Non-Motorized Transportation Plan

July, 2007
1 - COMMUNITY INVOLVEMENT

In 2005 and early 2006 the Consultant Team and City Staff coordinated a series of community involvement activities to help facilitate discussion of the NMTP process, including the identification of issues and possible plan improvements. The following highlights are a summary of the activities and results of the community involvement activities conducted as part of the NMTP.

OVERVIEW
The Community Involvement included the following activities.

Public Open House Meetings
Three public open house meetings our workshops were held to identify community issues regarding pedestrian and bicycle systems in Bonney Lake. These meetings were held:
- October 26, 2005 - to present preliminary conditions assessment results and assist in the identification of key issues and concerns.

City Council Meetings
Three City Council meetings included significant discussion of the NMTP process, findings and draft recommendations, including:
- October 18, 2005 - to present preliminary conditions assessment results and assist in the identification of key issues and concerns.
- February 21, 2006 – to present draft pedestrian system needs and discuss priority measuring methods and rank Council priorities.
- April 4, 2006
- May 6, 2006 – to present alternative local street design options to address sidewalk needs.
- September 5, 2006

Planning Commission Meetings
- The Planning Commission met monthly from September, 2006 through March, 2007 to discuss and consider various elements of the Draft NMTP.
- At its April, 2007 meeting the Planning Commission considered then recommend adoption of the NMTP.
SUMMARY OF KEY ISSUES, CONCERNS AND COMMENTS

This section includes a general summary of issues identified in the public meetings and City Council meetings.

Sidewalk System Issues
- lack of connectivity for both pedestrian and bicycle facilities
- strong support for separated sidewalks and pedestrian facilities
- desire to investigate alternative street/sidewalk designs similar to Seattle’s SEA Streets
- need to complete sidewalks to provide “safe routes to schools” – work with school districts to define routes and priorities
- improve connectivity to public facilities; parks, schools, business and retail areas, public buildings, etc.

Design / Standards Issues
- desire for more consistent design standards for all city/county/state operated facilities
- need to reduce / eliminate conflicts and obstructions on sidewalks including mailboxes, restaurants, landscaping, street trees, bicycle use, bus stop use, etc. – consistent application
- desire for improvement to pedestrian and bicycle facilities in "safe school routes"
- evaluate lane standards for safer bicycle use
- lack of connectivity due to disconnected street systems, cul-de-sacs, etc.

Bicycle System Issues
- lack of connectivity in the overall system
- desire for separated bicycle facility in congested areas
- connectivity to recreational and open spaces is important

The summary and findings of the Community Involvement effort were integrated into the plan process, particularly through the Recommended Measures to Implement the NMTP.
Inventory & Evaluation

Chapter 2

JULY 2007

Prepared by:

The Transpo Group
2 – INVENTORY AND EVALUATION

PROCESS

The City conducted extensive pre-planning as part of the NMTP to ensure the inventory of existing sidewalk and curb ramp facilities was both cost-effective and yielded highly accurate and reliable data for further analysis.

Title II of the ADA requires that the City evaluate its services, programs, policies, and practices to determine whether they are in compliance with the nondiscrimination requirements of the ADA. This section describes the data collection process and resulting inventory of sidewalk and curb ramp facilities within the urban area of Bonney Lake, all critical elements as part of the City’s Evaluation. The inventory and evaluation is described in these sections.

GPS-Based Data Collection

Techniques and Technology

Rather than manually record the sidewalk and curb ramp system with laptop computers or hard-copy tablets, the City and The Transpo Group evaluated and confirmed the use of hand-held Global Positioning System (GPS) units to electronically record the necessary system inventory. The GPS data collection method enabled the City to eliminate the steps of hard data transcription, formatting and re-entry for later GIS analysis.

A hand-held, Trimble GeoXT unit was provided to the City for data collection. The GeoXT was used to quickly develop and deploy a detailed data collection routine that addresses critical system components in Bonney Lake, and record field data with very high geo-positioning accuracy.

The GeoXT’s units were equipped with Terrasync software for maximum data collection capacity and geospatial GPS accuracy. The Pathfinder Office software provided the City the ability to efficiently develop the sidewalk/curb ramp inventory template, called a “Data Dictionary,” accurately transfer files between desktop computers and the GeoXT units, and accurately correct raw data for higher GPS accuracy – a process known as differential correction. Once the field data was transferred and geo-corrected, Pathfinder Office also provided routines to convert the raw data into geographic information system (GIS) coverage files. Following the raw data conversion, the City was then able to assimilate the sidewalk/curb ramp with other GIS data in its GIS program. The Transpo Group used the GIS data inventory for later self-evaluation and planning priority analysis (see Chapter 3 – Methodology for Prioritizing Pedestrian Projects).

Data Dictionary Development

The Transpo Group developed and tested the Data Dictionary file (see Appendix A) for use with the Trimble GeoXT’s to record the necessary sidewalk and curb ramp information. The Data Dictionary was developed to collect pertinent information to identify the location and characteristics of sidewalk and curb ramp features, focusing on ADA-compliance (see ADAAG) based on characteristics fully defined and summarized in Designing Sidewalks.
and Trails for Access. GPS data line features (GPS recordings for beginning and end points of each line) were developed to record the location of missing sidewalks and the characteristics of existing sidewalks. GPS point features were developed to record the location of missing curb ramps and the characteristics of existing curb ramps. The Data Dictionary was also developed with pre-set scoring values for all sidewalk and curb ramp attributes. These pre-set values helped expedite the GIS evaluation in later steps of the study. Table 2-1 briefly summarizes the characteristics targeted in the inventory.

Table 2-1: GPS Data Inventory - Features and Characteristics

<table>
<thead>
<tr>
<th>FEATURE</th>
<th>CHARACTERISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sidewalks</td>
<td>Location, width, cross-slope, material, surface condition, presence of heaving/cracking, type and number of fixed obstacles within sidewalk, type and number of movable obstacles located on sidewalk, presence of vertical obstructions, type of street lighting, type and number of driveway crossings, presence and type of buffer between street and sidewalk, presence and type of foliage (trees, shrubs, grasses, etc.), type of street curb</td>
</tr>
<tr>
<td>Missing Sidewalks</td>
<td>Location, type and number of fixed obstacles in immediate area of future sidewalk, type of street curb (if any)</td>
</tr>
<tr>
<td>Curb Ramps</td>
<td>Location, type, surface condition, material, top landing width and slope, number of ramps at corner, ramp width, ramp slope, ramp cross-slope, slip-resistant surface, sidewalk approach, ramp flare slope, gutter slope, crosswalk connection and alignment, bottom landing width and slope</td>
</tr>
<tr>
<td>Missing Curb Ramps</td>
<td>Location, sidewalk surface condition, material, type and number of fixed obstacles in immediate area of future curb ramp, location of nearby street drain</td>
</tr>
</tbody>
</table>

Field Application

Staff Training
Based on the pre-planning estimates the City hired one temporary staff person to conduct the walking inventory with the GPS equipment. The Transpo Group conducted orientation training of the temporary staff. The orientation training included a work session that fully defined the study purpose and specific sidewalk and curb ramp characteristics to be inventoried. The training also included demonstration of the use of the GeoXT GPS unit and application of the Data Dictionary to measure and record specific sidewalk and curb ramp characteristics.

