

97



US 2 Upper Wenatchee Valley  
TRANSPORTATION STUDY

US 2 Upper Wenatchee Valley

# Transportation Corridor Study

April 2020

Wenatchee



Chelan-Douglas  
TRANSPORTATION COUNCIL  
CDTC



Washington State  
Department of Transportation

# Table of Contents

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→ **Introduction** ..... **01**

→ **Executive Summary** ..... **02**

Chapter 1

---

→ **Project Background** ..... **04**

Chapter 2

---

→ **Vision & Guiding Principles** ..... **09**

Chapter 3

---

→ **Evaluated Projects** ..... **19**

→ **Appendices A-G** ..... **53**

→ **A. Existing Planning & Context Memorandum**

→ **B. Stakeholder Interview Summary**

→ **C. Project Meeting Summary**

→ **D. Community Engagement Summary**

→ **E. Project Evaluation Matrix**

→ **F. Project Findings**

→ **G. Data Collection**

# Introduction

Chelan-Douglas Transportation Council (CDTC) is a regional coordinating agency that brings together local governments and the Washington State Department of Transportation (WSDOT) to cooperatively plan for better transportation in the region. In response to a steadily-growing tourism economy and the associated demands on the US 2 highway corridor through the Upper Wenatchee Valley, CDTC and WSDOT decided to undertake a study to recommend transportation strategies that are supported and, over time, implemented by WSDOT and local governments.

The goal of this study is to identify realistic and implementable transportation capital enhancements that provide year-round benefit and management strategies to improve transportation for all modes along the corridor. The study emphasizes the unique traffic and safety issues associated with traffic that peaks during summer weekends and festivals in the City of Leavenworth rather than during a typical weekday afternoon.

# Executive Summary

As one of two major state highway corridors over the Central Cascades, US 2 serves as a route to desirable locations across the state. US 2 also serves as a vital regional and local connection for the communities of Leavenworth, Dryden, Peshastin, Cashmere, and Wenatchee, while operating as a “main street” within the City of Leavenworth.

Within the Upper Wenatchee Valley, between Coles Corner and Cashmere, this corridor also has several unique characteristics that create additional transportation challenges on US 2. Through this region, topography varies from narrow canyons to agricultural land, increasing cost and complexity to expand US 2, or build new or wider county roads. Seasonal travel to recreational destinations increases traffic on US 2 by as much as 50 percent on weekends during the summer months. US 2 also serves as the route to and from festivals and events in Leavenworth, which draw as many as 20,000 visitors to the area resulting in miles of queues on US 2 and limiting emergency services access to the area.

## Corridor Vision & Guiding Principles

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This study establishes a future vision for the US 2 Upper Wenatchee Valley Corridor that:

- » Provides reliable transportation options for all means of travel;
- » Accommodates emergency access, local trips, US 2 highway travelers into and out of the area, and freight movement;
- » Enhances the region’s unique identity.



To achieve this corridor vision, a set of guiding principles was established with input from the Project Advisory Committee and the community. These guiding principles were used to identify investments and strategies that advance the creation of a US 2 Upper Wenatchee Valley corridor that is:

**Reliable**



Locals, regional commuters, freight, and emergency responders have options to maintain a reliable travel time between key destinations.

**Safe & Complete**



The corridor offers complete, multimodal infrastructure where appropriate to meet users' needs and enhance corridor safety.

**Vibrant**



Improvements support Leavenworth's tourism industry and growing seasonal usage of the corridor.

**Realistic**



Improvements are practical, fundable, and implementable within a reasonable timeframe and include creative solutions to better manage traffic impacts from seasonal and special event travel.

**Supported**



Stakeholders and the community will be engaged to identify mutually beneficial solutions.

**The Findings**

This study evaluated over 70 project ideas and concluded that there is no one solution that will eliminate congestion on US 2 entirely. Solutions identified in this study do improve local and emergency access, increase transit reliability in the region, improve the lane markings and intersections on US 2 to better serve all modes through Leavenworth, and provide new local road connections.

The study did include the evaluation of ideas that have been around for many years, including widening US 2 to four lanes, reconstructing parallel county roads, and constructing a complete US 2 bypass around Leavenworth. While these projects seem like sensible solutions to reduce congestion on US 2, they were all found to be very expensive, environmentally infeasible, and in some cases unsupported. As a result, these projects were deemed fatally flawed and removed from consideration.

While the solutions in this study are not currently funded, these are ideas that align with the guiding principles and vision for the US 2 corridor and can serve as a guide to advance meaningful transportation improvements. These improvements include:

- » Build a US 2 Roundabout at Icicle Road
- » Create US 2 Express Bus Access at Peshastin
- » Implement Parking Management Strategies
- » Create a new connection across the Wenatchee River between Chumstick Highway and River Bend Drive
- » Implement US 2 Streetscape, Lane Marking and Intersection Improvements through Leavenworth
- » Build a US 2 Pedestrian and Bicycle Undercrossing to downtown and waterfront parks

## US 2 Roundabout at Icicle Road

### PROJECT DESCRIPTION

This project would construct a single-lane roundabout at the intersection of Icicle Road and US 2. Paired with center-island landscaping, a display of public art or a sculpture, and Bavarian-themed signage, the roundabout would create a gateway to Leavenworth as visitors arrive from Tumwater Canyon. Located at the western terminus of Link Transit’s Route 22, this project would also create an improved turn-around for transit and shuttles operating on the US 2 corridor through Leavenworth.



### PROJECT BENEFITS

- ✓ Improved local access to US 2
- ✓ A western gateway to Leavenworth
- ✓ Improved transit and shuttle circulation

This project would improve access for locals using Icicle Road to access homes or jobs without impacting travel times or congestion on US 2. Today, US 2 through traffic has priority at the intersection over traffic turning left onto Icicle Road and traffic on Icicle Road, which is stop-controlled. This configuration forces locals to wait for gaps in traffic on US 2, which can be difficult during periods of high congestion. With roundabout control at this intersection, all approaches would be yield-controlled, giving more equal opportunities for local and through traffic.

A roundabout configuration would reduce serious and fatal injury crash potential at the intersection by reducing speeds and limiting opportunities for severe collisions.

The Icicle Road intersection marks the transition of US 2 from a mountainous highway to Leavenworth’s “main street”. Installation of a roundabout would reinforce this gateway, by slowing speeds paired with signage and landscaping that would serve as a way to alter driver expectations and behaviors from the nearly 65 mile stretch of US 2 across the Cascades. Moreover, landscaping features of a roundabout provide the opportunity to incorporate Bavarian-themed elements, reinforcing the unique identity of Leavenworth.

The intersection is also the western terminus of Link Transit’s Route 22. The current configuration of the intersection requires transit operators to make a left-turn onto Icicle Road before pulling into the gas station on the southeast corner of the intersection and using the parking lot as the turnaround before continuing eastbound. Construction of a roundabout and relocating the transit stop from the parking lot to US 2 would improve transit service and efficiency at the west end of Leavenworth.



**Example of a roundabout in Breckenridge, CO. Source: MTJ, 2017**

## GUIDING PRINCIPLES

### Reliable



The roundabout improves local access onto the US 2 corridor, while not diminishing through traffic movement.

### Safe & Complete



The roundabout reduces entry and exit vehicle speeds and in doing so reduces the potential for serious and fatal crashes at the intersection.

### Vibrant



Paired with landscaping, public art or a sculpture, and signage, this project would create a unique and welcoming gateway into Leavenworth for visitors traveling on US 2. This project would also serve as a point to transition drivers from the mountain highway driving through Tumwater Canyon, to the slower speeds and behaviors needed when driving on a “main street”.

### Realistic



This project is the lowest cost capital project and can be completed almost entirely within available right-of-way.

### Supported



This project was not only added by the community as part of the engagement process, but also received over 60 “likes” on the online map.

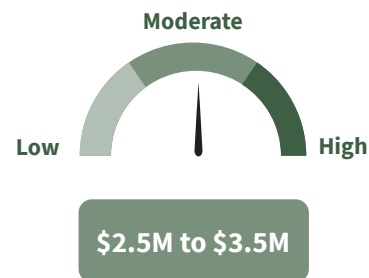
## ADDITIONAL CONSIDERATIONS

**Temporary Traffic Control** - Roundabout control limits the opportunity to deploy temporary traffic control measures. While queueing reaching Icicle Road was not observed this should be considered in evacuation planning.

**Landscaping & Art Costs** - While the roundabout would be constructed on a WSDOT facility, their fund contributions would not cover the addition of art or other visual enhancements to create a visual gateway to Leavenworth. Similarly, any center-island landscaping would be maintained by the City of Leavenworth.

**Future Growth** - This roundabout location could be metered with traffic-signals if future growth or congestion resulted in queueing reaching this intersection.

## COST



# Implement Parking Management Strategies

## PROJECT DESCRIPTION

This project builds on strategies identified as part of the Downtown Leavenworth Parking Management Plan and in some cases, identified for implementation in the near-term by the City of Leavenworth Parking Committee. Strategies maximize efficient use of the parking supply such that visitors can easily find parking, reducing congestion in Downtown that results from cruising for parking. These strategies would also allow the City to flexibly manage parking during high demand events.

**Strategy 1: Allocate remote parking for employees that work in Downtown.** With the recent transition of the WSDOT lot to City ownership, a portion of the available capacity in this lot would be allocated to employee parking. This lot is adjacent to the US 2/Mill Street transit stop, which would connect employees parking at this location to jobs in Downtown. Creating employee parking at this lot would also be supported by the TDM Strategies and Bike/Scooter Share projects discussed in the following section and the US 2 Ski Hill to River Bend Streetscape Improvements project.

**Strategy 2: Make other remote options available to employees.** Any unused capacity at the existing Willkommen Village could also be utilized followed by the paid use of parking in private-lots for employees.

**Strategy 3: Active management of on-street parking Downtown.** Once employees have adequate options to park remotely and connect to jobs in Downtown, measures including paid on-street parking and time-restricted parking in Downtown should be deployed to ensure that employees utilize remote parking opportunities leaving spaces in Downtown available for visitors.

**Strategy 4: Event-specific parking management.** With an active management plan for parking in place, the City would be able to transition use of the parking supply during large events. During events demanding large amounts of parking, the City could transition

some of the parking available to employees with additional incentives available to employees to travel to Leavenworth by rideshare or public transit during events and festivals. This would allow the City to better accommodate and manage the parking required for festivals, without construction of additional remote parking facilities.

## PROJECT BENEFITS

- ✔ A parking system that visitors can easily navigate
- ✔ The flexibility to transition parking between employees and visitors
- ✔ A system that allows visitors to park once

## GUIDING PRINCIPLES

### Vibrant



Several strategies identified as part of this project focus on more efficiently parking employees, which creates more opportunities for parking visitors.

### Realistic



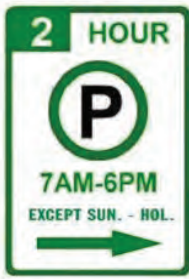
Many of the management strategies identified as part of this project can be implemented without significant costs and within the near-term (less than five years).

### Supported



Project stakeholders, PAC members, and community members have all expressed support for parking management strategies as part of this study.





**2-Hour Parking Sign.**  
Source: City Of Seattle, 2020.

Turnover of parking in Downtown Leavenworth was measured to be below typical parking turnover rates when data was collected for the Downtown Parking Management Plan. The data indicated that parking spots in Leavenworth were turning over approximately half as often as the industry average. This was believed to be a result

of employees using on-street parking in Downtown. By shifting employees to parking located outside of Downtown connected by transit, parking in Downtown would be more frequently available to visitors near their destination. This would limit the need for people unfamiliar with Leavenworth to circulate through Downtown looking for parking, improving not only the parking system, but also reducing congestion in Downtown.

Today, management of parking within Leavenworth for events and festivals requires starting from scratch each time management is needed and relies on parking lot owners to actively manage their parking supply. By putting management strategies in place, first focused on the management of employee parking, those systems can be leveraged to more efficiently manage the supply during times of high demand.

These strategies paired with other identified projects would help to create a “park once” experience for visitors in Leavenworth. With the ability to transition remote parking to visitors and have transit and bike/scooter share options in place, visitors can park and easily navigate between destinations using other modes.

## ADDITIONAL CONSIDERATIONS

**Support of Other Projects** - Strategies above would support the US 2 Ski Hill to River Bend Streetscape Improvements Project, Transit-on-Shoulders, and Bike/Scooter Share Projects, and TDM strategies. These management strategies would ensure that Leavenworth’s parking system has adequate capacity in strategic locations encouraging visitors to park and then leverage other mode choices to travel within Leavenworth.

**Increased Transit Service** - As Link Transit continues to increase service on Route 22 over the next several years and continues the operation of the circulator shuttle to complete Route 22 within Leavenworth, the use of transit by employees participating in TDM programs will continue to increase



**Example of On-Street Parking Meters.** Source: City of Lexington, KY.

**The Downtown Parking Plan** - While many of the strategies identified as part of this study are also documented in the Downtown Parking Plan, solutions in this study are strategies that would provide meaningful benefit to the US 2 corridor as a whole and support other projects identified by this study. The continued implementation of other strategies documented in the Downtown Parking Plan, not discussed in this plan, will continue to contribute to improving Leavenworth’s transportation system.

## COST

Cost for this project would vary depending on implementation of management strategies.

