CITY OF BLACK DIAMOND

March 6, 2018 Special Joint Meeting Agenda
City Council and Planning Commission
25510 Lawson St., Black Diamond, Washington

6:15 P.M. – CALL TO ORDER, FLAG SALUTE, ROLL CALL

WORK SESSION -

1. City's Comprehensive Plan Update
    a. Transportation Element

ADJOURNMENT:

CITY OF BLACK DIAMOND
COMPREHENSIVE PLAN - DRAFT

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ACRONYMS AND ABBREVIATIONS

BDMC	**Black Diamond Municipal Code**
City	**City of Black Diamond**
CPP	**countywide planning policies**
Ecology	**Washington State Department of Ecology**
FEMA	**Federal Emergency Management Agency**
GIS	**geographical information system**
GMA	**Growth Management Act**
LF	**linear feet**
MPD	**master planned development**
MPO	**metropolitan planning organization**
NAVD	**North American Vertical Datum of 1988**
NWI	**National Wetland Inventory**
PHS	**Priority Habitats and Species**
PSRC	**Puget Sound Regional Council**
RCW	**Revised Code of Washington**
SMA	**Shoreline Management Act**
SMP	**Shoreline Master Program**
SR	**State Route**
TDR	**transfer of development rights**
UGA	**urban growth area**
UGB	**urban growth boundary**
USACE	**United States Army Corps of Engineers**
USCB	**United States Census Bureau**
WAC	**Washington Administrative Code**
WDFW	**Washington Department of Fish and Wildlife**
WRIA	**Water Resource Inventory Area**

7.0 TRANSPORTATION

7.1 Organization of This Chapter

- **Introduction:** Describes the purpose of the Transportation Element.
- **Policies:** There are four goals that establish the foundation of Black Diamond's Transportation Plan contained in Chapter 1 of this Comprehensive Plan. Planning policies have been developed in support of each Goal to identify how it will be measured and evaluated.
- **Appendices:** Describes the existing transportation system and presents the traffic analysis conducted to support the Transportation Element. .

7.2 Introduction

The City of Black Diamond's (City's) transportation system is essential to its ability to move people and goods efficiently throughout the city and to provide connectivity between Black Diamond and the greater Puget Sound region. As with many communities, the City's development pattern, natural features and transportation system are inextricably linked. As a small community of predominantly rural character, the transportation network within Black Diamond is reflective of the original settlement pattern, varied topography, and gradual growth up to the present. As accounted for in this Comprehensive Plan update, significant amounts of new residential and commercial development are forecasted within the Lawson Hills and The Villages master planned developments (MPDs). This chapter of the comprehensive plan, also called the comprehensive transportation plan, identifies the policies and strategies for maintaining a safe, efficient, and effective transportation system that will serve both current and future needs for the City of Black Diamond. This chapter is supported by a transportation technical appendix, which summarizes the data analysis completed to support the comprehensive transportation plan.

7.2.1 Consistency with State and Regional Planning Requirements

The Growth Management Act (GMA) (RCW 36.70A) includes planning requirements that link transportation directly to land use decisions and fiscal planning. The comprehensive transportation plan is structured within the context

of these GMA requirements. Comprehensive Plans are required at a minimum to include the follow elements for transportation:

- Inventory of local and state facilities and services
- Land use assumptions for estimating travel
- Traffic forecasts for at least ten years based on adopted land use plan
- Level of service standard for local arterials, state facilities and transit routes
- Estimated traffic impacts and needs to meet current and future demands
- Action plan to show compliance with level of service standards
- Pedestrian and bicycle component
- Multiyear finance plan that identifies funding resources for action plan

The GMA also requires coordination and consistency among planning efforts where there are "common borders or related regional issues" (RCW 36.70A.100). The Act also requires countywide and multicounty planning policies to serve as frameworks for ensuring consistency among local comprehensive plans (RCW 36.70A.210). The City's comprehensive transportation plan has been prepared consistent with State GMA requirements.

In addition, the Regional Transportation Planning Organization legislation, which was adopted with the GMA, mandates that regional agencies, PSRC in this case, certify that the transportation elements in local comprehensive plans are consistent with regional transportation plans (RCW 47.80.023). PSRC is tasked with reviewing local agency comprehensive plans to ensure that regional and local planning efforts are coordinated, and adopted regional policies and provisions are addressed. Most notably this includes Vision 2040, the region's strategy for addressing anticipated growth of population and employment through 2040, and Transportation 2040, the region's long-range transportation plan that outlines the investments and strategies needed to keep the region moving as growth occurs. Regional population and employment forecasts provided by PSRC that include city approved growth projections were used to estimate future transportation needs. The City's comprehensive transportation plan has been prepared consistent with PSRC's Vision 2040 and Transportation 2040 regional planning initiatives.

PSRC requirements for Comprehensive Plans include the following major elements for transportation:

- Include transportation system management and demand management programs and strategies.
- Use land development tools and practices that support alternatives to driving alone, including walking, biking, and transit use.

- Include complete street provisions and improve local street patterns for walking and biking.
- Avoid new or expanded facilities in rural areas.
- Design transportation facilities to fit the community in which they are located. Use urban design principles when development and operating transportation facilities in cities and urban areas.
- Incorporate environmental factors into transportation decision-making, including attention to human health and safety.
- Identify stable and predictable funding sources for maintaining and preserving existing transportation facilities and services.

King County requirements are generally consistent with those of the GMA and PSRC. One exception is that the County requires each local jurisdiction to establish mode-split goals for non-single-occupancy vehicle travel to all significant employment centers.

7.2.2 Need for the Comprehensive Transportation Plan

In 1996, the City completed its first comprehensive transportation plan which was updated in 2001 and 2009. The 2016 update provides a revised look at the existing transportation system; addresses changes in legislative requirements; reflects changes in economic conditions; evaluates current needs; and reviews the adequacy of the planned transportation improvements with consideration of the Master Plan Developments to meet future travel needs and conditions.

Consistent with the regional update cycle, the City's comprehensive transportation plan is once again being updated to:

- **Determining Existing Transportation Deficiencies.** An inventory of the transportation system identifies the existing needs of the Black Diamond community.
- **Meeting GMA Requirements.** The City is required by the GMA to develop a comprehensive plan including a transportation chapter that includes a list of future system improvements to meet identified future needs and a multi-year financing plan.
- **Qualifying for Funding.** State and Federal agencies require local governments to have a comprehensive transportation plan that demonstrates the community's vision of its future.
- **Planning for the City.** Both public and private sectors can use the comprehensive transportation plan when making decisions about the transportation system.

7.2.3 Elements of the Comprehensive Transportation Plan

The comprehensive transportation plan, including information provided in the technical appendix, includes the following key elements:

- **Transportation Policies.** A list of policies the City will focus on to develop and maintain an efficient transportation system;
- **Transportation Improvement Program.** A list of transportation improvements to mitigate traffic congestion;
- **Funding Strategy.** A plan for funding the improvements and a contingency plan with additional funding sources; and
- **Concurrency Management System.** A monitoring system the City will use to make sure the transportation network will be able to accommodate development as it occurs.

7.3 Transportation Policies

The policies contained in this chapter are designed to guide development of the City's transportation system to serve development allowed under the land use chapter and adopted zoning. These policies are intended to guide the actions of the City, as well as private decisions related to individual developments.

7.3.1 Design, Construction, and Maintenance

The following policies guide the design, construction, operation, and maintenance of the City's transportation system. An underlying objective is to develop a multi-modal transportation system to serve all existing and future land uses. The policies address design and construction standards of transportation facilities to accommodate all types of transportation safely and efficiently. Level of Service standards, maintenance standards, and the need for Transportation Demand Management strategies are also addressed.

Policy T-1 Roadway Design Policy:
The City will ensure adequate and safe access to property via a system of primarily public and limited private roads by:

1. Utilizing the functional classification system for existing and planned roadways to determine the level of mobility for all travel modes, level of access, and use.
2. Establishing a range of transportation standards and criteria to ensure roadways are designed in a manner that fits within the context of the built or natural environment, and consistent with the intended functional

classification.

3. Implementing urban design principles in transportation programs and projects within the locally designated Town Center, Old Town.
4. Ensuring all roadway designs are coordinated with King County, Washington State, the Federal Highway Administration, and Metro Transit to achieve compatible design criteria, where applicable. The standards will also comply with federal and state design criteria.
5. Investigating the allowance of "low impact development" designs that minimize pavement width and emphasize the use of landscaping, and natural stormwater infrastructure treatment methods.

Policy T-2 Connectivity Policy:
Improve local roadway features, and patterns in a manner that enhances walking, bicycling and transit use through improved connectivity.

The City of Black Diamond recognizes that increasing connections throughout the city not only reduces vehicle miles of travel and therefore, pollution and traffic congestion, but also increases the sense of unity in the community. Therefore, the City will limit the use of cul-de-sacs, dead end roads, loops, and other street layouts that form barriers to travel. Where roadway connectivity is impractical, pedestrian and bicycle access ways should be provided. The City will encourage the use of trails and other connections that provide ease of travel at mid-block locations, between neighborhoods, and to key destinations. Private streets should generally only be allowed to serve a limited number of lots/dwelling units and/or only in unique circumstances. Private streets should not detract from overall motorized and non-motorized circulation.

Policy T-3 Level of Service (LOS) Standard Policy:
Monitor and adjust LOS standards that promote the optimal movement of people and goods. Ensure that new development does not degrade transportation facilities below adopted standards.

The adopted standard shall be LOS D for intersections along SR 169and LOS C for all other arterial and collector roadways, and transit routes within the Black Diamond city limits. The LOS shall be based upon the Highway Capacity Manual and methodology detailed in the Transportation Element Support Appendix.

Assess transportation LOS standards for potential inclusion of pedestrian, bicycle, and transit.

Policy T-4 Maintenance Policy:
Maintain the City's transportation system at a level with a goal of achieving and maintaining a TIB average pavement rating of 70 to 80 and that seeks to use sustainable processes and materials.

The City will establish programs and schedules, such as a pavement overlay program, for the level and frequency of maintenance on its roadways, bikeways, and sidewalks.

Policy T-5 Driveway Spacing Policy:
Limit and provide driveway access to the road network in a manner consistent with the function and purpose of each roadway.

The City will seek consolidation of access points to state highways, arterials, and major collectors. This will complement the highway and arterial system, reduce interference with traffic flows on arterials, and discourage through traffic on local roads.

New roadways or redeveloping properties must comply with the spacing standards to the extent practical, as determined by the city. As the opportunity arises through redevelopment, roadways not complying with these standards could improve with strategies such as shared access points, access restrictions (through the use of a median or channelization islands), or closure of unnecessary access points, as feasible.

Policy T-6 Local Access Policy:
Implement standards to limit the number of access points for each lot that may be served before a second point of access is required. Limit the length of dead end streets by either distance or number of lots served. Safe and convenient access requires multiple routes of ingress and egress. This is important for both residential convenience and for fire and police protection. A standard should be developed that balances unique topographic characteristics, future development plans, and the need for providing adequate access.

Policy T-7 Transportation Demand Management (TDM) Policy:
Transportation demand management (TDM) helps people use the transportation system more efficiently through education, incentives, products, and programs that remove barriers to non-drive alone modes such as transit, carpool, vanpool, walking, biking, and teleworking. TDM activities help get the most out of transportation investments. TDM implementers seek to accomplish a primary objective: connect all people with travel options that optimize the transportation system's capacity.

TDM activities produce wide-ranging benefits to individuals and the transportation system—saving people time and money and reducing traffic congestion, vehicle emissions, and fuel consumption while supporting physical activity and enhanced safety. TDM activities make existing transportation investments perform better, extend the life of existing infrastructure, and can improve outcomes for new investments.

TDM is typically implemented through programs administered by employers, major institutions, local jurisdictions, transportation management agencies, transit agencies and other transportation agencies and providers. Examples of TDM actions include:

1. Encouraging employers to provide information and promote the use of transit, carpools, or vanpools;
2. Promoting reduced employee travel during the daily peak travel periods through flexible work schedules and programs to allow employees to work part- or full-time at home or at an alternate work site closer to home; and
3. Encouraging employers to provide TDM measures in the work place through such programs as preferential parking for HOVs, improved access for transit vehicles, and employee incentives for sharing rides.
4. Establish mode-split goals for non-single-occupancy vehicle travel to all significant employment centers in the City.
5. Managing parking by including incentives for rideshare vehicle parking
6. Promoting reduced parking requirements for new construction
7. Promoting investments in walking and cycling infrastructure

Policy T-8 Transportation System Management (TSM) Policy

Transportation Systems Management (TSM) is an approach to mitigating congestion and improving traffic operations through better management and operation of existing transportation facilities. TSM techniques are designed to improve traffic flow, air quality, and movement of vehicles and goods, as well as enhance system accessibility and safety using low-cost but effective strategies such as:

- Intersection and signal improvements
- Roadway bottleneck removal programs
- Data collection to monitor system performance
- Special events management strategies

The City of Black Diamond will encourage management of the transportation system by:

1. Maintaining the existing transportation system assets.
2. Supporting use of High Occupancy Vehicles (HOVs), including buses, carpools, and vanpool programs through both private programs and the direction of Metro Transit;
3. Implementing roadway connectivity, and access spacing standards.
4. Investing in pedestrian, bicycle, and transit facilities.
5. Coordinating with WSDOT or other affected agencies to determine if communications or other ITS infrastructure should be addressed as part of roadway design/construction. Identifying opportunities to improve travel reliability and safety with TSM solutions.

