City of Bonners Ferry

Transportation Plan

www.deainc.com

DAVID EVANS AND ASSOCIATES INC.

November 13, 2008

EXECUTIVE SUMMARY

The Bonners Ferry Transportation Plan (BFTP) is an effort to provide local officials and the public with a complete inventory and analysis of transportation needs in the City of Bonners Ferry. The Plan provides a detailed and inclusive needs assessment primarily based on future land use, projected traffic growth, and future population projections. The Plan addresses a number of critical issues relating to the movement of people and goods from origin to destination.

This Plan has been developed to provide a sustainable transportation system in coordination with the City's vision of future land use. The Plan guides the management of existing transportation facilities and the design and implementation of future multi-modal facilities for the next 20 years. The City may choose to adopt none, parts, or all of the Plan's recommendations. Furthermore, this is intended to be a living document in that the City anticipates future updates and adjustments as time progresses and further build-out of the area occurs.

An analysis of future traffic operations (Year 2028) in the City indicated several areas with potential congestion problems. With the addition of background traffic growth and future proposed land use, several intersections and roadway segments will require mitigation in the future, which have been included as projects in the Capital Improvement Plan. Other projects were identified through maintenance needs and bicycle/pedestrian network planning as well as future improvements identified in the Boundary County Transportation Plan. Current system needs have been separated from mitigation required due to growth (See Chapter 7).

The recommendations of this Plan include street and highway system improvements, locations of new streets, bicycle and pedestrian improvements, modifications to street classifications and standards, potential truck routes, access management guidelines, and traffic impact study guidelines. The Transportation Plan includes recommended regulatory changes to require frontage improvements and sidewalks adjacent to new development on roads. The Plan also provides suggested recreational bikeway routes in and around the City. The recommended improvements are broken down into short and long-term projects with planning level cost estimates. These recommendations are essential for the City to have a balanced system, one that is efficient as well as safe, one that includes alternatives to private vehicular travel, and one that coordinates local, regional and state-wide transportation planning.

Successful implementation of all of the recommended actions contained in the Plan will not completely eliminate traffic congestion or abate all safety concerns. What it will achieve is a dramatic improvement to the transportation system. Only through a continuous process of planning, funding, and implementation can the City strive to address evolving challenges facing the transportation system. The cost of addressing theses issues are not inexpensive, but the cost of neglecting them would be much greater.

The City should pursue increased state transportation funding and enhance regional planning efforts to keep pace with demands for transportation improvements that promote principles of smart growth.

TABLE OF CONTENTS

FIGURES

TABLES

CHAPTER 1. INTRODUCTION

As the continued growth of a community adds users to the transportation system, the elements of that system must develop to handle the corresponding increased travel demand. Without proper planning, cities are often overwhelmed by their growth and the subsequent failure of the roadways and intersections within their jurisdiction. The Bonners Ferry Transportation Plan (BFTP) is aimed at analyzing the projected growth of the City of Bonners Ferry and identifying the current and future needs of the transportation system so that capital projects may be planned, funded, and implemented.

This plan was developed to provide a sustainable transportation system, coordinated with the City's vision of future land use. The plan guides the management of existing transportation facilities and the design and implementation of future multi-modal facilities for the next 20 years. Portions of this plan may be adopted within the transportation element of the comprehensive plan, superseding the transportation section in the existing plan. Finally, this is intended to be a living document in that the City anticipates future updates and adjustments as time progresses and further build out of Bonners Ferry occurs. Though focused on the City of Bonners Ferry, this plan also takes into account such jurisdictions as the Idaho Transportation Department (ITD), the United States Forest Service (USFS), the Kootenai Tribe of Idaho, and Boundary County.

This Plan began with the development of a series of Goals and Strategies through collaboration among the City Council and the City Administrator, which served to guide the plan to the final results. The Plan includes an evaluation of the current operations of the primary roads and intersections in and around Bonners Ferry as well as those operations expected as a result of projected growth. The existing traffic operations in Bonners Ferry include several areas with congestion issues. With the fast pace of recent development, several of the intersections will require mitigation in the future. Other needs were identified through maintenance and bicycle/pedestrian network planning. Current system needs have been separated from mitigation required due to growth (see Chapter 7).

Future (20-year) traffic volumes were forecasted based on the existing and planned land use and the trips associated with those land uses. Those trips were then distributed throughout the roadway system in Bonners Ferry resulting in projected turning movement volumes at key intersections. Growth in population and employment was allocated throughout the community with the guidance of Bonners Ferry and Boundary County staff. Using these growth forecasts, the transportation system was evaluated under a future no-build scenario (assuming that today's transportation network were in-place with future traffic volumes) to identify future system capacity deficiencies that would require mitigation in the form of capital improvements.

Some of the recommendations of this plan include street and highway system improvements, locations of new streets, bicycle and pedestrian improvements, modifications to street classifications and standards, traffic speed calming, access management guidelines, and traffic impact study guidelines. The improvements are broken down into short-term, long-term, and development driven projects based on their need and feasibility and planning level cost estimates were derived based on 2008 dollars. The principal agency responsible for funding is the City of Bonners Ferry. Boundary County and ITD are viewed as agencies for certain improvements. The plan identifies approximately $6 million in vehicular and $5 million in bicycle and pedestrian improvements (see Tables 7-1 & 7-2). Finding the funding for these projects will be challenging for the City, and drivers will experience increasing congestion and poor levels-of-service if it is not made available. This plan recommends the involvement of the development community, through direct (extraordinary impacts) and indirect (impact fees) mitigation cost recovery.

Qualitative recommendations have been included within this plan regarding jurisdictional consideration of utilizing nodal versus strip commercial land-uses, mixed land-uses, and varied density land-uses. Each of these "Smart Growth" or "New Urbanism" related land-use strategies will contribute to better efficiency on the Bonners Ferry transportation system, and over time, may facilitate reduction in the future financial requirements for the Capital Improvement Plan by reducing the number or magnitude of future projects.

1.1 Planning Area

The planning area, shown in Figure 7 (see Chapter 9), primarily covers the area of city impact (ACI) for the City of Bonners Ferry with adjustments made to account for areas of expected and/or potential growth.

1.2 Planning Process

This plan was developed through a series of steps involving technical analyses combined with systematic input and review by city staff, the City Council, and the public. Key elements of the process are included in Figure 8).

1.3 Community Involvement

Community involvement is an integral component any planning process and this plan was no exception. Beyond the consultation of the City Council, there will be a public meeting and open houses to review and critique the content of this Plan, as well as a series of interviews with interested parties. The City Council and staff provided guidance on technical issues and direction regarding policy issues to the consultant team, meeting several times during the development of the plan.

1.4 Goals and Strategies

The overall goal of the Bonners Ferry Transportation Plan is to provide and encourage a safe, convenient, and economic transportation system to facilitate the efficient pedestrian, bicycle and vehicular movement of people and freight through cost efficient and maintainable solutions within Bonners Ferry. The following Goals and Strategies were used to make decisions about various potential improvement projects:

Goal 1

Improve and enhance safety and traffic circulation and preserve an acceptable level of service (LOS) on the primary street systems.

Strategies

- Develop an efficient multimodal road network that would strive to maintain an LOS of D or better for peak hour traffic.
- Plan for the development of complementary transportation corridors to the state highway system.
- Improve and maintain existing roadways (e.g., pavement conditions, bike lanes, crosswalks, sidewalks and pedestrian facilities).
- Ensure planning coordination among the city, county, Boundary Area Transportation Team (BATT), tribe, state, and the Forest Service.
- Identify truck routes to focus truck traffic to a limited number of roads.
- Investigate the mitigation of railroad traffic on vehicular and pedestrian traffic circulation.

- Encourage citizen involvement in identifying problem areas and solutions.

Goal 2

Develop procedures to minimize negative impacts to and protect transportation facilities, corridors, or sites during the development review process.

Strategies

- Develop access management standards that guide the frequency, location and size of accesses for each street classification.
- Limit the number of approaches onto collectors and arterials in order to minimize conflicts between modes and preserve the function of the multimodal corridor.
- Develop and adopt requirements for traffic impact studies.
- Encourage the design and construction of local streets that improve street connectivity by reviewing, adjusting, and assigning roadway standards.
- Develop and adopt a method to encourage traffic speed calming within existing and proposed developments.

Goal 3

Enhance alternative modes of transportation, such as walking and bicycling, through improved access, safety, convenience, and service.

Strategies

- Plan for the development of a trail network that is designed to encourage pedestrian and bicycle use that interconnects areas of the community.
- Plan for the provision of transportation services to the transportation disadvantaged.
- Provide policies to review all development proposals to ensure improvement of existing and installation of additional sidewalks, trails, bicycle paths, and pedestrian ways.
- Ensure that new walkways directly connect residential areas with parks, schools, jobs, shopping and other pedestrian destinations and install crosswalks where deemed appropriate.
- Encourage development to occur near existing community centers (infill) where services are available to reduce dependence on automotive transportation.
- Seek funding for projects evaluating and improving the environment for alternative modes of transportation.
- Encourage mixed-use development to reduce automobile dependency.
- Identify and improve safe routes to school

Goal 4

Preserve adequate right-of-way for future multimodal corridors and improvements.

Strategies

- Identify future multimodal corridor needs on the transportation system map and ensure adequate building setbacks through zoning ordinances while allowing for strategic enhancement of land uses.
- Consider requirement for preservation of multimodal corridors as a condition of approval for annexation approvals.

- Obtain the entire needed right-of-way at the time of annexation.

Goal 5

Manage future construction and maintenance projects and minimize financial and operational impacts resulting from improvement projects.

Strategies

- Identify strategic funding sources and scenarios for recommended improvement projects.
- Develop a Capital Improvement Plan summarizing the improvement projects and funding strategies resulting from this planning process.

1.5 Related Documents

The transportation plan addresses the local transportation needs in Bonners Ferry. Several other related documents also address transportation issues either in or adjacent to the City. These documents were utilized to various extents during the planning process to ensure that the transportation plan is consistent with other transportation policies and plans already in effect, under development, or as updated. This section lists the applicable documents.

- Boundary County Comprehensive Plan, August 2008 (1)
- Boundary County Road Standards (2)
- Boundary County Transportation Plan (3)

CHAPTER 2. TRANSPORTATION SYSTEM INVENTORY

As part of the planning process for the BFTP, an inventory of the existing transportation system in the planning area was performed. This inventory included components of the street system, as well as general information associated with the pedestrian and bikeway systems. The inventory of the street system was based on a number of sources, including field data collection, Boundary County GIS data and other jurisdictional planning documents, ITD/FHWA documents, assessor maps, and aerial imagery. The maps corresponding to each of these datasets are presented in Chapter 3. The following aspects of the transportation system were inventoried:

- Roadway centerline (E-911)
- Existing functional classification
- Posted speed
- Crash data
- Current and future land use
- Roadway and right-of-way width
- Existing roadway function
- Turning movement counts
- Bicycle and pedestrian facilities

2.1 Roadway Centerline (E-911)

The GIS roadway centerline file was obtained from Boundary County. The roadway centerline file contains information for E-911 operation including the address, the surface type, the number of lanes, if the roadway is public or private, and the city of the address. This file was used as the basis for the roadways in all maps.

2.2 Roadway and Right-of-Way Width

The Avista Aerial Imagery, provided through the City, was used to inventory the width of roadways. Roadway width was identified using the County assessor maps as shown in Figure 9. Right-of-way width was not inventoried in complete detail, but to a level which allowed the planning process to identify general right-of-way availability along corridors. Fluctuations in right-of-way width between intersections were not inventoried. Figure 10 shows the right-of-way widths using centerline color as the indicator of width.

2.3 Existing Functional Classification

On October 1, 2002, FHWA adopted the 2010 Boundary County Rural Functional Classification map. Figure 11 shows the classified streets as taken from the sheet of the 2010 Boundary County Rural Functional Classification map that displays Bonners Ferry. Both sheets can be obtained from the ITD website (4).

2.4 Existing Roadway Function

Although the Boundary County Rural Functional Classification map depicts the federally recognized roadway classifications within the planning area, there are many non-federally recognized roadway functions in existence within Bonners Ferry street system. This planning process included the detailed identification of these roadway functions using the FHWA Functional Classification Guidelines (5) last revised in 1989. These qualitative functional classification descriptions were applied to the Bonners Ferry street system, further defining the characteristics of the transportation system. Figure 12 illustrates the identified existing function.

2.5 Posted Speed

A posted speed inventory was developed for several reasons:

- Identify areas of safety concern.
- Identify areas for more efficient movement.
- Assessing the consistency of speed zones.

The posted speed inventory was collected through field reconnaissance in the summer of 2008. Posted speed limits are identified by the color of the roadway centerline in Figure 13.

2.6 Turning Movement Counts

Turning movement counts were taken at 10 intersections in Spring and Fall of 2008. Each count was done during a single PM peak period. The turning movement count data was used for calibrating the distribution of trips through the network based on the trips generated by the given land use. This allowed a reliable count for additional intersections beyond those physically counted. All of the turning movement count data is available in Appendix B. The turning movement count locations can be seen in Figure 14.

2.7 Crash Data

Crash data was obtained in spreadsheet format from the Idaho Transportation Department for the years 2003 through 2007. The data was reformatted for analysis. Analysis details are located near the end of Chapter 4. Figure 15 depicts the crash locations across Bonners Ferry.

2.8 Bicycle and Pedestrian Facilities

Bicycle and pedestrian facilities are an important piece of a transportation network. With this in mind, the existing system was inventoried through a field assessment conducted in July, 2008. A current bicycle and pedestrian network inventory is given in Figure 18. Changes to the current bicycle facilities were suggested and identified through the public input and planning process and the resulting future bicycle and pedestrian network is presented Chapter 7.

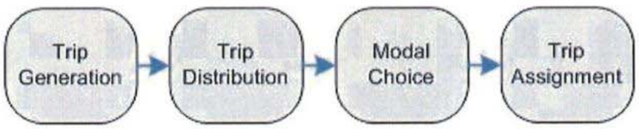
2.9 Current and Future Land Use

To effectively estimate future transportation conditions within the planning area, an understanding of current and future land use conditions is necessary. Current and future-anticipated land use information was developed by DEA and City staff for each Traffic Analysis Zone (TAZ) for use in developing the traffic forecast for the Bonners Ferry roadway network. A (TAZ) is an area defined within planning using geographic features and demographic characteristics as logical boundaries or constraints. This segmentation of the planning area allows a more accurate projection of land use and traffic volumes. The study area was broken down into 49 TAZ's, as shown in Figure 19. Members of DEA and City staff populated spreadsheets, broken down by TAZ's, defining the current vision for single and multi-family residential as well as retail and non-retail employment. The resulting land use densities, by TAZ, are provided in Appendix C.