# US 2 Express Bus Access at Peshastin

## PROJECT DESCRIPTION

This project would relocate the Peshastin bus stop to the shoulders of US 2, significantly reducing travel time for Route 22 between Leavenworth and Wenatchee. To connect bicyclists and pedestrians from Peshastin to the stops on US 2, this project would construct a bicycle and pedestrian bridge adjacent to the existing Main Street Bridge in Peshastin. Improvements to pedestrian facilities between the new bridge and School Street would be completed as part of this project, as would enhanced crosswalk markings connecting the bridge to the improved transit stop.

## PROJECT BENEFITS

- ✔ Transit travel time savings between Wenatchee and Leavenworth
- ✔ An all-ages all-abilities bicycle and pedestrian bridge to Peshastin that connects to transit

The narrow Main Street Bridge has an outdated design without opportunity for expansion to better serve non-motorized modes. By constructing a separate, parallel footbridge the project would accommodate bicyclists and pedestrians on a separate facility that would be accessible and comfortable for people of all ages and all abilities with a direct connection to transit.

Peshastin adds six minutes to the route travel time, resulting in higher costs to operate the route and less competitive travel times compared to driving. The additional six minutes is estimated to add \$250,000 in operating costs to Route 22 over the course of one year. By creating a connection and improved stop on US 2, this project would lower operating costs while improving travel time and reliability.





To serve Peshastin, Route 22 must currently divert off of US 2 over the Main Street bridge. This loop into



**Bicycle & Pedestrian Bridge.** Source: Public Square, 2018.



## GUIDING PRINCIPLES

Reliable	Safe & Complete	Vibrant	Supported
 <p>With the travel time savings from eliminating the loop into Peshastin, Route 22 would operate more efficiently with better on-time performance making transit a more attractive and reliable option.</p>	 <p>A parallel facility would serve both bicyclists and pedestrians of all-ages and abilities through the separation from vehicles crossing the Wenatchee River.</p>	 <p>The addition of an all ages, all abilities bicycle and pedestrian bridge serves the dual purpose of making transit more efficient and creating an amenity that could benefit outdoor recreation along the US 2 corridor.</p>	 <p>Both Link Transit and community members have expressed support for this project.</p>

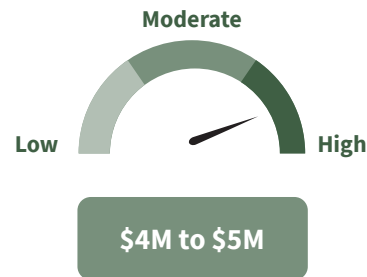
## ADDITIONAL CONSIDERATIONS

**Cost-Benefit** - This project would result in a direct cost-savings for Link Transit. With an estimated savings of \$250,000 per year and a total capital cost of between \$4 and \$5 million, investment in this project would be recovered in approximately 15 years.

**Support of Other Projects** - Transit travel time savings and reliability resulting from this project benefit other high-performing projects including: Parking Management, US 2 Ski Hill to River Bend Streetscape Improvements Enhancement. This project would also support several other projects including Employee Travel Demand Management and the Transit-on-Shoulders project, making transit a more attractive option during congested conditions.

**Funding Sources** - This project could apply for grants and other funding sources that could not be used for roadway capacity improvements.

## COST



## US 2 Ski Hill to River Bend Drive Streetscape Improvements

### PROJECT DESCRIPTION

This project would reconfigure US 2 in Leavenworth to provide a more complete and efficient facility for vehicles, transit, walking and bicycling. The improvements would enhance local accessibility for residents, prioritize the needs of emergency service vehicles, transit, and shuttles along the corridor and separate bicyclists and pedestrians from vehicles on US 2.

To improve mobility for local traffic using US 2 to access residential neighborhoods and Downtown Leavenworth, the existing westbound right-turn lane at Chumstick Highway, 9th Street, and Front Street would be extended. Only right-turning vehicles, transit, shuttles and emergency services would be able to utilize the extended right-turn lanes. All signalized intersections along US 2 in Downtown Leavenworth would be modified such that, only transit, shuttles, and emergency services would be able to continue through the intersection in this lane, with all other drivers being forced to turn right.

As part of this project, a traffic signal would be added at Front Street and the existing signals would be upgraded to include signal preemption. Signal preemption would allow vehicles with the appropriate transponder (emergency services, transit, and

shuttles) to preempt the regularly operating traffic signal to prioritize their movement through the intersection. To allow emergency services, transit, and shuttles to access the general purpose traffic lane ahead of the queue on US 2, the traffic signal would hold all through traffic on US 2 for approximately seven seconds to allow emergency services, transit, and shuttles in the right-turn lane to transition back into the general purpose lane.

Pedestrian improvements would include the addition of a visually appealing fence or landscaped buffer to provide separation between pedestrians and bicyclists and vehicles on US 2. This barrier would also discourage jaywalking across US 2 between intersections, reducing pedestrian crash potential and improving traffic flow on US 2.

Bicyclists on US 2 would be accommodated by a shared-use path between Chumstick Highway and Ski Hill Drive. The existing sidewalk on the north side of US 2 would be widened to accommodate both bicyclists and pedestrians. While bicyclists would transition to the shared-use path between Ski Hill Drive and Chumstick Highway, to the east and west of the improvements the existing on-street bicycle lane would be maintained. Crossings at Ski Hill Drive and Chumstick Highway would be restriped with additional markings, including green painted conflict areas, to connect bicyclists to the north side of US 2.



## PROJECT BENEFITS

- ✓ Truly multimodal US 2 that is more inviting to pedestrians and bicyclists
- ✓ Travel time benefits for transit, shuttles, and emergency services without adding measurable delay for general traffic
- ✓ Destinations in Leavenworth better connected via transit, shuttles and bike/scooter share

Today US 2 has on-street bicycle lanes through most of downtown and sidewalks on both sides. While confident cyclists use the on-street lanes, less confident cyclists tend to use the sidewalks, which vary in width and cannot always accommodate both bicyclists and pedestrians. With the addition of a shared-use path on the north side of US 2, this project would create a space designed to be shared by bicyclists and pedestrians. Paired with wayfinding and crossing improvements, the shared-use path would create an accessible route through downtown for both bicyclist and pedestrians.

Signal priority paired with queue-jump at signalized intersections would improve travel time through Leavenworth for emergency services, transit, and shuttles. Travel time improvement for shuttles and transit not only improves on-time operations, but also creates an incentive to use transit or shuttles to travel with Leavenworth. For emergency services, improved travel times translates into lower response times, meaning they can get to people in need in less time.

The priority for transit and shuttles paired with complete bicycle and pedestrian facilities would create more options in how people travel between Willkommen Village and Icicle Road. Paired with a bike/scooter share program, discussed in the following section, visitors would have access to multiple options to travel within Leavenworth whether arriving by transit or shuttles or driving and parking off the corridor or remotely.

## GUIDING PRINCIPLES

### Reliable



Using extended right-turn lanes paired with signal pre-emption to prioritize transit would create a more reliable transit option within the region. The extended right-turn lanes available only for use by transit, shuttles, emergency services, and right-turning vehicles would also ensure better access to residential neighborhoods.

### Safe & Complete



With improved access and signal priority, this project would allow for emergency services to reduce response times for Leavenworth residents.

### Vibrant



This project would encourage more efficient use of the corridor by creating mode shift opportunities by incentivizing the use of transit and shuttles through travel-time savings.

### Supported



Identifying a way to better prioritize emergency services along US 2 through Leavenworth while continuing to accommodate vehicles, bicyclists, pedestrians, and transit was supported by the community.

## ADDITIONAL CONSIDERATIONS

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**US 2 Driveway Access** - While full access would be maintained at all intersections along US 2, the extended right-turn pocket would eliminate the ability for eastbound traffic to turn left between intersections from Chumstick Highway to Front Street.

**Support of Other Projects** - This project would support the Bike/Scooter Share, Transit-on-Shoulders, and Shuttle Partnership projects. This project ensures that transit and shuttles operating on US 2 have a travel-time savings and can operate efficiently within Leavenworth encouraging higher use of the services, resulting in mode-shift for trips to Leavenworth. The project also increases comfortable space for bicyclists encouraging them to park once and utilize bike share and transit options to travel within Leavenworth. The reliable connection between Leavenworth destinations

would also support parking management strategies and make the “park once” strategy achievable for Leavenworth visitors.

**General Purpose Traffic Travel Time** - While this project would improve travel time for transit, shuttles, and emergency vehicles, there would be no benefit to travel time for drivers traveling through Leavenworth on US 2.

**Implementation** - This project could be implemented in steps as funding is available. Improvements could be made one intersection at a time or with priority for the westbound direction, followed by the eastbound direction.

### COST

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*Cost for this project is expected to vary based on phased implementation.*

# Chumstick Highway to River Bend Drive Connection

## PROJECT DESCRIPTION

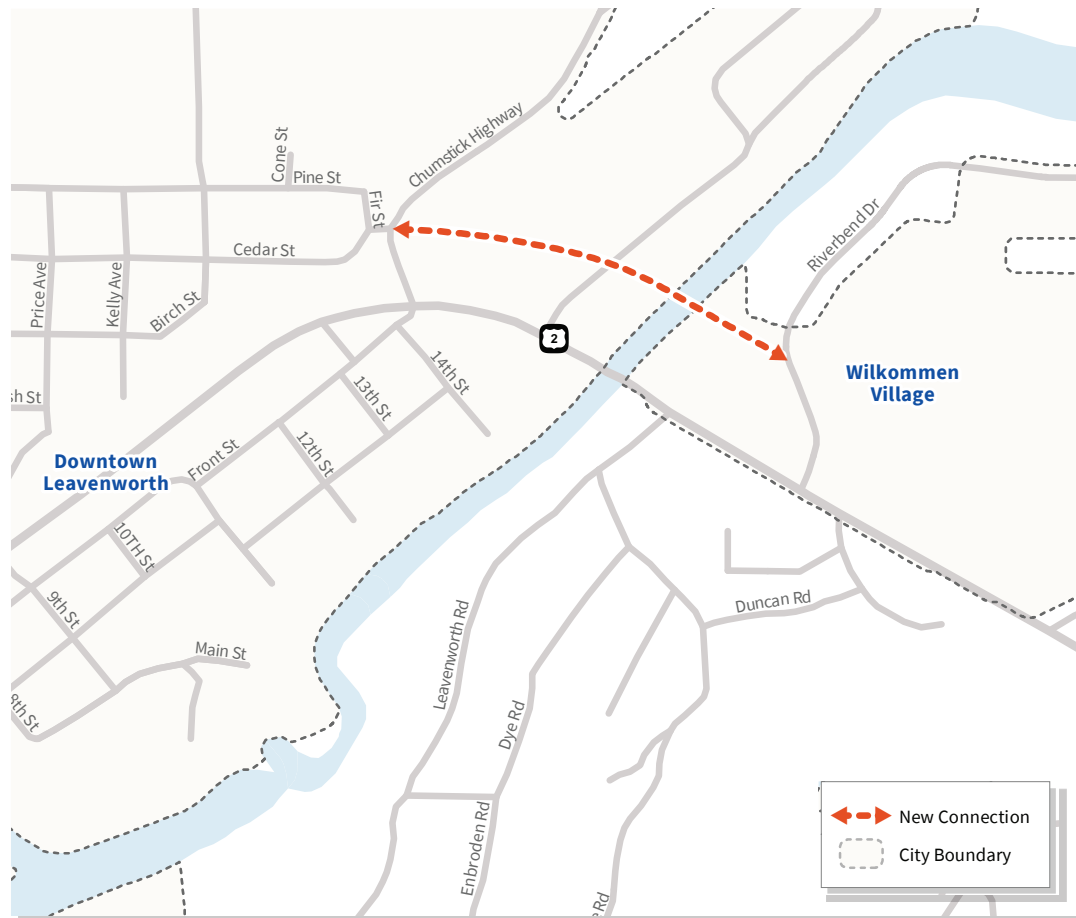
This project would create a new connection across the Wenatchee River connecting Chumstick Highway to River Bend Drive. This project would include construction of a new intersection with Chumstick Highway, a bridge across the Wenatchee River, and improvements to River Bend Drive from the new connection to US 2.

The new bridge would provide two general purpose travel lanes (one in each direction) to accommodate vehicles. Bicyclists would be accommodated in a side-running path shared with pedestrians on the north side of the bridge, while a sidewalk on the south side of the bridge would accommodate pedestrians.

To create the opportunity for transit to bypass US 2

during events (when US 2 is highly congested) and to facilitate better transit connections to residential neighborhoods, both the River Bend Drive intersection with US 2 and the Chumstick Highway intersection could be upgraded to include transit pre-emption. This technology could also be utilized by emergency services using this connection to access residential neighborhoods in Leavenworth.

The Chumstick Highway to River Bend Drive connection is the only viable project evaluated as part of this study that would result in significant travel time savings on US 2 during typical summer weekends. Evaluation of this project under summer weekend conditions resulted in a travel time savings of four minutes in the eastbound direction on US 2 and three minutes in the westbound direction. These travel time savings are equivalent to a 40 percent reduction from





Example of New Bridge Cross-Section. Source: Aspen Public Radio, 2018.

existing summer weekend travel times on US 2. During peak festival times heavy congestion on US 2 would still be expected to occur as a result of the limited capacity on US 2 as it exits Leavenworth.