Policy T-9 Pedestrians, Bicycles, and Transit Policy:
In Black Diamond, pedestrians have the right-of-way over all other transportation modes: cars and other vehicles shall yield to pedestrians, operating at safe speeds at all times. The City shall lessen dependence upon and the influence of the automobile by encouraging complete streets and multi-modal travel for all users including pedestrians, bicyclists, and transit passengers of all ages and abilities. City actions will:

1. Require new roadways to incorporate pedestrian, bicycle and transit facilities.
2. Provide for transit user needs beyond basic provision of service (e.g., by providing sidewalk and bicycle connections, shelters, benches) to encourage higher levels of use.
3. Continue to provide sidewalk, bike lane, and multi-use path infill along existing roadways.
4. Implement the Black Diamond Trails Plan.
5. Ensure that the transportation system provides equitable access to underserved and vulnerable populations, and is friendly and accommodating to travelers of all ages.
6. Explore options to improve the walkability of the narrow streets lacking sidewalks typical of older portions of the City, including key sidewalk extensions, connections to trails, context-appropriate wayfinding signage, shared auto and pedestrian street policies and road improvements.
7. Encourage older subdivisions to upgrade the physical environment to improve safety for pedestrians and bicyclists through reduced vehicular speed, warning signage, sidewalk widening at intersections, adding shoulders, improved paving, vegetation trimming to improve visibility and walkability to provide a safe and appealing walking environment.

Policy T-10 Safe Routes to School Policy

Safe and desirable walking and bicycling routes shall connect schools to residential, recreational and commercial areas throughout the City of Black Diamond to encourage families to walk or ride to school. To implement this policy, the City shall:

1. Work with the Enumclaw School District to develop appropriate route plans in compliance with WAC 392-151-025.
2. Seek funding to support pedestrian improvements through the State of Washington's Safe Routes to School Program
3. Consider such factors as crash history, safety concerns and current or potential non-motorized access when prioritizing non-motorized access to schools.

Policy T-11 Transportation Health and Safety Policy:

The City of Black Diamond will provide a transportation system that enhances the health and safety of residents by:

1. Improving safety at locations with known safety issues.
2. Minimizing conflict points (Location within intersection or roadway where two or more road users may share the same space at the same time resulting in potential collision) and improve safety of high accident locations.
3. Expanding the sidewalk, bike lane, and multi-use path network in the city.
4. Periodically review and improve messaging for the travelling public
5. Reducing the amount of collisions involving pedestrians and cyclists.
6. Improving personal security (e.g., street lighting).
7. Identifying transportation improvements along emergency response routes.
8. Maintaining prevention and recovery strategies that are coordinated locally and regionally under the Regional Transportation Recovery Plan.

Policy T-12 Parking Policy:

The parking needs of the City will be balanced by:

1. Encouraging the construction of additional parking in the historic "Old Town" area of Black Diamond, both within the public right-of-way and in off-street lots.
2. Promoting the addition of parking spaces in the "Old Town", possibly to include the use of a Local Improvement District (LID) to fund these parking improvements.

3. Identifying available areas to provide parking facilities for weekend bicyclists.
4. Continued discouragement of on-street parking along the SR 169 corridor.

7.3.2 Road Character and Right of Way

Policies contained in this subsection promote the unique characteristics of Black Diamond and address issues regarding land use development emphasizing desired locations for development throughout the city. These policies also address the City's view on right-of-way issues.

Policy T-13 Character of the City Policy:
Enhance the character that the City currently possesses by:

1. Encouraging landscaping, parkway trees, and compatible architecture in the design and construction of roadways, especially SR 169, and other facilities along selected corridors. Minimize obtrusive signs through provisions in the zoning code;
2. Limiting the number of traffic signals within Black Diamond by considering the use of roundabouts as the first solution where appropriate;
3. Implementing road standards and development guidelines consistent with LOS standards, to minimize paving widths; preserve desirable trees and vegetation through minimized right-of-way clearing; and allow creative designs;
4. Implementing separate road standards for the older, historic areas within the city that are specific to individual street geometries, with the goal of not causing undue disruption to existing neighborhoods;
5. Identifying transportation investments that support mixed-use and pedestrian friendly development;
6. Prioritizing transportation investments that serve the locally designated Town Center, Old Town; and
7. Exploring all viable multi-modal transportation improvement alternatives to single occupant vehicle transportation.

Policy T-14 Environmental Protection and Conservation Policy:
Design transportation facilities within Black Diamond that minimizes adverse environmental impacts resulting from both their construction and operation.

The City will fulfill this need by:

1. Aligning and locating transportation facilities away from environmentally sensitive areas;
2. Encouraging Low Impact Development (LID) in the design of transportation infrastructure where practical;
3. Mitigating unavoidable environmental impacts; and
4. Provide opportunity for expressing concerns and comments of interested parties.
5. Establish policies to minimize the use of de-icers or salt on roadways to protect the environment.

Policy T-15 Right-of-Way Policy:
Retain existing transportation system rights-of-way, and identify, acquire, and protect rights-of-way for future roadway and bikeway facilities.

The policies provided in this Transportation Element will be used by the City to identify current and future transportation system needs. The City will identify specific transportation corridors and protect needed rights-of-way as soon as possible. Some methods used to acquire and preserve rights-of-way include:

1. Requiring dedication of rights-of-way as a condition for development when the need for such rights-of-way is linked to the development and to support the City's economic development goals;
2. Requesting donations of rights-of-way to the public;
3. Purchasing rights-of-way by paying fair market value when donations and/or required dedications are not possible;
4. Acquiring development rights and easements from property owners; and
5. Protecting rights-of-way from encroachment by structures, substantial landscaping, or other obstruction is also encouraged by the City. Protection methods may include minimum setback requirements for property improvements and development of guidelines regarding installation and maintenance of landscaping within the public right-of-way.
6. Develop criteria and process for the vacation of public rights-of-way consistent with City goals and policies.

Policy T-16 Road Dedication Policy:
Road dedications shall be allowable on a limited basis consistent with the City's goals to increase the connectivity of the City's roadway network pursuant to the following provisions:

1. Connector streets need to be public.
2. New publicly-dedicated roadways must comply with City street standards.

Policy T-17 Private Road Policy

Private roads are discouraged and shall be allowable only if the following conditions are met:

1. Private roads may provide local residential access, with no connections to the existing or future public street system.
2. Private roads shall meet all applicable public road standards, including right-of-way widths.
3. A financial analysis shall be performed to determine the amount of funding needed to maintain the road annually including funding to repave the road every 25 years.
4. Private roads must be privately maintained through recognized Homeowner's Associations (HOAs). The developer shall establish a s street maintenance covenant with each home served by the road establishing the HOA and regular periodic contributions for maintenance and funds to be set aside for future major rehabilitation. The form of the HOA and covenant shall be approved by the City Attorney.
5. Internal circulation streets are private roads located within the boundaries of a commercial or multifamily development accessed directly from a public street. Internal circulation private streets shall meet the public local access street pavement section requirements and provide safe pedestrian connections.

7.3.3 Funding, Concurrency, and Impact Mitigation

The City faces the challenge of making the best use of the limited funds available to finance transportation projects. Issues addressed by these policies include concurrency, identifying favorable funding sources, and deciding impact mitigation assessments.

Policy T-18 Concurrency Policy:

Ensure that transportation improvements or strategies are constructed or financed concurrent with development, including roadway, pedestrian, bicycle, and transit facilities. This also includes coordinating the City's concurrency program with plans of other transportation agencies.

The most significant adopted policy of meeting concurrency standards is accomplished by the two major MPD Development Agreements that require the developer to implement any and all of the capacity adding projects in the City's comprehensive plan to maintain the City's level of service standards.

To monitor these commitments, the City's Concurrency Management System includes the following:

1. Assessing and determining compliance with the adopted level of service standards;
2. Identifying facility deficiencies (e.g., sidewalk, bike lanes, multi-use paths and transit); and,
3. Making appropriate revisions to the Six-Year TIP.

Policy T-19 Funding Sources Policy:
Secure adequate long-term funding sources for transportation through all feasible and available methods.

These methods may include:

1. Taking advantage of state funds, such as the Transportation Improvement Account (TIA), and the Public Works Trust Fund (PWTF);
2. Encouraging Washington State Department of Transportation (WSDOT) improvements on the state highway system;
3. Encouraging the use of LIDs by property owners to upgrade roads to meet City road standards;
4. Requiring impact mitigation and/or SEPA mitigation fees for projects as guided by this Plan. Impact mitigation payments and/or seeking voluntary contributions from developers may also be pursued;
5. Encourage Transportation Benefit Districts and Capital Facility Districts
6. Exploring the potential of assessing user fees to support maintenance and preservation of the transportation system; and
7. Seeking funding from federal agencies and all other available grant sources.

Policy T-20 Alternative Level of Service Policy:
Pedestrian and transit friendly development shall be encouraged within the locally designated Town Center, Old Town, by allowing less restrictive LOS standards for roadways.

If the adopted LOS standard cannot be maintained and expected funding for improvements to meet future transportation needs is found to be inadequate, then the City shall:

- Consider the impacts of land use on trip generation to reduce the travel demand placed on the transportation system; or
- Phase or restrict development to allow more time for the necessary LOS-driven transportation improvements to be completed by the development community and/or responsible agency or jurisdiction(s); or
- Reduce the LOS standard for the system or portions of the system to give the City more time to fund the needed transportation improvements.

Policy T-21 Financial Impact Mitigation Policy:
Require developers to contribute their fair share towards the transportation improvements required to meet the LOS standards. Impact mitigation efforts may include:

1. Requiring developers who are subject to an approved development agreement with the City to continue fulfilling all mitigation requirements imposed therein;
2. Requiring developers who are not subject to an approved development agreement to assist in providing additional transportation facilities and services in proportion to the impacts and needs generated by development;
3. Encouraging developers to design projects that generate less vehicular traffic; and
4. Requiring developers at the beginning and mid-point of each phase of the MPD project to monitor traffic generation and distribution to determine if traffic impacts of MPD development are occurring as projected.

7.3.4 Coordination and Consistency Policies

The policies contained in this subsection address such issues as multi-agency planning and coordination, consistency of transportation improvement programs and designs among jurisdictions, and cooperation among agencies that fund, build and operate the transportation system within Black Diamond.

Policy T-22 Traffic Impact Analysis Policy:
Require that a Traffic Impact Analysis (TIA) be prepared for new developments.

The City will require a TIA for new developments that are proposed in the city limits of Black Diamond that generate ten (10) or more vehicle trips in the PM peak hour or are otherwise determined to have the potential for an adverse impact upon the City's transportation system. The study should include site access points, arterial and collector roadways and intersections of arterials and collectors that are impacted by 10 or more PM peak hour trips, and may not be limited to intersections located within the city. The TIA should also identify gaps in the sidewalk, bike lane, and multi-use path networks, review the collision history of study area roadways (i.e., to identify safety issues, and traffic-related fatalities, serious injury, and pedestrian and bicyclist involved collisions), and evaluate roadway connectivity, and access spacing compliance for the study area. The TIA shall be

prepared by the City's traffic engineer and will be accepted after approval by the City.

Policy T-23 Intergovernmental Agency Coordination Policy:
Coordinate planning, construction, and operations of transportation facilities and projects with other governmental agencies.

This policy supports and complements the transportation functions of Washington State, King County, neighboring cities, PSRC, Metro Transit, and other entities responsible for transportation facilities and services within the city.

Policy T-24 Multi-modal Coordination Policy:
Coordinate planning and operation of efficient and varied means of transportation for the City of Black Diamond's transportation system. This will be accomplished by:

1. Encouraging King County Metro Transit, as the provider of transit service in the Black Diamond urban area, to evaluate expanding regular fixed transit service within Black Diamond.
2. Continued coordination between the City of Black Diamond and King County Metro Transit to provide transit connections between Black Diamond and other parts of King County.
3. Supporting development of regional park-and-ride lot facilities by Metro Transit and WSDOT. The City encourages such lots on sites promoting compatible land uses and along primary travel corridors for travel between Black Diamond and other urbanized areas in King and Pierce counties.
4. Providing for pedestrian and bicycle facilities in the City's road system through provisions in the City's design standards.
5. Plan connections between the local trail system and the Cedar to Green Regional Trail to encourage active transportation modes.