CHAPTER 3. TRAFFIC FORECASTING

The 4-Step planning process shown in Figure 1 provides a framework to model how an area travels. For this plan, the process began with the collection of land use information as provided by City staff. First, land use information was segregated across the 49 traffic analysis zones. Next, the number of trips attracted to and produced from the TAZ's were estimated using the ITE Trip Generation rates (6) and then distributed throughout the zones. The modal choice step, necessary when there are several transportation modes to choose from, was neglected during this analysis with all trips assumed to be vehicular. The final step of the 4-step process assigns the trips generated to the surrounding roadway network. The result is the dispersal of modeled turning movements throughout the roadway network.

Figure 1. Four Step Process



3.1 Trip Generation

The trip generation process is used to convert the land use and socio-economic data into vehicle trips and estimate the total number of trips for each TAZ. The trip rate parameters were based on the ITE Trip Generation rates to provide a repeatable background for the methodology. Trip generation methodology was applied to estimate the number of PM peak hour vehicle trips for each study area TAZ. Trip generation for the 2008 base year and 2028-horizon year is summarized in an Excel spreadsheet and can be seen in Appendix D.

3.1.1 Land Use and Socio-Economic Data

Land use and socio-economic data are used in the travel demand modeling process to estimate the quantity of travel activity associated with each TAZ. The base year (2008) and forecast year (2028) land use totals were compiled by DEA and staff at the City of Bonners Ferry. The data was summarized for each land use category for all TAZs within the study area. The following categories were used in developing the model:

- Single-Family Housing Units
- Multi-Family Housing Units (Apartments & Condominiums, Townhouse)
- Retail (number of employees)
- Non-Retail/Commercial (number of employees)
- Industrial (number of employees)
- School (number of students and number of employees)
- Agriculture (number of acres)
- Other (dependent on use)

The compilation of land use data is provided in Appendix C.

The land use data provided by DEA and the City in the 49 TAZs created trips associated with the TAZs, which are where vehicular trips are *produced* and where vehicular trips are *attracted*. A detailed listing of the

TAZ assignments is shown in Appendix D. A detailed map of the TAZ zones is also represented in Figure 19.

Existing and Future Land Use

The Bonners Ferry TAZ boundaries were laid over an aerial image of the study area as shown in Figure 19. Using this information, City staff estimated the socio-economic data as per the aforementioned categories. In some cases, a field review was conducted to update and confirm the employment data to account for recent development. The City also provided projections of the land use for each of the TAZ's for the 2028 horizon year. Details of the land use information are available in Appendix C.

Land Use Forecast Results

The City's land use projections resulted in an overall traffic growth rate of 2% per year forecasted to the Year 2028 Future scenario. Currently, there are 1,145 singe-family residential lots and 139 multi-family units within Bonners Ferry. Year 2028 assumes 1,662 single-family residential lots and 202 multi-family units (517 net new single-family residential lots and 63 new multi-family units or 45% total growth). Currently, approximately 431,758 square footage of retail and 786,813 square footage of non-retail exist in the Bonners Ferry study area. Year 2028 assumes 542,454 square footage of retail (26% total growth) and 1,063,547 square footage of non-retail (35% total growth).

3.1.2 Study Area Vehicle Trips

The ultimate goal of the trip generation process for the BFTP was to estimate vehicle trips throughout the highest one-hour period during the evening commute. The PM peak hour is generally thought to occur between 4:00 pm and 6:00 pm. The trip generation process estimates the number of trip origins and destinations within each TAZ for this peak period. Most of the origins during the PM peak-hour represent vehicles traveling home from work. For a PM peak hour forecast, origins are normally associated with places of employment, since they correspond to where a trip usually begins during the evening commute. Destinations are typically associated with households and retail centers because these are types of land uses where PM peak-hour trips might end.

The PM peak-hour trip rates for each land use category were first derived from rates detailed in the ITE Trip Generation Manual (6) by using rates for similar cities and similar land uses. In addition, a report published by the Federal Highway Administration entitled "Development and Application of Trip Generation Rates 2" (7) also was reviewed and used in developing the final trip rates for the forecasting. Trip rates for similar land uses were averaged together to obtain a final rate. The rates were further adjusted during calibration and trip balancing to better match existing traffic volumes within the study area. A list of the weekday PM peak-hour vehicle trip rates for each land use category may be found in Appendix C.

It is common for traffic projections to be based on a blindly assumed growth rate applied to all turning movements in an area regardless of the likelihood of growth in a certain area. The method employed for this plan, however, uses the change in land use to calculate the growth in trips thereby avoiding errors associated with growth typically applied to built-out areas. By basing the traffic projections on the growth of land use, this forecast has connected turning movement growth to community growth.

3.2 Trip Distribution and Assignment

The next step of the planning process is to distribute the trips from each of the TAZ's to their destinations. The trip distribution for this effort was conducted manually based on the land use data, p.m. peak hour turning movement counts and knowledge of the existing network. This step was completed in conjunction with the trip assignment using the field turning movement counts (see Figure 15). Whereas the trip distribution sends trips from one TAZ to another, the trip assignment "assigns" those trips to specific network elements such as roadway segments and intersections. The trip distribution and assignment resulted in turning movement volumes at each of the primary intersections in the study area as well as estimated volumes on the adjacent roadway segments. Turning movements for the current and future conditions at the primary study area intersections are shown in Appendix D. These volumes were used in subsequent chapters to evaluate the operations of these facilities.

CHAPTER 4. EXISTING CONDITIONS

The performance of the elements of a transportation network can be measured by a variety of characteristics. Some measures are visual, such as the presence of features like sidewalks, turn lanes, roadway shoulders and the amount of observed congestion on a roadway. Other measures are calculated from the traffic volumes on the network. The relationship between the vehicles using the roadway and the ability of that roadway to efficiently process those vehicles is the most common measure of the conditions of a transportation network. Based on the turning movement volumes discussed in the previous Chapter, an intersection and street capacity analysis was performed. Two primary methods of system evaluation were utilized: Volume-to-Capacity Ratio (*v/c*) and Level of Service (LOS). In addition to the operational analysis of the network, a safety analysis was conducted to evaluate the crash data presented in Chapter 2. The current state of the Bonners Ferry transportation network will provide a starting point from which to plan for the future.

4.1 Operational Analysis

There are three criteria typically used to assess the impact during a traffic analysis. The LOS is the most common qualitative classification of roadway and intersection performance and can be quantified by a variety of other measures such as delay, speed, and density. The critical movement is derived from the *volume-to-capacity (v/c) ratio* to qualify the relative performance of the movements at an intersection. Finally, the *queue length* is a visual measure of the breakdown of intersection performance and is used to plan for elements such as storage length and verify the performance of traffic signals. Computer programs such as Synchro are used to calculate the aforementioned measures for the study area roadways. Synchro is a network-based interactive software package for modeling, optimizing, managing, and simulating traffic systems. The output produced by Synchro simplifies the calculation of the levels of service at signalized and unsignalized intersections for multiple locations and different scenarios. Synchro also calculates signal timing plans (green times and cycle lengths), optimizes signal timing plans for isolated intersections and corridors, and determines 95th percentile queue lengths to assist in evaluating signalized intersections. The Synchro software also employs the 2000 Highway Capacity Manual (HCM) analysis procedures to evaluate traffic operations at signalized and unsignalized intersections.

4.1.1 Level of Service (LOS)

The LOS of a roadway or intersection is essentially a "letter grade" reflective of the performance of the facility. Roadway LOS is typically evaluated for uninterrupted facilities, such as highways and controlled access freeways and is based on speed and/or density of the roadway segment. A more common measure for interrupted roadway segments is the *v/c* ratio. The LOS of an intersection, however, is defined by the delay that a driver experiences when passing through it. The delay is the average experienced by each vehicle going through an intersection, whether passing through without stopping, or stopped for one or more full signal cycles, totaled for all vehicles passing through the intersection during the peak hour, then divided by that number of vehicles. The result is an "average intersection delay" per vehicle (in seconds). LOS is designated "A" through "F", "A" representing the highest level of operating conditions and "F" representing extremely congested and restricted operations. The typical LOS requirements for mitigation purposes is LOS C or worse for all major movements, with no movements below LOS D for future planning horizon years. Synchro was used to analyze the LOS for each of the primary intersections in the study area. The Synchro software is very effective in evaluating traffic conditions at individual intersections. The relationships between level of service, traffic conditions, and controlled delay are summarized in Table 4-1, Table 4-2, and Figure 2.

Table 4-1. Level of Service Criteria – Signalized Intersections

Level of Service	Description of Traffic Conditions	Controlled Delay (Sec/Veh)
A	Insignificant delays: no approach phase is fully utilized and no vehicle waits longer than one red indication	≤ 10
B	Minimal delays: an occasional approach phase is fully utilized. Drivers begin to feel restricted	> 10 – 20
C	Acceptable delays: major approach phase may become fully utilized. Most drivers feel somewhat restricted	> 20 – 35
D	Tolerable delays: drivers may wait through more than one red indication. Queues may develop but dissipate rapidly, without excessive delays.	> 35 – 55
E	Significant delays volumes approaching capacity. Vehicles may wait through several cycles and long vehicle queues form upstream	> 55 – 80
F	Excessive delays: represents conditions at capacity, with extremely long delays. Queues may block upstream intersections.	> 80

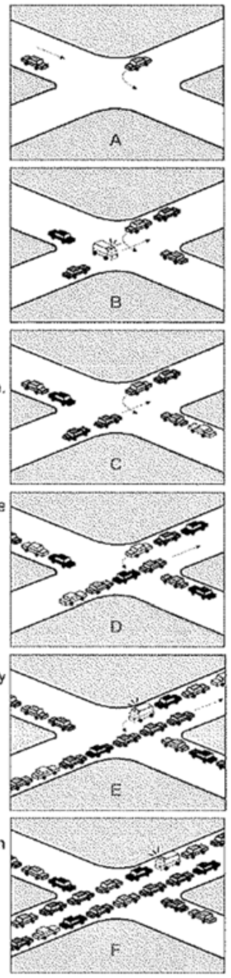
Source: Highway Capacity Manual, Transportation Research Board (8)

Table 4-2. Level of Service Criteria - Unsignalized Intersections

Level of Service	Description of Traffic Conditions	Controlled Delay (Sec/Veh)
A	No delay for stop-controlled approaches	0 – 10
B	Operations with minor delay	> 10 – 15
C	Operations with moderate delays	> 15 – 25
D	Operations with some delays	> 25 – 35
E	Operations with high delays and long queues	> 35 – 50
F	Operation with extreme congestion, with very high delays and long queues unacceptable to most drivers	> 50

Source: Highway Capacity Manual, Transportation Research Board (*8*)

Figure 2. Intersection Level of Service



LOS Intersections		Delay
A	No vehicle waits longer than one signal indication.	S: 0 to 10 seconds U: 0 to 10 seconds
B	On a rare occasion, vehicles wait through more than one signal indication.	S: 10 to 20 seconds U: 10 to 15 seconds
C	Intermittently, vehicles wait through more than one signal indication, occasionally backups may develop, traffic flow still stable and acceptable.	S: 20 to 35 seconds U: 15 to 25 seconds
D	Delays at intersections may become extensive, but enough cycles with lower demand occur to permit periodic clearance, preventing excessive backups.	S: 35 to 55 seconds U: 25 to 35 seconds
E	Very long queues may create lengthy delays.	S: 55 to 80 seconds U: 35 to 50 seconds
F	Backups from locations downstream restrict or prevent movement of vehicles out of approach creating a "gridlock" condition.	S: 80 seconds + U: 50 seconds +

S: Signalized U: Unsignalized

The first strategy in Goal 1 was to achieve LOS C for peak hours as its intersection performance standard. The development of this transportation plan employed this standard. Table 4-3 lists current operations at key *signalized* and *unsignalized* intersections within the City of Bonners Ferry. As shown in the table, most of the intersections are currently operating at an acceptable level of service. Because the non-stopping traffic at unsignalized (2-way stop control) intersections has zero delay, it is not realistic or meaningful to assign an LOS to the overall intersection as an indicator of its state of operation. Instead, it is typical to evaluate the LOS of the delayed approaches individually, leading to identification of mitigation. As such, it should be noted that the westbound movement (minor approach) at US-95 at Kootenai Street and the eastbound left (minor approach) at US-95 at Lincoln Street are currently operating at LOS D. The performance of these minor approaches, while deficient, have minimal impact on the system as a whole.

Table 4-3. Level of Service for Existing (Year 2008) PM Peak Hour Conditions

INTERSECTION	Control	Existing Peak Hour Level of Service (LOS)		
		Critical Movement	Delay	LOS
US-95 @ Deep Creek Road	U	EB LR	13.2	B
US-95 @ LaBrosse Hill Street	U	WB LR	11.2	B
US-95 @ McCall Road	U	EB LTR	15.1	C
US-95 @ Tamarack Lane	U	WB LR	20.2	C
US-95 @ Alderson Lane	S	--	8.5	A
US-95 @ Ash Street	U	WB LR	23.8	C
US-95 @ Kootenai Street	U	WB LR	26.3	D
Ash Street @ Cow Creek Road	U	NB LR	9.3	A
Riverside Street @ Main Street	U	EB LR	10.6	B
Kaniksu Street @ Caribou Street	U	WB LTR	11.4	B
US-95 @ Lincoln Street	U	EB Left	25.8	D
US-95 @ Denver Street	U	EB LTR	20.9	C
US-95 @ Riverside Street	U	EB Left	16.0	C

Control: U – Unsignalized; S - Signalized

4.1.2 Volume to Capacity Ratio

As described in more detail in Chapter 3, the transportation modeling process was used to generate roadway vehicular travel volumes for comparison to the roadway capacity. If, for instance, a roadway has a *capacity* of 1000 vehicles per hour (vph) and has a travel *volume* in the PM peak hour of 700 vehicles, then the resulting volume-to-capacity ratio (*v/c*) is 700/1000 or 0.70. For the purposes of this study, a *v/c deficiency*, requiring mitigation, was defined as 0.80 or higher. Table 4-4, *General Link Capacities* describes the typical roadway capacities used in this planning process, which were based on standard industry accepted capacities for community planning. Table 4-5 contains the roadway segments within the planning area with 2008 directional *v/c* ratios, all of which were below 0.60. Recognizing those segments with the highest *v/c* ratios is useful in identifying monitoring those segments during the horizon year analysis for potential mitigation requirements (see Chapter 5).

