jefferson st E/O Division Rd EB	344	509	754
	WB	335	496	734
	Total	679	1,005	1,488
18	Pearl St N/O Jefferson NB	175	259	383
	WB	76	112	167
	Total	251	372	550
19	SR410 S/O Jefferson NB	10,582	15,664	23,186
	SB	11,625	17,208	25,472
	Total	22,207	32,872	48,658
20	Spiketon Rd S/O Ryan Rd NB	410	607	898
	SB	426	631	933
	Total	836	1,237	1,832
21	Ryan Rd E/O Spiketon Rd WB	1,424	2,108	3,120
	EB	1,543	2,284	3,381
	Total	2,967	4,392	6,501
22	Spiketon Rd N/O Ryan Rd NB	479	709	1,050
	SB	474	702	1,039
	Total	953	1,411	2,088
23	S "A St N/O Jefferson St NB	492	728	1,078
	SB	470	696	1,030
	Total	962	1,424	2,108
24	E Mason St W/O S "A" St WB	179	265	392
	EB	100	148	219
	Total	279	413	611
25	Main St W/O "A" St WB	2,296	3,399	5,031
	EB	2,071	3,066	4,538
	Total	4,367	6,464	9,569
26	N "A" St N/O E Main St NB	1,297	1,920	2,842
	SB	1,326	1,963	2,905
	Total	2,623	3,883	5,747

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27	S River Rd S/O E Main Ave NB	2,004	2,966	4,391
	SB	1,648	2,439	3,611
	Total	3,652	5,406	8,002
28	E Main St E/O SR410 WB	2,871	4,250	6,291
	EB	2,438	3,609	5,342
	Total	5,309	7,859	11,633
29	N River Rd SW/O N A St EB	664	983	1,455
	WB	909	1,346	1,992
	Total	1,573	2,328	3,447
30	Park Ave E/O SR410 WB	2,309	3,418	5,059
	EB	2,701	3,998	5,918
	Total	5,010	7,416	10,978
31	N River Ave N/O N "A" St NB	1,578	2,336	3,458
	SB	1,416	2,096	3,103
	Total	2,994	4,432	6,560
32	Park Ave W/O SR410 WB	1,121	1,659	2,456
	EB	1,531	2,266	3,355
	Total	2,652	3,926	5,811
33	Main St W/O SR410 WB	697	1,032	1,527
	EB	1,164	1,723	2,550
	Total	1,861	2,755	4,078
34	Mason Ave W/O S3 St WB	445	659	975
	EB	317	469	695
	Total	762	1,128	1,670
35	N Natches St N/O Mason Ave NB	1,713	2,536	3,753
	SB	1,007	1,491	2,206
	Total	2,720	4,026	5,960
36	SR 410 W/O SR 165 WB	10,624	15,726	23,278
	EB	10,431	15,440	22,856
	Total	21,055	31,167	46,134

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38	SR410 N/O Park Ave SB	11,304	16,733	24,768
	NB	11,696	17,313	25,627
	Total	23,000	34,046	50,396
39	Collins Rd E/O Sargeant St EB	606	897	1,328
	WB	693	1,026	1,518
	Total	1,299	1,923	2,846
40	Levesque Rd S/O Collins Rd NB	336	497	736
	SB	296	438	649
	Total	632	936	1,385
41	Ryan Rd E/O Sheets St WB	1,000	1,480	2,191
	EB	1,062	1,572	2,327
	Total	2,062	3,052	4,518
42	Dundass Ave W/O Pioneer WB	33	49	72
	EB	48	71	105
	Total	81	120	177