City of Black Diamond
Comprehensive Plan - DRAFT

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7.0 TRANSPORTATION ELEMENT – TECHNICAL APPENDIX

7.1 Introduction

This Technical Appendix summarizes the data analysis completed to support the update of the City of Black Diamond's (City's) Transportation Element (Chapter 7) and includes information pertaining to:

- Transportation level of service, including definitions, relationship to concurrency, standards, and methodology;
- The City's existing transportation system, including operating conditions, availability of other modes of transportation, and the functional classification system;
- State, regional, and local transportation plans and improvements;
- Actions needed to meet the level of service standard;
- Travel forecasts used to estimate future traffic volumes based on future growth identified in the City's Land Use Element; and
- Existing and future roadway conditions and recommended transportation improvements.

7.2 Level of Service

A level of service (LOS) standard measures the performance of an existing transportation system and the adequacy of the planned future improvements. Additionally, LOS standards establish the basis for the concurrency requirements in the GMA. Agencies are required to "adopt and enforce ordinances which prohibit development approval if the development causes the LOS on a transportation facility to decline below the standards adopted in the transportation element of the comprehensive plan, unless transportation improvements or strategies to accommodate the impacts of development are made concurrent with development." (RCW 36.70A.070 (6)(b)). Therefore, setting the LOS standard is an essential component of regulating development.

7.2.1 Definitions

Conflict Point: Location within intersection or roadway where two or more road users may share the same space at the same time resulting in potential collision.

Collisions may involve any mode or road user or users including vehicles, bicycles and pedestrians.

LOS is both a qualitative and quantitative measure of roadway operations. LOS, as established by the *Highway Capacity Manual* uses an "A" to "F" scale to define the operation of roadways and intersections for motor vehicles as follows:

LOS A. Primarily free flow traffic operations at desired travel speeds. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Control delays at signalized intersections are minimal.

LOS B. Reasonably unimpeded traffic flow operations at average travel speeds. The ability to maneuver within the traffic stream is only slightly restricted and control delays at signalized intersections are not significant.

LOS C. Stable traffic flow operations. However, ability to maneuver and change lanes may be more restricted than in LOS B, and longer queues, adverse signal coordination, or both may contribute to lower than average travel speeds.

LOS D. Small increases in traffic flow may cause substantial increases in approach delays and, hence decreases in speed. This may be due to adverse signal progression, inappropriate signal timing, high volumes or some combination of these factors.

LOS E. Significant delays in traffic flow operations and lower operating speeds. Conditions are caused by some combination of adverse progression, high signal density, high volumes, extensive delays at critical intersections, and inappropriate signal timing.

LOS F. Traffic flow operations at extremely low speeds. Intersection congestion is likely at critical signalized intersections, with high delays, high volumes, and extensive queuing.

7.2.2 Level of Service and Concurrency

The concurrency provisions of the GMA require that local governments permit development only if adequate public facilities are, or can be guaranteed to be available within six years to support the new development.

The GMA requires each local jurisdiction to identify future facility and service needs based on its LOS standards. To ensure that future development will not cause the City's transportation system performance to fall below the adopted LOS

standard, the jurisdiction must do one or a combination of the following: modifying the land use element, limiting or "phasing" development, requiring appropriate mitigation, or changing the adopted standard.

7.2.3 Level of Service Methodology [Edits to section still forthcoming]

The City has established specific methods to calculate the LOS for evaluating the performance of the roadway intersections and transit service and facilities. This section describes those methods.

Intersection Level of Service

For signalized and unsignalized intersections, and roundabouts, the LOS is calculated using the procedures described in the latest edition of the *Highway Capacity Manual* (2010 edition). At signalized and all-way stop-controlled intersections, and roundabouts, the LOS is based on the weighted average delays for all movements, whereas the LOS for two-way stop-controlled intersections is defined by the weighted average delay for the worst movement.

State Highway Level of Service

1998 amendments to the GMA require local jurisdictions to address state-owned transportation facilities, as well as local transportation system needs in their comprehensive plans. Highways of statewide significance (HSS) are designated by the Washington State Department of Transportation (WSDOT) for interstate and principal arterials that are essential to connectivity between major communities.

WSDOT adopted LOS standards for HSS facilities is LOS D for urban areas (RCW 47.06.140). The LOS target is established for comprehensive plans and for reviewing developer impacts along urban HSS facilities.

WSDOT also analyzes "screen lines" for deficiencies along state routes using a standard of 70% of the posted speed. This screen line analysis allows WSDOT to identify the "most congested" locations along its HSS facilities. A speed of approximately 70% of the posted speed equates to conditions where a highway achieves the maximum throughput of vehicles.

In 2007, the WSDOT added SR 169 to the list of HSS facilities. The State's *2007- 2026 Highway System Plan* indicates that SR 169 is expected to operate below the 70% speed threshold (termed 'operating less than efficiently') during peak hours in 2030.

Transit Level of Service

The GMA (RCW 36.70A) requires communities to also adopt LOS standards for transit routes. The City has established guidelines to monitor the performance of the transit system as follows:

- Encourage King County Metro to expand service as the demand dictates;
- Monitor existing transit facilities to determine if additional routes are needed or if existing headways should be decreased (or frequency increased);
- Monitor the need for park and ride facilities; and
- Develop design standards for bus-pullouts, passenger waiting facilities, and other transit facilities.

Trail Level of Service

The City's 2008 Parks, Recreation and Open Space Plan established guidelines to measure the performance of the trail system. The level of service standard is to has 75 percent of the Black Diamond population within 0.5 miles of a trail facility.

7.2.4 Level of Service Standards

Based on the City Council's recommendations, this plan identifies a LOS standard of LOS D for intersections along State Route (SR) 169 consistent with WSDOT's standard for urban HSS facilities and LOS C for all other arterials and collectors throughout the city. Setting different LOS standards for specific areas is a common practice that accounts for the function and use of the roadways into the acceptable operating conditions.

The City also recognizes how intersection control (i.e., traffic signals, roundabouts, and stop signs) defines LOS. For two-way and one-way stop-controlled intersections, the LOS is defined by the amount of time vehicles are waiting at the stop sign.

Although a substantial volume of traffic can proceed through the intersection without any delays, a small volume at the stop sign can incur delays that would exceed LOS C or LOS D. To avoid mitigation that would only serve a small volume of traffic, the City allows two-way and one-way stop-controlled intersections to operate worse than the adopted LOS standard (see Table 7-1).

Table 7-1. Level of Service Standards

Signalized Intersections	Level of Service
Baker St & SR-169	D
Lawson St & SR-169	D
Ravensdale Road & SR-169	C
Roberts Drive & SR-169	C
Morgan St & Roberts Drive	C
216th Ave SE & SE 288th St	C
Jones Lake Road & SR-169	C

However, the City requires that these instances be thoroughly analyzed from the operational and safety perspectives and the City will individually evaluate these situations to determine when mitigation is appropriate.

These LOS standards are higher than other cities in the area. For example, the Cities of Maple Valley and Covington have adopted a standard of LOS D. The higher LOS standards adopted within Black Diamond for non-HSS facilities indicate the City's desire to minimize congestion and the willingness to identify and fund future transportation improvements. The higher LOS standards adopted within Black Diamond for non-HSS facilities also will increase the size of intersections, and may become an unaffordable standard to maintain.

7.3 Existing Transportation System

The City forms the southeastern edge of King County's urban area. The traffic circulation system within the city is basically the intersection of east west county roads with SR169 through the city, reflective of the original settlement pattern, natural barriers (Lake Sawyer and the Rock Creek Wetland), and lack of substantial growth up to the present. The area's road system consists of a state highway (SR 169), the City's arterials, collectors, and local access roads. Because the grid system is incomplete, many local access roadways are, in effect, long cul-de-sacs. Local access roads are also often narrow by current standards. Although the narrow widths and lack of locations for vehicles to turn-around are a problem for emergency services, the smaller area devoted to roads contributes significantly to the existing rural character of the community and reduces storm water impacts.

The city is bisected by SR 169, a north-south highway, providing both regional access from Renton to Enumclaw and local access. This route is also known as 3rd Avenue within Black Diamond. Along the city's northern boundary, SE 288th Street is an east-west arterial that becomes a City of Maple Valley Street east of Black Diamond. The Roberts Drive arterial provides local east-west access west of SR 169 as well as a link from Black Diamond to the City of Auburn and the Green River Valley employment centers to the west. The Lawson Street/Green River

Gorge Road is an east-west arterial providing local access east of SR 169 as well as access to the rural areas and communities to the east.

The Black Diamond/Ravensdale Road is a north-south arterial linking Black Diamond and Ravensdale and providing a secondary link to SR 516 (Kent-Kangley Road) and a link to Issaquah and SR 18 bypassing Maple Valley. The SE Lake Sawyer Road is a north-south arterial that forms the City's western boundary and also provides a connection to SR 516.

7.3.1 Existing Roadway and Intersection Characteristics

SR 169, within the planning area, is a two-lane principal arterial that generally divides the city into east and west sections. SR 169 serves an area extending between the cities of Renton and Enumclaw, providing both regional connections(to SR 18, SR 516 and Interstate 405, SR 410 and local access.

Posted speed limits along SR 169 vary depending on the amount of development adjacent to the highway. Areas immediately outside the city limits are posted at 50 miles per hour (mph). Within the city limits, legal speeds are reduced to 35 mph from the north City limits to 1st Ave and 50 mph from 1st Ave to to the southern city limits. All cross-streets intersecting with SR 169 are controlled by stop signs.

SE 288th Street is a two-lane road that runs east-west. The road is a minor arterial that changes to SE 291st Street as it approaches SR 169. The road serves City residents north of Lake Sawyer and also serves as the only access for Maple Valley residents living north of SE 288th Street and south of the Burlington Northern Railroad line. SE 288th (turns into291st) Street is stop sign-controlled at SR 169 and 216th Avenue SE on the west end. At all other intersections, the cross-street traffic is stop sign-controlled. The posted speed is 35 mph.

Roberts Drive(Auburn-Black Diamond Road west of city limits) provides access to the City of Auburn and is a two-lane minor arterial. The roadway branches into two facilities near Covington Creek allowing access to the City of Kent (Kent-Black Diamond Road) and Auburn (Auburn Black Diamond Road).

All cross-streets intersecting Roberts Drive are stop sign-controlled. Roberts Drive is controlled by a stop sign at its intersection with SR 169. Posted speeds are generally 40 mph outside the city limits and 25 to 35 mph once inside the city.

Green Valley Road is a two-lane minor arterial that connects SR 169 and Auburn. This street is classified by King County as a collector. The roadway is posted for a maximum speed of 40 mph, but operating speed is constrained to 10 to 15 mph in

certain areas due to its curvilinear horizontal alignment with steep grades. Green Valley Road is stop-controlled at SR 169. It should be noted that the annexation of property adjacent to Green Valley Road in 1995 included a condition that direct transportation access would not occur from the annexed area onto Green Valley Road.

Lake Sawyer Road/224th Avenue SE/216th Avenue SE is a two-lane generally north/south minor arterial that provides access to a predominantly residential area west of Lake Sawyer. The street generally parallels SR 169 between Roberts Drive and SR 516. The roadway is stop sign-controlled at its intersection with Roberts Drive. There are traffic signals at the intersections of 216th Avenue SE/SR 516, 216th Avenue SE/Covington-Sawyer Road, and SE 296th Street/219th Avenue SE. All other cross-street traffic intersections along Lake Sawyer/216th Avenue SE are stop sign-controlled. Posted speeds vary between 35 mph and 45 mph.

Covington-Sawyer Road is a two-lane minor arterial that connects with 216th Avenue SE on the western border of the city. It provides access to the City of Covington, SR 18 and SR 516.

Morgan Street is a two-lane east west collector from Roberts Drive to Railroad Avenue. Railroad Avenue extends Morgan Street as a two-lane collector from Morgan Street southeasterly to SR 169.

Functionally, Morgan Street and Railroad Avenue provide alternative connections between Roberts Drive and SR 169, through the downtown area by either Baker Street or Rail Road Ave. /Jones Lake Road. The intersection of Morgan Street and Roberts Drive is stop sign-controlled on the minor approach (Morgan Street). Jones Lake Road is controlled by stop sign at its intersection with SR 169. The posted speed limit on Morgan Street is 25 mph.

Lawson Street is an east/west minor arterial with its western terminus one block west of SR 169 and continuing east and northeast out of the city. Near the outskirts of the city, the roadway changes to Green River Gorge Road. The arterial provides access between SR 169 and residential developments in the city and rural areas east of the city. The posted speed limit along this route is 25 mph within the city limits. Near Mud Lake, the speed limit increases to 45 mph. Lawson Street is stop-controlled at its intersection with 3rd Avenue (SR 169).