Table 4-4. General Link Capacities

Link Type	Capacity Per Hour Per Lane	Speed (mph)
Principal Arterial	1200	35
Minor Arterial	900	30
Major Collector	700	25
Minor Collector	500	20
Local Road	500	20

Table 4-5. Year 2008 Volume-to-Capacity (Either Direction)

Roadway Name	Description	Direction	Volume-to-Capacity Ratio	Direction 2	Volume-to-Capacity Ratio 2
US-95	1/4-mile of Deep Creek Road	SB	0.21	NB	0.22
US-95	Deep Creek Rd. to LaBrosse St.	SB	0.24	NB	0.24
US-95	LaBrosse St. to McCall Rd.	SB	0.30	NB	0.27
US-95	McCall Rd. to Tamarack Ln.	SB	0.41	NB	0.44
US-95	Tamarack Ln. to Alderson Ln.	SB	0.45	NB	0.55
US-95	Alderson Ln. to Lincoln St.	SB	0.47	NB	0.56
US-95	Lincoln St. to Denver St.	SB	0.46	NB	0.55
US-95	Denver St. to Madison St.	SB	0.44	NB	0.55
US-95	Madison St. to Ash St.	SB	0.23	NB	0.30
US-95	Ash St. to Kootenai St.	SB	0.23	NB	0.28
US-95	Kootenai St. to Riverside St.	SB	0.16	NB	0.22
US-95	Riverside St. to ¼-mile N of	SB	0.18	NB	0.27
Caribou St.	Kaniksu St. to S of Kaniksu St.	SB	0.20	NB	0.25
Kaniksu St.	Caribou St. to W of Kaniksu St.	EB	0.16	WB	0.17
Ash St.	Ash St. to W of Cow Creek Rd.	EB	0.08	WB	0.11
Riverside St.	Main St. to W of Main St.	EB	0.12	WB	0.17
Kootenai St.	US-95 to W of US-95	EB	0.37	WB	0.33
Kootenai St.	US-95 to E of US-95	EB	0.12	WB	0.13

4.2 Safety Analysis

A more detailed analysis of the crashes shown in Figure 15 was conducted to determine common causes and potential solutions to the safety issues in Bonners Ferry. Shown in Table 4-6 through Table 4-10 are breakdowns of indirect and environmental characteristics of the crashes from 2002 through 2007 and Table 4-11 through Table 4-12 detail the contributing factors and types of crashes. These statistics, although informative, are supplemented by the figures that follow them and link the data to crash locations.

4.2.1 Indirect and Environmental Factors

The summary of crashes by month for each of the analysis years shows no unusual peak based on specific months or seasons. Although September through December are shown to have higher crash numbers than most of the previous months, the values are not cause for concern due to the relatively low increases (41 percent of the crashes in 33 percent of the year). This modest rise could be attributed to the beginning of the school year or to the beginning of winter and driver acclamation to driving in winter conditions. The values in Table 4-7 detailing the crashes by day of the week confirm that most crashes (83.7 percent) occur on weekdays and show a slight increase in crashes during the beginning of the week (40.2 percent on Monday and Tuesday), but show no unusual trends.

Table 4-6. Number of Crashes by Month (2002-2007)

Month	Year						TOTALS
	2002	2003	2004	2005	2006	2007	
January	4	4	2	1	1	2	**14**
February	1	5	4	1	2	3	**16**
March	3	2	3	2	1	4	**15**
April	4	2	2	2	0	0	**10**
May	1	2	3	6	1	5	**18**
June	1	1	3	3	0	2	**10**
July	6	3	3	7	4	0	**23**
August	2	2	3	5	3	2	**17**
September	5	4	3	4	5	1	**22**
October	4	2	5	2	5	2	**20**
November	1	9	3	4	4	3	**24**
December	1	2	4	4	4	5	**20**
TOTALS	**33**	**38**	**38**	**41**	**30**	**29**	**209**

Table 4-7. Number of Crashes by Day of the Week (2002-2007)

Day of the Week	Year						TOTALS
	2002	2003	2004	2005	2006	2007	
Sunday	1	3	4	4	2	0	**14**
Monday	7	5	9	11	7	4	**43**
Tuesday	8	12	6	5	6	4	**41**
Wednesday	4	6	6	7	5	3	**31**
Thursday	3	4	5	3	2	7	**24**
Friday	7	4	6	7	4	8	**36**
Saturday	3	4	2	4	4	3	**20**
TOTALS	**33**	**38**	**38**	**41**	**30**	**29**	**209**

Table 4-8 through Table 4-10 compares the number of crashes to environmental attributes. Table 4-8 shows that approximately 70 percent of the crashes occurred on dry roadways, probably because most of the vehicle-miles traveled were on dry surfaces. Less than 20 percent of the crashes occurred when the roads were subjected to winter conditions such as ice, slush, or snow. The data in Table 4-9 show that ¾ of the crashes occurred under clear or cloudy conditions, I.E. those without precipitation. It can be concluded from these two tables that winter driving conditions to not contribute heavily to the crashes in Bonners Ferry.

Furthering the prevalence of crashes to common driving times, it is shown in Table 4-10 that over 80 percent of the crashes occurred during daylight hours and that only 5 percent of the crashes took place when it was dark without the benefit of street lights. The data presented in the first 5 tables can be summarized by saying that most of the crashes in Bonners Ferry occurred during the daylight hours on a clear and dry weekday, leading to a conclusion that many of the crashes had identifiable and verifiable causes that could result in mitigation.

Table 4-8. Number of Crashes by Surface Condition (2002-2007)

Surface Condition	Year						TOTALS
	2002	2003	2004	2005	2006	2007	
Dry	26	27	29	29	18	16	**145**
Ice	1	4	0	2	3	1	**11**
Other	0	0	0	0	0	0	**0**
Slush	0	1	3	0	2	1	**7**
Snow	4	0	2	3	3	7	**19**
Wet	2	6	4	7	4	4	**27**
TOTALS	**33**	**38**	**38**	**41**	**30**	**29**	**209**

Table 4-9. Number of Crashes by Weather Condition (2002-2007)

Weather Condition	Year						TOTALS
	2002	2003	2004	2005	2006	2007	
Clear	24	24	17	21	15	13	**114**
Cloudy	6	9	13	12	6	7	**53**
Fog	0	0	0	0	0	0	**0**
Rain	1	3	3	5	3	2	**17**
Sleet/Hail	0	0	1	0	0	0	**1**
Smoke/Smog	0	0	0	0	0	0	**0**
Snow	2	2	4	3	6	7	**24**
TOTALS	**33**	**38**	**38**	**41**	**30**	**29**	**209**

Table 4-10. Number of Crashes by Light Condition (2002-2007)

Light Condition	Year						TOTALS
	2002	2003	2004	2005	2006	2007	
Day	28	26	31	34	23	27	**169**
Dawn or Dusk	1	2	3	0	1	1	**8**
Dark, No Street Lights	1	4	1	3	1	0	**10**
Dark, Street Lights On	3	6	3	4	5	1	**22**
TOTALS	**33**	**38**	**38**	**41**	**30**	**29**	**209**

4.2.2 Crash Types and Contributing Factors

Whereas the previous statistics dealt with indirect and environmental characteristics of the crashes, Table 4-11 and Table 4-12 summarize the details of the crashes. These tables document the prevailing contributing circumstances and the types of the crashes as reported by the responding law enforcement officer. As shown in Table 4-11, 53 percent of the crashes were concentrated in a Failure to Yield, Following Too Close, or Speed violations from 2003 to 2007. As illustrated in Figure 16, a cluster of the Improper Backing crashes occurred in the downtown area. The summary of Crash Types in Table 4-12 identifies that Rear End crashes account for 27 percent, Turning crashes tally 35 percent, and crashes with Stationary Objects account for 27 percent of the total crashes from 2003 to 2007.

The Crash Types illustrated in Figure 17 reveal a cluster of crashes between Walker and Fry along US 95, an area home to three crossing locations near the schools. Most of these crashes were rear end crashes caused by failure to yield, improper turning, or following too closely. Special attention will be paid to this area both due to the cluster of crashes and the proximity of public education and pedestrians. Near the downtown area, several more crashes caused by a failure to yield resulting in angle and turning events were reported. This area is already controlled by 4-way stop control, limiting the potential causes for these types of crashes. The intersection of Riverside/Main at US 95 is also witness to numerous crashes, most likely due to the close proximity and geometry of the two intersections in the area. Finally, a grouping of crashes was identified along US 95 from Alderson to Denver, the majority of which were rear end or sideswipe interactions. This area will be shown to benefit from additional capacity enhancements, thereby indirectly improving the safety of this segment.

Table 4-11. Number of Crashes by Contributing Circumstance (2002-2007)

Prevailing Contributing Circumstance	Year						TOTALS
	2002	2003	2004	2005	2006	2007	
Failed To Yield	0	9	9	17	6	7	**48**
Following Too Close	0	6	10	3	3	5	**27**
Speed Too Fast For Conditions	0	7	2	1	4	5	**19**
Exceeded Posted Speed	0	0	1	0	0	0	**1**
Drug/Alcohol Impaired	0	1	3	5	0	0	**9**
Inattention	0	2	2	1	4	3	**12**
Improper Lane Change	0	1	1	1	1	0	**4**
Improper Backing	0	2	3	3	2	2	**12**
Improper Turn	0	3	0	1	2	0	**6**
Improperly Parked	0	0	2	2	0	0	**4**
Vehicle Defect	0	1	2	0	0	1	**4**
Off Roadway	0	2	0	0	0	0	**2**
Distraction In Vehicle	0	1	0	0	0	0	**1**
Vision Obstruction	0	1	0	1	1	1	**4**
Asleep	0	0	0	0	0	1	**1**
Failure To secure Load	0	0	0	1	0	0	**1**
Other	0	2	3	5	7	4	**21**
No Data	33	0	0	0	0	0	**33**
TOTALS	**33**	**38**	**38**	**41**	**30**	**29**	**209**

Table 4-12. Number of Crashes by Type (2002-2007)

Crash Type	Year						TOTALS
	2002	2003	2004	2005	2006	2007	
Rear End	0	7	9	3	8	7	**34**
Rear-End Turning	0	2	0	1	0	1	**4**
Head On	0	1	0	0	0	0	**1**
Head-On Turning	0	2	2	8	0	1	**13**
Angle	0	1	2	3	0	0	**6**
Angle Turning	0	8	8	7	9	10	**42**
Stationary Object	0	13	11	11	5	7	**47**
Backed Into	0	1	1	3	2	1	**8**
Animal	0	0	0	0	2	0	**2**
Pedestrian/Bicycle	0	1	0	1	0	0	**2**
Side Swipe	0	1	4	3	2	2	**12**
Same Direction Turning	0	1	0	0	2	0	**3**
Cargo Loss	0	0	0	1	0	0	**1**
Non-Collision	0	0	1	0	0	0	**1**
No Data	33	0	0	0	0	0	**33**
TOTALS	**33**	**38**	**38**	**41**	**30**	**29**	**209**

Potential Crash Reduction Countermeasures – As growth continues throughout the City, the jurisdictions may begin to experience increased numbers of crashes, with marked crash trends that are commonly associated with urban growth. The Federal Highway Administration has funded a project through the National Cooperative Highway Research Program (NCHRP) intended to develop and validate guidance documents to assist state and local agencies in implementing strategies to reduce fatalities by 10 to 15 percent in targeted areas. This project is called NCHRP Project 17-18(3). The document can be viewed online at: http://safety.transportation.org/htmlguides/sitemap/default.htm. NCHRP Project 17-18(3) can be a useful guidance tool, for the City, as growth occurs. Excerpts outlining objectives related to crash reduction and possible crash reduction strategies from the report, referring to signalized and un-signalized intersections, have been included as follows (please refer to the original NCHRP document for further explanation):

Table 4-13. NCHRP Project 17-18(3): Signalized Intersections

Objectives	Strategies
17.2 A Reduce frequency and severity of intersection conflicts through traffic control and operational improvements.	17.2 A1 Employ multiphase signal operation (P,T).
	17.2 A2 Optimize clear and intervals (P).
	17.2 A3 Restrict or eliminate turning maneuvers (including right turns on red) (T)
	17.2 A4 Employ signal coordination (P)
	17.2 A5 Employ emergency vehicle pre-emption (P)
	17.2 A6 Improve operation of pedestrian and bicycle facilities at signalized intersections (P, T).
	17.2 A7 Remove unwarranted signal (P)
17.2 B Reduce frequency and severity of intersection conflicts through geometric improvements.	17.2 B1 Provide/improve left-turn channelization (P)
	17.2 B2 Provide/improve right-turn channelization (P)
	17.2 B3 Improve geometry of pedestrian and bicycle facilities (P, T)
	17.2 B4 Revise geometry of complex intersections (P, T)
	17.2 B5 Construct special solutions (T)
17.2 C Improve sight distance at signalized intersections	17.2 C1 Clear sign triangles (T)
	17.2 C2 Redesign intersection approaches (T)
17.2 D Improve driver awareness of intersections and signal control	17.2 D1 Improve visibility of intersections on approach(es) (T)
	17.2 D2 Improve visibility of signals and signs at intersections (T)
17.2 E Improve driver compliance with traffic control devices	17.2 E1 Provide public information and education (T)
	17.2 E2 Provide targeted conventional enforcement of traffic laws (T)
	17.2 E3 Implement automated enforcement of red-light running (cameras) (P)
	17.2 E4 Implement automated enforcement of approach speeds (cameras) (T)
	17.2 E5 Control speed on approaches (E)
17.2 F Improve access management near signalized intersections	17.2 F1 Restrict access to properties using driveway closures or turn restrictions (T)
	17.2 F2 Restrict cross-median access near intersections (T)
17.2 G Improve driver compliance with traffic control devices	17.2 G1 Provide public information and education (T)
	17.2 G2 Provide targeted conventional enforcement of traffic laws (T)
	17.2 G3 Implement automated enforcement of red-light running (cameras) (P)
	17.3 G4 Implement automated enforcement of approach speeds (cameras) (T)
	17.2 G5 Control speed on approaches

P – Proven; T – Tried; E – Experimental.
A full explanation of P, T and E appears in Section V of the study. Several strategies have sub-strategies with differing ratings.