### PROJECT BENEFITS

- ✓ 40% reduction in summer weekend travel times on US 2 through Leavenworth
- ✓ Additional capacity to move people across the Wenatchee River
- ✓ Improved bicycle and pedestrian connections to local trails and destinations

Today, US 2 is the only route that crosses Wenatchee River within the Leavenworth city limits, with extensive out-of-direction travel required to reach alternate crossings. Bottlenecks at both the Chumstick Highway and River Bend Driver intersections meter traffic on the bridge. While a new bridge would operate at a lower capacity than US 2, it would also reduce the bottleneck for traffic traveling on US 2 at both the Chumstick

Highway and River Bend Drive, increasing the number of vehicles able to cross the existing bridge. Considering the removal of bottlenecks and additional capacity offered by a new bridge, this project would increase the number of vehicles that can cross the Wenatchee River more than 50 percent compared to the capacity that exists today.

While a new bridge would facilitate the movement of vehicles across the Wenatchee River, it would also serve as an important connection for bicyclists. The improvements already in place for bicyclists and pedestrians west of Chumstick Highway paired with dedicated facilities on the new bridge would create a parallel route to US 2 between River Bend Drive and Ski Hill Road through Leavenworth. The route would also provide a connection to the middle school and high school for students living on the east side of the Wenatchee River.



## GUIDING PRINCIPLES

### Reliable



This project would improve travel times on US 2 by 40 percent during summer weekend conditions, making US 2 a more reliable route during periods of congestion. A new connection across the Wenatchee River would also ensure that movement across the river could continue to occur in the event of an incident on the US 2 bridge.

### Safe & Complete



This project would improve public safety by creating an additional capacity to move people, vehicles, and emergency responders across the Wenatchee River in the event of an emergency or natural disaster. With dedicated facilities for bicyclists and pedestrians, this project would also reduce the exposure of bicyclists crossing the Wenatchee River creating a safer and more comfortable bicycling experience.

### Vibrant



The new connection across the Wenatchee River would serve as a gateway to Leavenworth for local residents, bicyclists and pedestrians. With improved facilities for bicyclists and pedestrians crossing the river, this connection could also encourage a mode shift for local trips crossing the river.

## ADDITIONAL CONSIDERATIONS

**Right-of-Way** - A new connection between Chumstick Highway and River Bend Drive including construction of a new bridge will require significant right-of-way acquisition.

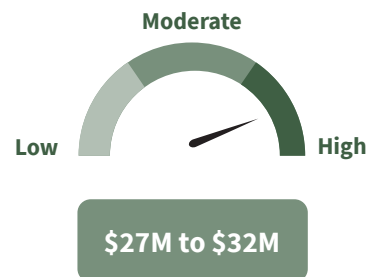
**Continuing Public Outreach** - Advancing this concept past the planning level will require engagement and support of the greater Leavenworth community.

**Environmental** - Work near the Wenatchee River is likely to require special permits and coordination with resource agencies.

**Additional Improvements** - Reconfiguration will be required for several local roadways including Chumstick Highway, Alpensee Strauss, Riverbend Drive and access to Safeway.

**Maintenance** - This bridge would be a local road owned and maintained by the City of Leavenworth.

## COST



## US 2 Undercrossing

### PROJECT DESCRIPTION

This project would connect the residential neighborhoods north of US 2 to downtown Leavenworth and the Wenatchee River Waterfront by constructing a US 2 undercrossing near the Leavenworth Park and Ride. The undercrossing would be accessible from both the Park and Ride lot and Sherbourne Street on the north and Division Street on the south, creating a more seamless connection across US 2 for bicyclists and pedestrians.

Leavenworth's Comprehensive Plan identifies US 2 as a barrier for biking and walking that separates the downtown area from the residential areas. All existing options for crossing US 2 near downtown expose bicyclists and pedestrians to conflicts with right-turning vehicles, except for the High-Intensity Activated Crosswalk (HAWK) beacon at City Hall, which is a mid-block crossing. The large number of pedestrian crossings that can occur in Downtown Leavenworth on a summer day or during events (over 3,000 pedestrians were counted on a Sunday in August at one crossing) create delay for vehicles along the US 2 corridor. Providing a grade separated crossing for and pedestrians creates fewer conflicts and more comfortable experience that reduces barriers to visiting the waterfront, encourages parking once in Downtown to visit multiple destinations, and improves operations at signalized intersections.

### PROJECT BENEFITS

- ✔ Separation of vehicles and pedestrians and bicyclists crossing US 2
- ✔ Elimination of a barrier for residents accessing the waterfront area
- ✔ Encouragement for Downtown employees and patrons to “park once”



Example of Pedestrian Undercrossing.  
Source: Schultz Heavy Civil Construction, 2020.

## GUIDING PRINCIPLES

### Reliable



The large number of pedestrian crossings that can occur on a summer weekend or during events reduce the efficiency of signalized intersections and add delay to the US 2 corridor. Providing a grade-separated crossing of US 2 would reduce this conflict, improving the efficiency and reliability of the corridor. Similarly, a grade separated crossing would make parking once in downtown and traveling between destinations more feasible, reducing the number of vehicles in downtown cruising in search of a parking space.

### Safe & Complete



The separation of pedestrians and bicyclists crossing US 2 would not only reduce potential conflicts with vehicles, but also create a more comfortable biking and walking experience.

### Supported



The community and stakeholders have supported project ideas that lower the number of pedestrians crossing US 2 during summer weekends and festivals.

### Vibrant



Encourages residents to walk or bike to the downtown or the waterfront area by eliminating the need to cross US 2, which is identified as a barrier separating downtown Leavenworth and the waterfront from residential neighborhoods. The ability to “park once” also makes downtown a more accessible destination.

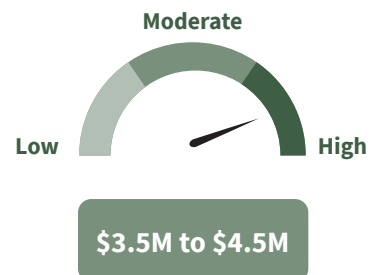
## ADDITIONAL CONSIDERATIONS

**Enhanced Pedestrian Separation** - This project should be paired with enhanced modal separation on US 2, through use of planters or visually appealing fencing to encourage use of the undercrossing.

**Wayfinding** - Wayfinding signs will be required to direct bicyclists and pedestrians on both sides of US 2 to the undercrossing.

**Right-of-Way** - Some right-of-way acquisition will be required to connect the undercrossing to neighborhood streets facilitating a connection for residents.

## COST



## Chapter 1

# Project Background



## Project Background

As one of two major state highway corridors over the Central Cascades, US 2 serves as a route for travel to and from desirable locations across the state. Within the Upper Wenatchee Valley, US 2 also serves as a vital regional and local connection for the communities of Leavenworth, Dryden, Peshastin, Cashmere, and Wenatchee. Tourist travel in the area is driven by outdoor recreation near Leavenworth and throughout the eastern slope of the Central Cascades and festivals hosted within the City of Leavenworth, including Oktoberfest and the Christmas Lighting Festival.

### → Transportation Challenges on the Corridor

While US 2 is a major highway that traverses the Cascades connecting Eastern and Western Washington, it also operates as a “main street” through the City of Leavenworth. The dual purpose as both a major highway and local main street creates the need to serve both regional and local trips in the corridor. While residents rely on the corridor for daily errands and to commute to and from work, it must also accommodate regional auto and freight trips passing through the Upper Wenatchee Valley, as well as recreational travel by all modes.

The corridor has several unique travel characteristics, described on the following page.



## Geography & Topography

Throughout the study area, the US 2 corridor is constrained by geography, limiting options for capacity improvements. This study focuses on a 23-mile stretch of US 2 bounded by Coles Corner to the west and Cashmere to the east. Just as the geography and topography vary throughout the study area, so do the constraints on the US 2 corridor.

From Coles Corner to Leavenworth city limits, US 2 traverses Tumwater Canyon. This portion of the corridor is bounded by steep slopes on one side and the Wenatchee River on the other. Due to the topography along this portion of the corridor, US 2 is a two-lane road with paved shoulders and a passing lane provided intermittently. This portion of the corridor is prone to closure due to avalanches in Tumwater Canyon. The only alternative route for this portion of the corridor is SR 207 to Chumstick Highway, which is not only a much longer route, but is also not traversable by freight due to tight curves between Plain and Leavenworth.

Within the City of Leavenworth the main topographic constraint for the corridor is the Wenatchee River. US 2 crosses the Wenatchee River between Alpensee Strasse and E. Leavenworth Road. This is the only river crossing within Leavenworth city limits. At the west end of

Leavenworth, Icicle Road crosses the Wenatchee River, approximately one mile south of US 2; however, connecting back to Leavenworth, requires an out-of-direction route totaling nearly six miles. To the east, the closest river crossing is three miles away, where the Main Street Bridge crosses the river and connects to US 2 in Peshastin. Accessing this crossing from the City of Leavenworth requires an additional two miles of out-of-direction travel using Chumstick Highway and North Road. The limited number of crossings with a direct connection to Leavenworth put added pressure on US 2, which serves as both the “main street” through Leavenworth and the primary ingress option for emergency services and egress option for residents in the event of a natural disaster.

East of Leavenworth, steep rock face paired with two narrow bridges over channels constrain US 2 just outside the Leavenworth city limits. Beyond Prey’s Fruit Barn & Orchards, land along the corridor transitions to agricultural land and there are fewer topographic constraints on the corridor. Through this portion of the corridor, US 2 widens to provide local access intermittently through a two-way-left-turn lane and/or dedicated right-turn lanes before transitioning to a four-lane facility at the SR 97 interchange.

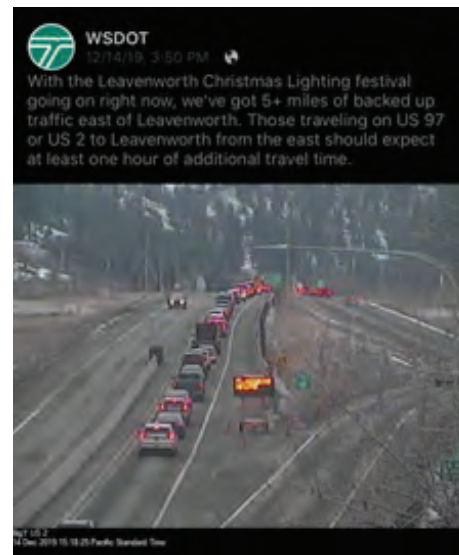
### Seasonal Travel

US 2 is one of the primary routes connecting the population in Western Washington to recreational destinations on the east side of the Cascades. This results in a significant increase in traffic volume on US 2 during the summer months, which is particularly pronounced on summer weekends. West of Leavenworth, US 2 traffic volume on summer Saturdays (June, July, and August) is 48 percent higher than winter Saturdays (December, January, February). East of Leavenworth, US 2 traffic volume on summer Saturdays is 31 percent higher than winter Saturdays, with an overall increase in traffic occurring during the summer months.



### Festivals & Events

Throughout the year festivals and events take place in Leavenworth, attracting visitors from all over the state. The largest event, the Christmas Lighting Festival, can draw over 20,000 visitors, creating parking, circulation, and emergency access issues not only within Leavenworth, but also on US 2. During the Christmas Lighting Festival, queues on US 2 can extend as far as the interchange with SR 97, approximately four miles. In recent years, the City, Chamber of Commerce and law enforcement agencies in the area have partnered to deploy management strategies including traffic control by flaggers at US 2 intersections in the City and emergency response staging.



**Figure 1: Queueing on US 2 during Leavenworth’s Tree Lighting Festival.**  
Source: Facebook, 2019



### → Existing Plans & Studies

Recent plans and studies have identified potential improvements to the US 2 corridor and strategies for managing parking demand in the City. These plans and studies include:

Chelan County Transportation Element

Leavenworth Comprehensive Plan

Leavenworth Downtown Strategic Parking Management Plan



For a detailed summary, see the Existing & Planning Context Memo, located in **Appendix A**.



## Chapter 2

# Vision & Guiding Principles



## Vision & Guiding Principles

The US 2 Upper Wenatchee Valley Corridor Transportation Study began in late 2018 with data collection and field observations conducted during the Tree Lighting Festival. The study was guided by and consistent with WSDOT’s Practical Solutions approach to ensure that policies, programs, and projects identified by this study are not only realistic, but also vetted by the community.

A key step in this study was the development of the vision for the corridor and a set of guiding principles, which were used to inform the entire process, including the selection and evaluation of the highest performing corridor improvements. The vision and guiding principles were established with collaboration and input the Project Advisory Committee, which is described in the following section.

### Corridor Vision

This study establishes a future vision for the US 2 Upper Wenatchee Valley Corridor that:

- » Provides reliable transportation options for all means of travel;
- » Accommodates emergency access, local trips, US 2 highway travelers into and out of the area, and freight movement;
- » Enhances the region’s unique identity.

### Overall Study Guiding Principles

The following guiding principles were established for evaluating potential solutions along the US 2 Upper Wenatchee Valley Corridor. Investments identified by this study must advance the creation of a corridor that is:

#### Reliable



Locals, regional commuters, freight, and emergency responders have options to maintain a reliable travel time between key destinations.