Black Diamond-Ravensdale Road is a two-lane minor arterial linking Black Diamond and Ravensdale and serves as a secondary connection between Kent-Kangley Road SR 169 and provides a connection to the Issaquah/ Hobart Road. The posted speed limit along this road is 45 mph within the city limits. Cross-street traffic along Black Diamond-Ravensdale Road is stop-controlled.

Baker Street (between SR 169 and Railroad Avenue/Morgan Street) is a two-lane arterial collector located in the downtown area of the city that also provides connection to all points west. The roadway provides access to the post office and school; it has a posted speed limit of 25 mph. It is stop sign controlled at SR 169 and Railroad Avenue/ Morgan Street.

All remaining roadways in the city are local roads with two-lane cross-sections. Most local roadways have posted 25 mph speed limits.

7.3.2 Existing Roadway Volumes and Travel Conditions [Edits to section still forthcoming]

Figure 7-1 depicts the City's road network and associated 2015 traffic volumes, which are based on PM peak period turning movement counts collected at each of the 10 intersections within the city and included in the City's concurrency program. These traffic counts were supplemented with available traffic data for SR 169 provided by WSDOT. These PM peak hour volumes were used to evaluate the existing LOS for each intersection, which is summarized in Table 7-2.

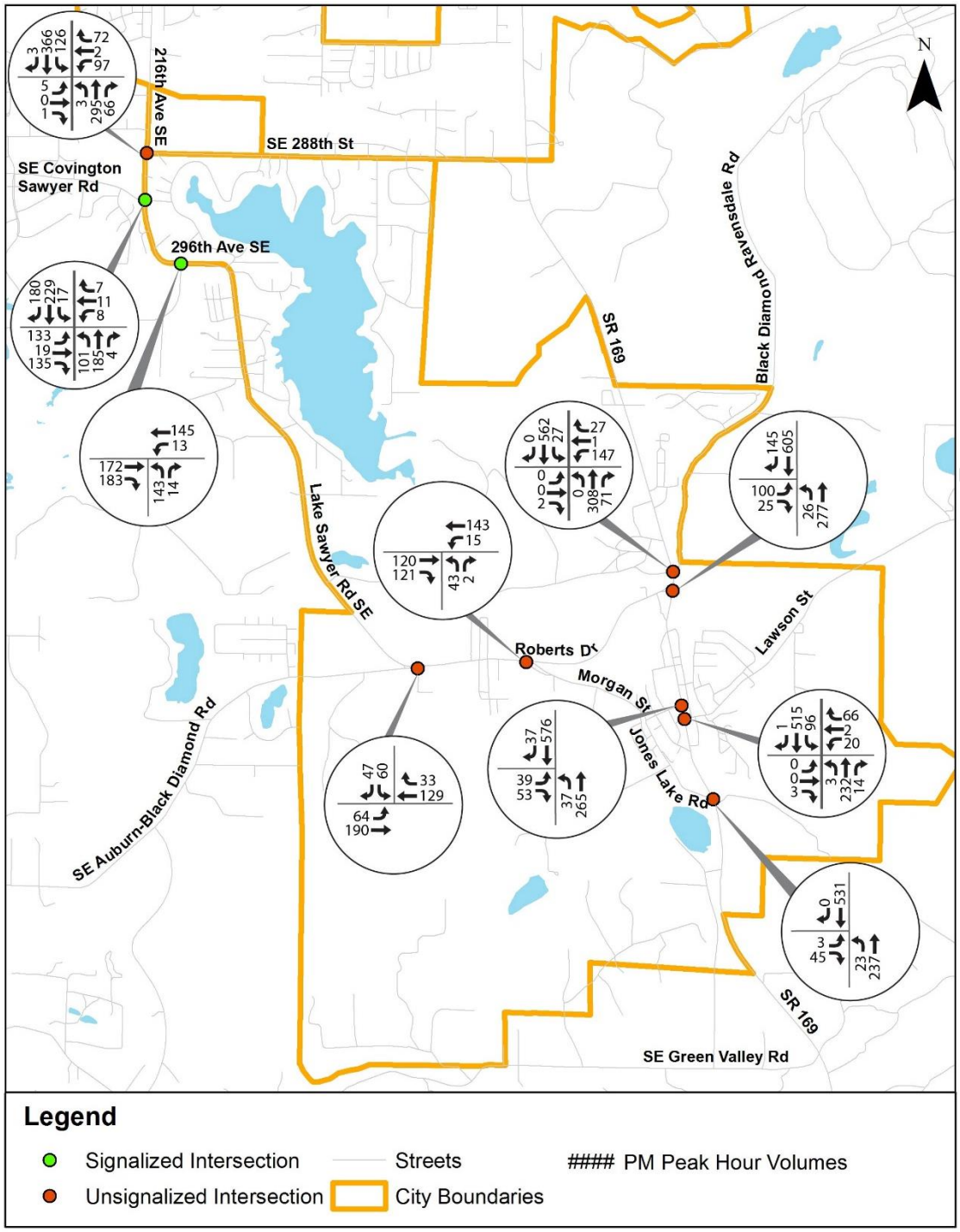


Figure 7-1. Study Area and Existing PM Peak Hour Traffic Volumes

Table 7-2. Existing Level of Service (2015)

Signalized Intersections	Level of Service	Delay (seconds)
SE 296th St/216th Ave SE/SE Covington-Sawyer Rd	B	16
219th Ave SE/SE 296th St/Lake Sawyer Rd SE	B	13
Unsignalized Intersections	**Level of Service**	**Delay (seconds)**
216th Ave/SE 288th St	**D**	**25**
SE Auburn-Black Diamond Rd/Lake Sawyer Rd SE	B	13
SR 169/SE Black Diamond-Ravensdale Rd	**F**	**75**
SR 169/Roberts Drive	**E**	**43**
Morgan St/SE Auburn-Black Diamond Rd	B	11
SR 169/Baker St	C	20
SR 169/Lawson Rd	C	16
SR 169/Jones Lake Rd	B	13

Note: intersections shown in bold do not meet LOS standards

Consistent with the City's adopted LOS standards established in this plan, intersections must operate at LOS D or better along SR 169 or LOS C or better for all other locations. The majority of intersections within the city operate at an acceptable LOS; however two intersections currently operate below their respective standards: SE Black Diamond-Ravensdale Road/SR 169 Roberts Drive/SR 169. For Black Diamond-Ravensdale Road/SR 169, the primary contributor to the delay is the westbound left movements from the minor street, while for Roberts Drive/SR 169 the primary contributor is the eastbound left movements.

7.3.3 Other Modes [Edits to section still forthcoming]

Rail Service

Presently, there are no railroads located within the city limits. Rail lines that historically provided service from Seattle through Renton to the city have been decommissioned. The last coal trains left Black Diamond in 1969. The old rail line passed through town in a north-south direction paralleling Railroad Avenue.

Public Transportation Service

The City currently has a low population density and is distant from major Puget Sound urban employment centers. Public transportation service is available but is limited. Metro currently provides one fixed route, Route 143 with scheduled service between Black Diamond and Enumclaw, Maple Valley, and Renton. This route also functions as Metro's Demand Area Response Transit (DART) Route 907 (formerly Metro Route 149). DART is contracted fixed-route transit service operated in King County using smaller transit vehicles with the flexibility to perform a limited number of off-route deviations upon request. Within Black Diamond, DART Route 907 flexible

service is provided in the area south of Roberts Drive, east of Morgan Street, north of Backer Street, and west of 3rd Avenue.

Table 7-3 summarizes existing transit services in the city. Route 143 provides 20 to 30 minute service during commute hours with service to from Black Diamond to downtown Seattle in the morning and from downtown Seattle to Black Diamond in the evening. DART Route 907 provides 60 to 90 minute service during off-peak hours.

Table 7-3. Summary of Existing Transit Service

Route	Beginning Location	Ending Location	Headway Range (minutes)	Duration of Service*
143	Downtown Seattle	Black Diamond (via Renton)	20-30	5:32 PM-7:08 PM**
143	Black Diamond	Downtown Seattle (via Renton)	20-30	5:28 AM-6:52 AM
DART 907	Renton	Enumclaw (via Black Diamond)	60-90	7:00 AM-4:02 PM
DART 907	Enumclaw (via Black Diamond)	Renton	60-90	7:50 AM-4:52 PM

*Service to Black Diamond at 3rd Avenue & Baker Street
**Last run from Black Diamond ends at Renton Transit Center and does not serve downtown Seattle

A park and ride lot located at the Masonic Lodge at 3rd Avenue/Baker Street provides 30 parking spaces for weekday parking for transit users. There are two other facilities in Maple Valley; the Maple Valley Park and Ride is located at SE 231st Street/SR 169 approximately 6.6 miles to the north of the Black Diamond Park and Ride and provides 122 spaces and the Maple Valley Town Square Park and Ride is located 4.1 miles north and provides 97 spaces.

The existing transit service meets the City's defined LOS criteria. However, in the future, additional service as well as provisions for bus pullouts, bus stops, and park and ride lots will become necessary, as the population increases.

Surface Freight Transportation

There are no freight terminal facilities located in the city. However, truck operations related to mineral extraction, logging and landfill commonly use the road network, primarily on SR 169.

Pedestrian Facilities

There are somewhat limited sidewalk facilities along the arterial and collector road network within the city. While adopted City road construction standards now require sidewalks on all new roads, many of the roads in areas of town that were developed prior to the 1980's were constructed to rural standards with gravel shoulders or no shoulder at all. The following arterials have sidewalks: SR 169 has a short stretch in the north commercial area on the west side and about 2200 feet in the downtown area on the east side of the street; and 216th Avenue SE between SE 288th Street and Covington-Sawyer Road on the west side and Roberts Drive on the south side from Brukners way to the library. Collector Streets, Morgan Street and Baker Street have a sidewalk on one side from Roberts Drive to SR 169.

Several subdivisions developed in the last 20 years were developed with sidewalks including: King County Housing Project , The Ridge, Diamond Glen, Morgan Creek, Eagle Creek, Lawson Hills Estates

Bicycle Facilities

No formal bicycle network exists within the city. Bicyclists currently use the existing roadways as informal routes, although there are no markings or signs to support the street usage for bicycles. City residents have voiced a desire to include bicycle facilities within the transportation environment. Recently the City has widened the westbound lane of Roberts Drive to provide for a 14 foot wide shared bike lane on Roberts Drive from Brukners Way to just past the library.

Trail Facilities

The city has an adopted 2011 Trails Plan that outlines strategies to expand the local trail system. There are currently two multipurpose King County trails that are in the planning and engineering phases to provide combined hike, bike and horse trail opportunities in the area. The Cedar to Green River Trail is a 3.7 mile multipurpose trail following an abandoned railroad corridor north of Maple Valley to SE Kent-Kangley Road. The next two phases of the the Cedar Green trail will extend through Black Diamond along Ravensdale Creek, through the City Lake Sawyer Park and then south along the western city limits to the top of the Green River Gorge where it will connect with 218th Ave SE as access to the Green River. The Cedar River Trail is a paved 17.3 mile multipurpose trail following an abandoned railroad corridor from Lake Washington in downtown Renton to Landburg Park on Summit Landsburg Road.

Shoreline/Water Transportation

There are no navigable waterways for freight or passenger transportation in the Black Diamond area. The region's primary river, Green River, is mainly used for recreational purposes.

Aviation Transportation

The nearest major airport facility is SeaTac International Airport located approximately 22 miles to the west. The City does not have a local airport; however, a privately owned field with a runway length of 1,500 feet is located along Roberts Drive west of SR 169.

Nearby public-use airports include Kent's Crest Airpark (6 miles), the Auburn Municipal Airport (14 miles) and the Renton Municipal Airport (18 miles).

Parking Facilities

On-street parking is presently provided informally throughout the city in conjunction with the local street network. Parking is restricted on SR 169. Additional public parking is currently needed, particularly in Old Town, and near the SR 169 corridor for weekend bicyclists driving to the city to ride, and for weekday commuters who wish to use transit.

7.3.4 Functional Classification System [Edits to section still forthcoming]

Roadway classifications define the character of service that a street is intended to provide. The City has classified its roadway system and adopted roadway design standards based on the roadway's functional and physical characteristics. The functional classification system is a hierarchical system providing for the gradation of traffic flow from an access function to a movement function. The functional classification system for the City is described in Table 7-4 and the accompanying roadway design standards are summarized in Table 7-5.

The following list provides the planned classifications by roadway.