Table 4-14. NCHRP Project 17-18(3), Unsignalized Intersections

Objectives	Strategies
HU17.1 AUH—Improve management of access near unsignalized intersections	HU17.1 A1UH—Implement driveway closures/relocations (T)*
	HU17.1 A2UH—Implement driveway turn restrictions (T)
HU17.1 BUH—Reduce the frequency and severity of intersection conflicts through geometric design improvements	HU17.1 B1UH—Provide left-turn lanes at intersections (P)
	HU17.1 B2UH—Provide longer left-turn lanes at intersections (T)
	HU17.1 B3UH—Provide offset left-turn lanes at intersections (T)
	HU17.1 B4UH—Provide bypass lanes on shoulders at T-intersections (T)
	HU17.1 B5UH—Provide left-turn acceleration lanes at divided highway intersections (T)
	HU17.1 B6UH—Provide right-turn lanes at intersections (P)
	HU17.1 B7UH—Provide longer right-turn lanes at intersections (T)
	HU17.1 B8UH—Provide offset right-turn lanes at intersections (T)
	HU17.1 B9UH—Provide right-turn acceleration lanes at intersections (T)
	HU17.1 B10UH—Provide full-width paved shoulders in intersection areas (T)
	HU17.1 B11UH—Restrict or eliminate turning maneuvers by signing (T)
	HU17.1 B12UH—Restrict or eliminate turning maneuvers by providing channelization or closing median openings (T)
	HU17.1 B13UH—Close or relocate "high-risk" intersections (T)
	HU17.1 B14UH—Convert four-legged intersections to two T-intersections (T)
	HU17.1 B15UH—Convert offset T-intersections to four-legged intersections (T)
	HU17.1 B16UH—Realign intersection approaches to reduce or eliminate intersection skew (P)
	HU17.1 B17UH—Use indirect left-turn treatments to minimize conflicts at divided highway intersections (T)
	HU17.1 B18UH—Improve pedestrian and bicycle facilities to reduce conflicts between motorists and nonmotorists (varies)

Objectives	Strategies
HU17.1 CUH—Improve sight distance at unsignalized intersections	HU17.1 C1UH—Clear sight triangles on stop- or yield-controlled approaches to intersections (T) HU17.1 C2UH—Clear sight triangles in the medians of divided highways near intersections (T) HU17.1 C3UH—Change horizontal and/or vertical alignment of approaches to provide more sight distance (T) HU17.1 C4UH—Eliminate parking that restricts sight distance (T)
HU17.1 DUH—Improve availability of gaps in traffic and assist drivers in judging gap sizes at unsignalized intersections	HU17.1 D1UH—Provide an automated real-time system to inform drivers of the suitability of available gaps for making turning and crossing maneuvers (E) HU17.1 D2UH—Provide roadside markers or pavement markings to assist drivers in judging the suitability of available gaps for making turning and crossing maneuvers (E) HU17.1 D3UH—Retime adjacent signals to create gaps at stop-controlled intersections (T)
HU17.1 EUH—Improve driver awareness of intersections as viewed from the intersection approach	HU17.1 E1UH—Improve visibility of intersections by providing enhanced signing and delineation (T) HU17.1 E2UH—Improve visibility of the intersection by providing lighting (P) HU17.1 E3UH—Install splitter islands on the minor-road approach to an intersection (T) HU17.1 E4UH—Provide a stop bar (or provide a wider stop bar) on minor-road approaches (T) HU17.1 E5UH—Install larger regulatory and warning signs at intersections (T) HU17.1 E6UH—Call attention to the intersection by installing rumble strips on intersection approaches (T) HU17.1 E7UH—Provide dashed markings (extended left edgelines) for major-road continuity across the median opening at divided highway intersections (T) HU17.1 E8UH—Provide supplementary stop signs mounted over the roadway (T) HU17.1 E9UH—Provide pavement markings with supplementary messages, such as STOP AHEAD (T) HU17.1 E10UH—Provide improved maintenance of stop signs (T) HU17.1 E11UH—Install flashing beacons at stop-controlled intersections (T)

Objectives	Strategies
HU17.1 FUH—Choose appropriate intersection traffic control to minimize crash frequency and severity	HU17.1 F1UH—Avoid signalizing through roads (T) HU17.1 F2UH—Provide all-way stop-control at appropriate intersections (P) HU17.1 F3UH—Provide roundabouts at appropriate locations (P)
HU17.1 GUH—Improve driver compliance with traffic control devices and traffic laws at intersections	HU17.1 G1UH—Provide targeted enforcement to reduce stop sign violations (T) HU17.1 G2UH—Provide targeted public information and education on safety problems at specific intersections (T)
HU17.1 HUH—Reduce operating speeds on specific intersection approaches	HU17.1 H1UH—Provide targeted speed enforcement (P) HU17.1 H2UH—Provide traffic calming on intersection approaches through a combination of geometrics and traffic control devices (P) HU17.1 H3UH—Post appropriate speed limit on intersection approaches (T)
HU17.1 IUH—Guide motorists more effectively through complex intersections	HU17.1 I1UH—Provide turn path markings (T) HU17.1 I2UH—Provide a double yellow centerline on the median opening of a divided highway at intersections (T) HU17.1 I3UH—Provide lane assignment signing or marking at complex intersections (T)

CHAPTER 5. FUTURE CONDITIONS

As population grows and land usage evolves in Bonners Ferry, the amount of traffic traversing the study area roadways is certain to change. This Chapter presents the impact of that change in traffic volumes on the intersections and roadways for the "No Build" and "Build" conditions. The "No Build" condition is commonly referred to as the "do nothing" option. This is how the network will operate with the same facilities as are in place today, but with future (typically increased) volumes. On the other hand, the "Build" option includes the proposed improvements implemented to mitigate the identified deficiencies in the "No Build" alternative. As discussed in Chapter 3 Traffic Forecasting, the future land use data was used to project traffic volumes onto the network for analysis at key intersections (see Appendix D). The operations of these intersections were evaluated in the Synchro operational model with the results presented in Appendix E.

5.1 2028 Volumes, 2008 Network (No build)

As shown in Table 5-1, the intersections at Kootenai Street and Lincoln Street have worsened from LOS D to LOS F and E, respectively. Additionally, Ash Street is also projected to fail by 2028 without mitigation. The Labrosse Hill Street, Tamarack Lane, and Riverside Street intersections were also shown to operation below acceptable levels of service. The projections in Table 5-1 were based on future growth projected by Year 2028 land use data as well as projected mainline growth along US 95.

Table 5-1. Intersection Level of Service: 2028 Volumes, 2008 Network

INTERSECTION	Control	2028 Peak Hour Level of Service (LOS)		
		Critical Movement	Delay	LOS
US-95 @ Deep Creek Road	U	EB LR	18.6	C
US-95 @ LaBrosse Hill Street	U	EB LR	29.6	D
US-95 @ McCall Road	U	EB LTR	20.9	C
US-95 @ Tamarack Lane	U	WB LR	29.8	D
US-95 @ Alderson Lane	S	--	13.9	B
US-95 @ Ash Street	U	WB LR	186.8	F
US-95 @ Kootenai Street	U	WB LTR	*	F
Ash Street @ Cow Creek Road	U	NB LR	9.1	A
Riverside Street @ Main Street	U	EB LR	11.3	B
Kootenai Street @ Main Street	U	NB LTR	21.1	C
Arizona Street @ Main Street	U	SB LR	16.3	C
Kaniksu Street @ Caribou Street	U	WB LTR	16.8	C
US-95 @ Lincoln Street	U	WB LTR	38.8	E
US-95 @ Denver Street	U	EB LTR	48.4	E
US-95 @ Riverside Street	U	EB Left	29.4	D

*Delay is excessive, software does not attempt to present a value
(R)oundabout (S)ignalized, (U)nsignalized

As shown in Table 5-3, the northbound through movement along US-95, from Tamarack to Madison is projected to operate at an unacceptable level of service at its current geometry. The southbound through movement along US-95, from Madison to Denver is expected to operate at 0.80, which is at the minimum threshold of required mitigation. It is likely that a similar effect would occur southbound along US-95, from Madison to Denver during the AM peak hour, perhaps exacerbated by school traffic. The link level volume-to capacity ratios displayed in the table show the specific area northbound along US 95, from Tamarack to Madison is forecast to operate beyond the acceptable threshold of 0.80. The potential of queuing along this section of US 95 is significant and, assuming a single northbound lane, will create excessive delays at many minor approaches of intersections along this section.

Table 5-2. Year 2028 Volume-to-Capacity (Either Direction V/C >0.80)

Roadway Name	Description	Direction	Volume-to-Capacity Ratio	Direction 2	Volume-to-Capacity Ratio 2
US-95	1/4-mile of Deep Creek Road	SB	0.32	NB	0.36
US-95	Deep Creek Rd. to LaBrosse St.	SB	0.43	NB	0.43
US-95	LaBrosse St. to McCall Rd.	SB	0.56	NB	0.54
US-95	McCall Rd. to Tamarack Ln.	SB	0.72	NB	0.76
US-95	Tamarack Ln. to Alderson Ln.	SB	0.73	NB	0.94
US-95	Alderson Ln. to Lincoln St.	SB	0.76	NB	0.87
US-95	Lincoln St. to Denver St.	SB	0.73	NB	0.81
US-95	Denver St. to Madison St.	SB	**0.80**	NB	0.84
US-95	Madison St. to Ash St.	SB	0.41	NB	0.47
US-95	Ash St. to Kootenai St.	SB	0.43	NB	0.43
US-95	Kootenai St. to Riverside St.	SB	0.28	NB	0.35
*US-95	Kootenai St. to Riverside St.	SB	0.28	NB	0.44
US-95	Riverside St. to ¼-mile N of	SB	0.30	NB	0.38
Caribou St.	Kaniksu St. to S of Kaniksu St.	EB	0.43	WB	0.56
Kaniksu St.	Caribou St. to W of Kaniksu St.	EB	0.36	WB	0.43
Ash St.	Ash St. to W of Cow Creek Rd.	EB	0.19	WB	0.18
Riverside St.	Main St. to W of Main St.	EB	0.28	WB	0.32
*Riverside St.	Main St. to W of Main St.	EB	0.18	WB	0.32
Kootenai St.	US-95 to W of US-95	EB	0.61	WB	0.50
*Kootenai St.	US-95 to W of US-95	EB	1.08	WB	0.50
Kootenai St.	US-95 to E of US-95	EB	0.20	WB	0.23
*Kootenai St.	US-95 to E of US-95	EB	0.20	WB	0.36

* Assumes EB Left Turn movement restricted at US-95/Riverside and WB Left Turn movement restricted at US-95/Ash

The eastbound through movement at Kootenai Street, from US-95 to the west is anticipated to operate at a *v/c* of **1.08**. This is based on the assumption that traffic has been redistributed and reassigned from the planned restrictions of eastbound left turn movements onto northbound US-95 at Riverside to access US-95 at Kootenai. These alterations, though not in place for the existing conditions, were included in related planning documents (3) and therefore analyzed as in-place. Recommended mitigation to the aforementioned deficient intersections and roadways are presented in the next section.

5.2 2028 Volumes, Mitigated Network (Build)

The previously mentioned rerouting of traffic to Kootenai Street will substantially increase the expected volumes through that intersection. However, due to grading constraints, sight distance restrictions and seasonal (icy) conditions, a signal a US-95 at Kootenai cannot feasibly be implemented. Instead, a joint effort between the City and DEA resulted in the configuration shown in Figure 3. The proposed access loop would restrict northbound left turns left turns off of US-95 and all left turns off of Kootenai Street from either direction. Instead, all traffic destined for northbound US-95 from the downtown area would cross under the highway on Arizona Street and traverse Plaza Street to reach the northbound lanes. This mitigation includes the addition of a eastbound right turn bay at Kootenai and Main for traffic destined for northbound US-95 and a westbound right turn bay at Arizona and Main for southbound US-95 vehicles. In order to process the increased volume at the intersection of Arizona Street and Plaza Street, a roundabout was analyzed. A roundabout, used in place of stop signs and traffic signals, will significantly improve traffic flow and safety. As shown in Table 5-3 the roundabout at Arizona at Plaza/casino will operate at LOS A. When implemented, the operations at the affected streets were shown to meet acceptable levels.

Figure 3. Kootenai/Plaza Street Access Loop

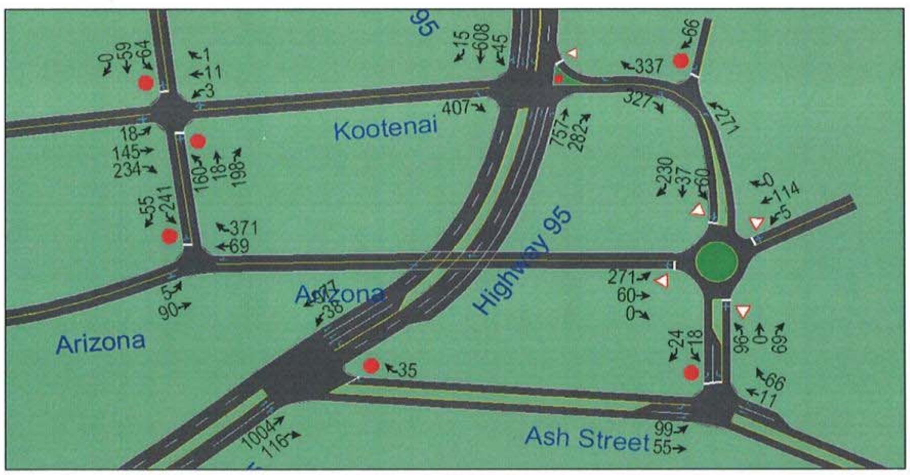


Table 5-3. 2028 Intersection Level of Service: Mitigated

INTERSECTION	Control	2028 Peak hour Level of Service (LOS)		
		Critical Movement	Delay	LOS
US-95 @ Deep Creek Road	U	EB LR	18.6	C
US-95 @ LaBrosse Hill Street	U	EB LR	**29.6**	**D**
US-95 @ McCall Road	U	EB LTR	20.9	C
US-95 @ Tamarack Lane	U	WB LR	19.6	C
US-95 @ Alderson Lane	S	--	13.9	B
US-95 @ Ash Street	U	WB Right	14.0	B
US-95 @ Kootenai Street	U	EB Right	21.0	C
US-95 @ Riverside Street	U	EB Right	12.4	B
Riverside Street @ Main Street	U	EB LR	9.3	A
Kootenai Street @ Main Street	U	NB LTR	15.6	C
Arizona Street @ Main Street	U	SB LR	12.0	B
Ash Street @ Plaza Street	U	SB Left	10.7	B
Kootenai/Plaza @ Arizona Street	R	--	4.0	A
Kaniksu Street @ Caribou Street	R	--	3.3	A
US-95 @ Lincoln Street	U	WB LTR	**38.0**	**E**
US-95 @ Denver Street	U	EB LTR	24.2	C

(R)oundabout (S)ignalized, (U)nsignalized

The intersection of US-95 at Ash Street does not meet signal warrants under this scenario (see Table 5-2) but was shown to operate acceptably with the traffic shift associated with the proposed left turn restriction and Kootenai/Plaza Access Loop. Although a Signal Warrant Analysis was conducted for all intersections operating at LOS E or worse, as summarized in Table 5-4, grading restraints and sight distance restrictions at both the Kootenai and Riverside intersections were prohibitive to signal implementation. Signal warrant worksheets are located in Appendix F.