Data Collection
The temporary staff was equipped with the GeoXT unit, tape measures (to measure sidewalk and curb ramp dimensions), and a Smart Level to efficiently and accurately measure sidewalk and curb ramp slopes. The staff was also equipped with an orange reflector vest and hat for safety.

For block sections, the predominant sidewalk characteristic was recorded for the entire block length. For curb ramps, unique and specific curb ramp (or missing curb ramp) characteristics were recorded for each public street corner.
Approximately 71 miles of streets were inventoried within the Bonney Lake urban area. The inventory recorded existing or missing sidewalk characteristics on each side of the street. About 31 miles of existing sidewalks were inventoried, and over 155 miles of missing sidewalks were logged. More than 550 street corners were inventoried for the presence and characteristics of curb ramps.

**Quality Control**

Pre-planning for the inventory effort included the identification of regular quality control and evaluation of the GPS raw data. Daily review of the raw GPS data was provided by The Transpo Group. Transpo also conducted weekly GPS data conversion, differential corrections, GIS data conversion and database assembly.

**Data Post-Processing and GIS Data Conversion**

Transpo conducted post-processing of the raw data on a weekly basis. By use of Pathfinder Office, the raw data was differentially corrected for more accurate data positioning. Differential corrections involve correlating the raw data geo-reference or position measurements (longitude-latitude and elevation) recorded by the GeoXT GPS units with a fixed, base station reference within the Seattle urban area.

The refined data was then converted to GIS format. A GIS database of the sidewalk and curb ramp inventory was sequentially developed based on the daily, individual inventory records from each surveyor.

**DATA SUMMARY**

**Sidewalks**

*Existing vs. Missing Sidewalks*

A clear majority—83 percent—of the city’s streets have no sidewalk facilities. Most of the city’s sidewalks are located directly next to the curb. Only about 17 percent of the sidewalk system has some form of a buffer that separates sidewalks from the street and curbs section.

*Sidewalk Location*

Local streets constitute a predominant share of the total street mileage within the study area. Most of the existing sidewalks are located along local streets that have been developed within the past 10-15 years. By far, the southern part of Bonney Lake is where most sidewalks are located. See Figure 2-1 for a map of the existing sidewalks in Bonney Lake.
Sidewalk Condition
A cursory examination of the sidewalk inventory was undertaken to identify location of sidewalks that likely needed to be replaced (due to significant heaving/cracking or non-compliant width) or missing sidewalks, by city area of impact. There were only a few sections of sidewalk that require maintenance or replacement due to structural problems.

Sidewalk Width
Most of the study area’s existing sidewalks are at least four feet wide. Many sidewalks are five feet or wider. Only a small percentage of existing sidewalks are less than four feet wide. Not all of the existing sidewalks are free of obstacles that reduce the effective clear width (minimum of four feet), but the fact that the majority of existing sidewalks are at least four feet or wider is an excellent starting point for the NMTP.
Heaving and Cracking
Sidewalks with significant heaving and cracking can be problematic for pedestrians with limited mobility. There were no portions of the study area sidewalks that have significant or extreme heaving and cracking conditions.

Obstacles
The inventory program was developed specifically to identify the location, type and density of fixed and removable obstacles found along existing sidewalks. The majority of existing sidewalks do not have fixed obstacles that reduce the pedestrian clear width of four feet. Those sidewalks with fixed obstacles, the number of obstacles are usually less than seven per street block.

Of course the type of fixed obstacle is important. Some obstacles may be relatively easy and inexpensive to move or remove. Review of the data indicates that mailboxes are the predominant type of fixed obstacle that reduces the sidewalk clear width below four feet. Street trees are also a common occurrence. While utility pole obstacles are less frequent, they are likely the most difficult and expensive fixed obstacle to remove from the sidewalk area.

Missing Sidewalks
In recent years the City has adopted and administered revised street design standards that include sidewalks. Newer residential developments have been constructed with sidewalks on both sides of new streets, including curb ramps at intersections. Even with these improvements, however, pedestrian access to critical activity centers, like schools and parks, remains poorly served by inadequate (mostly missing) sidewalks.

Curb Ramps
Of the 571 street corners inventoried along existing sidewalk corridors, only about 19 percent are missing curb ramps. All other corners have some type of curb ramp to assist the mobility-impaired pedestrian when crossing the street.

However, a number of the existing curb ramps are essentially ADA non-compliant. ADA non-compliance can generally mean that: (a) the ramp width is too narrow; (b) the top landing is either missing or too narrow; or, (c) the ramp slope is too steep. The construction of many of the non-compliant ramps preceded the approval of the ADA.
Sidewalks with missing curb ramps are more often found in older neighborhoods. For example, a small portion of Bonney Lake’s street and sidewalk system was constructed when curb ramp standards were not required.

Ramp Type
The majority of curb ramps constructed in the Bonney Lake study area are diagonal by design, with a single ramp oriented to the center of the street intersection. Perpendicular curb ramps are more often found where sidewalks are constructed with sidewalk buffer strips. In recent growth areas, most new curb ramps have been constructed to standards with diagonal ramp designs, to align with curb-side sidewalks.

Ramp Width
ADA requires that curb ramps be constructed with a minimum width of 3 feet and desired width of 4 feet. Most of Bonney Lake’s curb ramps were constructed to meet the minimum design width as prescribed by ADA.

Top Landing
ADA requires that a top landing be placed at all curb ramps, four feet wide and a slope not to exceed 2 percent. Many new ramps recently constructed do not include top landings.

Summary
By successfully deploying the GPS-based data collection effort, the City was able to fully inventory the critical pedestrian facilities within the Bonney Lake urban area. The inventory effort was completed within the pre-planning estimates for staffing and schedule, and was successfully formatted and assimilated in the City’s GIS database. The Evaluation and scoring, summarized in the Pedestrian Attribute Index, provides one of the essential measures from which the City analyzes, identifies and prioritizes pedestrian improvements (see Chapter 3).

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Methodology for Prioritizing Pedestrian Projects

Chapter 3

Prepared by: The Transpo Group
3 - METHODOLOGY FOR PRIORITIZING PEDESTRIAN PROJECTS

PEDESTRIAN IMPROVEMENT NEEDS

The Inventory and Evaluation (see Chapter 2) of Bonney Lake’s pedestrian system identified a series of needed improvements. The NMTP study process included several mapping steps which iteratively build and illustrate the eventual pedestrian system for Bonney Lake:

- Existing Sidewalks (from Chapter 2)
- New Sidewalks Included in City’s Transportation Plan (see Appendix B for a listing and map of the pedestrian improvement projects that are part of the Bonney Lake Transportation Plan street projects.)
- New Sidewalks to Complete City’s Arterial and Collector Street Network
- New Shared-Use Path (Fennel Creek Trail)
- New Neighborhood Connector Sidewalks
- New “Infill” Sidewalks
- New Pierce County Projects (mostly shoulder facilities)

Figure 3-1 illustrates the combined list of pedestrian improvement projects. The focus of this chapter identifies the method by which exclusively new sidewalk improvement projects are prioritized along the city’s street system.