Principal Arterials

- SR 169

Minor Arterials

- SE 288th Street
- Roberts Drive
- North Connector*

- North-South Connector*/Abrams Road
- Black Diamond-Ravensdale Road
- Lake Sawyer Road
- Pipeline Road*
- Lawson Connector*

Collectors

- Annexation Road*
- Southeast Loop Connector*
- Morgan Street
- Baker Street (west of SR 169)
- South Connector*
- Railroad Avenue (Jones Lake Road)
- Lake Sawyer Extension*

Local Access

- All remaining roadways within the city

* New Roadways (for location, see Figure 7-2) Summaries of the design criteria and characteristics for these different classifications of roadways is provided in Tables 7-3 and 7-4. These tables serve as only a general guide for the different classifications and the City's Road Design Standards should be referenced for further clarification.

Table 7-4. Functional Classification System Definition of Roadway Functions

Classification	Function	Continuity	Spacing (miles)	Direct Land Access	Minimum Intersection Spacing	Speed Limit (mph)	Parking	Comments
Principal Arterial	Primary – Intercommunity and intrametro area traffic movement Secondary – land access	Required	1/2 in CD; 1 in urban residential; 1-5 in suburban and fringe	Limited – major generators only	1/2 mile	35-45 (fully developed areas)	Prohibited	
Minor Arterial	Primary – Intercommunity and intrametro area traffic movement Secondary – land access	Required	1/8 – 1/2 in CBD; 1/2 – 1 in urban; 1-3 in suburban and urban fringe	Restricted – some movements may be prohibited; number and spacing of driveways controlled	1/4 mile	30-35	Generally Prohibited	Backbone of the street system
Collector	Primary – collect/distribute traffic between local roads and arterial system; Secondary – land access; Tertiary – interneighborhood traffic movement	Desirable	Not less than 1/4 mile from higher classified arterials	Safety controls; limited regulation	300 feet	25-30	Limited	Through traffic should be discouraged
Local	Land Access	None	As needed	Safety controls only	300 feet	25	Permitted	Through traffic should be discouraged

Table 7-5. Road Classifications and Development Standards

Classification	Minimum Right-of-Way (feet)	Minimum Paved Width (feet)	Other
Principal Arterial	60-100	38-62	Sidewalk, extra lane width for bicycles, planting strip
Minor Arterial	54 (2 lane) 66 (3 lane)	30 (2 lane) 40 (3 lane)	Sidewalk, extra lane width for bicycles, planting strip
Collector Road	60-72	28 (2 lane) 40 (3 lane)	Sidewalk, extra lane width for bicycles, panting strip
Local Access (Industrial)	50	28	Sidewalk, planting strip
Local Access (Commercial)	60-68	36	Sidewalk
Local Access (Residential)	48-60	22-32	Sidewalk, planting strip

Source: 2009 City of Black Diamond Engineering and Design Standards

7.4 Current Transportation Plans and Improvements

The City is working to identify the near-term improvements that address transportation needs for its community.

7.4.1 Planned Roadway Improvements [Edits to section still forthcoming]

The current planned roadway improvements consist of projects programmed by WSDOT, King County, and the City.

WSDOT & SR169

WSDOT has jurisdiction over SR 169 through the city. WSDOT completed a Route Development Plan for SR 169, the plan has not been completed. A conversation with WSDOT's Urban Planning Office and review of available meeting minutes of the SR 169 Working Group, indicate the potential to widen SR 169 to as many as six lanes from Jones Road (in Maple Valley) to I-405 and four to five lanes from SE 291st Street north to Maple Valley. Within the city, WSDOT has proposed minor widening to allow for a two-way-left turn lane north of the historic core of the city and a truck climbing lane south of Green Valley Road. For purposes of this plan, the City is assuming a 3-lane section for SR 169 through the old town area and through the north commercial area , with potential widening at intersections to accommodate turn lanes. The City is also planning long term for further widening (4 or 5 lanes north of Roberts Drive to the City's future north connector and is seeking additional right of way through dedication upon major development or redevelopment where the right of way width is less than 100 feet.

King County

King County has identified two future improvements in the Tahoma/Raven Heights/North Soos Creek Planning Area, which includes Black Diamond (detail is in the County's *2012 Transportation Needs Report*). The County's list of improvements in or around the city is shown in Table 7-6.

Table 7-6. King County Identified Black Diamond Area Facility Improvement Needs

Project #	Project Action	Location	Priority	Cost
NM-5051	Provide non-motorized facility	Black Diamond-Ravensdale Rd from SR 169 to Kent-Kangley Rd	High	$2,327,000
RC-142	Reconstruction of existing 1.3-mile roadway segment	SE Green Valley Rd from 243rd Ave SE to SR 169	High	$1,633,000

Source: 2012 King County Transportation Needs Report

City of Black Diamond

Figure 7.2 identifies the critical future road network to fill in the street grid and provide alternative east west as well as north south corridors. Lake Sawyer, Ravensdale Creek, and the Rock Creek Wetland prevent other connections and extensions of a grid system. The City has identified several road improvements shown in Table 7-7. The City maintains a Six-year Transportation Improvement Program (TIP). The Six-year program proposes improvements to existing substandard roads and includes repairing and overlaying existing roadways, paving gravel roadways, constructing sidewalks, and widening roadways. At the time that the Six-year Transportation Improvement Program was adopted only the capacity adding projects that the City was going to be participating in were included. So in addition to the projects identified in the 6 year TIP there are capacity adding projects that are planned for the Master Planned Developer to construct as identified in Table

Table 7-7. Black Diamond Six-Year Transportation Improvement Program (2016 – 2021)

Rank	Year	Improvement	From	To	Type of Improvement	Length in Miles	Estimated Cost	Funding
1	2017	General Street Improvement (CIP Project T1)	N/A	N/A	Use for opportunities to leverage private funds, short overlays, chip Sealing, crack sealing, patch work, addressing minor safety problems	N/A	$30,000/year; $180,000 total	Local City Funds
2	2017	Roberts Drive Rehabilitation, phase 1 (CIP Project T2	Bruckners Way	City Hall	Leveling, overlay, sidewalks, pedestrian lighting, widening	0.28	$100,000	Grant /TIB, Developer Mitigation, Local City Funds
3	2017	232nd Ave. SE Overlay or Chip Seal (CIP Project T9)	SE 288th St.	End of road	Chip seal, excluding portion from SE 293rd to back of Pond @ Greenbrier	0.77	$100,000	Grant/TIB, Local City Funds
4	2017	New Arterial "Annexation Rd" (CIP Project T3)	Lk Sawyer Rd	Across Roberts Drive south to A2	New Street Grid Capacity	0.7	$2,900,000	Developer Funded
5	2017	Lake Sawyer Road Extension (CIP Project T4)	Roberts Drive	Annexation Rd.	New Street Grid Capacity	0.5	$1,800,000	Developer Funded
6	2018	Roberts Drive Rehabilitation, phase 2 (CIP Project T8)	City Hall	King County Library	Grind, patch, replace panels, crack sealing, shoulder reinforcement	0.23	$200,000	Pavement Preservation Grant, Local City Funds
7	2018	Lawson Connector (CIP Project &16)	SR 169	Lawson Street	New Street Grid Capacity	0.6	$3,200,000	Developer Funded

8	2016	King County Housing ADA Improvements (1st Ave.)	Baker St.	Approx. 250' south of Baker St.	Remove existing sidewalk, install new sidewalk and curb ramps	0.10	$155,000	CDBG Grant
9	2016	Grant Matching Fund	N/A	N/A	Matching funds for grants	N/A	$40,000/year; $240,000 total	Local City Funds
10	2019	Lawson Street Sidewalk, Ph. II (CIP Project T14)	6th Ave.	Newcastle Dr.	5-foot sidewalk on the north side of Lawson Street	0.19	$356,000	Grant/Safe Routes to School, Developer Mitigation
11	2019	Roberts Drive/SR 169 Intersection Improvements (CIP Project T7)	N/A	N/A	Two lane Roundabout or Signalize Intersection	N/A	$7,777,000	Developer Mitigation and Grant
12	2017	Jones Lake Road	SR 169	Railroad Ave.	Patching and overlay	0.29	$122,000	Grant/TIB, Local City Funds
13	2017	228th/224th/216th Chip Seal	SE 312th St.	Covington-Sawyer Road	Patching and chip sealing (excluding in front of Kentlake Highlands & Fire Station)	1.46	$129,000	Grant/TIB, Local City Funds
14	2019	Ravensdale / 169 interim intersection improvements (CIP Project T17)	N/A	N/A	Roundabout or Signalized intersection	N/A	$700,000	Developer Funded and Possible Grant
15	2020	Roberts Drive Rehabilitation, phase 3	King County Library	SR 169	Widen and overlay, sidewalk, street lighting and stormwater improvements	0.56	$1,700,000	Grant / TIB, Local City Funds

16	2017	Commission Sidewalk	Railroad Ave. at Museum	Commission St. behind Museum	Install decorative sidewalk and concrete sidewalk, ADA improvements	0.04	$150,000	Grant/Pedestrian, Museum In-Kind Contribution, Local City Funds
17	2021	Sidewalk Extensions & Bike Lanes	N/A	N/A	Sidewalk extensions and roadway widening to add bike lanes	N/A	$400,000	Grant Funds
18	2020	North Connector (CIP Project T18)	169	South to new commercial and multi-family housing	New minor arterial connection to SR 169 with signal	0.25	$1,000,000	Developer Funded
19	2020	Intersection Roberts Drive & Lake Sawyer Extension (CIP Project T19)	N/A	N/A	New Roundabout	N/A	$1,000,000	Developer Funded
20	2021	Ravensdale / 169 intersection (CIP Project T20)	N/A	N/A	Intersection realignment & signal or roundabout	N/A	$8,000,000	Developer Funded & Grant
21	2021	Intersection Roberts Drive & Annexation Road (CIP Project T21)	N/A	N/A	New roundabout	N/A	$1,000,000	Developer Funded
22	2019	Morgan Creek Neighborhood Roads Preservation	N/A	N/A	Seal Coat	1.19	$97,000	Local City Funds
23	2022	Intersection 216th Ave SE & SE 288th Street (CIP Project T22)	N/A	N/A	Signalization or Roundabout	N/A	$1,400,000	Developer Funded
						Total	$32,706,000	

7.5 Actions Needed to Meet Level of Service Standard [Edits to section still forthcoming]

Two intersections operate below their respective LOS standards under existing conditions: SE Black Diamond-Ravensdale Road/SR 169 and Roberts Drive/SR 169. Intersection control (e.g., a roundabout or traffic signal), additional turn lanes and roadway widening improvements would be needed at these locations to meet acceptable LOS standards. These actions are included in the 2015-2021 improvements listed in Table 7-7. The design and permitting of these intersections is already underway s required to be constructed by the City's Development agreement with the Master Planned Developer in the City.

7.6 Travel Forecasts

The City of Black Diamond's existing travel demand models were updated to reflect the current and future level of development to be in place by the year 2035 both within the City and the Puget Sound Regional Council (PSRC) planning area. The land use data was obtained from PSRC and refined with city staff input to account for the approved Master Plan Developments (Lawson Hills and The Villages) and other development potential. The travel forecasts were based on the following land use projections:

- year 2014 - 4,361 population, 1,627 households and 561 jobs
- year 2035 – 19,262 population, 7,674 households and 3,709 jobs

The existing travel demand models were also updated to reflect the current and future transportation investments programed to be in place by the year 2035 both within the City and the Puget Sound Regional Council (PSRC) planning area.

7.6.1 Future Land Use and Transportation Concepts

The City intends for the Black Diamond Comprehensive Plan Transportation and Land Use Elements work together to meet the needs of increasing local traffic-related impacts. Regional traffic growth on SR 169 will continue as long as vehicular capacity is available on that route. Similar conditions would be expected on other arterials that facilitate regional traffic. The need for planned transportation improvements will depend on the location, density and timing of the area where development occurs. The construction of the needed and planned capacity adding transportation improvement projects will occur as required by the

City's Development Agreement with the Master Planned Developer and periodic traffic monitoring and modeling dictates. At the expiration of the Developer Agreement in 10 to 15 years the implementation of transportation capacity projects may shift to a City funded transportation capacity program with traffic impact fees and may vary depending on market forces, availability of utilities and actions taken by the jurisdiction.

Forecast Horizons

The TIP is linked to the City's planned land uses and the anticipated traffic volumes. There are two forecast horizons presented in the comprehensive transportation plan:

- Short-Term: 2015 to 2021
- Long-Term: 2022 to 2035

The short-term forecast coincides with the City's TIP and represents current growth trends and expected short term development within the city. Future levels and timing of land development were based on conversations with City staff, local land owners, and development firms. Changes to development patterns and priorities may vary the need for and the completion order of the transportation improvements. The long-term traffic forecast represents the future growth in housing, employment and background traffic that will produce the expected 2035 traffic projections. The City's Development Agreement with the Master Planned Development (MPD) Developer requires updates at the beginning and middles of the three phases of development so as to program the timing of transportation capacity adding projects to come on line as needed.