For unsignalized intersections, the Highway Capacity Manual (HCM) two-way stop-control (TWSC) analysis procedure assumes random arrivals on the major street. For a typical major street, the delay equation in the HCM will predict greater than 50 seconds of delay (LOS F) for many TWSC intersections that allow minor street left-turn movements. LOS F will be predicted regardless of the volume of the minor street left-turning traffic. Even with an LOS F estimate, most low-volume minor street approaches may not meet any of the Manual on Uniform Traffic Control Devices (MUTCD) volume or delay warrants for signalization.

Table 5-4. Signal Warrant Summary

* 8-hour projections based on NCHRP 365	2008	2028
US-95 @ Ash		
8-Hour Vehicular Volume	Not Warranted	Not Warranted
Peak Hour	Not Warranted	Not Warranted
US-95 @ Kootenai		
8-Hour Vehicular Volume	Not Warranted	**Warranted**
Peak Hour	***Warranted**	**Warranted**
US-95 @ Lincoln		
8-Hour Vehicular Volume	Not Warranted	Not Warranted
Peak Hour	Not Warranted	Not Warranted
US-95 @ Nevada		
8-Hour Vehicular Volume	Not Warranted	Not Warranted
Peak Hour	Not Warranted	Not Warranted
US-95 @ Riverside		
8-Hour Vehicular Volume	*** Warranted**	**Warranted**
Peak Hour	**Warranted**	**Warranted**

* Meets 8-hour 70% minimum volume

The intersection of Kaniksu and Caribou was projected to witness heavy northbound left turns and eastbound right turns (210 vph and 174 vph, respectively) as vehicles travel from Caribou onto Kaniksu and vice-versa. The traffic at this intersection can be attributed to three sources: the hospital, the Tribe headquarters, and numerous residents to the west and northwest. A roundabout was analyzed at the intersection of Kaniksu and Caribou that will may improve the flow of traffic and improve mobility as well as reduce exposure for pedestrians and bicyclists on these recommended bicycle routes.

The westbound movement (minor approach) US-95 at Lincoln Street and eastbound movement (minor approach) at US-95 at Denver Street were forecasted to operate at LOS E during the PM peak hour without improvements. With the addition of an additional northbound through lane, indicated as necessary due to a deficient *v/c* ratio, however, these intersections are shown to improve. With the addition of a second through lane, the capacity, safety, and level of service as well as overall operations at most intersections between Tamarack and Madison will improve, as well as the roadway v/c ratios (see Table 5-5). Despite this additional capacity, the westbound approach at Lincoln is still shown to be below acceptable levels at LOS E. This is attributable to the increased volumes projected by the Bonner Heights Subdivision (9). It should be noted that LOS E is often experienced and tolerated on a minor approach turn movement during peak hour conditions. Traffic patterns are known to shift when moderate delays are experienced. In addition, the delineation of turn bays along the two-way left turn lane at all intersections between Tamarack and Madison would aid the driver in identifying turning locations. Further, a project was requested by the City to realign Lincoln Street to meet US-95 at the signalized intersection with Alderson Lane, which would further improve the operations at these intersections.

It should be noted that although future capacity deficiencies indicate many locations in need of improvement due to growth, that the approach to planning improvements for the transportation system is not merely reactive. The approach employed within this plan is to investigate measures that may prevent the future capacity deficiency in the first place and then plan for mitigation if still appropriate.

Table 5-5. Year 2028 Mitigated *v/c* Ratio

Roadway Name	Description	Direction	Volume-to-Capacity Ratio	Direction 2	Volume-to-Capacity Ratio 2
US-95	Tamarack Ln. to Alderson Ln.	SB	0.73	NB	0.47
US-95	Alderson Ln to Lincoln St.	SB	0.76	NB	0.43
US-95	Lincoln St. to Denver St.	SB	0.73	NB	0.40
US-95	Denver St. to Madison St.	SB	**0.80**	NB	0.42
Kootenai St.	US-95 to W of US-95	EB	0.77	WB	0.50

CHAPTER 6. TRANSPORTATION IMPROVEMENTS

In evaluating the current and future transportation conditions, it is apparent that past and future growth has and will continue to cause the need for changes in transportation. As can clearly be seen in the data presented in Chapter 5, there were transportation deficiencies caused by the anticipated build-out plan (future land use and background traffic growth) within the City of Bonners Ferry and surrounding areas. Although an initial response to projections of future deficiencies are assuming that the current trend will continue without alteration, then the City may wish to consider adjusting their view to what the future may hold, making *proactive* changes to policies (e.g. land-use patterns) that shape transportation needs as time progresses. The transportation improvements detailed in the previous chapter that brought the system within acceptable operational levels are the first step in maintaining a safe and efficient transportation system in Bonners Ferry.

6.1 Roadway and Intersection Improvement Projects

As described in Chapter 5, there were several major projects devised to improve and maintain operations and safety of the transportation system in Bonners Ferry. The Kootenai/Plaza Access Loop will reroute traffic from the downtown area to specific access points onto US-95 for the northbound or southbound lanes. This project includes a roundabout, turn bays, the elimination of turn bays, and will require signage to keep drivers on the right path. An additional northbound lane on US-95 between Tamarack and Madison is required to maintain an acceptable v/c ratio and will also improve minor movements along the way. Finally, a proposed roundabout at Kaniksu and Caribou is proposed to maximize the efficiency of the turns at this intersection.

These major projects, as well as several smaller pieces as detailed in Chapter 7 are the first step in improving transportation alternatives. The following sections include further enhancements to the network.

6.2 Pedestrian and Bicycle Facilities and Alternative Modes

Non-motorized modes of travel are an important focus to connect neighboring communities, recreational attractions, and office uses. Convenient multi-modal connections for bicyclists and pedestrians that are well-integrated into the transportation system are a vital component of the bicycle and pedestrian network. Currently, the City of Bonners Ferry does not have a significant network of developed trails, pathways or bike lanes. One existing barrier to consider for bicycle and pedestrian travel may include cold during the winter months. While this obstacle may likely serve as a deterrent to existing and potential trips by bike or by foot, convenient multi-modal access will help to address this issue and extend trip ranges.

The Americans with Disabilities Act (ADA) was enacted in 1990, providing rights and protections to individuals with disabilities. To comply in the realm of the pedestrian network, local agencies must bring sidewalks, curb ramps and roadway crossings up to a set of specified standards when constructing new facilities or making modifications within existing public rights-of-way. For purposes of facility use and planning, people who use wheelchairs are considered pedestrians.

Safety and security is a major concern of both current and potential bicyclists and pedestrians. A priority should be placed on encouraging local public transit and other alternative transportation systems to increase mobility, improve access for all residents, reduce traffic congestion, maintain air quality, and conserve energy. A priority should be placed on providing publicly funded transportation to those who are mobility-impaired, such as elderly, youth and disabled citizens. Encouraging pedestrian and bicycle usage by providing bicycle routes, walking paths and trails throughout the City of Bonners Ferry will reduce the dependency on automobiles. Figure 20 shows the proposed pedestrian and bicycle facilities within the City of Bonners Ferry.

The general approach to planning the bicycle and pedestrian system was to identify primary bicycle and pedestrian probable trip production areas and then provide routing to probable trip attraction areas. Customer bases include recreational users, commuters, students, and exercise enthusiasts. Some of the common productions and attraction areas included:

- Well defined neighborhoods
- Parks
- Schools
- Shopping Areas
- Connection points to adjacent community networks
- Recreational destinations (e.g. single track recreational areas, beaches, etc)
- Connections to regional bike routes

The bicycle and pedestrian facilities envisioned as part of this transportation plan were generally based on the guidelines set forth in the American Association of State Highway and Transportation Officials, Guide for the Development of Bicycle Facilities, 1999. Additionally, three functional classifications were used in planning these facilities:

- *Class 1* facilities represent separated multi-use bicycle and pedestrian travel-ways. These are intended for general bicycle and pedestrian use (traveling separate from traffic).
- *Class 2* facilities represent striped bicycle lanes on a vehicular travel-way. These are intended for bicycle commuter use (traveling with traffic) and/or providing connections where Class 1 facilities are not feasible.
- *Class 3* facilities represent a share-the-road situation where the vehicle and the bicycle do not have separately delineated travel lanes.

Finally, during the planning of future roadway functional class, options were added to the palette of typical roadway sections (see Table 6-2) depicting bicycle and pedestrian facilities where appropriate (e.g. when a route is shown on the proposed bicycle and pedestrian system map, Figure 20).

The Future Bicycle and Pedestrian network as depicted within this document was developed based on the values and perceived needs at the time of publication. This may require revisions as time progresses. The pedestrian and bicycle capital improvements listed in Chapter 7 were developed by identifying needed improvements to the bicycle and pedestrian network that were not necessarily associated with a vehicular CIP project.

6.3 Truck Routes

The designation of truck routes is intended to route truck traffic to those streets where they would cause the least amount of neighborhood intrusion and where noise and other impacts would not be considered nuisances while providing reasonable access to commercial and industrial areas. Roadways providing access to the highway are the most likely candidates for truck route designation. The designated truck route as identified by the state is along US 2/US-95. Additional streets that should be considered include Riverside Street, Kootenai /Plaza Street Access Loop, Arizona Street and Ash Street/Cow Creek Road. Riverside Street and Kootenai Street serve as major connections to the downtown area serving government agencies, commercial, industrial and residential uses. In order to handle typical truck loads, Riverside Street, Kootenai/Plaza Street, Access Loop, Arizona Street and Ash Street/Cow Creek Road pavement structural sections will have to be enhanced and designed to withstand truck traffic.

The designation of truck routes does not prevent trucks from using other roads or streets to make deliveries and the like. Figure 24 shows existing and future truck routes as well as freight route capacity per axle.

6.4 Functional Classification

As a result of this planning process, a revised functional classification system has been developed. The existing functional classification is shown in Chapter 2 (see Figure 11) along with the existing roadway function (see Figure 12). Figure 25 is the proposed Future Functional Classification Map. Future new connections and/or extensions, the function of many of the future roadways changed, resulting in a need for proposing updates for the Federal Functional Classifications.

The proposed changes in functional class are based on the FHWA Guidelines for Functional Classifications (4). Higher level functions (e.g. principal arterials) tend to emphasize route mobility, or the ease of traffic flow, while lower level functions tend to emphasize land access. In various situations these emphases appear to be at odds, especially when much land access is needed from a higher function roadway. The following graphics demonstrate function and access vs. mobility.

Figure 4. Pictorial Explanation of Roadway Function

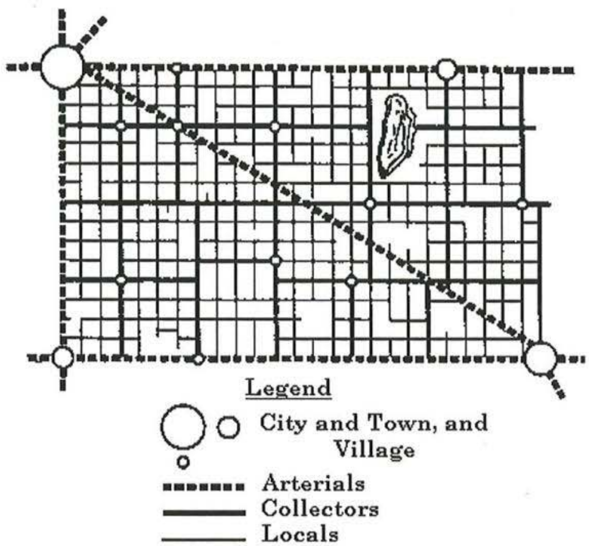
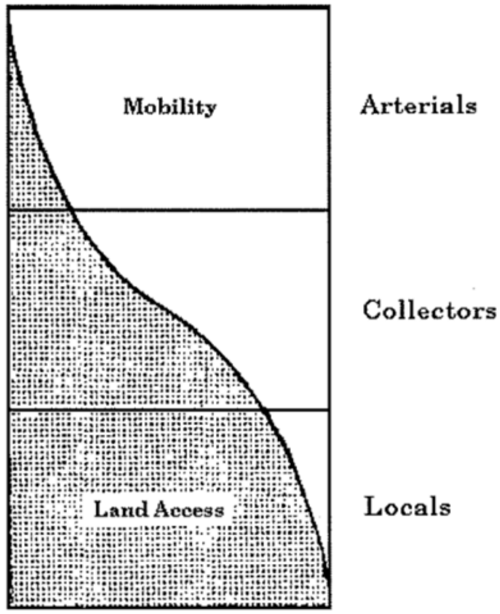


Figure 5. Proportion of Service by Function



6.5 Street Standards and Typical Sections

Street classification standards relate the design of a roadway to the function performed by that roadway. The function is determined by characteristics such as level of regional connectivity and extent of adjacent land access. Street standards are necessary to provide a community with roadways that are safe, aesthetically pleasing, and easy to administer. When new roadways are planned or constructed and when existing roadways are reconstructed, plans are based on experience and policies as well as publications of the profession. Within the generally accepted range of standards, communities have some flexibility in adopting specific design requirements to match the planned roadways under their jurisdiction, compatible with adjacent land uses.

6.5.1 Existing Street Standards

As previously discussed in Chapter 2, current specifications for right-of-way and roadway width have been based on the Boundary County Rural Functional Classification map, which depicts the federally recognized roadway classifications within the planning area. There are many non-federally recognized roadway functions in existence within Bonners Ferry street system. These standards specify the minimum right-of-way and roadway widths for arterial streets, collector streets, and local streets. The existing standards are provided in the Boundary County Transportation Plan (3).

6.5.2 Revisions to Street Standards

At the outset of this planning process, there was a provision for the adoption of common roadway standards within the City of Bonners Ferry to promote system continuity and efficient development processes. This section presents a common functional classification system, common roadway geometry standards including design requirements along with typical roadway section geometry categorized by functional classification.

Additional naming conventions extensions for typical roadway sections are as follows:

- B: Bicycle/Pedestrian Facility
- P: Parking Facility
- Bus: Business Area Use
- Res: Residential Area Use

6.5.3 Roadway Geometry

It should be noted that state highways are subject to the standards determined by ITD but can be superseded when within a local agency boundary. Consequently, standards for US-95 are not included in this document. Proposed revisions to city standards are summarized in the following sections. As improvements are implemented, appropriate components of each design should conform to ADA standards.