PEDESTRIAN PRIORITY INDEX

Aside from those pedestrian improvements identified as part of the City’s street system plan, future pedestrian improvements in Bonney Lake should be prioritized so the City can effectively implement the NMTP recommendations. The City’s Pedestrian Priority Index (PPI) was based on the following measure:

Accessibility - The closer that needed pedestrian improvements projects are located to various important trip generators and transportation facilities, the higher their priority. A series of critical accessibility indices are grouped into a composite Accessibility Index to help prioritize improvements.

Table 3-1 summarizes the component index ratings, point values and scoring values of the PPI. A total of 46 points is possible within the Accessibility Index. Candidate projects (i.e., install new pedestrian facilities) located within all of the critical pedestrian access areas could score as high as 46 points.

The individual accessibility indices are described in this section.

1 A new street class called “Neighborhood Connector” was introduced to the GIS database, designating those neighborhood routes which provide greater mobility function than local streets, but not as much as collector streets. In many cases these streets link neighborhoods with schools, parks and commercial centers. The neighborhood connector is not currently adopted by the City of Bonney Lake. Use of the neighborhood connector street class was applied in this study for the sole purpose of better distinguishing local street pedestrian priorities.
Figure 3-1

INSERT PDF OF Draft Projects HERE
**Table 3-1: Pedestrian Priority Index Ratings, Point Values and Numeric Scores.**

<table>
<thead>
<tr>
<th>Index Criteria</th>
<th>Location Rating</th>
<th>Point Value</th>
<th>Raw Possible Score</th>
<th>Council Weight Factor</th>
<th>Total Possible Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ACCESSIBILITY INDICES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arterial, Collector Streets</td>
<td>Within 1/8-mile radius of arterial or collector</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Within ¼-mile radius of arterial or collector</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schools</td>
<td>Within 1/8-mile radius of school</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Within ¼-mile radius of school</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walk to School Route</td>
<td>Within 1/8-mile radius of Walk to School Route</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Within ¼-mile radius of Walk to School Route</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parks</td>
<td>Within 1/8-mile radius of park</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Within ¼-mile radius of park</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transit Route Bus Stops</td>
<td>Within 1/8-mile of bus stop</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Within ¼-mile of bus stop</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commerce Center</td>
<td>Within 1/8-mile of commerce center</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Within ¼-mile of commerce center</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civic Buildings</td>
<td>Within 1/8-mile radius of public building</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Within ¼-mile radius of public building</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fennel Creek Trailhead</td>
<td>Within 1/8-mile radius of trailhead</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Within ¼-mile radius of trailhead</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>COMPOSITE ACCESSIBILITY INDEX</strong></td>
<td></td>
<td>16</td>
<td></td>
<td>46</td>
<td></td>
</tr>
</tbody>
</table>

**DEFINING THE ACCESSIBILITY INDICES**

A range of spatial index measures were developed to identify and quantify critical pedestrian access issues. Access at the pedestrian trip ends (origins and destinations) and pedestrian access to critical transportation system features (bus transit and arterial streets) were developed based on currently available technology (City GIS database) and relevant data information (2000 US Census and City GIS data).

*Arterial and Collector Streets*

Arterial streets are the major thoroughfares in the City’s system and provide area access to many major destinations like major shopping centers, employment centers and medical facilities. Bonney Lake has only one major arterial: SR-410. There are several minor arterial and collector streets as shown in Figure 6 of the Bonney Lake Transportation Plan. In addition, arterial streets typically carry higher vehicular volumes at higher speeds. Collector streets also carry a diverse amount of traffic, but more often serve as access points to local neighborhoods. All of these characteristics intensify the need for separate pedestrian access and safety facilities. Without them, arterial and collector streets become significant barriers...
to pedestrians of all kinds, but especially to the mobility-impaired. Areas within 1/8-mile of arterial and collector streets (to focus on sidewalks immediately adjacent to or connecting to arterial and collector streets) are scored with an accessibility index value of two, and areas within a quarter-mile of arterial and collector streets were assigned a value of one.

Schools
Many students walk or ride bicycles on the sidewalks to school. Students, particularly younger children, are among the most vulnerable pedestrians. Areas around schools, where student pedestrians congregate, require special attention in the form of pedestrian facilities and safety measures. As such, areas within 1/8-mile of all schools were assigned an accessibility index value of two, and those areas within a quarter-mile of schools were assigned a value of one.

Walk to School Routes
Similar to schools and school crossings, walk to school routes\(^2\) also service student pedestrians and require special attention because of safety issues. Areas within 1/8-mile on either side of a walk to school route were assigned an accessibility index value of two, and those areas within a quarter-mile of Walk to School routes were assigned a value of one.

Parks
Parks attract recreational users of all ages. Pedestrian access and safety facilities are essential to park accessibility. Some linear parks also include multi-use trails that provide critical transportation connections for pedestrians and cyclists. Accordingly, areas within 1/8-mile of all parks were assigned an accessibility index value of two, and those areas within a quarter-mile of parks were assigned a value of one.

Public Transit Bus Stops
Pierce Transit and Sound Transit provide bus service to Bonney Lake. Almost all of the bus riders begin and end their trips as pedestrians or will access the bus at stops requiring pedestrian facilities. Safe and continuous pedestrian facilities that link the bus stops to the surrounding area are an integral component of the public transit system. Areas within 1/8-mile of either Pierce Transit or Sound Transit bus stops have been assigned an accessibility index value of two, and areas within a quarter-mile have been assigned a value of one.

Commerce Centers
Easy access to commercial areas helps both residents and local businesses: residents are able to get the goods and services they need, and businesses are able to contribute to the local economy. Areas within 1/8-mile of these centers have been assigned an accessibility index value of two, and areas within a quarter-mile have been assigned a value of one.

\(^2\) School districts are required by Washington State regulations (see Appendix C) to have suggested walk route plans for every elementary school where children walk to school. The plan must cover a one-mile radius from the school, and the suggested routes to school map must be distributed to all elementary school students and their parents. Source: Washington State Traffic Safety Commission and Washington State Department of Transportation.
Civic Buildings
Access to public buildings is a critical component to the ADA Title II. Libraries, court houses and other public buildings provide a wide-range of services to children, senior adults, and mobility-impaired residents. Areas within 1/8-mile of civic buildings have been assigned an accessibility index value of two, and areas within a quarter-mile of these facilities have been assigned a value of one.