#### Safe & Complete



The corridor offers complete, multimodal infrastructure where appropriate to meet users’ needs and enhance corridor safety.

#### Vibrant



Improvements support Leavenworth’s tourism industry and growing seasonal usage of the corridor.

#### Realistic



Improvements are practical, fundable, and implementable within a reasonable timeframe and include creative solutions to better manage traffic impacts from seasonal and special event travel.

#### Supported



Stakeholders and the community will be engaged to identify mutually beneficial solutions.

## → Stakeholders & Community Engagement Methods

Over the course of the study, a variety of engagement methods were deployed so that input from the perspectives offered by diverse corridor stakeholders and the broader community was heard at appropriate study milestones.

### Stakeholder Interviews

As part of the early engagement process, 17 stakeholder interviews were completed by the study team. Stakeholder interviews included residents, local business owners, local community group representatives, service providers, and agencies responsible for operations along the US 2 corridor. Stakeholder interviews were used to understand the opportunities and constraints along the corridor from the agencies and individuals that rely on the corridor on a daily basis.

The full list of interviews conducted is shown to the right and a detailed summary of the interviews can be found in **Appendix B**.

### Festival Operators

- » Chantell Steiner, Leavenworth Festhalle Civic Center Oversight Committee
- » Steve Lord, Chair of Oktoberfest
- » Nancy Smith, Executive Director of Leavenworth Chamber of Commerce

### Community Groups

- » Wilma Cartagena, President of NCW Hispanic Chamber of Commerce
- » Doug Clarke, Vice-Chairman of Peshastin Community Council
- » Tim Bentz, Transportation Supervisor with Cascade School District
- » Josh Harmening, House Manager with Tierra Village

### Businesses & Service Providers

- » Dan Carr, Owner of Visconti's Restaurant
- » Chris John, General Manager of Posthotel
- » Gary Plannagan, Owner of Osprey Rafting Company
- » Ed Rutledge, Owner of Eagle Creek Winery
- » Brian Pulse, Director of Emergency Medical Services with Cascade Medical Center
- » Lisa Worthen and Eric Worthen, Owners of Dan's Food Market

### Agencies

- » Lieutenant Kelly Gregerson, Washington State Patrol
- » Terry Van Hoven, WSDOT Maintenance
- » Steve Burger, Link Transit
- » Monica Lough and Craig Larson, Port of Chelan County

## Project Advisory Committee

The US 2 Upper Wenatchee Valley Transportation Study benefited from the expertise of a Project Advisory Committee (PAC), which was comprised of volunteers from the following organizations:

- » Chelan-Douglas Transportation Council
- » Chelan County
- » Chelan County Fire District #3
- » Chelan County Sheriff
- » City of Leavenworth
- » Leavenworth Planning Commission
- » Leavenworth Chamber of Commerce
- » Friends of Leavenworth
- » Link Transit
- » WSDOT
- » Local Growers

The PAC met five times over the course of the project. Their role was to provide local input and context from the perspective of their representative organizations and to serve as a sounding board for study decisions.

During the meetings, the study team shared cross-section, intersection, and non-motorized access concepts and asked PAC members to provide input on potential fatal flaws and/or opportunities that could be leveraged with each investment. Summaries of the PAC meetings are included in **Appendix C**.

## → Community Input

The community was successfully engaged at three major milestones.

### The Vision & Principles

Input on the Corridor Vision and Guiding Principles, developed through collaboration with the PAC, was collected from the community in the form of a survey. The community was asked to provide input on the Vision and Guiding Principles, including identifying the principles that were most important to them and identify any additional corridor opportunities and constraints not identified by the study team. The survey received responses from 166 community members, ranging from Leavenworth residents to people who reside west of the Cascades.

Input from the survey was used to finalize the Guiding Principles and Vision for the study. The top two Guiding Principles, selected by the community through the survey, were also weighted more heavily during the project evaluation process.

### The Projects

The PAC had an influential role in developing project ideas for this study. At the first PAC meeting, members were asked which modes of transportation would be most important on each of the four segments of the corridor. With consideration for walking, biking, local trips, regional trips, emergency services, freight, and “other”, members were asked whether they thought each mode was necessary to accommodate on US 2, could be accommodated on parallel routes, or did not need to be accommodated at all. This input from the PAC began the framework for project development and prioritization along the corridor. The community also had an opportunity to provide input on project ideas through an online

pin-map. Using this map, the community could “like” or “dislike” project ideas developed by the study team, add their own project ideas, or comment on ideas on the map. The opportunity to provide input was live during the summer months and was promoted at the Leavenworth Farmers Market, on agency websites, and on changeable message signs on US 2 during a summer weekend. The community added 115 ideas to the pin-map and provided 175 comments and nearly 1,000 “likes” and “dislikes” for project ideas.

Input collected from the online pin-map was used to evaluate projects under the Supported Guiding Principle. Nine projects added by community were also added to the project ideas and carried through the project evaluation process.

### **The Plan**

The Draft Plan was presented to the community at a February 13, 2020 Community Workshop.

At the meeting, community members had the opportunity to view the projects evaluated in greater detail, ask questions and provide input. At the end community members were asked to identify projects that they thought should be moved forward if funding were available. This opportunity to provide input was also made available on the project website. This information was then used to refine how projects are presented in the final plan. For a more detailed summary of the Community Engagement process, see Appendix D. A time line summarizing engagement of both the PAC and broader community is shown on the following pages.



### PAC MEETING #1

- How should we accommodate US 2 users?
- What is the vision for the US 2 corridor?
- What principles should guide this study?



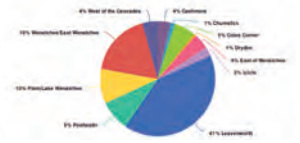
- Draft Vision & Guiding Principles
- Existing Planning & Context
- Stakeholder Interviews



### PAC MEETING #2

- Provided input on Vision & Guiding Principles
- How should we evaluate potential projects?

Please tell us where you live. This will help us better understand your feedback.



### COMMUNITY SURVEY

- Completed on the project website with 166 responses received
- Do the guiding principles align with community values?
- Which principles are most important?
- Are there other guiding principles this study should consider?



### LOCAL EVENT

- In-person event for local residents
- What ideas do you have for improvements on US 2?

US 2 Upper Wenatchee Valley Corridor Transportation Study		
Criteria	Rating	Rating
<b>1.1</b> <b>Route:</b> Local, regional, connectivity, freight, interregional, interregional, long distance, or long distance (interregional, long distance, or long distance)	1. Major corridor based on state corridor or future potential	1. Major corridor based on state corridor or future potential
<b>1.2</b> <b>Route:</b> Local, regional, connectivity, freight, interregional, interregional, long distance, or long distance (interregional, long distance, or long distance)	2. Major corridor based on state corridor or future potential	2. Major corridor based on state corridor or future potential
<b>1.3</b> <b>Route:</b> Local, regional, connectivity, freight, interregional, interregional, long distance, or long distance (interregional, long distance, or long distance)	3. Major corridor based on state corridor or future potential	3. Major corridor based on state corridor or future potential
<b>1.4</b> <b>Route:</b> Local, regional, connectivity, freight, interregional, interregional, long distance, or long distance (interregional, long distance, or long distance)	4. Major corridor based on state corridor or future potential	4. Major corridor based on state corridor or future potential
<b>1.5</b> <b>Route:</b> Local, regional, connectivity, freight, interregional, interregional, long distance, or long distance (interregional, long distance, or long distance)	5. Major corridor based on state corridor or future potential	5. Major corridor based on state corridor or future potential
<b>1.6</b> <b>Route:</b> Local, regional, connectivity, freight, interregional, interregional, long distance, or long distance (interregional, long distance, or long distance)	6. Major corridor based on state corridor or future potential	6. Major corridor based on state corridor or future potential
<b>1.7</b> <b>Route:</b> Local, regional, connectivity, freight, interregional, interregional, long distance, or long distance (interregional, long distance, or long distance)	7. Major corridor based on state corridor or future potential	7. Major corridor based on state corridor or future potential
<b>1.8</b> <b>Route:</b> Local, regional, connectivity, freight, interregional, interregional, long distance, or long distance (interregional, long distance, or long distance)	8. Major corridor based on state corridor or future potential	8. Major corridor based on state corridor or future potential
<b>1.9</b> <b>Route:</b> Local, regional, connectivity, freight, interregional, interregional, long distance, or long distance (interregional, long distance, or long distance)	9. Major corridor based on state corridor or future potential	9. Major corridor based on state corridor or future potential
<b>1.10</b> <b>Route:</b> Local, regional, connectivity, freight, interregional, interregional, long distance, or long distance (interregional, long distance, or long distance)	10. Major corridor based on state corridor or future potential	10. Major corridor based on state corridor or future potential

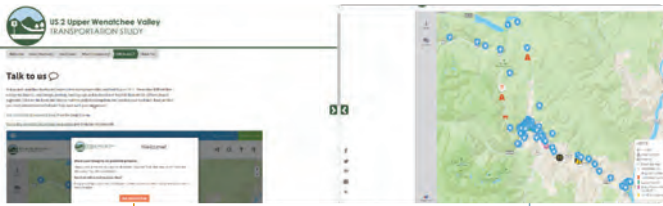


- Development of potential project ideas
- Created project evaluation matrix to help screen projects with fatal flaws



### PAC MEETING #3

- What have we heard from the community so far? How have we used their input?
- Does our project evaluation matrix work?
- How should we rank project ideas?



### COMMUNITY IDEAS

- Online map live during the summer travel months
- Asked the community to provide input on potential project ideas
- Community members added projects they wanted to see considered
- Received 115 new ideas, 175 comments and over 700 “likes” and “dislikes”

- Final list of 75 project ideas
- Completed evaluation matrix for all 75 projects
- Began evaluating top-performing projects
- Collected summer weekend traffic data on US 2

### PAC MEETING #4

- Presentation of top-performing projects and project benefits
- Which projects do you see as most important for the US 2 corridor?
- Which projects do you not support? Why?



US 2 Roundabout at Icicle Road	
<p><b>PROJECT DESCRIPTION</b></p> <p>This project would construct a single-lane roundabout at the intersection of Icicle Road and US 2. Prior to center-lane roundabouts, it is only open to a left-turn, and a roundabout would create an opportunity to create a gateway to Leavenworth in the western portion of the corridor. Located at the western terminus of US 2, this project would also create an improved area for transit and shuttle service on the US 2 corridor through Leavenworth.</p>	<p><b>PROJECT BENEFITS</b></p> <ul style="list-style-type: none"> <li>• Improved local access to US 2</li> <li>• A western gateway to Leavenworth</li> <li>• Improved transit and shuttle circulation</li> </ul>



- Technical evaluation of top-performing projects based on guiding principles
- Identified list of investments

### PAC MEETING #5

- Presentation of investments
- Feedback on projects identified for the Draft Plan

### COMMUNITY MEETING

- Overview of the study process
- Presentation of project findings
- What do you think about the projects?

## → Technical Analysis & Project Evaluation

With consideration for the different contexts of US 2 over the 23-mile study area, the study area was divided into four separate segments based on the roadway characteristics and the land use context in each area. The four corridor segments, shown on **Figure 2**, are:

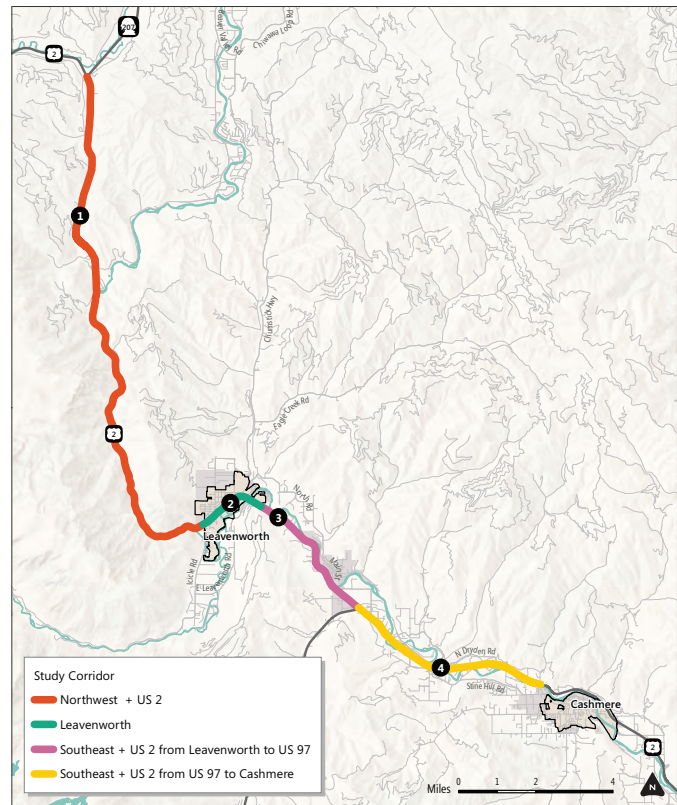
1. Northwest: from Coles Corner to Icicle Road
2. Leavenworth: from Icicle Road to the Leavenworth city limits
3. Peshastin: from Leavenworth to US 97
4. Southeast: from US 97 to Hay Canyon Road

### Data Collection

The following data were collected along the US 2 corridor from Coles Corner to Cashmere to describe key corridor characteristics:

- » **Land Use:** Land use context around each segment, including land use types (residential, commercial, etc.), future plans for redevelopment, neighborhood access, environmental conditions, as well as opportunities and constraints created by these uses.
- » **Pedestrian/Bike Facilities:** Conditions for walking and biking along each segment as well as parallel routes in the area, and considerations for how the need to serve those users will influence potential treatments.
- » **Transit:** A description of services operating along the segment, headways, and stops along the segment.
- » **Vehicle Operations:** Roadway configurations and features for each segment, as well as trends in volume data.
- » **Safety:** Crash data, provided by WSDOT, for a four-year period (January 2015 to November 2018) was evaluated for crash history, crash factors, and crash density along the segments and within the City of Leavenworth.