Table 6-1. Alignment Geometry Design Requirements

Design Speed	Driveway	15	20	25	30	35	40	45	50
Posted Speed		15	15	20	25	30	35	40	45
Horizontal									
Design Vehicle		WB-50	WB-50	WB-50	WB-50	WB-50	WB-62	WB-62	WB-62
Stopping Sight Distance (ft)	N/A	80	115	155	200	250	305	360	425
Max. Superelevation (%)	N/A	N/A	N/A	N/A	N/A	N/A	6%	6%	6%
Minimum Radius (ft)	50[1]	50[1]	107[1]	198[1]	333[1]	510[1]	485[2]	643[2]	833[2]
Maximum Relative Gradient (%)[3]	0.78%	0.78%	0.74%	0.70%	0.66%	0.62%	0.58%	0.54%	0.50%
Clear Zone (ft)(curbed)[4]	N/A	1.5	1.5	1.5	1.5	1.5	7	10	10
Clear Zone (ft)(curbless)[4]	N/A	7-10	7-10	7-10	7-10	7-10	7-10	10-12	10-12
Minimum Radius (ft)(Curb Returns)	20	15	15	30	30	30	45	45	45
Maximum Radius(ft)(Curb Returns)	30	30	30	45	45	45	60	60	60
Deceleration Length (ft)	N/A	N/A	N/A	N/A	170	275	340	410	485
Minimum Storage Length (ft)	N/A	100	100	100	100	100	100	100	100
Taper Length (ft)(Deceleration)	N/A	100	100	100	100	100	100	100	100
Taper Length (ft)(Acceleration)	N/A	45	80	125	180	245	320	405	500
Maximum Tangent Length (ft)	N/A	330	330	330	500	500	N/A	N/A	N/A
Length to Cul-de-Sac (ft)	N/A	400	400	400	N/A	N/A	N/A	N/A	N/A

Design Speed	Driveway	15	20	25	30	35	40	45	50
Vertical									
Minimum K Value (Sag)	10	10	17	26	37	49	64	79	96
Minimum K Value (Crest)	3	3	7	12	19	29	44	61	84
Minimum Grade (%)	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
Maximum Grade (%)	10%	9%	8%	7%	7%	7%	7%	7%	6%
Minimum Vertical Curve Length (ft)	N/A	45	60	75	90	105	120	135	150

[1] Minimum radii are for non-superelevated sections.

[2] Minimum radii are assumed to use max superelevation (see Exhibit 3-26, page 168, AASHTO Policy on Geometric Design of Highway and Streets, 2004)

[3] See Exhibit 3-30, page 177, AASHTO Policy on Geometric Design of Highway and Streets, 2004

[4] See AASHTO Roadside Design Guide for calculation requirements

Roadway typical sections are described in detail on the following pages. The sections shown in Table 6-2 depict proposed additions or revisions to the City roadway standards. General information on access management is discussed later in this chapter in addition to the Draft Access Management Standards in Appendix G.

The typical roadway sections are proposed as a system promoting flexibility between land use zones. The right-of-way and pavement widths were intended to be consistent along a given classified route so that changes in zone along the route could be serviced by changes in the configuration of a given roadway along that route. For instance, a collector street situated through an industrial zone may have need of a two-way-left turn lane (TWLTL) to accommodate truck traffic but as that street transitions into a commercial area, using the same pavement width, that street could be striped to facilitate on-street parking. For the typical road cross section, refer to Figure 4.2 of the Boundary County Transportation Plan (BCTP). For design criteria, refer to Section 4.4 of the BCTP.

Table 6-2. Roadway Typical Section Matrix

Classification	Speed (MPH)	Zoning	R/W Width[1] (Feet)	Easement (Feet)	Paved Width (F-F) (Feet)	Travel Lanes (Feet)	Turn Lanes (Feet)	Sidewalk (Feet)	Bike Facility (Feet)	Parking (Feet)
Arterials										
Arterial 5-B1	35-45	All	80	10	64	2@12', 2@13'	1@14'	1@6'	1@12'	N/A
Arterial 3	35-45	All	80	10	42	2@14'	1@14'	2@6'	N/A	N/A
Arterial 3-B1	35-45	All	80	10	42	2@14'	1@14'	1@6'	1@12'	N/A
Arterial 3-B2	35-45	All	80	10	48	2@12'	1@14'	2@6'	2@5'	N/A
Collectors										
Collector 2	25-35	All	60	10	30	2@12'	N/A	N/A	N/A	N/A
Collector 2-B2	25-35	All	60	10	34	2@12'	N/A	N/A	2@5'	N/A
Collector 3	25-45	All	60	10	38	2@12'	1@14'	2@6'	N/A	N/A
Collector 3-B1	25-35	All	70	10	38	2@12'	1@14'	1@6'	1@12'	N/A
Collector 3-B2	25-35	All	70	10	46	2@11'	1@14'	2@6'	2@5'	N/A
Local Access Streets										
Local 2-Bus	25	Ind/Com	60	10	28	2@14'	N/A	2@6'	N/A	N/A
Local 2-P-Bus	25	Ind/Com	60	10	38	2@12'	N/A	2@5'	N/A	2@7'
Local 2-P-Res	20	Residential	60	10	34	2@10'	N/A	2@5'	N/A	2@7'
Local 2-P1-Res	20	Residential	60	10	30	2@11'	N/A	2@5'	N/A	1@8'
Alleys										
Alleys	15	Residential	20	10	16	2@8	N/A	N/A	N/A	N/A

[1] R/W Width for newly platted right-of-way unless otherwise noted.

6.5.4 Explanation of Typical Sections

The following narrative describes the functional classification and rationale behind the configuration of the proposed typical roadway sections depicted in the previous pages. As a general note, each typical section includes concrete, pavement, base and ballast section dimensions that are given as guidelines. Unless the City of Bonners Ferry has adopted separate specifications for materials and workmanship, the Idaho Standards for Public Works Construction shall be followed. Furthermore, the dimensions shown are to be considered minimums in lieu of designed values. The City may still require analysis to verify needed concrete, pavement, base or ballast thicknesses on a site specific basis. Finally, various sections below address potentially positive and negative (if applicable) aspects of each configuration from a geometric perspective.

Local Access Streets

Based on the FHWA Functional Classification Guidelines *"the local street system comprises all facilities not on one of the higher systems (i.e. arterial, collector). It serves primarily to provide direct access to abutting land and access to the higher order systems. It offers the lowest level of mobility and usually contains no bus routes. Service to through-traffic movement usually is deliberately discouraged."* (10) These transportation planning efforts have identified a further breakdown of the local street system into two additional categories described as follows:

Local Access – Commercial and Industrial Streets

Commercial and industrial local access streets are intended to provide the greatest access for commercial and industrial zoning locations. From a design perspective, they are expected to carry less than 1,000 vehicles per day. Table 6-2 (local access streets) shows Local 2-Bus and Local 2-P-Bus typical sections with a 60 foot right-of-ways respectively, and 28 and 38 foot paved widths from face-of-curb to face-of-curb.

Local Access –Residential Streets

Experience has indicated that the design of a residential street and the subdivision in which it is located will affect the traffic operation, safety and livability with such a street. Generally, the average weekday traffic volume on a local residential street averages approximately 400 to 500 vehicles per day. When traffic volumes exceed approximately 1,000 vehicles per day, the residents on that street begin to notice the traffic and often complain about increasing traffic, noise, and potential accidents.

Areas with sidewalks located adjacent to the curb generally contain mailboxes, standard street light standards and sign poles, thus reducing the effective width of the walk. Sidewalks located away from the curb with a planting strip between the street and the walk generally eliminate obstructions in the walkway, and provide a winter snow storage area as well as a more pleasing design and buffer from traffic. To maintain a safe and convenient walkway, a five-foot minimum sidewalk width should be used in residential areas. This provides sufficient width for two persons to walk side-by-side and for people using wheelchairs or pushing strollers to pass other sidewalk users without interference.

Local streets are expected to carry less than 1,000 vehicles per day. To maintain low volumes, local residential streets shall be designed to encourage low speed travel. Street standards have been established for the local residential streets, allowing 30 to 34 feet of paved surface. The variation in paved surface widths allows for segments with parking on one side with narrow travel lanes, for two-way traffic with off street parking or for the common two-way traffic with on-street parking, both sides. Narrower streets generally improve the neighborhood aesthetics, and discourage speeding (see Traffic Calming section in this chapter). They also reduce right-of-way needs, construction and maintenance costs, peak storm-water run-off, and vegetation clearance. However, narrower streets may restrict visibility and allow for less on-street parking. These options may be viewed in Table 6-2 (local access streets). These two options require a 60-foot right-of-way width.

Collector Streets

Based on the FHWA Functional Classification Guidelines *"the collector street system provides both land access service and traffic circulation within residential neighborhoods, commercial and industrial areas. It differs from the arterial system in that facilities on the collector system may penetrate residential neighborhoods, distributing trips from the arterials through the area to the ultimate destination. Conversely, the collector street also collects traffic from local streets in residential neighborhoods and channels it into the arterial system. In the central business district, and in other areas of like development and traffic density, the collector system may include the street grid which forms a logical entity for traffic circulation."*[2]

From a design perspective, collectors are expected to carry between 1,000 and 5,000 vehicles per day, including limited through traffic. Table 6-2 (collectors) show five configurations of proposed collectors that have been prescribed for use. Right-of-way requirements for these sections vary from 60-foot to 70-foot in width and with paved widths varying from 30-foot to 46-foot. The collector sections provide various alternatives for allowing on-street parking, center turn lanes or bike lanes to meet localized needs or constraints.

Arterial Streets

Based on the FHWA Functional Classification Guidelines *"the minor arterial street system should interconnect with and augment the urban principal arterial system and provide service to trips of moderate length at a somewhat lower level of travel mobility than principal arterials. This system also distributes travel to geographic areas smaller than those identified with the higher system."*

"The minor arterial street system includes all arterials not classified as a principal and contains facilities that place more emphasis on land access than the higher system, and offer a lower level of traffic mobility. Such facilities may carry local bus routes and provide intra-community continuity, but ideally should not penetrate identifiable neighborhoods. This system should include urban connections to rural collector roads where such connections have not been classified as urban principal arterials."(10)

The spacing of minor arterial streets may vary from 1/8 - 1/2 mile in the central business district to 2 - 3 miles in the suburban fringes, but should normally be not more than 1 mile in fully developed areas.

From a design perspective, minor arterial streets should be configured to carry between 5,000 and 10,000 vehicles per day. In situations where a new minor arterial roadway is going to be constructed, the following criteria may be used to determine the appropriate section for the roadway. If the minor arterial street volume forecast is less than 800 vehicles per hour in the direction of heavier flow, the three-lane cross-section, the arterials in Table 6-2 (Arterials) may be used. If the volume forecast exceeds 800 vehicles per hour in the direction of heavier flow, then the 5-lane cross sections shown in Table 6-2 (Arterials) may be used.

Minor arterial streets consist of three- or five-lane cross sections with right-of-way requirements ranging from 60-foot to 90-foot. Several of the arterial section provide for bike lanes and most provided for sidewalks (with the exception of the low-density typicals). A generally negative impact to pedestrian crossing opportunities may be experienced as these typical sections are utilized. On-street parking is not provided on minor arterial street sections.

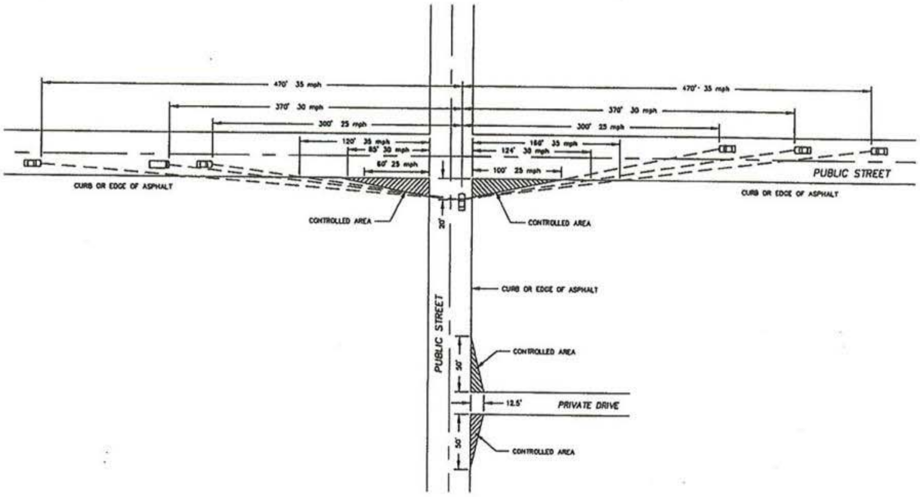
Alley Ways

The alley way typical section shown in Table 6-2 (alleys) of the typical sections is intended to provide an alternative development option to "from-street" garage access, allowing for a more traditional neighborhood design. The alley will be a public right-of-way and may be used for utilities, maintenance access and traditional curb-side services.

6.5.5 Intersection Site Triangle

This section discusses the standards for sight distance at intersections, and the need for a "clear sight triangle" free from obstructions. Intersection sight distance criteria allow a vehicle to enter the roadway without undue deceleration of vehicles in the through-traffic lanes. In order to maintain adequate sight distance, a clear sight triangle must be maintained without obstructions. The following figure is a suggested site triangle diagram appropriate for urban use:

Figure 6. Intersection Site Triangle Diagram



6.5.6 Bicycle Lanes

In cases where a bikeway is proposed within the street right-of-way, the roadway pavement section shall be widened to provide a bike lane on each side of the street as shown on the typical sections. On-street bike lanes must always flow in the same direction as vehicular traffic. The striping shall be done in conformance with the Manual on Uniform Traffic Control Devices. In cases where curb parking will exist with a bike lane, the bike lane will be located between the parking and travel lanes. In limited situations, curb parking may have to be removed to permit a bike lane.

The Future Bicycle Network (see Figure 20) identifies and establishes regionally coordinated bicycle corridors within the City. The bikeways on new streets or streets to be improved as part of the street system plan shall be added when the improvements are made. The Improvement Projects section of this chapter includes several bicycle system Capital Improvements.

6.5.7 Sidewalks

As future development occurs, it is anticipated that every curbed paved street shall have sidewalks on both sides of the roadway. Sidewalks on all streets shall have a minimum, barrier-free, five-foot concrete width. Wider sidewalk widths may be used elsewhere depending on the land use and approval from the jurisdiction.

CHAPTER 7. CAPITAL IMPROVEMENTS/IMPLEMENTATION

Implementation of the City of Bonners Ferry Transportation Plan will require changes to the comprehensive plan, street standards, and possibly subdivision ordinances. These changes will allow the City to address both existing and emerging transportation issues throughout the city in a timely and cost-effective manner. This implementation program is geared toward providing the city with the tools to amend plans with street standards that conform to the transportation plan and achieve the overall transportation goal "to provide and encourage a safe, convenient, and economic transportation system to facilitate the efficient pedestrian, bicycle and vehicular movement of people and freight within the city."

Implementation of the plan may also require that the city incorporate new access management standards, traffic claming programs, illumination standards, traffic impact analysis requirements and provide a revised plan for the city's bicycle and pedestrian system.