Fennel Creek Trailhead
As with parks, multi-use trails like the Fennel Creek Trail attract recreational users of all ages. These facilities can provide important links between different neighborhoods, and also between neighborhoods and major arterial and collector streets. Accordingly, areas within 1/8-mile of any Fennel Creek Trailhead were given an accessibility index value of two, and areas within a quarter-mile of any Fennel Creek Trailhead were assigned a value of one.

The City Council’s input to the PPI was the primary factor in the weighting of certain indices. Each access score is weighted on a scale from 1 to 5. The weight added to the access score indicates the level of prioritization for the City. The indices with the most weight added are school access and Walk to School route access. The next level of indices with weighted scores included park access, transit access, and proximity to a Fennel Creek trailhead. All other indices were weighted minimally. See Table 3-1 for the Accessibility Index and each access score.

Planning-Level Cost Estimates
A set of planning-level unit cost measures were prepared within the City GIS database to help estimate the cost of future pedestrian improvements in Bonney Lake. These costs are not necessarily reflective of actual costs, but provide a comparative basis for establishing priorities and evaluating future programs. All possible pedestrian system improvements were assigned a planning-level cost estimate. The unit costs were based on recent roadway and sidewalk improvement projects completed by the City of Bonney Lake. All costs were based on 2007 dollars and do not include right-of-way costs assuming that most improvements are within existing right-of-way. Table 3-2 summarizes the planning-level unit cost estimates used for the NMTP.

Table 3-2: Planning-Level Unit Costs.

<table>
<thead>
<tr>
<th>Improvement</th>
<th>Unit Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Per Ramp</strong></td>
<td></td>
</tr>
<tr>
<td>Perpendicular (two ramps per corner)</td>
<td>$1,100</td>
</tr>
<tr>
<td>Diagonal, Parallel and All Others (usually single ramps)</td>
<td>$1,100</td>
</tr>
<tr>
<td><strong>Per Lineal Foot</strong></td>
<td></td>
</tr>
<tr>
<td>Sidewalk, Curb, Gutter &amp; Drain</td>
<td>$275</td>
</tr>
<tr>
<td>Sidewalk, Curb &amp; Gutter</td>
<td>$175</td>
</tr>
<tr>
<td>Sidewalk Only</td>
<td>$36</td>
</tr>
</tbody>
</table>
IDENTIFYING PEDESTRIAN IMPROVEMENT PROJECTS AND THEIR PRIORITIES

Those potential sidewalk or curb ramp improvements with the highest Accessibility Index score should have the highest priority for future project completion. The scoring was applied to all sidewalk segments and curb ramp locations, including missing sidewalk segments and missing curb ramps. Three priority levels were assigned to all possible pedestrian improvements, as summarized in Tables 3-3 and 3-4. Critical local street sidewalk projects were combined into what is defined here as the “Community Program.” The Community Program is also defined to include: (a) placeholder funding for annual pedestrian spot-improvements city-wide, including signing, striping, curb ramp replacements and cross-walk improvements; and, (b) “in-fill” sidewalk projects along various collector and minor arterial streets.

Table 3-3: Pedestrian Improvement Priorities for Arterial & Collector Streets.

<table>
<thead>
<tr>
<th>Priority</th>
<th>Accessibility Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>26-46</td>
</tr>
<tr>
<td>Moderate</td>
<td>10-25</td>
</tr>
<tr>
<td>Low</td>
<td>0-9</td>
</tr>
</tbody>
</table>

Table 3-4: Pedestrian Improvement Priorities for Community Program.

<table>
<thead>
<tr>
<th>Priority</th>
<th>Accessibility Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>26-46</td>
</tr>
<tr>
<td>Moderate</td>
<td>21-25</td>
</tr>
<tr>
<td>Low</td>
<td>0-20</td>
</tr>
</tbody>
</table>

GIS Database Applications

A series of interim queries of the City’s GIS database were made to ensure that the definition and selection of pedestrian improvement project priorities do not duplicate or double-count projects. Possible project priorities along Washington State Department of Transportation (WSDOT) facilities were also flagged and removed from the Plan summary, even though in some cases the pedestrian system GPS inventory covered several WSDOT routes.

The City’s functional classification of streets was applied to all project priority summaries. The initial summary of project priorities revealed a significant number of local street improvements. Upon further review and evaluation of the City’s street functional classification scheme, the local street class varies significantly throughout Bonney Lake. Currently, there are many local streets that provide neighborhood circulation or neighborhood connector access, with connecting lengths in excess of \(\frac{1}{4}-\frac{1}{2}\)-miles. These streets provide a greater neighborhood circulatory and mobility function, especially for pedestrians, but are currently lumped into the same class as cul-de-sacs (which provide only direct access to a very limited number of homes). As such, a new street class called “Neighborhood Connector”...
was introduced to the GIS database, designating those neighborhood routes which provide greater mobility function than \textit{local} streets, but not as much as \textit{collector} streets. In many cases these streets link neighborhoods with schools, parks and commercial centers.

It should be noted that the \textit{neighborhood connector} is not currently adopted by the City of Bonney Lake. Use of the neighborhood connector street class was applied in this study for the sole purpose of better distinguishing local street pedestrian priorities.

Further, the combination of possible \textit{neighborhood connector} route projects and collector and arterial street sidewalk “in-fill” projects (completing sidewalks along one side of major streets or segments of major streets where sidewalks already exist) were packaged under a category defined as “Community Program.”

\section*{Pedestrian Improvement Needs}

The cost to build new and improved sidewalks and curb ramps compliant with the ADA is estimated at $32.7 million. Figures 3-2 and 3-3 and Table 3-5 summarize these pedestrian improvement cost estimates by priority and improvement type. \textit{Top} priority pedestrian improvement projects in the Bonney Lake urban area, which are estimated to cost about $6.3 million, are either new sidewalks or new curb ramps. \textit{Moderate} priority pedestrian improvement projects are estimated to cost $12.8 million, and \textit{Low} priority pedestrian improvement projects will cost about $3.3 million.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figures/3-2_3-3}
\caption{Pedestrian Improvement Costs (2007 costs, in million)}
\end{figure}
Insert TABLE 3.5 PDF here
Top Priority Pedestrian Improvement Projects

As shown in Table 3-6, the top priority pedestrian improvement projects in the Bonney Lake urban area are estimated to cost about $6.3 million. These improvements are complements to Bonney Lake’s critical people connectors, and help to complete the City’s pedestrian network, especially along arterial and collector streets.

Table 3-6: Pedestrian Improvement Costs (2007 costs, in millions).