7.7 Transportation Improvement Recommendations

This section of the transportation plan establishes intersection and roadway improvement programs for the periods 2015 to 2021 and 2022 to 2035.

7.7.1 Arterial and Collector Roadway Improvements [Edits to section still forthcoming]

A conceptual configuration for the future roadway system in 2035 is shown in Figure 7-2. New arterial and collector roads include: Pipeline Road, Annexation Road, Lake Sawyer Extension, Lawson Connector, South Connector, Southeast Loop Connector, and North Connector.

The proposed roadways shown in Figure 7-2 are to show the general route and connections of future roadways and are not specific to a design level locations. The intent is to show a basic route, connections and concept and the exact locations will be determined after engineering and environmental review. These new roads will distribute future traffic growth throughout the City that would otherwise have been concentrated on the few existing major arterials.

The Pipeline Road will provide an east / west alternative to Roberts Drive and will enhance the circulation and access for industrial development. The North Connector will provide a north / south alternative to SR 169 in the middle of the City. The Annexation Road would provide north-south and east-west circulation through the southwestern portion of the City's Expansion Area. Other new facilities are proposed to improve general circulation.

Agency Coordination

Improvements on SR 169 will require coordination with WSDOT. The City has adopted a Gateway Overlay District from the North City boundary to Roberts Drive regulating how development will occur along the roadway including separated meandering sidewalks within the front setbacks of the properties. The Comprehensive Plan should include a vision for SR 169 through the city. The City could use the vision to begin discussions with WSDOT to coordinate the future design of the road. Then as development occurs along the highway, improvements (such as lanes, sidewalks, bike lanes, median planting, turn pockets, driveways, and signals) could be implemented consistent with the overall design. The City will continue to participate in the implementation of or future updates to the SR 169 Route Development Plan (WSDOT, 2007) and as well as any other regional transportation planning efforts.

Intersection Control Requirements

Although the construction of new collector roads and connecting arterials will help distribute traffic, key intersections will warrant traffic control and intersection improvements to meet the City's LOS standards in the future. The City identified roundabout-controlled intersection improvement as the preferred solution to address the increasing turning movements at intersections. Where it is shown that the traffic movements cannot be handled and or the site conditions will not allow for a roundabout, signalization of the intersection can be considered. The necessity for and location of intersection improvements would be established at the time development occurs. The City will look to avoid locating signals in its historic downtown area.

Many intersection control improvements are expected and warranted during the 20-year planning period. The improvement for roads and intersections will be implemented incrementally with developments as traffic volumes increase.

Figure 7-2. 2035 Roadway Network Concept

7.7.2 Roadway Conditions – 2021 [Edits to section still forthcoming]

This plan anticipates future conditions for the year 2021 to derive the Six-year TIP. The analysis includes the roadway projects identified in the Six-Year 2015-2021 TIP plus additional improvements identified in the Master Plan Development needed to ensure that the roadway system meets the City's adopted LOS standards.

2015 to 2021 Recommendations

Development and increasing traffic from neighboring jurisdictions will increase traffic volumes throughout the city. Table 7-8 and Figure 7-4 list the 2015 to 2021 recommended actions. The transportation improvements recommended are expected to meet the projected travel needs throughout the city.

Table 7-8. Transportation Improvements (2016-2021)

Improvement	Action	Comments
A1, Annexation Road	Construct City-standard collector roadway	Provides access to new development
A2, Lake Sawyer Extension	Construct City-standard collector roadway	Provides access to new development
A3, Lawson Connector	Construct City-standard minor arterial roadway; realign across from Roberts Drive	Provides access and serves as vital connection to areas to the east of SR 169
A4, Black Diamond-Ravensdale Realignment	Roadway realignment	Realigns Black Diamond-Ravensdale Road north of existing intersection with SR 169
A5, North Connector	Construct City-standard minor arterial roadway	Provides access and improves circulation in area
SR 169/Black Diamond-Ravensdale Road	Roundabout and Channelization Improvements	Improves intersection operations
SR 169/Roberts Drive/Lawson Connector	Roundabout and Channelization Improvements, connect to Lawson Connector	Improves intersection operations
SR 169/SE North Connector	Roundabout and Channelization Improvements	Improves intersection operations for new access point

Roberts Drive / Lake Sawyer Road	Roundabout and Channelization Improvements (Now completed)	Improves intersection operations
Roberts Drive/Annexation Road	Roundabout and Channelization Improvements	Improves intersection operations
216th Avenue SE/SE 288th Street	Roundabout and Channelization Improvements	Improves intersection operations
Existing Roadways	Widen/Pave/Overlay	Per Six-Year TIP

Level of Service – 2021

With the completion of the recommended 2016 to 2021 projects with the addition of the projected traffic levels from new development, intersections within the city would generally meet the LOS C and LOS D standards.

Figure 7-3 2021 PM Peak Hour Traffic Volumes and Roadway Network

Figure 7-4 Transportation Improvements (2016-2021)

Roadway Conditions - 2035

The traffic volumes anticipated for the year 2035 are depicted in Figure 7-5. The City expects that additional arterial roads will be needed in the planning area. SR 169 and Roberts Drive will continue to carry the largest volumes of traffic. The Morgan Street and the Railroad Avenue connection between Roberts Drive and SR 169 would serve as a prominent collector road.

2022 to 2035 Recommendations

Future transportation recommendations for the 2022 to 2035 time horizon are shown in Table 7-9 and Figure 7-6. The program improves existing facilities, provides connections to "fill-in" the existing system, and constructs new facilities to meet the projected travel needs throughout the city.

Table 7-9. Transportation Improvements (2022-2035)

Improvement	Action	Comments	Cost
A1, Annexation Road (Completed in 2017-2021)	Construct City-standard collector roadway from Robert's Drive to approx. on SR (1.5 miles)	Provides access to new development	$2,900,000
A2, Lake Sawyer Extension (Completed in 2017-2021)	Construct City-standard collector roadway	Provides access to new development	$1,800,000
A3, Lawson Connector (Completed in 2018-2021)	Construct City-standard minor arterial roadway; realign across from Roberts Drive.	Provides access and serves as vital connection to areas to the east of SR 169	$3,200,000
A4, Black Diamond-Ravensdale Realignment (Completed in 2017-2021)	Roadway realignment	Realigns Black Diamond-Ravensdale Road north of existing intersection with SR 169	$8,000,000
A5, North Connector (Completed in 2017-2021)	Construct City-standard minor arterial roadway	Provides access and improves circulation in area	$1,000,000
A6, Pipeline Road	Construct City-standard minor arterial roadway	Provides alternative east-west arterial to	$11,600,000

		Auburn-Black Diamond Road	
A8, South Connector	Construct City-standard collector roadway	Provides access to new development and improves circulation in area	$7,560,000
A9, SE Loop Connector	Construct City-standard minor arterial roadway	Provides access and serves as vital connection to areas to the east of SR 169	$7,125,000
SR 169th Improvements	Widen to 4 lanes from Roberts Drive to north City limits	Improves intersection operations	$5,875,00
SR 169/Roberts Drive	Two lane Roundabout/Signal and Channelization Improvements, connect to Lawson Connector	Improves intersection operations (on short-term list)	$7,777,000
SR 169/Black Diamond-Ravensdale Road	Roundabout/Signal and Channelization Improvements	Improves intersection operations (on short-term list)	$8,000,000
North Connector/SR 169	Roundabout/Signal and Channelization Improvements	Improves intersection operations (on short-term list)	$1,000,000
SR 169/SE 288th Street	Roundabout/Signal and Channelization Improvements	Improves intersection operations (on short-term list)	$630,000
SR 169/Baker Street	Roundabout/Signal and Channelization Improvements	Improves intersection operations	$630,000
SR 169/Lawson Street	Roundabout/Signal and Channelization Improvements	Improves intersection operations	$630,000
SR 169/Railroad Avenue/SE Loop Connector	Roundabout/Signal and Channelization Improvements	Improves intersection operations	$630,000
SR 169/South Connector	Roundabout/Signal and Channelization Improvements	Improves intersection operations	$630,000

SR 169/SE Green Valley Road	Roundabout/Signal	Improves intersection operations	$630,000
Roberts Drive/Morgan Street	Roundabout/Signal	Improves intersection operations	$630,000
Roberts Drive/Lake Sawyer Road Extension	New Roundabout/Signal and Channelization Improvements	Improves intersection operations (on short-term list)	$1,000,000
Roberts Drive/Annexation Road	New Roundabout/Signal and Channelization Improvements	Improves intersection operations (on short-term list)	$1,000,000
Lake Sawyer Road/Pipeline Road	Roundabout/Signal and Channelization Improvements	Improves intersection operations	$690,000
216th Avenue SE/SE 288th Street	Roundabout/Signal and Channelization Improvements	Improves intersection operations (on short-term list)	$1,400,000
SE 288th Street/232nd Avenue SE	Roundabout/Signal	Improves intersection operations	$630,000
North Connector/Pipeline Road	Roundabout/Signal	Improves intersection operations	$630,000
North-South Connector/Roberts Drive	Roundabout/Signal	Improves intersection operations	$630,000
North-South Connector/Morgan Street	Roundabout/Signal	Improves intersection operations	$630,000

Note: The projects listed identify needed facilities within the City if the project growth takes place during the 20-year period. New capacity adding projects will be the responsibility of the project's developer to design and construct to meet the demands of the new growth within the City according to the Development Agreement with the City or through the City's SEPA process. The City's role is monitoring, review and collecting a proportionate share of mitigation fees from in fill development for affected intersections. New development will also be responsible for providing on-site roads, trails, sidewalksand circulation, which is not identified in the TIP.

Figure 7-5 2035 PM Peak Hour Traffic Volumes and Roadway Network

Figure 7-6 Transportation Improvements (2015-2035)

Level of Service–2035

With the listed improvements for 2021 to 2035, the City's arterial and collector road system all roadways and intersections would operate within an acceptable LOS except for 216th Ave SE / SE Covington Sawyer Rd. Table 7-10 indicates the intersection LOS operations within the City for 2035. With the intersection improvements described in Table 7-, two intersections would not meet the City's LOS C standard. The 216 Avenue SE/SE Covington-Sawyer Road intersection would operate at LOS F and the 216th Avenue/SE 288th Street intersection would operate at LOS F. The traffic volume growth at these locations appears to be primarily from regional growth outside Black Diamond. It is recommended that the City coordinate with King County, City of Covington and Maple Valley to improve connectivity outside the City of Black Diamond to assist with this problem.

Table 7-10. Future Intersection Level of Service Summary (2035)

Signalized Intersections	Level of Service	Delay (seconds)
216th Ave SE/SE Covington-Sawyer Rd	F	176
219th Ave SE/SE 296th St	A	8
Unsignalized Intersections	**Level of Service**	**Delay (seconds)**
216th Ave/SE 288th St	F	96
Roberts Drive/Lake Sawyer Rd SE	A	8
SR 169/SE Black Diamond-Ravensdale Rd	C	16
SR 169/Roberts Drive/Lawson Connector	A	9
Roberts Drive/Morgan St	A	8
SR 169/Baker St	A	6
SR 169/Lawson Rd	A	6
SR 169/Jones Lake Rd	A	8

7.7.3 Public Transportation [Edits to section still forthcoming]

Metro is expected to continue the one existing transit route into the 2021 horizon year depending on ridership levels and available funding. Service frequency may be increased, however, depending upon demand in the City and Maple Valley and Enumclaw areas. By the 2035 forecast year, additional park-and-ride facilities and transit service may be needed along SR 169. Other transit facilities may be necessary to serve new residential and employment within the City, specifically growth in the Master Plan Developments. The likely locations would be along Roberts Drive or Lake Sawyer Road. The City MPD's Development Agreement identifies a park and ride facility within walking distance of the highest density of the Master Planned Development.

7.7.4 Pedestrian and Bicycle Facilities [Edits to section still forthcoming]

Sidewalks, walkways, and bicycle paths are integral parts of road design, as they are typically located within the roadway right-of-way. Sidewalks should be located on roads providing access to downtown areas, schools, parks, shopping centers, office buildings, and along transit

routes. Enhanced sidewalk design standards should be applied by the City to address areas with high pedestrian activity, to increase pedestrian comfort and to allow for street plantings.

Bicycle lanes or paths are especially useful where bicycle traffic is high; especially near parks, schools, and other uses generating bicycle traffic. Bicycles can sometimes be accommodated without a bicycle lane on low volume local or collector roads. the City's standard of wider shared auto and bicycle lanes on arterials and collectors in time should address the need for a continuous linked facilities for bicycles.

Bicycles are not appropriate on sidewalks designed for pedestrians. In low volume areas where bicycles and pedestrians share the sidewalk, an 8 to 10-foot-wide path is needed. In areas with high bicycle traffic volumes, a separate 5-foot bicycle path is needed.