To better understand trends for each of these topic areas throughout the study corridor, see **Appendix A**, the Planning Context report developed for this study.



**Figure 2: Corridor Segments. Source: Fehr & Peers, 2019**



### → Project Evaluation

A total of 75 project ideas were considered by this process as ways to help achieve the Corridor Vision. The study team evaluated each of these potential investments according to the Guiding Principles established by the PAC.

The 75 project ideas were first evaluated using the Project Evaluation Matrix (see **Figure 3**). The matrix provided an objective means for evaluating how potential projects advanced the five Guiding Principles for this corridor plan. Projects could receive a maximum of 84 points based on their consistency with each of the Guiding Principles. This process assigned the most points for consistency with the top two Guiding Principles identified by the community: **Safe & Complete** and **Reliable**.

Once the evaluation matrix was complete, the ranked projects were divided into three tiers. Project tiers were based on points, with projects scoring 60 points or more being considered in the top tier (Tier 1), projects scoring between 30 and 60 points in the middle tier (Tier 2), and projects scoring less than 30 points in the bottom tier (Tier 3).

Results of the project evaluation step, including the project tiers, were then used to group projects as described in the following section.

The complete Project Evaluation Matrix, including scoring criteria, can be found in **Appendix E**.

US 2 Upper Wenatchee Valley Corridor Transportation Study			
Project Evaluation Criteria			
Number	Guiding Principles	Metric Description	Ranking
1	<b>Reliable.</b> Locals, regional commuters, freight, and emergency responders have options to maintain a reliable travel time between key destinations.	1.1: Improves corridor travel time under current or future conditions.	8= Reduces difference in travel times experienced along corridor between summer weekends and event times and typical conditions for both summer weekends and events 4= Reduces the difference in travel times between typical conditions and summer weekends or events (but not both) 2= Minimal improvement expected as a result of a planning or programic solution. 0= Does not improve the difference in travel times on the corridor between summer/event times and typical conditions
		1.2: Creates more reliable transportation connections in the region.	4= Major Connection (Serves large number of users or multiple modes) 2= Minor Connection (Serves primarily local trips or only one mode of travel) 0= No
2	<b>Safe &amp; Complete.</b> The corridor offers appropriate multimodal infrastructure to meet users' needs and enhance safety.	2.1: Improves emergency response times and access to the corridor.	6= Yes 0= No
		2.2: Fixes a known sight distance issue or identified modal conflict point, including improving the frequency or comfort of pedestrian crossings, and access to more complete bicycle and pedestrian facilities along the corridor.	6= Yes 0= No
3	<b>Vibrant.</b> Improvements supporting the region's economy and growing seasonal usage of the corridor.	3.1: Provides for a unique and welcoming travel experience.	6= Major amenity or enhancement 3= Minor amenity or enhancement 0= None
		3.2: Project encourages more efficient use of the corridor, in terms of the times when people travel, the modes they use, and how vehicles are stored.	6= Project encourages shifting of trips by mode, to other peak times and improves parking management 0= No
4	<b>Realistic.</b> Improvements are practical, fundable and implementable within a reasonable timeframe and include creative solutions to better manage traffic impacts from seasonal and special event travel.	4.1: Project can be completed within available Right-of-Way.	6= No Right of Way Aquisition Required 3= Minimal Right of Way Aquisition Required 0=Significnat Right of Way Aquisition Required
		4.2: Project costs are aligned with budget constraints.	6= Low Cost Improvement (\$0-\$400,000) 3= Moderate improvement cost (\$400,000-\$3M) 0= High cost (\$3M+)
5	<b>Supported.</b> Stakeholders and the community will be engaged to identify mutually beneficial solutions.	5.1: Receives support from the community and stakeholders throughout this study.	12= High 6= Medium 0= Low

Figure 3: Project Evaluation Metrics & Scoring. Source: Fehr & Peers, 2019.

## → Project Selection

Once project evaluation was complete, the projects were identified as either an evaluated project or project not advancing based on feasibility, project complexity, timeline for implementation and adherence to the Project Guiding Principles.

### **Project Not Advancing**

This category includes projects that were found not to advance more than two of the Guiding Principles or that received fewer 30 points in the evaluation matrix (Tier 3 projects). This category also includes projects identified as having a fatal flaw through the project evaluation process that would make implementation unachievable. Several projects identified as fatal flaw projects through the evaluation process are discussed in detail in the following chapter.

### **Evaluated Projects**

This category includes all the projects identified by this study that were found to advance three or more of the Guiding Principles. A number of projects in this category are projects that could be implemented fairly quickly outside the scope of this study and projects that may be beneficial to multi-modal travel in the area but could be evaluated as part of other studies or transportation plans. For these projects, a description of the project as well as considerations for implementation, such as coordination needs, right-of-way, and technical challenges have been included in the following chapter.

Six of the highest performing projects, identified as providing measurable benefit to the corridor at spot locations or corridor wide were selected for a more detailed evaluation. For each of these investments, the following chapter outlines the more detailed evaluation of benefits to users, conceptual design and cost. A final list of projects selected for evaluation was determined based on information presented at the September 26, 2019 PAC meeting.

## Chapter 3

# Evaluated Projects



## The Projects

Of the 75 project ideas that came out of this process, 39 project ideas were found to be consistent with the corridor’s guiding principles and were not identified as having a fatal flaw. The following chapter summarizes first projects that were identified as having fatal flaws, then describes the projects evaluated as part of this study.

### → Fatally Flawed Projects

Fourteen project ideas were identified as having a fatal flaw that would make them either infeasible to implement or inconsistent with the ultimate goals of this US 2 corridor plan. Fatal flaws were identified through input from the community, stakeholders, the PAC, and in some cases through technical evaluation.

All projects identified as having a fatal flaw can be found in the Project Evaluation Matrix in **Appendix E**. Three major capital investments that were found to be fatally flawed are summarized below.

### Roundabouts at Primary US 2 Intersections

One question that has been frequently asked is if converting US 2 intersections to roundabouts would better manage traffic by improving local access to US 2 and removing signal delay. The study team evaluated the feasibility of constructing roundabouts at three major US 2 intersections: Ski Hill, 9th Street, and Chumstick Highway. Using the Project Evaluation Matrix, this project was identified as a Tier 2 project. The project also received community and PAC member support and advanced four of the five Guiding Principles (Safe & Complete, Reliable, Vibrant, and Supported). As a result, a traffic simulation analysis of this project was performed.

The evaluation of this project in greater detail led to the identification of two fatal flaws: queueing on US 2 and the inability to implement temporary traffic control once roundabouts were in place.

Simulation of the US 2 corridor through Leavenworth with roundabouts at these intersections indicated that on a summer weekend queueing along the corridor would spillback into upstream roundabouts blocking the side-street traffic entering the roundabouts. The analysis also indicated that heavy through traffic flows on US 2 would result in relatively few gaps for traffic from local streets to enter the roundabout, which could exacerbate high delays for residents and traffic attempting to access US 2.

Another key limitation of roundabouts is the inability to deploy temporary traffic control measures. Given the dynamic nature of Leavenworth and the need for flexible traffic management during events like Oktoberfest and the Tree Lighting Festival, or even more critically, during a natural disaster, the limited flexibility associated with roundabouts was also identified as a fatal flaw. For example, in the event an evacuation was needed, the current two-way-left-turn lane could be repurposed as a receiving lane to add capacity in the eastbound direction. With a roundabout in place, this repurposing of space would no longer be possible.

Identification of these two fatal flaws resulted in the recommendation that this project be removed from further consideration as part of this study.

### US 2 Widening

When the traffic volume on a roadway exceeds capacity and results in heavy congestion, as is experienced during peak times on US 2, one of the most apparent solutions is to widen the roadway. With approximately 60 feet of space between curbs on US 2 through Leavenworth, the widening of US 2 from two general purpose lanes and a two-way-left-turn lane to four general purpose lanes was considered.

While additional capacity through Leavenworth could reduce delay for through trips on the corridor, impacts to local access, parking, bicycle lanes, and sidewalks would be substantial.

Right-of-way exists to accommodate four lanes of travel, but maintaining local access at US 2 intersections would require the removal of parking both on-street and in some business parking lots along the corridor. This would also require sidewalks along US 2 to be narrowed throughout Leavenworth. Widening the highway would also eliminate the ability to accommodate bicyclists on US 2 as it would require removal of the existing on-street bicycle lanes. This may result in the bicyclists choosing another route through Leavenworth or using the sidewalk with pedestrians. With the need for pedestrians to cross two additional lanes of traffic on US 2, an additional seven seconds would need to be added to pedestrian crossing time at signalized intersections on US 2 adding additional delay to trips traveling through on US 2.

With any roadway widening project, one important consideration is induced demand. As a result of the congestion that occurs today on US 2 through Leavenworth, it is likely that there are additional users who want to travel on US 2 but choose not to. These users may be taking alternate routes, either local or regional, shifting their travel to off-peak times, or using other modes like biking or walking. As widening US 2 through Leavenworth would be expected to reduce congestion and make traveling on US 2 more appealing, this may lead to users altering their routes, travel times, or mode choices, resulting in an increase in demand on US 2.

Lastly, for US 2 widening to be truly effective, the widening would need to extend all the way to SR 97. Through a micro-simulation evaluation of two-lane travel through Leavenworth, the simulation indicated that at the east end of Leavenworth, the transition from two through lanes of travel to a single through lane would create a bottleneck resulting in significant queueing and congestion.

A high-level cost estimate developed for widening US 2 from the west end of Leavenworth to SR 97 resulted in a cost of at least \$32,000,000<sup>1</sup>. Given the costs required to widen US 2 through this entire section and the impact of widening US 2 to local access, businesses and parking and biking on the corridor, this project was identified as not feasible and removed from further consideration.



<sup>1</sup>Cost-estimated using estimated cost per mile for roadway improvements developed by Arkansas Department of Transportation. Costs for widening from a 2 lane to 4 lane roadway in an urban area we determined to be most applicable to the Leavenworth section. Given the extent of rock blasting and bridge widening determined necessary for widening between Leavenworth and SR 97, costs associated with construction of a new roadway in a mountainous area were determined to be most applicable to that section. This cost estimate does not include a number of other likely costs, such as right of way acquisition.

## Improving Parallel Routes

Another question that often comes up is whether there's the opportunity create a US 2 bypass or sufficiently modify parallel routes to offer a viable US 2 alternative. To answer this question, the study team considered what it would take to improve three potential US 2 alternatives.

**Icicle Road to East Leavenworth Road:** The first route considered, Icicle Road to East Leavenworth Road could be designated as an alternate route for the segment of US 2 through Leavenworth. This route provides access to resorts and residential areas located in Chelan County. Both Icicle Road and East Leavenworth Road are two-lane roadways; however, Icicle Road has paved shoulders wide enough to accommodate bicyclists, while East Leavenworth Road has no shoulders. Both roadways are also heavily utilized by bicyclists and other recreational modes of travel and have direct access to residential driveways.

Using this route as an official alternate to US 2 through Leavenworth would require substantial improvements to both Icicle Road and East Leavenworth Road. On East Leavenworth Road, widening would be required to provide a dedicated space for bicyclists or other non-motorized modes that is separate from vehicles. Increased demand on these roadways would also require significant improvements to the pavement and increase on-going maintenance costs as trucks and recreational vehicles degrade pavement faster than passenger-cars. A high-level cost estimate for this project indicates that roadway reconstruction with needed widening to improve the roadway for more consistent use would be approximately \$15,000,000.<sup>2</sup>

While the costs of capital improvements and the on-going maintenance that would be required for these roadways is one consideration in this project's feasibility, the intended use of the roadway must also be considered. This area provides public access to several recreational areas, including trailheads and Icicle Creek, some of which are located directly adjacent to the roadways. Land use in this area is mostly residential, with many residents having direct access to both Icicle Road and East Leavenworth Road. With no other route options into Leavenworth, these residents would be heavily impacted by use of these roadways as an alternate route. This impact to residents led to this project being unsupported by project stakeholders and ultimately identified as having a fatal flaw likely to prohibit the project from moving forward.

**North Road to Chumstick Highway:** A second route that was considered as an option to bypass both Leavenworth and Tumwater Canyon is North Road to Chumstick Highway, which connects to SR 207 near Lake Wenatchee and then US 2 at Coles Corner.

Chumstick Highway is a narrow two-lane road with hairpin curves that prevent large trucks from using this route. North Road is also a narrow two-lane roadway with no shoulder. North Road is also heavily used by the agricultural land uses between Peshastin and the connection to Chumstick Highway.