<table>
<thead>
<tr>
<th>Streets</th>
<th>Top</th>
<th>Moderate</th>
<th>Low</th>
<th>TOTAL</th>
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<tr>
<td>Arterial/Collector</td>
<td>$5.9</td>
<td>$9.7</td>
<td>$1.5</td>
<td>$17.1</td>
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<td>Neigh. Connector</td>
<td>$0.4</td>
<td>$3.1</td>
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<td>$5.4</td>
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<td>Annual Program</td>
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<td></td>
<td>$0.1</td>
<td>$0.1</td>
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<tr>
<td>In-Fill</td>
<td>$10.1</td>
<td></td>
<td></td>
<td>$10.1</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$6.3</strong></td>
<td><strong>$12.8</strong></td>
<td><strong>$3.4</strong></td>
<td><strong>$32.7</strong></td>
</tr>
</tbody>
</table>

New Sidewalks
Installing new sidewalks along critical street corridors helps remove significant obstacles to pedestrians of all types. Those streets that currently do not have sidewalks on one or both sides of the street were identified in the Plan for the installation of new sidewalks.

New Curb Ramps
Installing new curb ramps in critical locations will significantly remove obstacles for the mobility-impaired pedestrian. Those street corners that currently do not have curb ramps (but are otherwise served by compliant sidewalks) were identified in the Plan for the installation of new curb ramps.

USING THE PEDESTRIAN PRIORITY INDEX

The PPI provides the City of Bonney Lake with an objective methodology for selecting and prioritizing pedestrian system improvements. However, professional judgment will always be required to select appropriate projects. Other factors will likely need to be evaluated by the City, including:
- relationship to TP projects
- special grant application projects
- pending development projects
- prevailing site conditions

See Chapter 6 - Recommended Measures to Implement the NMTP for further recommendations regarding pedestrian project funding.

It is recommended that the PPI calculation be reviewed and updated periodically, concurrently with the regular update of the City’s 2006 Transportation Plan. In this manner the City can incorporate the completion of sidewalks that are installed with roadway widening or new street projects identified in the TP. Doing so will ensure that the
pedestrian priorities reflect pedestrian and street project completion, new development or other land use changes in Bonney Lake. Because the PPI characteristics and numeric values themselves may need to be refined over time, it is recommended that they be reevaluated at least every five years.

Additionally, the GIS database will need to be updated at least annually to incorporate all newly-constructed City projects and new developments. It should also be noted that new developments that have been constructed since the NMTP data inventory may not be compliant with the ADA.

Areas for Future PPI Enhancements
For the first time the City has a comprehensive database and methodology to identify and prioritize long-range pedestrian improvements. The PPI is also structured to be amended, with relative ease, to include new or more refined measures. Following the initial implementation of the PPI, the City should conduct further evaluation of other possible measurements as more data is available, including:

- Hospitals, emergency care and other site-specific medical facilities
- Site-specific Senior and Assisted-Living Facilities
- Safe-Route-To-School Priority Corridors (see Chapter 6 – Recommended Measures to Implement the NMTP) in conjunction with the appropriate school district
- A hierarchy of schools, ranking those facilities of with specific needs (e.g. grade and middle schools, high schools, colleges and universities)
- Access to specific gateways or access points to the greenway trails and multi-use path system
- A hierarchy of civic buildings, ranking those facilities of heavier public use and need (e.g. courthouses, city halls, health & human services, employment centers)

---

1 Bonney Lake Transportation Plan, April 2006. The Transpo Group.
Figure 3-1

Bonney Lake Non-Motorized Transportation Plan

Legend

EXISTING SIDEWALKS
NEW SIDEWALKS
Bonney Lake TP Street Projects
Pierce County
City of Bonney Lake & WSDOT
Non-Motorized TP Projects
Arterial/Collector Streets
One Side (Minimum)
Two Sides
Neighborhood Connectors
One Side (Minimum)
Neighborhood Pathway
In-fill Projects (See Table 3-5)
Trail/Shared-Use Path/ Road-Shoulder
Fennell Creak Trail (planned)
Proposed Connector
Trail Heads
Pierce County Road-Shoulder
Park-N-Rides
Schools
Parks
City Limits

See Appendix B
See Table 3-5

Bonney Lake Non-Motorized Transportation Plan
TABLE 3.5
Non-Motorized Transportation Improvement Projects (2007 to 2025+)