The City recognizes the importance of pedestrian and bicycle facilities for recreation and commuter uses. The trail system is a major component of the City's proposed non-motorized transportation system. The Black Diamond Trails Plan (2011) proposes several expansions to the local trail system with multipurpose trails, off-road hiking trails, off-road mountain biking trails and horse trails. The City's Trail Plan may need to be updated to insure adequate local connections to the major Regional Cedar to Green King County multi-purpose trail that is currently in preliminary design.

Recommendations

The City has added to the sidewalk system significantly in recent years. However, north south linkages and connections to the future regional trail will be needed. Figure xxx shows the current extent of the sidewalk system. The City road construction standards require sidewalks on all new roads. It is recommended that sidewalks, walkways, or trails be constructed with or along all new or reconstructed collectors, minor arterials and on most local access roads as appropriate within City limits.

In the old portions of the City developed prior to the 1980's the roads are narrow, the right of way widths are narrow, the roads serve small pockets of development and carry very little traffic. The citizens in these areas walk on or along the existing roads sharing the roadways with vehicles. It is recommended that the City consider formalizing this vehicle and pedestrian shared facility practice with the assistance of a traffic engineer examining speeds, signage and road improvements and adopting standards and ordinances to establish and facilitate this reasonable accommodation for pedestrians. Reconstruction of existing local access roads are very difficult to fund, particularly if sidewalks are included. The older neighborhoods would benefit from reconstruction of the roadways within the existing right of way and roadbed as City funding would be greatly extended bringing reinvestment to these neighborhoods much quicker.

There is not a system of bicycle paths or lanes in the City. New roadways will include bike lane provisions along arterial and collector facilities in the City. It is recommended that bike lanes or

widened lanes for share use be constructed along existing arterial and collector roadways in the future when they are scheduled for rehabilitation or reconstruction.

As stated in the transportation policies (T-8), the City encourages the development of a network of off-road facilities for non-motorized travel. The City should seek these facilities in connection with new development and should attempt to identify potential off-street bicycle routes (Class I) for cyclists wherever sufficient public demand and space can be made available.

The recommended non-motorized facilities in this plan will have a positive impact on the transportation system. The plan's support for bicycle facilities would also help encourage alternatives for shorter length trips.

7.7.5 Transportation Demand Management Strategies [Edits to section still forthcoming]

Transportation Demand Management (TDM) is a term encompassing a broad range of measures designed to promote alternatives to the single-occupant vehicle (SOV). By promoting these alternatives, mobility can be maintained without expanding the capacity of the road network.

TDM strategies generally include increased public transportation service, ride-sharing programs and other transportation systems management strategies, such as improved signal coordination and timing.

Commute Trip Reduction

Washington State's Commute Trip Reduction Law (RCW 70.94.521) requires all employers with more than 100 full-time employees in counties with populations greater than 150,000 (including King County) to implement a commuter trip reduction (CTR) plan. Although presently there are no employers within the City that employ more than 100 employees, anticipated employment growth may necessitate a CTR program in the future.

Reducing congestion includes strategies to reduce demands on the transportation system. Some elements of a CTR plan include:

- provision of preferential parking or reduced parking charges, or both for high-occupancy vehicles (HOVs) and institution of paid parking for single occupant vehicles;
- provision of commuter ride matching services to facilitate employee ridesharing for commute trips;
- provision for subsidies for transit passes or employee use of HOVs;
- vehicles for car pooling and van pooling;
- permitting flexible work schedules to facilities employer's use of transit, car pools, and van pools;
- cooperation with transportation providers to provide additional service to the work site;

- provision for bicycle parking facilities, lockers, changing areas, showers for employees who bicycle or walk to work;
- establishment of a program to permit employees to work part or full time at home or at an alternative work site closer to their homes (telecommuting);
- establishment of a program of alternative work schedules such as compressed work week (4-day work week); and
- employer-guaranteed ride home for employees who use alternative transportation modes. This program allows employees to use a company vehicle or provides a taxi reimbursement if there is a family emergency or they are required to work outside their normal work hours.

Land Use Policy

A city's ability to regulate land use is the most effective way available to manage travel demand. Land use plans and the planning and zoning sections of city codes are the principal instruments for implementing land use policy. Some examples of land use policy instruments are discussed below:

Zoning and Land Use Designation

Zoning and land use designation of individual parcels are very important in determining traffic impacts. In general, retail (particularly fast-food and convenience stores) generates the most traffic per employee or square foot of development. On the other hand, if there is inadequate commercial zoning compared to housing, residents will have to travel out of town for needed services. A balanced approach will best minimize traffic impacts. Conversely, industrial developments (such as heavy manufacturing and warehousing) generally have lower traffic impacts. Most other commercial activities (offices, medical, etc.) and residential areas fall somewhere in between these extremes.

Promoting Business

Even though the City of Black Diamond is small it has funded a Business Development Director and continues to seek bringing more employers to Black Diamond so that residents will have more opportunity to live and work in Black Diamond

Standards for Transportation Facilities

City codes may also regulate the number and location of driveways, the required minimum (and in some cases, maximum) number of parking spaces, the number and convenience of bicycle parking spaces, and sidewalk requirements. These requirements can provide for good design that can maximize the efficiency of the roadway system and can promote use of commute alternatives.

7.8 Funding Strategy [Edits to section still forthcoming]

The Comprehensive Transportation Plan recognizes the planning and improvement programming process as ongoing and provides a basis for initiating the funding strategy. A

funding analysis is included that examines the available sources to pay for the recommended improvements and new roadways. This analysis recommends those strategies which would be most beneficial for the City to pursue when identifying funding for the improvements outlined in the Six-Year TIP.

During the TIP process each year, the City confirms the construction costs of the recommended improvements and new roadways and matches the appropriate funding strategy to construct the planned improvements. The TIP review also allows the City to reevaluate the need and timing for additional improvements.

Proposed Six-Year Financing Plan

The City is required to create a 6-year financing plan for both transportation and capital facilities, however whereas the City of Black Diamond has required that the Master Planned Developer design, permit and construct all of the capacity adding projects in the City's transportation plan as needed to meet the City's adopted level of service, the city need only monitor the LOS and enforce the Development Agreement with each implementing plat within the Master Planned Development.

The Six-Year TIP is the result of an interactive process that balances the goals of all comprehensive plan elements. Financial planning for transportation uses the same process as the financial planning for capital facilities; however, the timing and funding for transportation is restricted by the concurrency requirement and the binding nature of LOS standards. In the unique situation in Black Diamond concurrency was addressed through the review and permitting process for the Master Planned Developments, therefore if the Master Planned Developer does not keep up with the capacity adding projects in order to meet the city's adopted level of service the MPD development will be halted. The City's strategy to tie concurrency directly to THE major developer within the City should give the City a step ahead of most communities that struggle to keep up with maintaining concurrency requirements.

Costs

The costs associated with the city's transportations costs include the following:

- maintenance and operation of the existing and proposed system;
- costs for designing and constructing new and/or expanded facilities;
- general costs associated with administering, planning, and overhead.

Costs associated with the transportation environment in the City include the cost of maintaining the existing City transportation facilities (roads, etc.); upgrading or expanding the vehicular road network, expanding the pedestrian system; and, providing bicycle facilities, system control (signage, markings, etc.), as well as transportation system planning and design. Although the City is not fiscally responsible for the costs associated transportation improvements required by new development, the City is responsible to ensure that capacity adding projects are

constructed concurrent with MPD development, and is collecting proportionate share of SEPA mitigation from non MPD projects to ensure equity to the development community

Funding Sources

A number of financial strategies are available to the City to finance the transportation improvements identified in the comprehensive transportation plan. Table 7-11 lists these strategies, their availability, and recommendations for the City to consider when implementing the improvement program. Historically, the City has relied on Real Estate Excise tax, grants and contributions from land developers to construct roadway improvements.

Strategies

To provide a more consistent strategy for funding roadway improvements, the City shifted the implementation responsibility of the capacity adding project to the Master Planned Developer creating a direct link between development and maintaining concurrency.

Historically, the City has relied on Real Estate Excise Tax, grants and frontage improvements from land developers to construct roadway improvements. Then in 2015 at the approval of the Villages Master Planned Development and Lawson Hill Master Planned Development, the City signed a binding development agreement that requires that the developer design, permit and construct as needed to maintain the City's level of service any and all of the planned improvements and new road connections. This puts the City in a unique position of just having to review, monitor and collect a proportionate share from other non MPD development in the City. Many other city's struggle to stay ahead because of the burden of financing existing deficiencies, pass through trips and the growth in background trips which are all unfunded.

We would recommend that the City explore a mechanism for a set mitigation/impact fee per PM peak hour trip for infill development. A pay and go proportionate share program for infill development would reduce the administrative burden, reduce the high cost of individual studies, and provide more efficiency and certainty to the development community

Table 7-11. Summary of Possible Local Funding Sources for Transportation Improvements

Comments	Potential of Revenue Generation	Realistic Acceptance	Comments
Local Motor Vehicle Fuel Tax (1-5)	Good	In-place	Funds distributed on a per capita basis
Transportation Benefit District (1-5)	Good	In-place but could be raised	
Local option Sales Tax (1-5)	Good	Difficult	Requires County implementation
Impact Fees; (3, 5)	Good but small amount of the	Good	Allows equitable funding of system improvements; some

	total growth funding needed. Would help local equity.		resistance by development community
Developer Contributions [3, 4, 5]	Good	In-place	Development may support facilities that provide direct access; not likely to fund general system needs
Local Improvement Districts [4]	Good	Difficult	Good for local access assessments for specific needs (e.g. sidewalks in commercial area); not good for mitigating through volumes
Bond Financing [1-5]	Good	Moderate	Contrary to "pay-as-you-go" policy; may be little public acceptance if considered region wide bond measure. Limited by City's bond rating.
State and Federal Grants [2-5]	Good in the small City Program; Will become more competitive once over $5000 pop.	Fair	City has had some success in obtaining funds. Once the City has their comprehensive plan approved they will also be eligible for more grants including Federal.
Capital Facilities District [2, 5]	Good	Difficult	Would require approval by Council

Potential use of funds:

[1] Operations & Maintenance

[2] Capital Projects

[3] Capacity adding projects (traffic mitigation)

[4] Road improvement

[5] Safety

7.9 Plan Administration

7.9.1 Funding Matrix

Table 7-12 presents the recommended improvements, their estimated cost, and the timeframe in which they would be constructed, along with a suggested funding source. Future detail for each project will be developed as part of the annual TIP process. This section summarizes concurrency for the City to use in administering the comprehensive transportation plan.

7.9.2 Concurrency [Edits to section still forthcoming]

Legislative Requirement

The GMA requires that each city and county incorporate a Concurrency Management System (CMS) into their comprehensive plan transportation element. A CMS is a policy to determine whether adequate public facilities are available to serve new developments.

> "Local jurisdictions must adopt and enforce ordinances which prohibit development approval if the development causes the level of service on a transportation facility to decline below standards adopted in the transportation element of the comprehensive plan, unless transportation improvements or strategies to accommodate the impacts of development are made concurrent with the development." (RCW 36.70A.070) The city of Black Diamond adopted a robust concurrency ordinance meeting these requirements on December 2015 by ordinance 15-1070.

The term "concurrent with the development" is defined to 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 6 years of development.

The City's primary strategy to maintain traffic concurrency is: by the authority of the MPD Development Agreement, the City has placed the construction responsibility of the necessary capacity adding projects on the MPD developer and directly linked the future progress of the development maintaining the traffic LOS. .

Other strategies that could be used in order to maintain compliance with concurrency include:

- Increasing roadway capacity or adopting transportation system management (TSM) strategies to accommodate the increase in demand use to development; and
- Adopting TDM strategies, such as increased transit access and rideshare programs, to offset the increase in demand.
- Often it is a combination of improvements and strategies that create the most effective CMS.

CMS Implementation

The GMA also requires cities to formalize a CMS into a process that shows measurable results. The City established a position on concurrency in a Concurrency Policy (T-14). The City's CMS program is further defined below.

LOS standards and providing adequate funding

The City recommends the following LOS standards:

- Roadway. LOS D for all intersections along SR 169 and LOS C for all other arterials and collectors within the City. The City will evaluate stop-controlled intersections on an individual basis when the LOS standard is exceeded.

- Transit. LOS standard is expressed in terms of a goal to monitor existing transit facilities and to improve transit operations as demand dictates.

- Other. LOS standard is expressed in terms of a goal to provide pedestrian and bicycle facilities throughout the City.