Appendix 6 - C. Pedestrian Ratings

Table 8. Pedestrian Ratings									
Multiply Pedestrian Safety Factors and divide by 100 to obtain index:									
((Ped Type + Ped Vol) X AWDT X SW X Speed X RW)/100 = INDEX									
Ped Type Factor : is 1.00 plus 0.75 if there are handicapped, or school children, or elderly users			Ped Volume Factor: 1.0 < 10 peds/day 1.1 < 50 peds/day 1.2 < 100 peds/day						
Multiply Factors for rating:	(Add type+volume)		Vehicle Volume	Shoulder Width	Speed Limit	Road Width	Rating		
	Ped Type 1.00 + 0.75 if HC/sch 1.00 - 1.75	Ped Volume Ped Factor Range: 2.00 - 2.95	(AWDT) ^{1/3} Volume Factor Range: 20-Oct	2(10-SW) Shoulder Factor Range: 18-Dec	(SPD/2) ^{2/3} Speed Factor Range: 10-Apr	(30- RW) ^{1/3} Road Width Range: 1.0 - 2.5	PROD / 100		
1	Mundy Loss Rd (South of 112 St SE)		Ped Type	Ped Volume	Vehicle Volume	Shoulder Width	Speed Limit	Road Width	INDEX
	East Shoulder		1	1.1	4,800	0.5	35	21	94
	West Shoulder		1	1.1	4,800	0.5	35	21	94
	2003 Rating		1	1.1	4,800	0.5	35	21	94
	2023 Rating		1.75	1.2	8,700	0.5	35	21	162
	2023 Rating		1.75	1.2	8,700	0.5	25	21	129
2	Mundy Loss Rd (112 St SE - SR410)		Ped Type	Ped Volume	Vehicle Volume	Shoulder Width	Speed Limit	Road Width	INDEX
	East Shoulder		1	1.1	1,600	1.5	35	21	59
	West Shoulder		1	1.1	1,600	1.5	35	21	59
	2003 Rating		1	1.1	5,700	1.5	35	21	89
	2023 Rating		1.75	1.2	10,200	1.5	35	21	152
	2023 Rating		1.75	1.2	10,200	1.5	25	21	122
3	Ryan Road (Spiketon Rd- Levesque Rd)		Ped Type	Ped Volume	Vehicle Volume	Shoulder Width	Speed Limit	Road Width	INDEX
	East Shoulder		1	1.1	2,600	0.5	35	21	77
	West Shoulder		1	1.1	2,600	0.5	35	21	77
	2003 Rating		1	1.1	2,600	0.5	35	21	77
	2023 Rating		1.75	1.2	4,500	0.5	35	21	130
	2023 Rating		1.75	1.2	4,500	0.5	25	21	104

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4	Mundy Loss Rd (North of Hinkleman Rd)	Ped Type	Ped Volume	Vehicle Volume	Shoulder Width	Speed Limit	Road Width	INDEX
	East Shoulder	1	1.1	2,300	0.5	35	21	74
	West Shoulder	1	1.1	2,300	0.5	35	21	74
	2003 Rating	1	1.1	2,300	0.5	35	21	74
	2023 Rating	1.75	1.2	4,100	0.5	35	21	126
	2023 Rating	1.75	1.2	4,100	0.5	25	21	101
5	W Mason Rd (Natches - Hinkleman Ext)	Ped Type	Ped Volume	Vehicle Volume	Shoulder Width	Speed Limit	Road Width	INDEX
	East Shoulder	1	1.1	2,200	0.5	35	21	73
	West Shoulder	1	1.1	2,200	0.5	35	21	73
	2003 Rating	1	1.1	2,200	0.5	35	21	73
	2023 Rating	1.75	1.2	4,000	0.5	35	21	125
	2023 Rating	1.75	1.2	4,000	0.5	25	21	100
6	112 St SE (West of SR165)	Ped Type	Ped Volume	Vehicle Volume	Shoulder Width	Speed Limit	Road Width	INDEX
	East Shoulder	1	1.1	1,600	0.5	35	21	65
	West Shoulder	1	1.1	1,600	0.5	35	21	65
	2003 Rating	1	1.1	1,600	0.5	35	21	65
	2023 Rating	1.75	1.2	2,900	0.5	35	21	112
	2023 Rating	1.75	1.2	2,900	0.5	25	21	90
7	Spiketown Rd (South of Mt View Ave)	Ped Type	Ped Volume	Vehicle Volume	Shoulder Width	Speed Limit	Road Width	INDEX
	East Shoulder	1	1.1	800	0.5	35	21	52
	West Shoulder	1	1.1	800	0.5	35	21	52
	2003 Rating	1	1.1	800	0.5	35	21	52
	2023 Rating	1.75	1.2	1,500	0.5	35	21	90
	2023 Rating	1.75	1.2	1,500	0.5	25	21	72
8	Collins Rd (Sergeant - Levesque Rd)	Ped Type	Ped Volume	Vehicle Volume	Shoulder Width	Speed Limit	Road Width	INDEX
	East Shoulder	1	1.1	1,300	0.5	25	21	49
	West Shoulder	1	1.1	1,300	0.5	25	21	49
	2003 Rating	1	1.1	1,300	0.5	25	21	49
	2023 Rating	1.75	1.2	2,300	0.5	25	21	83