This route was identified as having several fatal flaws by the study team and stakeholders. First, while Chumstick Highway is currently used as an alternative route when Tumwater Canyon is closed, encouraging more use of this route would require significant reconstruction. This would include straightening of roadway to eliminate hairpin curves on Chumstick Highway that make it inaccessible to some vehicles. On North Road, an increase in traffic volume (which would include general purpose traffic

<sup>2</sup>Cost-estimated using estimated cost per mile for roadway improvements developed by Arkansas Department of Transportation. Assumes 10 lane-miles of reconstruction for a rural non-freeway facility.

and agricultural vehicles) would also require geometric changes such as widening to provide shoulders.



*Today, North Road is a narrow roadway with many curves surrounded by agricultural uses.*

The construction and widening of shoulders along with improving horizontal curves, visibility, and signage between Fox Road and Nibblelinke Road was identified as a 20-year project in Chelan County's Transportation Element. The planning level cost estimates for these improvements resulted in an estimate of \$3,500,000 and account for only 1.5 of the four miles of North Road that would need to be reconstructed. Assuming improvements on North Road are likely to cost approximately \$2,300,000 per mile, based on previous estimates completed, this project is estimated to cost nearly \$10,000,000. The cost alone would likely make these improvements infeasible but paired with the fact that this alternate route would require substantial out-of-direction travel, this was also considered to be a fatal flaw for this project. On a typical summer weekend, travel time between the east side of Leavenworth and Coles Corner is estimated to be 22 minutes on US 2. Using Chumstick Highway to bypass Leavenworth and Tumwater Canyon is estimated to be 34 minutes, a 50 percent increase in travel time due to the longer distance even when considering congestion in Leavenworth.

Lastly, this alternate route was not supported by stakeholders or the community. Community input noted that this route is heavily utilized by not only bicyclists, but cross-country skiers, and people

accessing the Wenatchee River, a major concern when considering increasing not only traffic volume, but freight vehicles. The community and stakeholders also noted the concern for ongoing maintenance costs as a major concern for this project.

With costly safety improvements required, no way to make the route travel time competitive, and no support, this project was eliminated from further consideration.

**Leavenworth Bypass:** A third alternative route option that has been discussed in the Upper Wenatchee Valley since the 1960's is the idea of constructing a bypass that would take US 2 around both Tumwater Canyon and Leavenworth.

A reconnaissance report developed by WSDOT in 1965 evaluated the idea of US 2 leaving the current alignment at Merritt, just west of Coles Corner, following the existing SR 207 and Chumstick Highway alignment, before rejoining the current US 2 alignment just west of Peshastin. While the concept was never advanced, as congestion on US 2 has continued to increase through Leavenworth and Tumwater Canyon, the question of "would a bypass solve US 2 congestion?" continues to be asked.

The primary benefit of a bypass is to move more of the regional through trips that don't have an origin or destination in Leavenworth to a separate route that is unaffected by local traffic. In theory, through traffic could continue at higher speeds and would no longer impact Leavenworth's local mobility during the summer season.

Similar to the other alternate route options, the costs of this bypass far exceed the potential benefits. The most feasible option for a Leavenworth bypass, consistent with the idea evaluated in the 1960's would follow SR 207 and Chumstick Highway, a route with many fatal flaws as discussed above. All other potential routes would require constructing a new route through the Cascades, which would still require out-of-

direction travel, significantly reducing the potential travel benefit. As such, this alternate route was also considered fatally flawed without developing a cost estimate but is assumed to be at least \$100 million if not substantially higher.

## Evaluated Projects

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The projects presented in this chapter represent the most effective actions that WSDOT, Chelan County, City of Leavenworth, and Link Transit could take to achieve the ultimate vision of a US 2 Upper Wenatchee Valley Corridor that:

- » Provides reliable transportation options for all means of travel;
- » Accommodates emergency access, local trips, US 2 highway travelers into and out of the area, and freight movement;
- » Enhances the region’s unique identity.

This report describes the technical analysis, stakeholder collaboration, and community outreach that collectively helped arrive at these projects. These projects all received community and/or stakeholder support, are not associated with fatal flaws, and advance the Guiding Principles established for investments along this corridor:

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### Reliable



Locals, regional commuters, freight, and emergency responders have options to maintain a reliable travel time between key destinations.

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### Safe & Complete



The corridor offers complete, multimodal infrastructure where appropriate to meet users’ needs and enhance corridor safety.

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### Vibrant



Improvements support Leavenworth’s tourism industry and growing seasonal usage of the corridor.

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### Realistic



Improvements are practical, fundable, and implementable within a reasonable timeframe and include creative solutions to better manage traffic impacts from seasonal and special event travel.

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### Supported



Stakeholders and the community will be engaged to identify mutually beneficial solutions.



First, six high-performing projects that were evaluated in greater detail are presented, including a summary of project benefits, adherence to the Guiding Principles, additional considerations, and cost.

To understand the project evaluation process and findings in more detail, see **Appendix F**. These projects include:

- » US 2 Roundabout at Icicle Road
- » Parking Management
- » US 2 Express Bus Access at Peshastin
- » US 2 Ski Hill to River Bend Streetscape Improvements
- » Chumstick Highway to River Bend Drive Connection
- » Undercrossing at US 2 Park and Ride.

These six projects are followed by numerous other projects found to advance the Guiding Principles, that should be considered for further evaluation by local agencies.

## High Performing Projects

### → US 2 Roundabout at Icicle Road



#### Project Description:

This project would construct a single-lane roundabout at the intersection of Icicle Road and US 2. Paired with center-island landscaping, a display of public art or a sculpture, and Bavarian-themed signage, the roundabout would create a gateway to Leavenworth as visitors arrive from Tumwater Canyon. Located at the western terminus of Link Transit's Route 22, this project would also create an improved turn-around for transit and shuttles operating on the US 2 corridor through Leavenworth.

#### Implementation Considerations:

The first consideration is the ability to deploy temporary traffic control. Roundabout control limits the opportunity to deploy temporary traffic control measures. While queueing reaching Icicle Road was not observed this should be considered in evacuation planning.

Costs associated with maintaining landscaping and including public art in the roundabout design should also be considered. While the roundabout would be constructed on a WSDOT facility, their fund contributions would not cover the addition of art or other visual enhancements to create a visual gateway to Leavenworth. Similarly, any center-island landscaping would be maintained by the City of Leavenworth.

As growth occurs and traffic volume at this intersection increases, the need to install traffic signals to meter traffic through the roundabout may need to be considered if queueing and congestion reach this intersection in the future.

This project is estimated to cost between \$2.5 to \$3.5M.

#### Project Benefits:

This project would advance all five of the Guiding Principles as described below.

#### **Reliable**

This project would improve access for locals using Icicle Road to access homes or jobs without impacting travel times or congestion on US 2. Today, US 2 through traffic has priority at the intersection over traffic turning left onto Icicle Road and traffic on Icicle Road, which is stop-controlled. This configuration forces locals to wait for gaps in traffic on US 2, which can be difficult during periods of high congestion. With roundabout control at this intersection, all approaches would be yield-controlled, giving more equal opportunities for local and through traffic.

The intersection is also the western terminus of Link Transit's Route 22. The current configuration of the intersection requires transit operators to make a left-turn onto Icicle Road before pulling into the gas station on the southeast corner of the intersection and using the parking lot as the turnaround before continuing eastbound. Construction of a roundabout and relocating the transit stop from the parking lot to US 2 would improve transit service and efficiency at the west end of Leavenworth.

#### **Safe & Complete**

A roundabout configuration would reduce serious and fatal injury crash potential at the intersection by reducing speeds and limiting opportunities for severe collisions and fatal injury crash potential at

the intersection by reducing speeds and limiting opportunities for severe collisions.

### **Vibrant**

The Icicle Road intersection marks the transition of US 2 from a mountainous highway to Leavenworth’s “main street”. Installation of a roundabout would reinforce this gateway, by slowing speeds paired with signage and landscaping that would serve as a way to alter driver expectations and behaviors from the nearly 65 mile stretch of US 2 across the Cascades. Moreover, landscaping features of a roundabout provide the opportunity to incorporate Bavarian-themed elements, reinforcing the unique identity of Leavenworth.

### **Realistic**

This project is the lowest cost capital project and can be completed almost entirely within available right-of-way.

### **Supported**

This project was not only added by the community as part of the engagement process, but also received over 60 “likes” on the online map.

## **→ Parking Management**

### **Project Description:**

This project builds on strategies identified as part of the Downtown Leavenworth Parking Management Plan and in some cases, identified for implementation in the near-term by the City of Leavenworth Parking Committee. Strategies maximize efficient use of the parking supply such that visitors can easily find parking, reducing congestion in Downtown that results from cruising for parking. These strategies would also allow the City to flexibly manage parking during high demand events.

### **Strategy 1: Allocate remote parking for employees that work in Downtown.**

With the recent transition of the WSDOT lot to City ownership, a portion of the available capacity in this lot would be allocated to employee parking. This lot is adjacent to the US 2/Mill Street transit stop, which would connect employees parking at this location to jobs in Downtown. Creating employee parking at this lot would also be supported by the TDM Strategies and Bike/Scooter Share projects discussed in the following section and the US 2 Ski Hill to River Bend Streetscape Improvements project.

### **Strategy 2: Make other remote options available to employees.**

Any unused capacity at the existing Willkommen Village could also be utilized followed by the paid use of parking in private-lots for employees.

### **Strategy 3: Active management of on-street parking Downtown.**

Once employees have adequate options to park remotely and connect to jobs in Downtown, measures including paid on-street parking and time-restricted parking in Downtown should be deployed to ensure that employees utilize remote parking opportunities leaving spaces in Downtown available for visitors.

### **Strategy 4: Event-specific parking management.**

With an active management plan for parking in place, the City would be able to transition use of the parking supply during large events. During events demanding large amounts of parking, the City could transition some of the parking available to employees with additional incentives available to employees to travel to Leavenworth by rideshare or public transit during events and festivals. This would allow the City to better accommodate and manage the parking required for festivals, without construction of additional remote parking facilities.

### **Implementation Considerations:**

Strategies identified as part of this project would support the US 2 Ski Hill to River Bend Streetscape

Improvements Project, Transit-on- Shoulders, and Bike/Scooter Share Projects, and TDM strategies. These management strategies would ensure that Leavenworth’s parking system has adequate capacity in strategic locations encouraging visitors to park and then leverage other mode choices to travel within Leavenworth.

As Link Transit continues to increase service on Route 22 over the next several years and continues the operation of the circulator shuttle to complete Route 22 within Leavenworth, the use of transit by employees participating in TDM programs will continue to increase and would be supported by the parking management strategies recommended as part of this study.

While many of the strategies identified as part of this study are also documented in the Downtown Parking Plan, recommendations in the study are strategies that would provide meaningful benefit to the US 2 corridor as a whole and support other projects identified by this study. The continued implementation of other strategies documented in the Downtown Parking Plan, not discussed in this plan, will continue to contribute to improving Leavenworth’s transportation system.

Cost for this project would vary depending on implementation of management strategies.

### **Project Benefits:**

This project would advance three of the Guiding Principles.

#### **Vibrant**

Turnover of parking in Downtown Leavenworth was measured to be below typical parking turnover rates when data was collected for the Downtown Parking Management Plan. The data indicated that parking spots in Leavenworth were turning over approximately half as often as the industry average. This was believed to be a result of employees using on-street parking in Downtown. By shifting employees to parking located outside of Downtown connected by

transit, parking in Downtown would be more frequently available to visitors near their destination. This would limit the need for people unfamiliar with Leavenworth to circulate through Downtown looking for parking, improving not only the parking system, but also reducing congestion in Downtown.

Today, management of parking within Leavenworth for events and festivals requires starting from scratch each time management is needed and relies on parking lot owners to actively manage their parking supply. By putting management strategies in place, first focused on the management of employee parking, those systems can be leveraged to more efficiently manage the supply during times of high demand.

These strategies paired with other identified projects would help to create a “park once” experience for visitors in Leavenworth. With the ability to transition remote parking to visitors and have transit and bike/scooter share options in place, visitors can park and easily navigate between destinations using other modes.

#### **Realistic**

Many of the management strategies identified as part of this project can be implemented without significant costs and within the near-term (less than five years).

#### **Supported**

Project stakeholders, PAC members, and community members have all expressed support for parking management strategies as part of this study.

### **→ US 2 Express Bus Access at Peshastin**

#### **Project Description:**

This project would relocate the Peshastin bus stop to the shoulders of US 2, significantly reducing travel time for Route 22 between Leavenworth and Wenatchee. To connect bicyclists and



pedestrians from Peshastin to the stops on US 2, this project would construct a bicycle and pedestrian bridge adjacent to the existing Main Street Bridge in Peshastin. Improvements to pedestrian facilities between the new bridge and School Street would be completed as part of this project, as would enhanced crosswalk markings connecting the bridge to the improved transit stop.

**Implementation Considerations:**

This project is estimated to cost between \$4M and \$5M and would result in a direct cost-savings for Link Transit. With an estimated savings of \$250,000 per year and a total capital cost of between \$4 and \$5 million, investment in this project would be recovered in approximately 15 years.

This project could apply for grants and other funding sources that could not be used for roadway capacity improvements.

Transit travel time savings and reliability resulting from this project benefit other high-performing

projects including: Parking Management, US 2 Ski Hill to River Bend Streetscape Improvements Enhancement. This project would also support several other projects including Employee Travel Demand Management and the Transit-on-Shoulders project, making transit a more attractive option during congested conditions.