<table>
<thead>
<tr>
<th>Project Code</th>
<th>Project Name</th>
<th>Street</th>
<th>Functional Level</th>
<th>Project Description</th>
<th>Mitigation Impact Fee</th>
<th>Improvement</th>
<th>Agency (4) Grants</th>
<th>TIP?</th>
<th>Priority</th>
<th>Cost (3)</th>
<th>Cost (3)</th>
<th>Cost (3)</th>
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</thead>
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<tr>
<td>N100</td>
<td>64th St E</td>
<td>Myers Rd</td>
<td>183rd Ave Neigh</td>
<td>Neighborhood Sidewalk improvements design based either on City standard (curb, gutter, sidewalk) or SEA Street design option.</td>
<td>$130,680</td>
<td>$130,680</td>
<td>$19,602</td>
<td>$65,340</td>
<td>$45,348</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N103</td>
<td>Locust Ave</td>
<td>Bonney Lake Blvd</td>
<td>McGhee Dr</td>
<td>Neighborhood Sidewalk (minimum on one side of street)</td>
<td>$87,120</td>
<td>$87,120</td>
<td>$13,068</td>
<td>$43,560</td>
<td>$30,492</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N104</td>
<td>68th St E</td>
<td>McGhee Dr</td>
<td>193rd Ave</td>
<td>Neighborhood Sidewalk (minimum on one side of street)</td>
<td>$348,480</td>
<td>$348,480</td>
<td>$52,272</td>
<td>$174,240</td>
<td>$121,968</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N108</td>
<td>189th Ave / 190th Ave neigh. Pathway</td>
<td>64th St E</td>
<td>Neigh / Local</td>
<td>Neighborhood Sidewalk (minimum on one side of street)</td>
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<td>$174,240</td>
<td>$26,136</td>
<td>$87,120</td>
<td>$60,984</td>
<td></td>
<td></td>
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</tr>
<tr>
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<td>65th St E</td>
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<td>194th Ave</td>
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<td>$87,120</td>
<td>$13,068</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>194th Ave</td>
<td>65th St E</td>
<td>64th St E</td>
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<td>$8,712</td>
<td>$1,307</td>
<td>$4,356</td>
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<tr>
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<td>77th St E</td>
<td>Myers Rd</td>
<td>185th Ave</td>
<td>Neighborhood Sidewalk (minimum on one side of street)</td>
<td>$348,480</td>
<td>$348,480</td>
<td>$52,272</td>
<td>$174,240</td>
<td>$121,968</td>
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<td></td>
</tr>
<tr>
<td>N112</td>
<td>Locust Ex Ave</td>
<td>185th Ave</td>
<td>Locust Ave</td>
<td>Neighborhood Sidewalk (minimum on one side of street)</td>
<td>$87,120</td>
<td>$87,120</td>
<td>$13,068</td>
<td>$43,560</td>
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</tr>
<tr>
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<td>75th St E</td>
<td>Locust Ave</td>
<td>193rd Ave</td>
<td>Neighborhood Sidewalk (minimum on one side of street)</td>
<td>$348,480</td>
<td>$348,480</td>
<td>$52,272</td>
<td>$174,240</td>
<td>$121,968</td>
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<td>84th St E</td>
<td>Locust Ave</td>
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<td>$130,680</td>
<td>$19,602</td>
<td>$65,340</td>
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<td></td>
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</tr>
<tr>
<td>N115</td>
<td>189th Ave / 190th Ave</td>
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<td>82nd St E</td>
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<td>$87,120</td>
<td>$13,068</td>
<td>$43,560</td>
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<td>75th St E</td>
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<td>$261,360</td>
<td>$39,204</td>
<td>$130,680</td>
<td>$91,476</td>
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<tr>
<td>N117</td>
<td>77th St E / 192nd Ave</td>
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<td>193rd Ave</td>
<td>Neighborhood Sidewalk (minimum on one side of street)</td>
<td>$261,360</td>
<td>$261,360</td>
<td>$39,204</td>
<td>$130,680</td>
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<td>N120</td>
<td>189th Ave / 190th Ave</td>
<td>84th St E</td>
<td>82nd St E</td>
<td>Neighborhood Sidewalk (minimum on one side of street)</td>
<td>$87,120</td>
<td>$87,120</td>
<td>$13,068</td>
<td>$43,560</td>
<td>$30,492</td>
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<tr>
<td>N121</td>
<td>190th Ave</td>
<td>80th St E</td>
<td>75th St E</td>
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<td>$261,360</td>
<td>$261,360</td>
<td>$39,204</td>
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<td>193rd Ave</td>
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<td>$261,360</td>
<td>$39,204</td>
<td>$130,680</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>N124</td>
<td>78th St E / 197th Ave</td>
<td>Villa Estates</td>
<td>Church Lake Rd</td>
<td>Neighborhood Sidewalk (minimum on one side of street)</td>
<td>$174,240</td>
<td>$174,240</td>
<td>$26,136</td>
<td>$87,120</td>
<td>$60,984</td>
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<tr>
<td>N125</td>
<td>194th Ave / Villa Estates</td>
<td>78th St E</td>
<td>75th St E</td>
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<td>$130,680</td>
<td>$19,602</td>
<td>$65,340</td>
<td>$45,348</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N130</td>
<td>109th St E</td>
<td>191st Ave</td>
<td>192nd Ave</td>
<td>Neighborhood Sidewalk (minimum on one side of street)</td>
<td>$43,560</td>
<td>$43,560</td>
<td>$43,560</td>
<td>$43,560</td>
<td>$43,560</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N131</td>
<td>111th St E</td>
<td>191st Ave</td>
<td>192nd Ave</td>
<td>Neighborhood Sidewalk (minimum on one side of street)</td>
<td>$43,560</td>
<td>$43,560</td>
<td>$43,560</td>
<td>$43,560</td>
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<td>N132</td>
<td>Bonney Lake Blvd</td>
<td>Locust Ave</td>
<td>W Tapps Hwy</td>
<td>Collector Sidewalk (minimum on one side of street)</td>
<td>$1,234,200</td>
<td>$1,234,200</td>
<td>$1,234,200</td>
<td>$1,234,200</td>
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</tr>
<tr>
<td>N134</td>
<td>184th Ave</td>
<td>SR-410</td>
<td>Sumner-Buckley Hwy</td>
<td>Collector Sidewalk (minimum on one side of street)</td>
<td>$406,560</td>
<td>$406,560</td>
<td>$406,560</td>
<td>$406,560</td>
<td>$406,560</td>
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<td></td>
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</tbody>
</table>

Notes:
1. Use AWP-9-7 to fund the projects.
2. Infill LP - Proprietary distribution City or County/Community Transportation Improvement Program (2007 to 2025) or funded as part of State Transportation Plan.
3. Projects with a project cost include a 1.0% of year 2007 dollars. Costs were obtained from City's personnel or calculated based on engineering reports not from current projects.
Recommended Bicycle Facilities
4 - RECOMMENDED BICYCLE FACILITIES

INTRODUCTION

Planning for the integration of bicycle facilities on new streets and highways can be much easier than retrofitting existing facilities. Arterial and collector streets with limited width and higher traffic volumes are difficult to modify and add separate bicycle lanes in both directions unless part of a larger street widening or upgrade project. This chapter provides an initial summary of bicycle facilities in Bonney Lake to illustrate these shortcomings, and to heighten awareness of the need for greater bicycle system connectivity and integration. The evaluation of the bicycle system as part of the NMTP has helped identify and summarize critical gaps in the bike lane system (along major street corridors) and shared-use path network.

Bicycle Lanes & Shared Roadways

As discussed in Chapter 2 – Inventory and Evaluation, the percentage of the City’s streets and roadways without bicycle or pedestrian facilities indicates a significant oversight of the need for these facilities. This oversight is logical considering Bonney Lake’s beginnings as a rural community. The City has begun to remedy the situation by requiring sidewalks in new subdivisions, for example; however, bicycle lanes are still lacking on the City’s main arterials.

Several recently completed plans and projects have identified bicycle system improvements within the Bonney Lake urban area, including the Bonney Lake Transportation Plan (2006) and Fennel Creek Corridor Plan (draft 2006). But there are many existing streets with inadequate bicycle design components and several remaining gaps in the city’s bicycle system.

Locust & Bonney Lake Avenues: Insufficient bike lane width and missing directional lane.

SR 410: Shoulder lane ends, no lane transition through intersection.
Fennel Creek Corridor Plan
In general, shared use paths such as the proposed Fennel Creek Trail are important components of the bicycle and pedestrian transportation system because they can provide a high quality walking and bicycling experience in an environment that is protected from vehicle traffic. Fortunately, the City has recently undertaken an in-depth analysis of the Fennel Creek corridor and its ecosystem. This analysis can serve as a basis for the future development of the shared use Fennel Creek Trail, which the City has proposed since 1997.¹

As illustrated in Figure 4-1, the Fennel Creek Trail will be a major contribution to the City’s non-motorized transportation network, but it must be planned and budgeted as a starting point to building the network, not an endpoint. The City’s plans to connect its 4.5-mile portion of the Fennel Creek Trail with the Foothills Trail, which is in line with Pierce County’s Non-Motorized Transportation Plan, is a promising sign for the future of bicycle and pedestrian transportation in Bonney Lake.

Downtown Bonney Lake Plan
As a component of the City’s Comprehensive Plan, the Downtown Plan is a clear articulation of the City’s vision for the future Downtown Bonney Lake. While this portion of the Comprehensive Plan takes pains to make the City’s downtown more pedestrian-friendly, bicycle users are seldom mentioned. If the City intends to expand certain downtown streets, it should take cyclists and their needs into account by providing bicycle lanes and storage facilities where necessary. It appears that the City has intentions to include bicycle lanes with the 184th Avenue extension, but the cross-section illustrations of other downtown areas do not indicate an intention to make streets friendlier to bicycle users.
Figure 4-1 Fennel Creek Trail

INSERT PDF MAP HERE
Figure 4-1  Fennel Creek Trail
Revising the Bicycle Planning Language
Bonney Lake can begin more proactive planning for bicycle facilities by first expanding upon the Fennel Creek Corridor Plan and the Downtown Development Plan and clarifying the definitions of the various bicycle facilities, especially for the on-street bicycle system.