Examples of Pedestrian Ratings



Mundy Loss Road (South of 112 Ave E)
Ratings: 2003: 95 2013: 151

Traffic volume increases from 4,835 to 7,157 per day, speed limit is 35 mph, traveled way is 21 feet, the shoulder width averages 0.5 feet, and 2.95 is the Ped Use Factor.



Mundy Loss Road (SR410 - 112 Ave E)
Ratings: 2003: 81 2013: 130

Traffic volume increases from 5,665 to 8,386 per day, speed limit is 35 mph, traveled way is 21 feet, the shoulder width averages 2.3 feet, and 2.95 is the Ped Use Factor.



Ryan Road (Spiketon - Lesvesque Road)
Ratings: 2003: 71 2013: 114

Traffic volume increases from 2,062 to 3,052 per day, speed limit is 35 mph, traveled way is 21 feet, the shoulder width averages 0.5 feet, and 2.10 is the Ped Use Factor increasing to 2.95. Reducing the 2013 speed limit to 25 mph would reduce the rating to 91.

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W Mason Rd (Natches – Hinkleman Ext
Ratings: 2003: 73 2013: 117

Traffic volume increases from 2,208 to 3,268 per day, speed limit is 35 mph, traveled way is 21 feet, the shoulder width averages 0.5 feet, and 2.10 is the Ped Use Factor increasing to 2.95. Reducing the speed limit to 25 reduces the 117 rating to 82.

Appendix 6 – D. Transportation Capital Improvement Plan

TRANSPORTATION CAPITAL IMPROVEMENT PLAN

TABLE 9A

Priority	Project	Location/Segment	Estimated Cost	Funding Source	Estimated Start Date	Project Scope
1	Main Street Rehabilitation	"A" Street to River Avenue	\$665,000	TIB (SCP) & Local	2006	Reconstruct/rehabilitate, grind, replace water, stormwater drainage and underground power, install curb and gutter, sidewalk, landscape amenities, lighting and repave.
2	Ryan Road (Phase I) Reconstruct	Willow Glenn Apts to Spiketon Road	\$640,000	TIB (SCP) & Local	2006	Reconstruction/rehabilitate, grind, replace water, sewer and storm, widen, install curb, gutter & sidewalk 1 side, repave.
3	River Avenue Pedestrian Improvements	Jefferson Street to Skatepark	\$110,000	TIB (PSMP) & Local	2006	Widen and pave roadway, install curb and gutter, sidewalk, storm, relocate power and install lighting.
4	Sheets Road Resurfacing	Ryan Road to South City Limits	\$40,000	Local	2006	Grind and overlay with asphalt or as alternative maintenance chip seal.
5	SR 165/SR410/112th/Ryan Road Realignment Project	Intersection of all	\$3,550,000	STP (Federal), TIB (SCP), WSDOT & Local	2007	Rehabilitate/reconstruct/realign intersection of SR165/Ryan Road/112th Street E. to new configuration. Widen, repave, install utilities, install signalization at new intersection and SR410.
6	Hinkleman Road Resurfacing (Phase I)	Hinkleman Ext to 28410 Hinkleman Road	\$98,000	TIB (SCP Pavement Preservation) & Local	2007	Reconstruct with minor widening, overlay, relocate power and install utilities.