**Project Benefits:**

This project advances four of the Guiding Principles.

**Reliable**

To serve Peshastin, Route 22 must currently divert off US 2 over the Main Street bridge. This loop into Peshastin adds six minutes to the route travel time, resulting in higher costs to operate the route and less competitive travel times compared to driving. The additional six minutes is estimated to add \$250,000 in operating costs to Route 22 over the course of one year. By creating a connection and improved stop on US 2, this project would lower operating costs while improving travel time and reliability.

**Safe & Complete**

A parallel facility would serve both bicyclists and pedestrians of all-ages and abilities through the separation from vehicles crossing the Wenatchee River.

**Vibrant**

The narrow Main Street Bridge has an outdated design without opportunity for expansion to better serve non-motorized modes. By constructing a separate, parallel footbridge the project would accommodate bicyclists and pedestrians on a separate facility that would be accessible and comfortable for people of all ages and all abilities with a direct connection to transit.

**Supported**

Both Link Transit and community members have expressed support for this project.

## → US 2 Ski Hill to River Bend Streetscape Improvements



### Project Description:

This project would reconfigure US 2 in Leavenworth to provide a more complete and efficient facility for vehicles, transit, walking and bicycling. The improvements would enhance local accessibility for residents, prioritize the needs of emergency service vehicles, transit, and shuttles along the corridor and separate bicyclists and pedestrians from vehicles on US 2.

To improve mobility for local traffic using US 2 to access residential neighborhoods and Downtown Leavenworth, the existing westbound right-turn lane at Chumstick Highway, 9th Street, and Front Street would be extended. Only right-turning vehicles, transit, shuttles, and emergency services would be able to utilize the extended right-turn lanes. All signalized intersections along US 2

in Downtown Leavenworth would be modified such that, only transit, shuttles, and emergency services would be able to continue through the intersection in this lane, with all other drivers being forced to turn right.

As part of this project, a traffic signal would be added at Front Street and the existing signals would be upgraded to include signal preemption. Signal preemption would allow vehicles with the appropriate transponder (emergency services, transit, and shuttles) to preempt the regularly operating traffic signal to prioritize their movement through the intersection. To allow emergency services, transit, and shuttles to access the general purpose traffic lane ahead of the queue on US 2, the traffic signal would hold all through traffic on US 2 for approximately seven seconds to allow emergency services, transit, and shuttles in the right-turn lane to transition back into the general purpose lane.

Pedestrian improvements would include the addition of a visually appealing fence or landscaped buffer to provide separation between pedestrians and bicyclists and vehicles on US 2. This barrier would also discourage jaywalking across US 2 between intersections, reducing pedestrian crash potential and improving traffic flow on US 2.

Bicyclists on US 2 would be accommodated by a shared-use path between Chumstick Highway and Ski Hill Drive. The existing sidewalk on the north side of US 2 would be widened to accommodate both bicyclists and pedestrians. While bicyclists would transition to the shared-use path between Ski Hill Drive and Chumstick Highway, to the east and west of the improvements the existing on-street bicycle lane would be maintained. Crossings at Ski Hill Drive and Chumstick Highway would be restriped with additional markings, including green painted conflict areas, to connect bicyclists to the north side of US 2.

### **Implementation Considerations:**

While this project would improve travel time for transit, shuttles, and emergency vehicles, there would be no benefit to travel time for drivers traveling through Leavenworth on US 2.

This project would maintain full access at all intersections along US 2; however, the extended right-turn pocket would eliminate the ability for eastbound traffic to turn left between intersections from Chumstick Highway to Front Street.

This project would also support the Bike/Scooter Share, Transit-on-Shoulders, and Shuttle Partnership projects. This project ensures that transit and shuttles operating on US 2 have a travel-time savings and can operate efficiently within Leavenworth encouraging higher use of the services, resulting in mode-shift for trips to Leavenworth. The project also increases comfortable space for bicyclists encouraging them to park once and utilize bike share and transit options to travel within Leavenworth. The reliable connection between Leavenworth destinations would also support parking management strategies and make the “park once” strategy achievable for Leavenworth visitors.

This project could be implemented in steps as funding is available. Improvements could be made one intersection at a time or with priority for the westbound direction, followed by the eastbound direction. Cost for this project would also vary based on implementation.

### **Project Benefits:**

This project would advance four of the Guiding Principles.

#### **Reliable**

Signal priority paired with queue-jump at signalized intersections would improve travel time through Leavenworth for emergency services, transit, and shuttles. Travel time

improvement for shuttles and transit not only improves on-time operations, but also creates an incentive to use transit or shuttles to travel with Leavenworth. For emergency services, improved travel times translates into lower response times, meaning they can get to people in need in less time.

#### **Safe & Complete**

Today US 2 has on-street bicycle lanes through most of downtown and sidewalks on both sides. While confident cyclists use the on-street lanes, less confident cyclists tend to use the sidewalks, which vary in width and cannot always accommodate both bicyclists and pedestrians. With the addition of a shared-use path on the north side of US 2, this project would create a space designed to be shared by bicyclists and pedestrians. Paired with wayfinding and crossing improvements, the shared-use path would create an accessible route through downtown for both bicyclist and pedestrians.

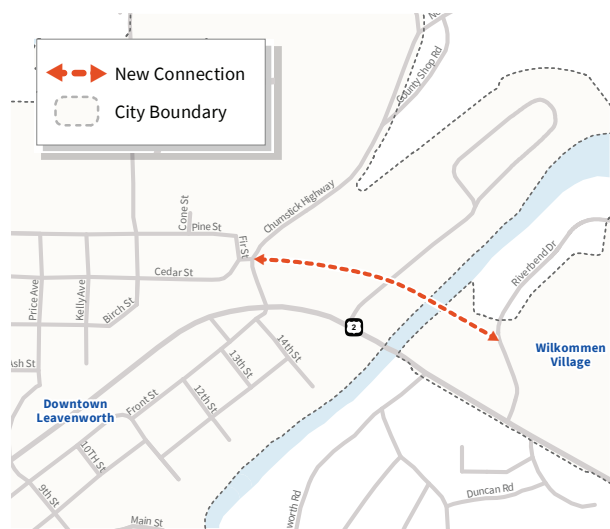
#### **Vibrant**

The priority for transit and shuttles paired with complete bicycle and pedestrian facilities would create more options in how people travel between Willkommen Village and Icicle Road. Paired with a bike/scooter share program, discussed in the following section, visitors would have access to multiple options to travel within Leavenworth whether arriving by transit or shuttles or driving and parking off the corridor or remotely.

#### **Supported**

Identifying a way to better prioritize emergency services along US 2 through Leavenworth while continuing to accommodate vehicles, bicyclists, pedestrians, and transit was supported by the community and project stakeholders.

## → Chumstick Highway to River Bend Drive Connection



### Project Description:

This project would create a new connection across the Wenatchee River connecting Chumstick Highway to River Bend Drive. This project would include construction of a new intersection with Chumstick Highway, a bridge across the Wenatchee River, and improvements to River Bend Drive from the new connection to US 2.

The new bridge would provide two general purpose travel lanes (one in each direction) to accommodate vehicles. Bicyclists would be accommodated in a side-running path shared with pedestrians on the north side of the bridge, while a sidewalk on the south side of the bridge would accommodate pedestrians.

To create the opportunity for transit to bypass US 2 during events (when US 2 is highly congested) and to facilitate better transit connections to residential neighborhoods, both the River Bend Drive intersection with US 2 and the Chumstick Highway intersection could be upgraded to include transit pre-emption. This technology could also be utilized by emergency services using this connection to access residential

neighborhoods in Leavenworth.

The Chumstick Highway to River Bend Drive connection is the only viable project evaluated as part of this study that would result in significant travel time savings on US 2 during typical summer weekends. Evaluation of this project under summer weekend conditions resulted in a travel time savings of four minutes in the eastbound direction on US 2 and three minutes in the westbound direction. These travel time savings are equivalent to a 40 percent reduction from existing summer weekend travel times on US 2. During peak festival times heavy congestion on US 2 would still be expected to occur as a result of the limited capacity on US 2 as it exits Leavenworth.

### Implementation Considerations:

A new connection between Chumstick Highway and River Bend Drive including construction of a new bridge will require significant right-of-way acquisition and special environmental permits for work along the Wenatchee River. This project would also require reconfiguring several local roadways and access points including Chumstick Highway, Alpensee Strauss, Riverbend Drive and access to Safeway. Advancing this concept past the planning level will also require ongoing engagement and support from the greater Leavenworth community.

This bridge would be a local road owned and maintained by the City of Leavenworth, construction is estimated to cost between \$27M to \$37M.

### Project Benefits:

This project would advance three of the Guiding Principles.

#### Reliable

Today, US 2 is the only route that crosses Wenatchee River within the Leavenworth city limits, with extensive out-of-direction travel required to reach alternate crossings. Bottlenecks



at both the Chumstick Highway and River Bend Driver intersections meter traffic on the bridge. While a new bridge would operate at a lower capacity than US 2, it would also reduce the bottleneck for traffic traveling on US 2 at both the Chumstick Highway and River Bend Drive, increasing the number of vehicles able to cross the existing bridge. Considering the removal of bottlenecks and additional capacity offered by a new bridge, this project would increase the number of vehicles that can cross the Wenatchee River more than 50 percent compared to the capacity that exists today.

### **Safe & Complete**

While a new bridge would facilitate the movement of vehicles across the Wenatchee River, it would also serve as an important connection for bicyclists. The improvements already in place for bicyclists and pedestrians west of Chumstick Highway paired with dedicated facilities on the new bridge would create a parallel route to US 2 between River Bend Drive and Ski Hill Road through Leavenworth. The route would also provide a connection to the middle school and high school for students living on the east side of the Wenatchee River.

### **Vibrant**

The new connection across the Wenatchee River would serve as a gateway to Leavenworth for residents, bicyclists, and pedestrians. With improved facilities for bicyclists and pedestrians crossing the river, this connection could also encourage a mode shift for local trips crossing the river.

## **→ Undercrossing at US 2 Park and Ride**

### **Project Description:**

This project would connect the residential neighborhoods north of US 2 to downtown Leavenworth and the Wenatchee River Waterfront by constructing a US 2 undercrossing near the

Leavenworth Park and Ride. The undercrossing would be accessible from both the Park and Ride lot and Sherbourne Street on the north and Division Street on the south, creating a more seamless connection across US 2 for bicyclists and pedestrians.

Leavenworth's Comprehensive Plan identifies US 2 as a barrier for biking and walking that separates the downtown area from the residential areas. All existing options for crossing US 2 near downtown expose bicyclists and pedestrians to conflicts with right-turning vehicles, except for the High-Intensity Activated Crosswalk (HAWK) beacon at City Hall, which is a mid-block crossing. The large number of pedestrian crossings that can occur in Downtown Leavenworth on a summer day or during events (over 3,000 pedestrians were counted on a Sunday in August at one crossing) create delay for vehicles along the US 2 corridor. Providing a grade separated crossing for and pedestrians creates fewer conflicts and more comfortable experience that reduces barriers to visiting the waterfront, encourages parking once in Downtown to visit multiple destinations, and improves operations at signalized intersections.

### **Implementation Considerations:**

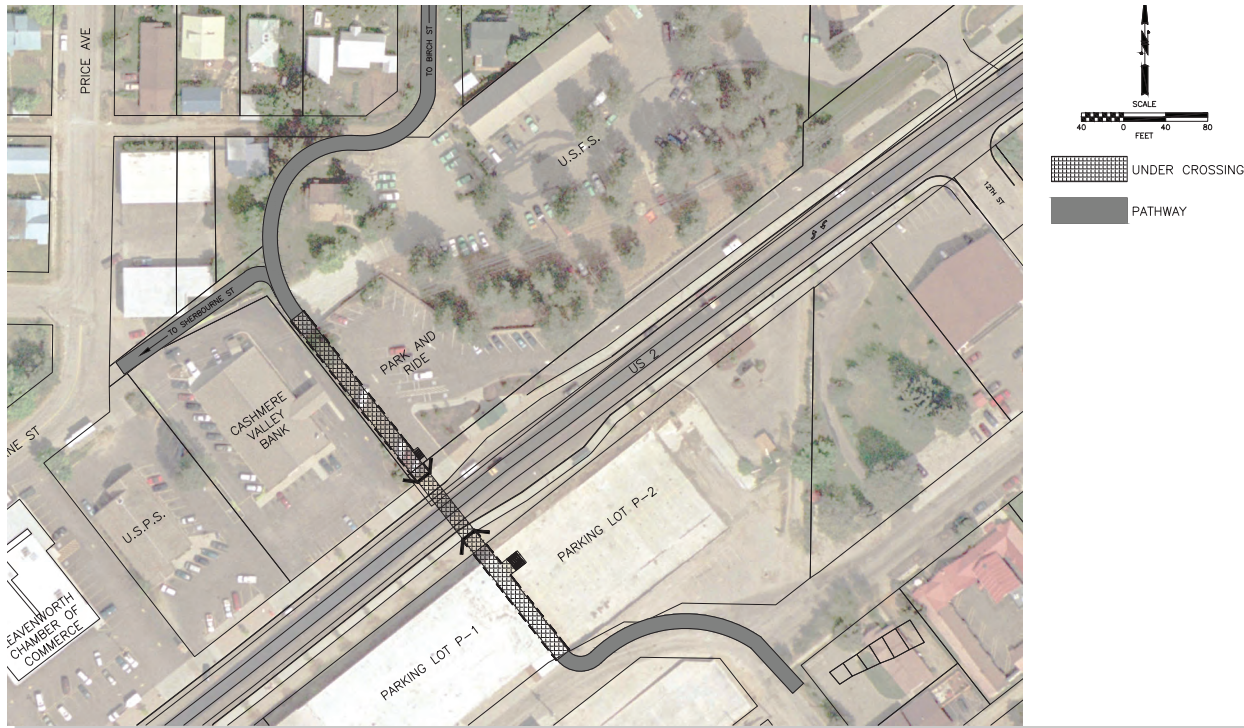
This project should be paired with enhanced modal separation on US 2, through use of planters or visually appealing fencing to encourage use of the undercrossing. Wayfinding signs will also be required to direct bicyclists and pedestrians on both sides of US 2 to the undercrossing.