7.1.1 Street Classifications and Standards Recommendations

Defining requirements for existing street classification levels—minor arterials, collectors, and residential streets have been identified within this document (See Chapter 6). The comprehensive plan and street standards will need to be revised to reflect the new set of recommended street standards and functional classification categories presented herein. The new functional classification categories include arterials, collectors, and local streets. New street standards will apply to roadway elements such as right-of-way width, requirements for sidewalks, bicycle lanes and multi-use paths, on-street parking, access management, and geometric design standards. A full discussion of the new street standards and functional classifications is found in Chapter 6.

The goals and objectives outlined in Chapter 1 include the desire of the jurisdictions to achieve a higher level of access management within the City of Bonners Ferry. The goal reads as follows:

Goal 2

Develop procedures to minimize negative impacts to and protect transportation facilities, corridors, or sites during the development review process.

Objectives

- Develop access management standards that guide the frequency, location and size of accesses for each street classification.
- Limit the number of approaches onto collectors and arterials in order to minimize conflicts between modes and preserve the function of the multimodal corridor.
- Encourage the design and construction of local streets that improve street connectivity by reviewing, adjusting, and assigning roadway standards.

7.1.2 Recommendation of Traffic Calming Program

Goal 2

- Develop and adopt a method to encourage traffic speed calming within existing and proposed developments.

The purpose of the proposed Traffic Calming Program is to implement traffic calming techniques, when appropriate, in response to neighborhood requests for assistance with residential traffic concerns. Techniques typically include installation of one or more devices on a local residential street that make it inconvenient for drivers to drive fast or to use the local residential street as a throughway.

A Draft Traffic Calming Program has been included in Appendix A, in which neighborhoods request assistance in calming traffic on local residential streets, the roadway jurisdiction reviews and evaluates the requests or proposals, consensus with a majority of the neighborhood is reached about appropriate strategies to address the problems identified, and the selected strategy is implemented by the neighborhood and the city.

Recommendation of Traffic Impact Analysis Requirements

Goal 2

- Develop and adopt requirements for traffic impact studies.

A traffic impact analysis (TIA) is a comprehensive study that analyzes all surface transportation modes, including pedestrians, bicycles, vehicles, and other public transportation services, that would be affected by a development. These studies vary in their range of detail and complexity depending on the type, size and location of the development. The impact analysis area is generally larger than just the immediate project site. The TIA describes the transportation improvements necessary to accommodate traffic volumes generated by the development which are in excess of the impacts anticipated by planned future land use and therefore subject to mitigation costs beyond impact fees. The TIA documents the extent of impact of the proposed development on the surrounding transportation network, including additional trips, resulting level of service during AM and PM peaks, and the need for auxiliary lanes or other special capacity or safety features. Traffic impact studies should accompany developments which have the potential to impact the transportation network. They are important in assisting public agencies in making land use decisions and financing transportation needs beyond what were expected during the transportation planning process. These studies can be used to help evaluate whether the development is appropriate for a site and what type of transportation improvements may be necessary to mitigate the impacts of the development.

Benefits

Traffic impact analyses help communities to:

- Forecast additional traffic associated with new development, based on accepted practices.
- Determine the improvements that are necessary to accommodate the new development.
- Assist communities in land use decision making.
- Assist in allocating scarce resources to areas which need improvements.
- Identify potential problems with the proposed development which may influence the developer's decision to pursue it.
- Allow the community to assess the impacts that a proposed development may have.
- Help to ensure safe and reasonable traffic conditions on streets after the development is complete.
- Reduce the negative impacts created by developments by helping to ensure that the transportation network can accommodate the development.
- Provide direction to community decision makers and developers of expected impacts.
- Protect the substantial community investment in the street system.

Draft traffic impact analysis requirements have been included in Appendix H for potential adoption.

7.2 Intersection/Roadway Improvements

V-1001 – School Congestion (Add traffic signal) – As initially recommended by the Boundary County Transportation Plan, a type of signal has been recommended near the educational facilities on South US-95. Congestion on US-95 near the Bonners Ferry High School, Boundary Middle School, and the Valley View Elementary has created unacceptable delays during the beginning and the end of the school day as school bus traffic and vehicular traffic transporting students to and from school flood the highway. These volumes are expected to increase as county-wide population increases. A signalized intersection should be constructed at US-95 to serve the three schools. Although a signal was shown not to meet vehicular volume warrants at any unsignalized intersections in the area, there are also pedestrian and school crossing warrants to consider. The primary access for the middle school and high school is off of Tamarack Lane, whereas the elementary school accesses Augusta Lane. The signal is recommended to be placed at Tamarack to maximize spacing to the existing signal at Alderson. The signal should be operated using traffic loops to activate the signal cycle and to minimize unnecessary delays for through US-95 traffic.

V-1002 – Alderson Lane at US-95 Turn Lane Extension – The Alderson Lane intersection at US-95 is currently signalized, allowing Alderson traffic to enter US-95 without long delays. This will become increasingly important as the Paradise Valley area develops. The existing right for northbound US-95 traffic turning onto Alderson Lane should be lengthened. This will reduce the delay for US-95 traffic by allowing turning traffic to slow and negotiate the acute turn onto Alderson Lane without affecting the US-95 through traffic.

V-1003 – Cow Creek at Oak Street Intersection Reconfiguration – Cow Creek and Oak Street meet at an approximate 30 degree angle. This acute angle creates problems with sight distance for westbound traffic from both roadways. Currently, Oak Street is a through street and Cow Creek Road is a stop street. It is recommended that Cow Creek Road be realigned both vertically and horizontally to meet Oak Street at an angle of intersection as close as possible to 90 degrees. Realignment will require grade revisions on Cow Creek Road and a retaining wall along the railroad to prevent encroachment.

V-1004 – Kootenai/Plaza Street Access Loop – Realign streets and provide access for northbound traffic onto US-95. Provide a loop/ramp interchange between US-95 and Kootenai Street/Plaza Street that will provide loop/ramp combinations in the northeast quadrant. The intersection of the loop ramp combination in the northeast quadrant will be aligned with Kootenai Street/Plaza Street. A roundabout is recommended connecting Arizona Street, Plaza Street and the casino. A roundabout, used in place of stop signs and traffic signals, will significantly improve traffic flow and safety. Where roundabouts have been installed, motor vehicle crashes have declined by approximately 40 percent, and those involving injuries have been reduced as much as 80 percent. Crash reductions are accompanied by significant improvements in traffic flow, thus reducing vehicle delays, fuel consumption, and air pollution.

The project need is based on increasing accessibility and improving the flow of traffic between US-95 and the City of Bonners Ferry downtown area. Please note that all traffic traveling southbound, east of US-95 will utilize Plaza Street, Arizona Street and Main Street ultimately connecting with Kootenai Street.

V-1005 – Riverside Street at US95 – Due to sight distance and geometric restraints, the eastbound left turn movement should be restricted, including the removal of the left turn bay. In addition to the sight distance issues, this intersection is also the location of several crashes, as described in Chapter 4. From a LOS standpoint, intersections with partial (side-street) stop control, are evaluated based on the delay for each minor movement instead of for the intersection as a whole since motorists on the main road are not required to stop, which results in unacceptable reported levels of service during the peak hour. **See V-1004**

V-1006 – Kootenai Street at US95 – The eastbound left turn movements should be restricted and the left turn bay removed. This improvement is necessary based on grading constraints, sight distance restrictions and seasonal conditions. It has been determined that a signal a US-95 at Kootenai cannot feasibly be implemented. Intersection control modification (restrict eastbound left turn lane). **See V-1004**

V-1007 – Ash Street at US95 – The westbound left turn movements should be restricted and the left turn bay removed. Note that traffic traveling southbound, east of US-95 will utilize Plaza Street, Arizona Street and Main Street ultimately connecting with Kootenai Street. **See V-1004**

V-1008 – Arizona Street at Main Street – With the implementation of the Kootenai/Plaza Street Access Loop, the intersection of Arizona Street at Main Street is anticipated to carry a substantial amount of additional traffic including all movements onto northbound US-95 from Riverside, Kootenai and Ash Street. Traffic congestion and motor vehicle crashes are widespread problems, especially in urban areas. The construction of westbound right turn lane will be necessary to process the projected 371 westbound right turn movements. A dedicated right turn lane will minimize potential queuing as well as maximize the capacity and overall operation at this intersection. Note that the level of service projected in the mitigated scenario is anticipated to be acceptable assuming stop control (see Table 5-3).

V-1009 – US-95 – To enhance the capacity of US-95, an additional (second) northbound through lane from Tamarack to Madison will be needed. This will improve the level of service at the Lincoln Street and Denver Street intersection, as well as all of the intersections between Tamarack and Madison. There should be turn bays delineated along the two-way left turn lane at all intersections between Tamarack and Madison. This improvement will also improve the operations at minor intersections in the area by increasing the opportunities for crossing and turning movements.

V-1010 – Caribou Street at Kaniksu Street – Heavy future northbound left turn movements (210 pm peak hour vehicles) are anticipated as well as heavy eastbound right turning vehicles (174 pm peak hour vehicles). A roundabout at this intersection may improve traffic flow, improve mobility as well as reduce exposure for pedestrians and bicyclists. Multiple medical facilities are located adjacent to this intersection and pedestrian and bicycle traffic is anticipated to be significant. Successful implementation of a roundabout will improve traffic flow as well as potentially minimize the conflict between vehicles and pedestrians/bicyclists, thus improving both the safety and the operations.

V-1011 – Lincoln Street Intersection Re-alignment – Based on feedback from the City staff, a realignment of Lincoln Street to meet the Alderson Lane intersection at US-95 is proposed. This improvement will provide signalized access to the neighborhood west of the highway without adding an additional signal. However, the realignment of Lincoln Street will incur substantial right-of-way acquisition costs and therefore may be dependent on redevelopment of the surrounding area.

V-1012 – Bypass Feasibility Study – Through Bonners Ferry, US-95 is the primary path of travel through the entire city. In fact, the lone crossing of the Kootenai River is at US-95. In addition, US-95 provides a critical connection between the Trans Canada and the US Interstate system. Alternative connectivity is vital in maintaining safety, capacity, tourism and the movement of goods. With the recommendation to restrict left turn movements on to the highway in the downtown area, the consideration for an alternate route to a second bridge crossing the Kootenai River should be examined. This improvement is the recommendation for a targeted study to evaluate the geometric, economic, and social feasibility of such a route.

V-1013 – Kootenai Street at Main Street – With the rerouting of traffic destined for northbound US-95 from the downtown area to Arizona Street, the eastbound right turn volume at this intersection is projected to increase to 234 vehicles in the peak hour. The addition of an eastbound right turn lane will allow this intersection to operate efficiently by minimizing the potential queuing as well as maximizing the capacity of the available lanes.

7.3 Pedestrian/Bicycle Improvements

P-2001 – South Hill (US-95) – US-95 at Bonners Ferry South Hill is a 4-lane section with a narrow center raised curb type median and pedestrian path separated from the southbound driving lane by a concrete Jersey barrier. The existing lanes are narrow and have no shoulder. The median works well in summer months but creates a snow plowing and driving hazard in the winter. Narrow lanes and roadway curvature combined with the existing non-barrier median creates a traffic hazard especially when trucks are present. When built, the pedestrian walkway was immediately adjacent to the driving lane separated by only a curb. Later a Jersey barrier was added to protect pedestrians which helped, but is not an ideal situation. Proposed improvements include a central barrier type median and an expanded pedestrian/bicycle pathway that includes pathway lighting and provides additional protection from passing motorists. The median barrier should extend from Madison to Riverside Street, breaking only for the Ash Street and Kootenai Street intersections. When highway traffic increases to the point that left turning Ash and Kootenai Street traffic creates level of service or safety problems median barrier should be extended to include these intersections. Downtown area traffic would then access the highway by right turn only via ramps with acceleration lanes at the Ash and Kootenai Street intersections.

P-2002 – South Main Street at US-95 – Pedestrian and bicycle facilities along the South Main Street (US-95) corridor should be upgraded. A sidewalk was added recently along a significant portion of this corridor, but it is immediately adjacent to the traveled way which is inherently unsafe. In most areas, the sidewalk is only on one side of the highway forcing pedestrians to cross. This corridor is the backbone of the pedestrian and bicycle traffic between the downtown area and the South Hill area. This route connects a significant portion of the residential neighborhoods to the school and to the downtown shopping areas. Any roadway improvement in the area should include a separated walking and biking path on both sides of the highway (provide walking/bike pathways on both sides of 1600' of roadway and provide a striped, signed pedestrian crossing at the intersection of Madison and Main Streets).

P-2003 – Walking path to Old Highway 95 – Provide approximately 850' of bicycle/pedestrian pathway from accessing the Old North Hill grade area.

P-2004 – El Paso Street (Highway 95 to End) – Major development is expected at the south end of El Paso Street in coming years. In order to better serve the development traffic including pedestrian and vehicle traffic, El Paso Street should be widened and sidewalks installed.

P-2005 – Augusta Street (Highway 95 to Buchanon) – Augusta Street from Highway 95 to Buchanon Street is the main access to the Valley View School. Widening for bus traffic and installation of curb, gutter, and sidewalk is needed to provide a safe and functional access to Highway 95.

P-2006 – Alderson Lane – Alderson Lane from Highway 95 to the bottom of the Paradise Valley Hill is a Major Collector for both Bonners Ferry and Boundary County. Alderson Lane is in need of road widening, curb, gutter, and sidewalk installation.

P-2007 – Kaniksu Street (Hospital Way to City Limits) – This project includes Kaniksu Street from the City limits to the Hospital. Improvements include overlaying the existing roadway and installation of a pedestrian/bicycle path along the project length.

P-2008 – Monroe Street – An at-grade crosswalk with flashing beacons should be installed on the north leg of the Monroe Street/US-95 intersection. This enhanced crosswalk will connect the neighborhoods on the

East and West sides of the highway as well as provide a route to the public swimming pool on Washington. Pedestrians should still use extreme care when crossing the street where flashing beacons are in place. Although the intersection gives a warning to drivers that pedestrians intend to cross the street, pedestrians should still follow the safety tips for crossing the street.

P-2009 – Madison Street to Arizona Street (US-95) – Install a sidewalk along west side of US-95, from Madison Street to Arizona Street, where no sidewalk currently exists. This corridor is the backbone of all pedestrian and bicycle traffic between the downtown area and the South Hill area. This route connects a significant portion of the residential neighborhoods to schools an existing sidewalk to the downtown shopping areas.

P-2010 – Old 95 sidewalk connection – Provide approximately 750'-1000' feet of sidewalk connecting the Old 95 trail on the north hill to the end of the existing sidewalk north of the bridge.