Table 7-12. Transportation Improvement Project – Cost Estimates

Improvement	From	To	Length (miles)	Total Project Cost	2016	2017	2018	2019	2020	2021	2022-2034	Type of Improvement	Potential Funding
New Roads													
Annexation Road	Lk Sawyer Rd	Across Roberts Drive south to A2	0.70	$ 2,900,000		$ 2,900,000						New street grid capacity	Development
Pipeline Road	SR-169	Lake Sawyer /Black Diamond	1.50	$ 11,600,000							$ 11,600,000	New roadway construction	Development
North Connector	SR-169	South to a new neighborhood	0.25	$ 1,000,000					$ 1,000,000			New minor arterial connection to SR-169 with signal	Development
Lake Sawyer Road Extension	Lk Sawyer Rd	Annexation Rd	0.50	$ 1,800,000		$ 1,800,000						New street grid capacity	Development
Lawson Connector	SR-169	Lawson Street	0.60	$ 3,200,000			$ 3,200,000					Construct 36' wide minor arterial roadway	Development
South Connector	Annexation Rd	SR-169	1.50	$ 7,560,000							$ 7,560,000	Construct 36' wide minor arterial roadway	Development
Overlays													
General Streets Improvement				$ 30000 / year	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000		Short overlays, chip sealing, crack sealing, patch work, addressing minor safety problems	
232nd Avenue SE	SE 288th St	End of Road	0.77	$ 100,000		$ 100,000						Chip seal	Grant/Local/ Development
Roberts Drive Rehabilitation Phase 2	City Hall	King County Library	0.23	$ 200,000			$ 200,000					Grind, patch, replace panels, crack sealing, shoulder reinforcement	Grant/Local
Jones Lake Road	SR-169	Railroad Ave	0.29	$ 122,000		$ 122,000						Patching and overlay existing roadway	Grant/Local
288th/224th/216th Chip Seal	SE 312th St	Covington-Sawyer Road	1.46	$ 129,000		$ 129,000						Patching and chip sealing existing roadway	Grant/Local
Morgan Creek Neighborhood Roads Preservation			1.19	$ 97,000				$ 97,000				Seal coat on existing roadway	Local
Minor Road Improvements													
Roberts Drive Rehabilitation Phase 1	Bruckners Way	City Hall	0.28	$ 100,000		$ 100,000						Leveling, overlay, sidewalks, pedestrian lighting and roadway widening	Grant/Local/ Development
Roberts Drive Rehabilitation Phase 3	King County Library	SR-169	0.56	$ 1,700,000					$ 1,700,000			Widen and overlay, sidewalk, street lighting and stormwater improvements	Grant/Local
Sidewalk Extensions & Bike Lanes				$ 400,000						$ 400,000		Sidewalk extensions and roadway widening to add bike lanes	Grant
Traffic Controls													
SR-169/Roberts Drive				$ 7,777,000				$ 7,777,000				Roundabout or Signal	Grant/Development
Ravensdale/SR-169 interim intersection				$ 700,000				$ 700,000				Roundabout or Signal	Grant/Development
Ravensdale/SR-169				$ 8,000,000						$ 8,000,000		Roundabout or Signal	Grant/Development
216th Ave SE/ SE 288th St				$ 1,400,000							$ 1,400,000	Roundabout or Signal	Grant/Development
Roberts Drive/Lake Sawyer Rd				$ 1,000,000					$ 1,000,000			Roundabout	Development
Roberts Drive/Annexation Rd				$ 1,000,000						$ 1,000,000		Roundabout	Development
Lake Sawyer Ext/Annexation Rd				$ 205,600							$ 205,600	Roundabout	Development
Sidewalk													
King County Housing ADA Improvements (1st Ave)	Baker St	Approx. 250' south of Baker St.	0.10	$ 155,000	$ 155,000							Install new sidewalk and curb ramps	Grant
Lawson St. Sidewalk phase 2	6th Ave.	Newcastle Dr.	0.19	$ 356,000			$ 76,000	$ 280,000				Install new 5-foot sidewalk on north side	Grant/Development
Commission Sidewalk	Railroad Ave.	Commission St. behind Museum	0.04	$ 150,000		$ 150,000						Install sidewalk, ADA improvements	Grant/Local
Grant/Local TOTALS				$ 51,831,600	$ 185,000	$ 5,331,000	$ 3,506,000	$ 8,884,000	$ 3,730,000	$ 9,430,000	$ 20,765,600		

A TIP with a potential funding plan has been prepared in connection with the comprehensive plan. With the installation of the capacity adding projects as identified in xxxx facilities meet the LOS standards based on existing, 6-, and 20-year forecasts. The potential funding plan identifies possible sources for improvements identified in the comprehensive transportation plan.

Monitoring/Analyzing Available Transportation Capacity

The City requires a Traffic Impact Analysis (TIA) for developments that impact the transportation system. A TIA is a specialized study of the impacts a development will have on the surrounding transportation system. It is specifically concerned with the generation, distribution, assignment, and accessibility of traffic to and from the development, and the impact of development traffic on the adjacent roadway system. The City's guidelines for TIAs are similar to those of other communities in western Washington regarding when a TIA is required for a development and the scope of work needed to effectively analyze the impacts of site generated traffic. Generally, if a development adds 10 or more vehicles in the PM peak hour a TIA is required. If deemed necessary by the City, the TIA may also address transit and other modes for impact assessment. The City uses the adopted LOS standards as guidelines for assessing concurrency and mitigation.

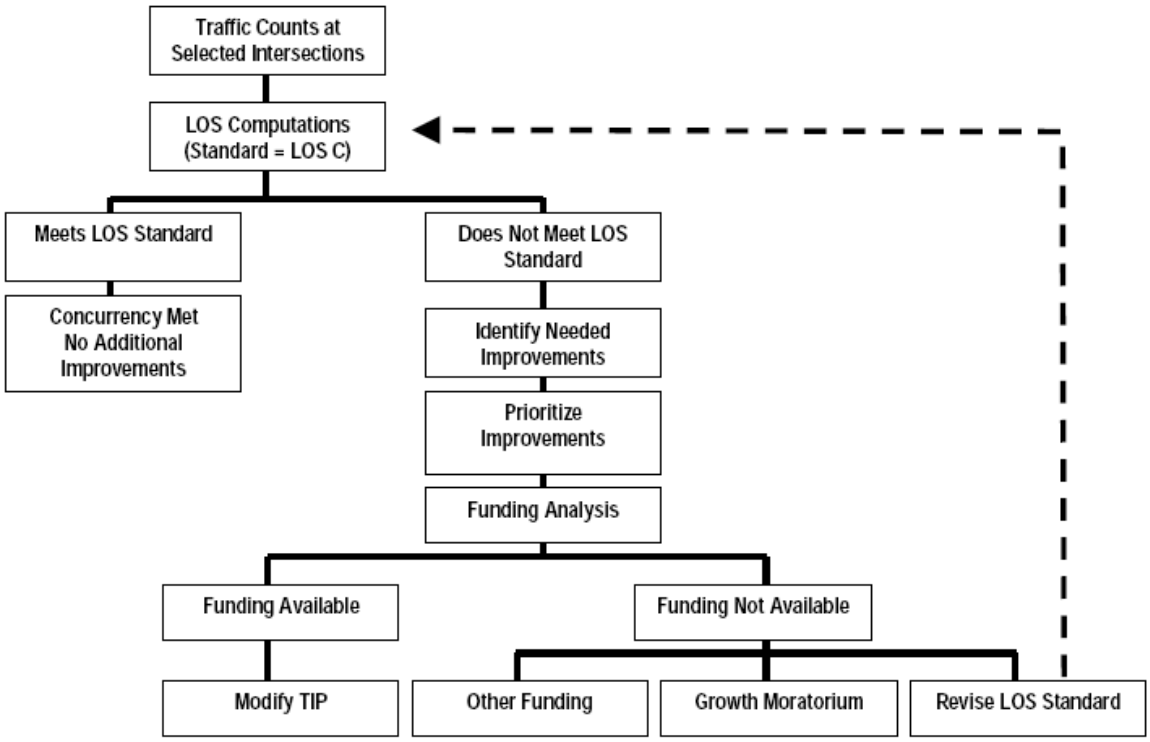
A system to monitor concurrency was developed and is illustrated in Figure 7-7 As noted in the chart, there are four options for the City to consider:

- Future Considerations. In the future as the MPD development agreements near expiration the City will need to begin to look for other funding sources and strategies to meet the future traffic needs post MPD development. Look for other funding sources, such as dedicating the second 1/4 of 1 percent of the Real Estate Excise Tax for street projects.
- Reassess LOS standards. GMA allows a community to change LOS standards annually. Any changes to LOS standards should be done in connection with annual TIP reviews.
- Reassess Land Use. GMA requires that if the funding for capital improvements (such as roads) cannot be met, the land use or levels of development within the plan should be re-assessed.
- Growth Moratorium. Per GMA requirements. If funding cannot be met, and the LOS standard unchangeable, then GMA requires development to be stopped until either issue can be resolved.

C. Analyzing External Influences on Concurrency Management System.

The City's LOS standards will also be used to evaluate impacts to the transportation system created by development outside the City. The City's annual TIP development process will evaluate if concurrency standards have been exceeded and identify the improvements needed to maintain the City's standards. The City should seek appropriate funding sources to mitigate through traffic impacts.

Figure 7-2. Concurrency Management System



7.10 Transportation Plan [Edits to section still forthcoming]

The Black Diamond Comprehensive Transportation Plan emphasizes that the transportation system should be designed to provide safe and efficient vehicular circulation, while at the same time maintaining a pedestrian-oriented "small town" environment. The City plans to continue developing its transportation network as a grid system. The Plan will use a grid of similar smaller roads as well as linking existing and planned neighborhoods to accommodate future growth. Street construction standards are to be used to reinforce the transportation goals and policies.

The plan's policy guidance includes using the existing transportation system efficiently and encouraging transportation alternatives, such as transit, HOV use, and pedestrian and bicycle facilities. Cooperation between affected jurisdictions (the City, State of Washington, King County and the Puget Sound Regional Council) in planning for state highways and county roads is also supported by City policies. The presence of both state and county roads as the primary arterial system requires coordination with King County and Washington State in the planning of these roads.

7.10.1 Alternative Modes

The Comprehensive Plan identifies that a comprehensive network of non-motorized facilities, including trails, sidewalks, and bicycle facilities to be developed. These facilities would enhance non-motorized mobility options and reduce automobile dependency. Similarly, an off-street parking plan for Old Town, a park-and-ride for City residents, and visitor parking to serve bicyclists who come to the City to ride on weekends are identified as desired elements of the plan.

7.10.2 Funding Strategies

To provide for the necessary transportation facilities, the plan identifies an ongoing program of transportation facility planning and private MPD development funded projects by the authority of a development agreement, developer contributions, and public funds. The plan identifies that development should cover the cost of the impact of development on transportation system.

7.10.3 Transportation Improvement Program

Road improvement projects for existing deficiencies are identified for the short term (2010 to 2016) as required by GMA. New roads are identified for both the short-term and the long-term (2017 to 2022) for better circulation for vehicles. The road system identified in Figure 7-4 and Figure 7-6 form the basis for the long-term motorized transportation improvements. Non-motorized transportation improvements will be identified in the City's update to the trails plan.

The improvements proposed for the short and long term are intended to mitigate the impacts of anticipated traffic growth. Construction of additional roads identified in the proposed Arterial and Collector System Plan will serve to divert and spread traffic flows.

7.10.4 Transportation and Land Use Element Coordination

The Black Diamond Comprehensive Plan Transportation and Land Use Elements are intended to work together to maintain the City's unique character in the face of increasing regional traffic. Surrounding King County land uses and other regional land use patterns may produce adverse effects on City traffic. Land use patterns that perpetuate automobile dependency would be expected to increase traffic in the City. It should be noted that an isolated change of land uses within the City may not, by itself, be expected to produce improved City-wide mobility.

7.10.5 Transportation Facilities and LOS Standards Coordination

Intergovernmental coordination is essential for the cost-effective provision of transportation services. The City does not possess the resources nor is it fiscally responsible for addressing all the of the transportation circulation system needs that might be identified through transportation planning. The City has reviewed the plans of the County and State Department of Transportation and has assessed the impact of their plan on the transportation facilities in the City. The LOS standards and proposed transportation improvements to be adopted by this element are not inconsistent with the LOS standards or plans of other jurisdictions. In addition, the City is committed to actively seek financial resources necessary to achieve the goals of the Comprehensive Transportation Plan. The City is an active participant (Mayor Benson has been the chair for two years) in the South County Area Transportation Board, SCATB, that serves as a South King County forum for information sharing, consensus building, and coordinating in order to resolve transportation issues and promote transportation programs that benefit the south King County area. Additionally, the City of Black Diamond joined SEAL-TC, South East Area Legislative Transportation Coalition which was formed by Covington, Maple Valley and Black Diamond chamber of commerce. This Coalition has a mission to improve access to, from and through our communities by way of public-private collaboration, legislative advocacy and commitment to our region.