There is need for further clarity in the definitions for bicycle facilities, otherwise planners, engineers, policy officials and the general public might be unclear about what the City’s full intentions are. Figure 4-2 illustrates the basic forms of bikeway facilities as defined by the Manual of Uniform Traffic Control Devices (MUTCD). Consistent with the MUTCD, the City should adhere to the following definition of terms concerning bicycle facilities in Bonney Lake:

*Bicycle Facilities* — a general term denoting improvements and provisions that accommodate or encourage bicycling, including parking and storage facilities, and shared roadways not specifically defined for bicycle use.

*Bikeway* — a generic term for any road, street, path, or way that in some manner is specifically designated for bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

*Bicycle Lane* — a portion of a roadway that has been designated by signs and pavement markings for preferential or exclusive use by bicyclists. Bicycle lanes are one-way facilities that are placed on both sides of a street, and they carry bicyclists in the same direction as adjacent motor vehicle traffic. In addition to lane striping, pavement markings and signage identify bicycle lanes.

Another type of bicycle lane is a shoulder bikeway. Shoulder bikeways are paved shoulders that are at least four feet in width and are separated from conventional travel lanes with a lane stripe. This type of facility is typically applied to a rural roadway that does not have curb and gutter.
Figure 4-2: Bikeway Definitions

**Shared Use Path**
Provides a completely separated right of way for the exclusive use of bicycles and pedestrians with crossflow minimized.

**Bike Lane**
Provides a striped lane for one-way bike travel on a street or highway.

**Bike Route Signed Shared Roadway**
Provides for shared use with pedestrian or motor vehicle traffic, typically on lower volume roadways.
Designated Bicycle Routes— a system of bikeways designated by the jurisdiction having authority with appropriate directional and informational route signs, with or without specific bicycle route numbers. Bicycle routes, which might be a combination of various types of bikeways, should establish a continuous routing. Designated bicycle routes can be divided into shared roadway and shared-use path facilities.

A. Shared Roadway— on a shared roadway, bicyclists and motorists share the same travel lane. Shared roadways bicycle routes can be accommodated on streets with wide outside travel lanes, along streets with bicycle route signing, or along local streets where motorists have to weave into the adjacent lane in order to safely pass a bicyclist.

B. Shared-Use Path—a bikeway outside the traveled way and physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an independent alignment. Shared-use paths are also used by pedestrians (including skaters, users of manual and motorized wheelchairs, and joggers) and other authorized motorized and non-motorized users.

Shared-use paths often attract recreational users. However, because they typically wind through a community and connect destinations, they also offer an excellent opportunity to function as non-motorized transportation routes. For children, or any cyclist uncomfortable with sharing the roads with vehicles, shared-use paths may be the preferred facility.

Implementation of these specific terms will help advance consistent dialogue between all agencies and the Bonney Lake community regarding bicycle facility planning and design, within the context of multi-modal systems development.

Non-Motorized Plan Findings

Bonney Lake’s Transportation Plan (see Appendix B) adds a number of important arterial street improvements on the street system over the next 20 years, as shown in Figure 4-3. Some of the arterial street improvements identify new bicycle lanes, others do not. Those that do not are mostly suitable for revised street standard applications that use the same street width but stripe travel lanes for the addition of bicycle lanes.
Once completed these arterial street projects help fill a number of gaps in the bicycle system. To accommodate separate bike lanes, the City should consider minor adjustments to its arterial street design standards. To do so requires examination of:

- Number and width of planned vehicular travel lanes
- Presence and width of planned center turn-lane/median treatment

Modification to arterial street can be as simple as striping bicycle lanes, and re-striping travel lanes with reduced width (10 ½- or 11-feet instead of 12-feet wide) to accommodate additional bike lanes. These modifications may maximize the efficiency and safety of the corridors for motorists, pedestrians, bicyclists, and transit users. Well-designed street improvements can also help trigger reinvestment and help enhance the viability of some corridors in the city.

AASHTO guidelines should be used to determine how these planned streets can be modified to accommodate bike lanes without significantly affecting the safety or operation of the roadway. Reduced travel-lane widths are within AASHTO minimums. However, each of the City’s streets has unique characteristics and land use access. It is important to apply good judgment - each project should be reviewed by the City’s Engineer.

**Reducing Travel-Lane Widths**

In general, the need for full-width travel lanes decreases with speed:

- up to 25 mph ~ travel lanes may be reduced to 10 or 10 ½ feet
Bonney Lake Non-Motorized Transportation Plan

- up to 30 to 40 mph ~ 11-foot travel lanes and 12-foot center turn lanes may be acceptable


**Recommended Re-engineering Projects**

The NMTP presents an initial set of recommended projects that will serve as a first step toward achieving the integrated network of bicycle facilities that would be further outlined in a Master Plan. Specific corridors were selected based on the following criteria:

- They provide connectivity between major destinations, such as downtown Bonney Lake, schools, commercial centers and other Bonney Lake activity centers or neighborhoods
- They are corridors on which concentrations of attractors are located
- They are direct and follow arterials with projected higher vehicular traffic in the future

The NMTP includes a Bikeway Map, Figure 4-4, which identifies streets where new, on-street bicycle lanes should be installed through re-engineering. These recommendations help fully connect the Bonney lake bicycle system.

**Table 4-1** lists the specific bike facility recommendations for the major street corridors in Bonney Lake and shared-use paths. Specific re-engineering projects with higher priority for short-term implementation are listed in **Table 4-1**.
### Table 4-1: Recommended Bonney Lake Bicycle Facilities (see Figure 4-5 for dimensions)