P-2011 – Parking access to Old 95 trial – Provide approximately 5 parking spaces at a paved parking lot area at south end of Old 95 trail.

P-2012 – West Riverside Trail (US-95 to City Limits) – Install a six-foot wide walking path from US-95 to the western City Limits along the south side of the Kootenai River (approximately 1 mile). The trail entrance would be at the intersection of First Street and Riverside Drive. A single entry/exit point is recommended in order to reduce confusion and increase control of trail access as well as reducing the potential for vandalism.

P-2013 – West Riverside Trail Crossing – Install at-grade pedestrian crossing at west leg of the First Street/Riverside Drive intersection, ultimately connecting to the West Riverside Trail.

P-2014 – Walking path to public pool – Install a six-foot wide walking path from Madison Street (south side) to Washington Street, ultimately connecting to the public pool.

P-2015 – Ball Park Trail – Install a ten-foot wide shared use path from the north end of the Kootenai River bridge east to the existing ball fields and picnic areas. There is currently a beaten path under the bridge to these areas for which the ownership is unknown; this project recommends paving this path as a connection to the existing sidewalks system, thereby completing a path from most places in the city to these recreational areas.

Project Number	Project Title	Cons Prior	cation			Operati onal Deficie		Financial Partners						Project Cost (2008 Dollars)
			Freight	Structural	Bike/Ped Plan	Existing	2028	ITD	Boundary County	Urban Renewal	Private Dev.	Impact Fees	Other	
V-1001	School Congestion					◆		▲						$ 400,000
V-1002	Alderson Lane at US 95						◆	▲						$ 100,000
V-1003	Cow Creek at Oak Street Intersection					◆		▲						$ 750,000
V-1004	Kootenai/Plaza Street Access Loop						◆	▲				▲		$ 1,150,000
V-1005	Riverside Street at US 95						◆	▲				▲		$ 37,400
V-1006	Kootenai Street at US 95						◆	▲				▲		$ 37,400
V-1007	Ash Street at US 95						◆	▲				▲		$ 52,400
V-1008	Arizona Street/Main Street (Alt 1)						◆							$ 426,100
V-1008	Arizona Street/Main Street (Alt 2)						◆							$ 9,000
V-1009	US 95 - Tamarack to Madison						◆	▲				▲		$ 1,076,400
V-1010	Caribou Street at Kaniksu Street						◆							$ 347,600
V-1011	Lincoln Street Intersection Re-alignment						◆							$ 1,382,900
V-1012	Bypass Feasiblity Study						◆	▲						$ 150,000
V-1013	Kootenai Street at Main Street						◆							$ 12,700
	<<Discuss Freight Routes With City>>													
Note:	V-1001 - V-1003 including cost estimates are inclu													**$ 5,931,900**

Project Number	Project Title	Cons Prior	cation			Operational Deficie		Financial Partners						Project Cost (2008 Dollars)
			Freight	Structural	Bike/Ped Plan	Existing	2028	ITD	Boundary County	Urban Renewal	Private Dev.	Impact Fees	Other	
P-2001	South Hill (US 95)					◆		▲						$ 2,500,000
P-2002	South Main Street at Highway 95				●	◆		▲						$ 120,000
P-2003	Walking Path to Old Highway 95				●		◆	▲						$ 50,000
P-2004	El Paso Street-Hwy. 95 to End				●		◆	▲						$ 400,000
P-2005	Augusta Street-Hwy. 95 to Buchanon					◆		▲						$ 250,000
P-2006	Alderson Lane				●	◆		▲						$ 250,000
P-2007	Kaniksu Street-Hospital Way to City Limits						◆	▲						$ 270,000
P-2008	Monroe Street				●	◆								$ 172,000
P-2009	Madison to Arizona Ped Improvements					◆								$ 229,500
P-2010	Old 95 Sidewalk Connection						◆							$ 82,900
P-2011	Parking Access to Old 95 trail						◆							$ 25,500
P-2012	West Riverside Trail (US 95 to City Limits)						◆							$ 214,550
P-2013	West Riverside Trail						◆							$ 4,600
P-2014	Walking path to public pool					◆								$ 77,600
P-2015	Ball Park Trail				●	◆								$ 163,300
Note:	P-2001 - V-2007 including cost estimates are inclu													**$ 4,809,950**

CHAPTER 8. FUNDING SOURCES

8.1 Funding Strategies

The successful implementation of the Transportation Plan will require that the jurisdictions secure funding for new transportation projects over the next 20 years. This chapter provides a review of historic funding mechanisms used by other jurisdictions to fund transportation improvements.

8.1.1 Local Funding Sources

Transportation improvements in Idaho are funded through a combination of federal, state (highway districts), and city resources. Historically, local funding sources that have been used to finance improvements to transportation system include the following:

- General fund
- Local improvement districts
- General levy bonds
- Serial bonds
- Development impact fees
- Urban renewal agency and districts

General Fund

General funds include all local funds subject to appropriation by a governing body – property taxes, local option sales taxes, utility taxes, and general state shared revenue, among others. General funds are established to account for resources devoted to financing the general services a jurisdiction performs for its citizens. General fund revenues can be used for transportation purposes.

Some of the major revenue sources for the jurisdiction's general fund include property taxes, franchise fees, permit fees, user fees, and state shared revenue. Historically, the portion of the general fund, of which has been dedicated for improvements to each jurisdiction's transportation system has been small. The amount of general fund dollars dedicated to transportation-related projects is determined during the jurisdiction's budgeting process. The city council or board reviews and adopts requests from the various jurisdictional departments during this process, and typically there are funding shortfalls. These capital dollars have usually been used to patch and seal streets.

Local Improvement Districts

Idaho Code (Title 50, Chapter 17) allows cities, counties, and highway districts to form local improvement districts (LIDs) to construct public improvements. LIDs are most often used by cities to construct local projects, such as streets, sidewalks, or bikeways. Jurisdictions that use LIDs are required to have a local LID ordinance that provides a process for district formation and payback provisions. Through the LID process, the cost of local improvements is generally spread out among a group of property owners along a public street or within a specified area. The cost of improvements is paid for by special assessments on those properties that benefit from the improvements. LIDs are funded through the sale of special assessment bonds. Because the bonds sold for financing improvements are public, they can be sold as tax exempt, so the cost to property owners is generally less than private bond funding.

Impact Fees

Idaho Code (Title 67, Chapter 82) allows local governments to establish development of impact fees as a means of funding public works infrastructure needed for new local development. These fees are meant to ensure that adequate public facilities, including the local transportation system, are available to serve new growth and development and that those who benefit from this development pay a proportionate share of the cost of new public facilities needed to serve the development.

A plan-based methodology is used to determine impact fees for transportation improvements. This methodology allows jurisdictions to select capital projects that can reasonably be related to development impact and to collect impact fees based on vehicle trip demand.

Urban Renewal Agency
Idaho Code (Title 50, Chapter 20) establishes the Idaho Renewal Law and a process for the creation of urban renewal agencies to address "deteriorated" and "deteriorating" areas within a jurisdiction. In relation to transportation, these degraded areas are seen as potentially contributing to traffic problems and the general inefficiency of the transportation system, and are therefore the proper subject of attention for urban renewal agencies.

Federal and State Funding Sources
There are a number of federal and state programs that the City of Bonners Ferry can look forward to raise additional transportation funding. However, federal programs are highly competitive and the degree to which a jurisdiction can rely upon these programs is limited.

The two principal sources of highway user revenues are federal-aid highway programs and state user taxes. Federal-aid funding for highways comes from the Highway Trust Fund. Most of these funds are generated by federal gas and diesel taxes. Other funding comes from taxes on tires and heavy trucks. Funds are authorized for highway construction, planning, safety, and other uses. Federal-aid funds are divided into a variety of funding categories and programs. Major federal-aid highway funding programs include the National Highway System, Interstate program, Surface Transportation Program (STP), Congestion Management and Air Quality Improvement Program (CMAQ), and the National Scenic Byways Program.

Federal Surface Transportation Program
STP funds are allocated to states and sub-allocated to cities, counties, and highway districts on a formula basis. The funds may be used for any road that is functionally classified above a local or rural minor collector, and that is scheduled for improvements in the Idaho Statewide Transportation Improvement Program.

Federal Enhancement Funds
The Transportation Equity Act for the 21st Century (TEA 21) included provisions that require the state to set aside a portion of its STP funds for projects that will enhance the cultural and environmental value of the state's transportation system.

Eligible transportation enhancement projects must be directly related to the inter-modal transportation system. This program funds enhancements, including pedestrian and bicycle facilities; preservation of abandoned railway corridors; landscaping and other scenic beautification; control and removal of outdoor advertising; acquisition of scenic easements and scenic or historic sites; scenic or historic highway programs; historic preservation; rehabilitation and operation of historic transportation buildings, structures, or facilities; archaeological planning and research; and mitigation of water pollution due to highway runoff.

Congestion Mitigation and Air Quality Improvement Program
The CMAQ provides a flexible funding source to state and local governments for transportation projects and programs to help meet the requirements of the Clean Air Act. Eligible activities include transit improvements, travel demand management strategies, traffic flow improvements, and public fleet conversion to cleaner fuels, among others. Funding is available for both current non-attainment areas and for maintenance areas that were formerly non-attainment areas that are now in compliance.

State Highway Account

The State Highway Account (SHA) is the primary source of state funding for improvements to highways. The SHA is funded primarily through fuel taxes, which represent around 70 percent of state highway user taxes and fees; vehicle registration fees, which account for about 16 percent of state highway user taxes and fees; and a weight-distance tax, which is based on a single registration fee calculated by truck weight and mileage.

8.2 Transportation Plan Funding Recommendations

While it is possible that federal and state funding will pay part of the cost for some local transportation improvements, it is very unlikely that such funding would pay for the whole cost, and there is the possibility that there would be no federal or state funds for local projects. However, the inclusion of specific transportation improvements in local transportation plans and in the CIP increases the likelihood of securing federal and state funds. Still, as with other local jurisdictions in Idaho, funding improvements to the transportation system in the City of Bonners Ferry will almost certainly remain a difficult and challenging task in the future.

Those sources that have historically provided funding for transportation improvements will continue to play an important role in funding future projects. As each jurisdiction's residential and commercial areas grow, there will be opportunities for the increased use of LIDs and impact fees. It is recommended herein that the City of Bonners Ferry either adopt or update an Impact Fee Program to reflect the addition and deletions of projects recommended through this transportation plan.

The expansion or establishment of urban renewal districts may also provide funding for capital projects. The ability to secure federal and state grants will be dependent on many factors, including the ability of the City of Bonners Ferry to make a persuasive case that there is a need for transportation-related improvements. The City of Bonners Ferry Capital Project Budget should also be updated to reflect the funding requirements of appropriately sized projects.

8.2.1 Other Funding Mechanisms

In addition to historic revenue sources, there are other funding sources that the City of Bonners Ferry should explore to help pay for new transportation projects. This section offers a summary of some of these potential funding sources. Because population and employment growth in the City of Bonners Ferry and the region has and is expected to occur at a significant rate over the next 20 years, it will become increasingly important for the jurisdictions to identify alternative sources of funding and/or make changes to existing funding mechanisms in order to accommodate this expected growth.

Development Impact Fees

Impact fees are one-time charges paid by new development to pay for part of the capital cost of providing public facilities that serve new development. The City of Bonners Ferry currently does not levy a traffic development impact fee on new development, and this has been a consistent source of transportation revenue in recent years. It is recommended that the City adopt impact fees programs as well.

As with many of the alternative funding source recommendations, there are questions of whether there would be sufficient community support for local option taxes and fees that require a larger financial commitment from area residents. It is therefore critical that the City articulate to residents a vision for growth over the next 20 years, the importance of the transportation system to this vision and to the livability of the community, and how transportation projects identified in adopted plans address the needs of the community. A revised traffic development impact fee structure must be seen as necessary, fair, and equitable.

Local Option Transportation Taxes

Nationally, the share of transportation funds raised by local option taxes remains small, but has been growing. Local option transportation taxes have been adopted in one form or another in at least 46 states. Their growing popularity suggests that the need for transportation facilities and services continues to outpace the ability of state and federal governments to provide them.

The decision to increase taxes for any purpose is always a difficult one. In transportation, it tends to occur when the public believes there is a pressing local need that cannot be met with existing resources. Local option taxes are increasingly becoming the levers by which communities ensure that needed transportation projects are built. However, Idaho has been cautious in its adoption of local option transportation taxes. Historically, roads have been seen as a state rather than a local responsibility, in part due to the largely rural character of the state and the long distances between destinations. As a result, most roads have been funded through state and federal sources.

The following local option transportation taxes could provide additional sources of revenue for transportation improvements within the City of Bonners Ferry.

Local Option Vehicle Fee

There are many different ways of assessing vehicles fees, each with its own rationale. For this section we have broadly defined vehicle assessment to include annual vehicle registration fees. Other common types of vehicle assessments include those based on vehicle value (or some proxy), weight, age body type, or number of wheels; and other taxes on vehicle rental and leases, parking, and sales. Another important user tax, weight-based fees on trucks, is an important source of revenue for many state governments, including Idaho, but is not practical at the local level, since local governments do not have jurisdiction over the use of state and federal highways.

Many authorize some type of vehicle license or registration fee. The State of Idaho authorizes local governments to enact local vehicle registration fees at the discretion of each county. Local option vehicle registration fees could be adopted at the Bonner County level to pay for some of the local project costs that would otherwise be paid by local sources. There is a relationship between vehicle registration fees at the county level and the benefits to transportation facilities within a local jurisdiction. Many of the vehicle operators within Bonner County that would pay a local option registration fee would also use City of Bonners Ferry transportation facilities and thus benefit from that use of registration fees.

Local Option Sales Tax

Nationally there has been a shift in local finance away from property taxes and toward sales taxes. This has been particularly true of transportation finance, where the sales tax has emerged as one of the most significant and politically feasible revenue options for local governments seeking to finance transportation infrastructure projects. Thirty-three states have authorized local option sales taxes for transportation purposes (or for more general purposes that may include transportation). Although many local governments in various states simply use their sales tax revenues for general revenue purposes, it is quite common for local governments to earmark their sales tax revenue for transportation purposes.

Local Option Gas Tax

Many local jurisdictions have dealt with transportation funding shortfalls by implementing local gas taxes. Currently, 15 states allow the implementation of local gas taxes, whose funds are usually earmarked for transportation projects. Taxes on motor fuels are often seen as an attractive source of revenue because the tax can be easily administered and provides a relatively stable revenue stream. Perhaps most importantly, it is paid by drivers who use the transportation facilities the tax is helping to fund, therefore establishing a close connection between those who pay the taxes and those who benefit from them.