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7	Mundy Loss Pedestrian Improvement Project	SR410 to 112th Street East	\$265,000	TIB (PSMP) & Local	2007	Shoulder improvements w/pavement widening, installation of curb, gutter, sidewalks, storm drainage and street lighting.
8	River Avenue & Main Street Intersection Improvements	Intersection of Main Street & River Ave	\$763,000	TIB (SCP) & Local	2008	Install signalization, turn lanes and pedestrian facilities.
9	Hinkleman Road Resurfacing (Phase II)	28410 Hinkleman to Mundy Loss	\$102,000	TIB (SCP Pavement Preservation) & Local	2008	Reconstruct with minor widening, overlay, relocate power and install utilities.
10	SR410 & Park Street Safety Improvement Project	Intersection of SR410 & Park Ave	\$175,000	WSDOT, TIB (PSMP) & Local	2008	Install right hand turn pocket on Park Avenue for access to northbound SR410, install pedestrian improvements including curb, gutter and sidewalk and relocate crossing to south side of intersection.
11	View Place Resurfacing	Whitmore Way to Cul-de-sac	\$10,000	Local	2009	Grind existing surface and overlay with asphalt.
12	Whitmore Way Resurfacing	Collins Road to Sergeant Street	\$75,000	TIB (SCP Pavement Preservation) & Local	2009	Grind existing surface and overlay with asphalt.
13	Mason Avenue Pedestrian Improvement Project	Naches Street to Hinkleman Extension	\$338,000	TIB (PSMP) & Local	2009	Shoulder improvements w/pavement widening, installation of curb, gutter, sidewalks, storm drainage and street lighting.
14	Ryan Road (Phase II) Reconstruct	Spiketon Road to Levesque Road	\$1,584,000	TIB (SCP) & Local	2010	Reconstruction/rehabilitate, grind, replace water, sewer and storm, widen, install curb, gutter & sidewalk 1 side, repave.
15	Cedar Street Resurfacing	Coul Street to Main Street	\$85,000	TIB (SCP Pavement Preservation) & Local	2010	Grind and overlay with asphalt or as alternative maintenance chip seal.

6. Transportation

16	112th Street East Pedestrian Improvement Project	Ryan Road/SR165 to Mundy Loss	\$118,000	Local	2010	Remove damaged asphalt path on south side of roadway and install 5' concrete sidewalk with planter strip for the full length.
17	Wheeler Street Resurfacing	Naches Street to 2nd Street	\$25,000	TIB (SCP Pavement Preservation) & Local	2011	Grind and overlay with asphalt.
18	2nd Street Resurfacing	Mason Avenue to Wheeler Street	\$45,000	TIB (SCP Pavement Preservation) & Local	2011	Grind and overlay with asphalt.
19	Park Avenue Resurfacing	SR410 to Naches Street	\$125,000	TIB (SCP Pavement Preservation) & Local	2011	Grind and overlay with asphalt or as alternative maintenance chip seal.
TOTAL TABLE 9A			\$8,813,000			

TABLE 9B

20	River Avenue Resurfacing	Jefferson Street to Dieringer Street	\$63,000	TIB (SCP Pavement Preservation) & Local	2012	Grind and overlay with asphalt or as alternative maintenance chip seal.
21	River Avenue & "A" Street Intersection Improvements	Intersection of River Avenue & "A" Street	\$797,000	TIB (SCP) & Local	2012	
22	Mt. View Resurfacing	Division Street to Spiketown Road	\$70,000	TIB (SCP Pavement Preservation) & Local	2013	Grind and overlay with asphalt or as alternative maintenance chip seal.
23	SR410 & Main Street Intersection Improvements	Intersection of SR410 & Main Street	\$1,006,000	STP(S), WSDOT & Local	2013	Reconstruction/rehabilitate, grind, replace water, sewer and storm, widen, install curb, gutter & sidewalk 1 side, repave.
24	Division Street Resurfacing	Ryan Road to Jefferson Street	\$60,000	TIB (SCP Pavement Preservation) & Local	2014	Grind and overlay with asphalt or as alternative maintenance chip seal.
25	Main Street & "A" Street Intersection Improvements	Intersection of Main Street & "A" Street	\$345,000	TIB (SCP) & Local	2014	Install signalization, turn lanes and pedestrian facilities.