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<thead>
<tr>
<th>Project Name</th>
<th>from</th>
<th>To</th>
<th>Recommended Bicycle Facility Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fennel Creek Trail</td>
<td>Fennel Creek Trail</td>
<td>Church Lake Rd</td>
<td>Bike Lane: x</td>
</tr>
<tr>
<td>Fennel Creek Connector</td>
<td>City limits</td>
<td>City limits</td>
<td>Shoulder: x</td>
</tr>
<tr>
<td>SR 410</td>
<td>Sumner-Buckley Hwy</td>
<td>SR 410</td>
<td>Shared Lane: x</td>
</tr>
<tr>
<td>198th Ave</td>
<td>96th St E</td>
<td>SR 410</td>
<td>Shared-Use Path: x</td>
</tr>
<tr>
<td>214th Ave E</td>
<td>104th St E</td>
<td>Rhodes Lake Rd</td>
<td>x</td>
</tr>
<tr>
<td>Sumner-Buckley Hwy</td>
<td>City limits</td>
<td>Church Lake Rd</td>
<td>x</td>
</tr>
<tr>
<td>198th Ave E</td>
<td>104th St E</td>
<td>Rhodes Lake Rd</td>
<td>Pierce Co project: x</td>
</tr>
<tr>
<td>214th Ave E</td>
<td>Sumner-Buckley Hwy</td>
<td>96th St E</td>
<td>Pierce Co project: x</td>
</tr>
<tr>
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<td>120th St E</td>
<td>Pierce Co project: x</td>
</tr>
<tr>
<td>South Prairie Rd</td>
<td>200th Ave E</td>
<td>214th Ave E</td>
<td>x</td>
</tr>
<tr>
<td>Church Lake Rd</td>
<td>Summer-Buckley Hwy</td>
<td>Kelley Lake Rd</td>
<td>x</td>
</tr>
<tr>
<td>Kelley Lake Rd</td>
<td>Church Lake Rd</td>
<td>214th Ave E</td>
<td>x</td>
</tr>
<tr>
<td>Meyers Rd</td>
<td>SR 410</td>
<td>City limits</td>
<td>x</td>
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<tr>
<td>Bonney Lake Blvd</td>
<td>180th Ave E</td>
<td>South Tapps Dr</td>
<td>x</td>
</tr>
<tr>
<td>Locust Av</td>
<td>Summer-Buckley Hwy</td>
<td>Bonney Lake Blvd</td>
<td>x</td>
</tr>
<tr>
<td>South Tapps Dr</td>
<td>Church Lake Rd</td>
<td>City limits</td>
<td>x</td>
</tr>
<tr>
<td>Angeline Rd</td>
<td>City limits</td>
<td>Sumner-Buckley Hwy</td>
<td>x</td>
</tr>
<tr>
<td>192nd Ave E</td>
<td>SR 410</td>
<td>104th St E</td>
<td>x</td>
</tr>
<tr>
<td>192nd Ave E/104th St E</td>
<td>Rhodes Lake Rd</td>
<td>200th St E</td>
<td>x</td>
</tr>
<tr>
<td>Sumner Buckley Hwy</td>
<td>Church Lake Rd</td>
<td>214th Ave E</td>
<td>x</td>
</tr>
<tr>
<td>214th Ave E</td>
<td>Summer-Buckley Hwy</td>
<td>City limits</td>
<td>x</td>
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<tr>
<td>Rhodes Lake Rd</td>
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</tbody>
</table>

The recommended on-street bicycle facilities are coordinated with the off-street facilities (multi-use paths) that have already been identified as part of the Fennel Creek Corridor Plan and Bonney Lake Comprehensive Plan, which will help develop a more comprehensive bicycle route network throughout Bonney Lake.
Bicycle Design Guide

The City’s street standards do not currently identify specific guidelines for the design of bicycle lanes and shared-use paths. For major arterials, the cross-sectional diagram indicates four-foot outside the “fog line” instead of designated “bicycle lanes.” The City standards do not include any guidance on shared-use paths.

Furthermore, the City’s street design standards also do not list bicycle facilities as part of the minimum street design standards by street functional classification. The City should consider revising and updating its 2005 Street Design Standards with parameters for bike lanes, particularly for Major and Minor Arterials.

The City of Bonney Lake should consult the *AASHTO Guide for the Development of Bicycle Facilities* as the principle design guide for bicycle facilities. Some general recommendations for bike lanes, shared-lane and shared-use paths design are provided here.
Figure 4-4: Bonney Lake Bicycle Facilities

INSERT PDF MAP HERE
Figure 4.4     Bicycle System Plan

Bonney Lake Non-Motorized Transportation Plan

Consider modified street standards to accommodate bicycle lanes
Coordinate with WSDOT to combine existing shoulder bikeway with new on-street bicycle lanes as part of SR-410 improvements
**Bicycle Lane**

Bicycle lanes should be constructed or striped at a recommended width of *five feet* (four feet at a minimum where on-street parking is prohibited) outside of the curb-gutter section. A six-inch, solid white line should be delineated between bicycle lanes and motor vehicle travel lanes. Along side of on-street parking, bike lanes should be striped and the vehicular travel lane speed limit should be set no higher than 25 mph.

**Shared-Lane Routes**

In the absence of sufficient space to include on-street bicycle lanes on several of Bonney Lake’s major streets, it is important to provide greater route designation for shared travel lanes. These shared lanes, if posted and marked appropriately, indicate significant bicycle traffic to both the motorists and cyclists. The use of “sharrow” pavement markings has been adopted by the state of California for these conditions. WSDOT is considering statewide policy for state highway applications but has not approved use of “sharrow” pavement markings for shared-lane designation.

**Shared-Use Path**

Shared-use paths should be constructed to a minimum of ten feet in width to adequately accommodate the mix of bicycle and pedestrian users. Twelve feet is optimal in areas of high travel demand.

The *AASHTO Guide for the Development of Bicycle Facilities* also contains guidance on related design issues such as intersections, common hazards, end-of-trip facilities, and bicycle facility maintenance should also be included. Application of these bicycle design guidelines will help the City and others consistently develop bicycle system facilities in the Bonney Lake area.

*Figure 4.5* illustrates the three different bicycle facility types for application on Bonney Lake Streets and shared-use paths.
Figure 4-5: Recommended Bicycle Facility Types

- **Shared Use Path**
- **Bike Lane (Adjacent to Parking)**
- **Signed Shared Lane**
Regardless of the type of bicycle facility, or even the presence of a designated bikeway route, all streets should be designed and maintained to eliminate the common hazards that create safety problems for bicyclists. Features or issues that require specific consideration for their effect on bicyclists include:

- Storm grates
- Pavement surface quality
- At-grade railroad crossings
- Rumble strips
- Roadway bridges
- Construction zones
- Bicycle Parking

Application of these design guidelines will ensure consistency in facilities design. Consistency will provide cyclists with assurance regarding the type and quality of the bikeways that they will encounter. It will also encourage both cyclists and drivers to operate with each other on public right-of-way. Consistency and predictability encourage bicycle use and are cornerstones of a safe multi-modal transportation infrastructure.

**Coordinating SR 410 Improvements with WSDOT**

Currently, wide shoulder lanes are present along several sections of SR 410. The *Washington State Highway Systems Plan* identifies several improvement projects along SR 410 within the Bonney Lake study area. WSDOT is currently funding widening of SR 410 between 214th and 234th Avenues E. This widening will provide capacity and improve safety in the developing Eastown area of the City. The project includes additional lanes in each direction, installation of new traffic signals at 224th Avenue E and 234th Avenue E, and incorporates access management solutions along the corridor.

Also as noted in the Bonney Lake Transportation Plan, new HOV lanes are identified in the *Washington State Highway Systems Plan* between SR 167 and 184th Avenue E. The additional HOV lanes would provide better access to the existing park and ride and encourage residents to consider carpooling or using transit during the peak hours. In addition, the Bonney Lake Transportation Plan identifies a future project for widening SR 410 between 184th Avenue E and South Prairie Road within the City.