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26	Jefferson Street Resurfacing	Pearl Street to Franklin Street	\$80,000	TIB (SCP Pavement Preservation) & Local	2015	Grind and overlay with asphalt or as alternative maintenance chip seal.
27	SR410 & Mundy Loss Intersection Improvements	Intersection of SR410 & Mundy Loss	\$1,170,000	STP(S), WSDOT & Local	2015	Install signalization, widen to 5 lanes and pedestrian facilities.
28	Levesque Trail Project	Ryan Road to Collins Road	\$400,000	IAC, TIB (PSMP) & Local	2015	Pedestrian improvements consisting of the installation of an 8' wide paved walking trail.
TOTAL TABLE 9B			\$3,991,000			

TABLE 9C

29	Spiketon Road (Slope Stabilization)	South City Limits to Spiketon Ditch	\$280,000	Local	2016	Import fill, compact, stabilize slope and restore.
30	Spiketon Road Pedestrian Improvements	Mt. View to South City Limits	\$700,000	Local	2016	Shoulder improvements w/ pavement widening, installation of curb, gutter, sidewalks, storm drainage and street lighting.
31	Cedar and Pearl Street Intersection Improvements	Intersection of Cedar Street & Pearl Street	\$310,000	TIB (SCP) & Local	2012	Grind and overlay with asphalt, replace curb, gutters, sidewalk and stormwater drainage.
32	Collins Road Trail Project	McNeely Street to Levesque Road	\$450,000	IAC, TIB (PSMP) & Local	2019	Pedestrian improvements consisting of the installation of an 8' wide paved walking trail.
33	Mundy Loss & 112th Street East Intersection Improvements	Intersection of Mundy Loss & 112th Street East	\$773,000	TIB (SCP) & Local	2013	Install signalization, turn lanes and pedestrian facilities.
34	Hinkleman Extension Continuation	SR410 to 112 th Street East	\$625,000	TIB (SCP) & Local	2016	Full street construction to include subgrade, pavement surface, curbs, gutters, sidewalks both sides, utility

Appendix 6 – E. Minimum Street Design Standards

Table 10: Minimum Street Design Standards

Design Standard	Major Arterial	Minor Arterial	Collector	Local Access	Private Access	Alleys
Minimum Right-of-Way/Access Easement	100'	66'	60'	55'	30'	16'
Minimum Pavement Width	40'	40'	36'	34'	20'	12'
Parking Lane	None	Both sides	Both sides	Both Sides except one side in cul-de-sac	N/A	N/A
Minimum/Maximum Grade	0.7%-8%	0.7%-10%	0.7%-12%	0.7%-12%	0.7%-12%	0.7%-12%
Curb	Cement Concrete Vertical Curb and Gutter	Cement Concrete Vertical Curb and Gutter	Cement Concrete Vertical Curb and Gutter	Cement Concrete Vertical Curb and Gutter	N/A	N/A
Sidewalks	Both Sides: 8' wide, except a reduction to 6' may be allowed if alternative design such as low impact meandering is approved by the City.	Both Sides: 6' wide in commercial area and 5' wide in all other areas. Alternative design such as low impact meandering may be allowed subject to review and approval by the City.	Both Sides: 5' Alternative design such as low impact meandering may be allowed subject to review and approval by the City.	Both Sides: 5' Alternative design such as low impact meandering may be allowed subject to review and approval by the City.	N/A	N/A
Planter Strip	Both Sides: Minimum of 8', except in areas where alternative design is approved, then planter are may be averaged based on design approval by the City.	Both Sides: Minimum of 5', except in areas where alternative design is approved, then planter are may be averaged based on design approval by the City.	Both Sides: Minimum of 4', except in areas where alternative design is approved, then planter are may be averaged based on design approval by the City.	Both Sides: Minimum of 3', except in areas where alternative design is approved, then planter are may be averaged based on design approval by the City.	N/A	N/A
Cul-De-Sac Radius Right-of-Way/Access Easement	N/A	N/A	N/A	55'	40'	N/A
Cul-De-Sac Radius (pavement width)	N/A	N/A	N/A	40' (w/o parking) 45' (w parking)	40'	N/A

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Intersection Curb Radius	30'	30'	30'	25'	25'	25'
Design Speed(MPH)	Per City Ordinance	25	25	25	25	15
Minimum Centerline Radius for Normal Crown	460'	460'	460'	200'	N/A	N/A
Stopping Site Distance	250'	250'	250'	160'	N/A	N/A
Traffic Control Signage and/or Pavement Striping	Required	Required	Required	Required	N/A	N/A

Appendix 6 - F. ITE Trip Generation Standards

Table 11: ITE Trip Generation Standards			
Unit (without pass by reduction)	Daily trips/unit	\$/Trip	\$/Unit
Single-family detached house (per unit)	9.57	434	\$4,153
Apartment (per unit)	6.63	434	\$2,877
Condominium/Townhouse (per unit)	5.86	434	\$2,543
Mobile Home Park (per unit)	4.81	434	\$2,088
Congregate Care (multi unit buildings that may include dining, medical, recreational rooms) (per unit)	2.15	434	\$933
Recreational Homes (may be rented)	3.16	434	\$1,371
Residential Planned Unit Development (per unit)	7.5	434	\$3,255
Hotel (per room)	8.23	434	\$3,572
Motel (per room)	9.11	434	\$3,954
Movie Theater w/o matinee (per seat)	1.76	434	\$764
General Light Industrial (fewer than 500 employees emphasizing activities instead of manufacturing) (per employee)	3.02	434	\$1,311
General Light Industrial (fewer than 500 employees emphasizing activities instead of manufacturing) (per gross floor area 1,000 SF)	6.97	434	\$3,025
Manufacturing (per employee)	2.1	434	\$911
Manufacturing (per 1,000 gross floor area SF)	3.82	434	\$1,658
Warehousing (per 1,000 SF gross floor area)	4.96	434	\$2,153
Mini Warehouse Storage Units (per 1,000 SF gross floor area)	2.5	434	\$1,085
Elementary School (per student)	1.02	434	\$443
Private School K-12 (per student)	0.92	434	\$399
Church (per 1,000 SF gross floor area)	9.11	434	\$3,954
Day Care (per 1,000 SF gross floor area)	79.26	434	\$34,399
Nursing Home (per bed)	2.61	434	\$1,133
Nursing Home (per employee)	4.03	434	\$1,749
Medical/Dental Office (per 1,000 SF gross floor area)	36.13	434	\$15,680
General Office Building (per 1,000 SF gross floor area)	11.01	434	\$4,778
Office Park (per 1,000 SF gross floor area) (contains offices and support such as banks, restaurants, service stations)	11.42	434	\$4,956
Business Park (per 1,000 SF gross floor area) (contains buildings with common roadway system, rear usually has garage door, includes office/commercial and industrial/warehousing)	12.76	434	\$5,538
Specialty Retail Center (per 1,000 SF gross floor area) (strip shopping centers with a variety of retail shops and small restaurants)	40.67	434	\$17,651
Free Standing Discount Store (per 1,000 SF gross floor area) (7 day/week, off street parking, wide range of products)	56.63	434	\$24,577
Shopping Center (per 1,000 SF gross Leasable Area)	42.92	434	\$18,627
Quality Restaurant (per 1,000 SF gross floor area)	89.95	434	\$39,038
High Turnover Sit-Down Restaurant (per 1,000 SF gross floor area)	130.34	434	\$56,568
Fast Food with drive thru window (per 1,000 SF gross floor area)	496.12	434	\$215,316

6. Transportation

Gasoline/Service Station with Convenience Market (per vehicle fueling positions)	162.78	434	\$70,647
Super Market (per 1,000 SF gross floor area)	111.51	434	\$48,395
24 hour Convenience Market (per 1,000 SF gross floor area)	737.99	434	\$320,288
Drive in Bank (per 1,000 SF gross floor area)	54.77	434	\$23,770
Pharmacy/Drugstore (per 1,000 SF gross floor area)	90.06	434	\$39,086
Home Improvement Superstore (per 1,000 SF gross floor area)	35.05	434	\$15,212
Tire Store (per 1,000 SF gross floor area)	24.87	434	\$10,794