Some right-of-way acquisition will be required to connect the undercrossing to neighborhood streets facilitating a connection for residents.

This project is estimated to cost between \$3.5M and \$4.5M.

### **Project Benefits:**

This project advances four of the Guiding Principles.



**Reliable**

The large number of pedestrian crossings that can occur on a summer weekend or during events reduce the efficiency of signalized intersections and add de-lay to the US 2 corridor. Providing a grade-separated crossing of US 2 would reduce this conflict, improving the efficiency and reliability of the corridor. Similarly, a grade separated crossing would make parking once in downtown and traveling between destinations more feasible, reducing the number of vehicles in downtown cruising in search of a parking space.

**Safe & Complete**

The separation of pedestrians and bicyclists crossing US 2 would not only reduce potential conflicts with vehicles, but also create a more comfortable biking and walking experience.

**Supported**

The community and stakeholders have supported project ideas that lower the number of pedestrians crossing US 2 during summer

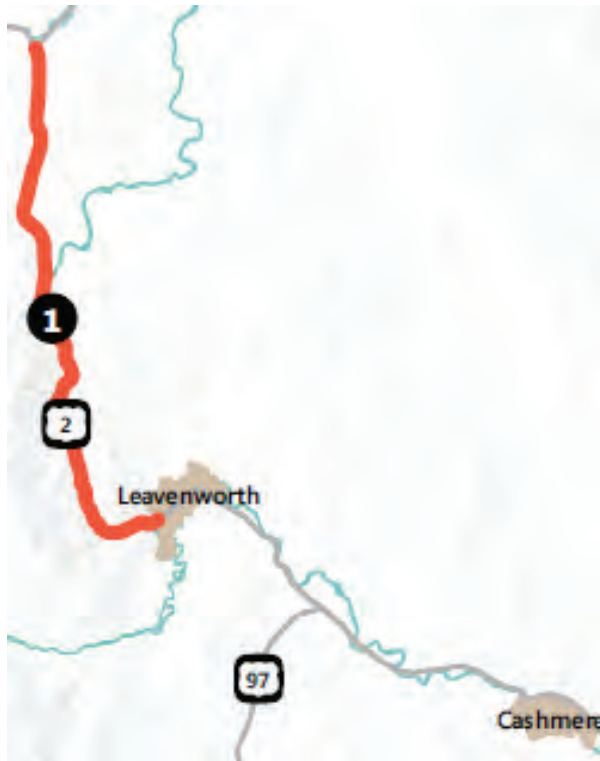
weekends and festivals.

**Vibrant**

Encourages residents to walk or bike to the downtown or the waterfront area by eliminating the need to cross US 2, which is identified as a barrier separating downtown Leavenworth and the waterfront from resi-dential neighborhoods. The ability to “park once” also makes downtown a more accessible destination.

## → Segment 1 – Coles Corner to Leavenworth

The projects summarized in this section would improve the stretch of US 2 between Coles Corner and Leavenworth's city limits.



### Signage & Wayfinding for Designated Parking Areas

**Project Description:** Add signage along US 2 between Coles Corner and Leavenworth to inform drivers of designated parking areas. Parking areas could include recreational areas, existing pull-outs with capacity to accommodate parking, or improved pull-outs. Signs informing drivers of designated parking areas could eliminate parking on the shoulder throughout the Tumwater Canyon.

**Implementation Considerations:** Wayfinding signs should direct drivers to parking areas near desired recreational areas or vistas to ensure use of parking. The capacity to accommodate parking in existing pull-outs or recreational areas will need to be considered to avoid directing visitors

to areas that cannot accommodate parking. Each parking area should also include signage with the distance to the next available parking location if demand exceeds capacity. Warning signs indicating potential pedestrian crossings should also be constructed on US 2 in advance of parking areas.

**Benefits:** Currently, people accessing trailheads, the Wenatchee River, or vistas throughout the Tumwater Canyon park on shoulders and in areas not designated for parking. This not only creates safety concerns for drivers on US 2 as the roadway varies in width throughout the canyon, but also results in pedestrians crossing US 2 with no warning to drivers. Consolidation of parking would allow for better signage for potential pedestrian crossing signs. Parking through the Tumwater Canyon can also cause issues for roadway maintenance when parked cars block access to areas requiring maintenance.

### Upgrade Existing Pullouts

**Project Description:** This project would expand existing pullouts to provide additional space for cars to park. In addition to space for more parking, upgrades would include signage alerting drivers of available parking and striping to ensure efficient use of the space.

**Implementation Considerations:** The location of upgraded pullouts should be selected based on proximity to recreational areas or vistas. Sight distance near the pullouts should also be considered when selecting locations to upgrade, so that vehicles driving on US 2 can see vehicles turning into and out of the pullouts.

**Benefits:** Upgrading existing pullouts would be less costly than creating new pullouts or parking areas in Tumwater Canyon. This would also create more parking opportunities for vehicles accessing areas within the canyon, eliminating the safety and maintenance concerns associated with vehicles parked along US 2.

## Modify Edge Lines to Increase Shoulder Size

**Project Description:** The only available space for bicyclists in Tumwater Canyon is the shoulders of US 2, which vary in width throughout the Canyon. This project would restripe the white edge line on the outside of US 2 in both directions to provide additional space for bicyclists on the shoulder and reduce travel lane widths.

**Implementation Considerations:** Roadway striping must conform with standards documented in the Manual on Uniform Traffic Control Devices (MUTCD).

**Benefits:** Moving the edge line to narrow the driving lane would provide additional space on the shoulders, lowering bicyclists stress through Tumwater Canyon.

## No Parking Signs

**Project Description:** The addition of “No Parking” signs throughout Tumwater Canyon.

**Implementation Considerations:** No parking areas should be located where parking creates safety concerns for operations on US 2, requires pedestrians to cross in areas without adequate sight-distance, or creates access issues for maintenance or emergency responders. As there is a strong demand for parking within US 2, no parking areas should not be located near desired recreational areas or vistas. Prohibiting parking near desired areas could result in people parking farther away and walking on or near US 2 creating a safety concern.

**Benefits:** Without “No Parking” signs in locations where parking creates the potential for increased crashes on US 2, there is no way to control or regulate parking without temporary signs. With signs in place, violations are enforceable, discouraging illegal parking in areas identified as having roadway characteristic that could lead to increased crash potential with parking or where access is critical in the event of an emergency.

## No Pedestrian Crossing Signs

**Project Description:** This project would recommend “No Pedestrian Crossing” signs be added on US 2 in areas where pedestrian crossings conditions, such as speed, intersection complexity, or geometry create conditions that increase pedestrian crash potential beyond acceptable levels.

**Implementation Considerations:** Locations identified for “No Pedestrian Crossing” signs should be areas with a high demand for pedestrian crossing that also include design or operational characteristics that an engineering assessment deem beyond acceptable levels, such as high-speed limited stopping sight distance. Signage should also denote where pedestrians may cross.

**Benefits:** This project would prohibit pedestrians from crossing in identified areas that have higher crash potential and allow for enforcement of no crossing signs, lowering the likelihood that dangerous pedestrian crossings will continue to occur.

## High Friction Surface Treatments (also identified for Segment 3 and 4)

**Project Description:** This project would apply pavement treatments to areas along US 2 where pavement friction is reduced due to wet or icy surface conditions or the speed and geometry of the roadway. The pavement treatment would include application of a high-quality aggregate, which would increase pavement friction.

**Implementation Considerations:** To determine locations where this treatment would lower friction related crash potential, a detailed review of the most recent crash data along US 2 would need to occur. This evaluation would consider pavement condition and wet weather related crashes or other contributing factors that benefit from increased friction would take place.

**Benefits:** The application of high friction surface treatment would lower friction related crash potential reducing the number of crashes occurring on US 2.

### Variable Speed Area

**Project Description:** Installation of electronic speed limit signs throughout Tumwater Canyon that would allow speed limits to be adjusted based on roadway conditions. Speed limit adjustments would be made during inclement weather, high-congestion, or peak recreational times when parking and pedestrian activity in the canyon where crash potential would be lowered based on reduced speed.

**Implementation Considerations:** Operation of a variable speed area would require the installation of sensors in the roadway to gather information on traffic speed, volume, and weather conditions. Implementation would also require a traffic operations center to interpret data and adjust speeds accordingly. Coordination with law enforcement agencies would also be required so that enforcement officers are aware of current speed limits.

**Benefits:** Conditions on US 2 within Tumwater Canyon can change significantly as a result of weather conditions. This project would allow for the changing of speed limits to slow drivers down as conditions degrade in the canyon. Speed limits could also be lowered when congestion on US 2 increases, or during peak recreational times, when visitors parking and crossing US 2 causes safety concerns within the canyon.

### Increase Shoulder Widths to Accommodate Bicyclists

**Project Description:** This project would widen the shoulders on US 2 between Coles Corner

and Leavenworth to provide additional space for bicyclists.

**Implementation Considerations:** Shoulder treatments such as edge-line rumble strips should also be considered if adequate space is available to alert drivers that they are departing from the travel lane and potentially encroaching on space allocated for bicyclists.

**Potential Benefits:** Widened shoulders would provide additional space to separate bicyclists from vehicles in Tumwater Canyon, which is a mountainous highway.

### Roundabout at US 2 and SR 207

**Project Description:** A single-lane roundabout could replace the existing two-way stop-controlled intersection at the junction of US 2 and SR 207 in Coles Corner.

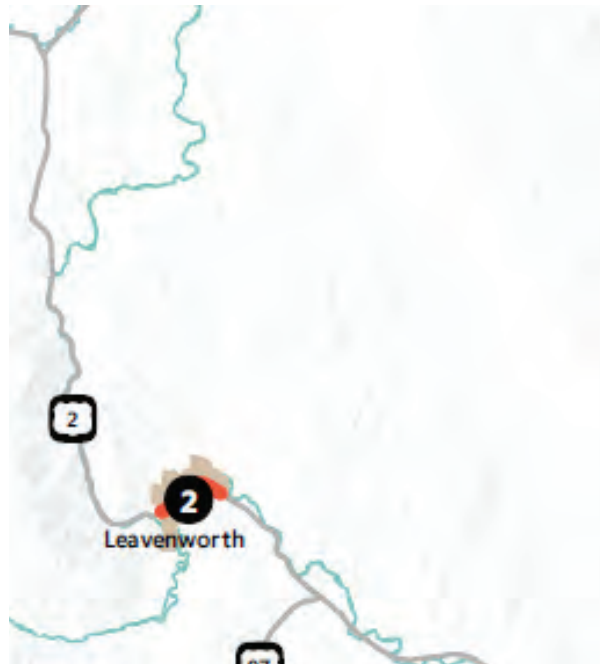
**Implementation Considerations:** The footprint of a roundabout at this intersection would likely exceed the footprint of the current intersection requiring right-of-way acquisition.

**Potential Benefits:** The roundabout would increase the predictability of traffic flow and reduce traffic conflicts at the intersection by increasing sight distance and creating delineation for vehicles and pedestrians. Over the past five years, there have been seven vehicle collisions at the intersection, caused by drivers not giving proper right-of-way, driver inattention, speeding, or the influence of drugs or alcohol. Roundabouts have been found to reduce injury crashes by 75% at intersections where stop signs or signals were previously used for traffic control<sup>3</sup>.

<sup>3</sup>Insurance Institute for Highway Safety, sourced by WSDOT: <https://www.wsdot.wa.gov/Safety/roundabouts/benefits.htm>

## → Segment 2 – Leavenworth

Projects summarized below include management strategies and improvements that would encourage users to choose transit or active transportation modes, creating the opportunity to reduce congestion on US 2 within the City of Leavenworth.



### Transit Shuttle Service

**Project Description:** This project could be paired with improvements on US 2 to provide travel time benefit for shuttles and parking management strategies encouraging parking outside the downtown core.

**Implementation Considerations:** This project would require collaboration with shuttle operators in the region, which could include multiple small entities. Creation of this program, establishing rules for how these shuttles operate and where they can drop off/pick up, and promoting this program with operators would require action by the City.



**Figure 4: Eastern Sierra Transit shuttle service.**  
Source: PCT, 2019

**Potential Benefits:** Increasing transit shuttle service frequency in the region would give visitors more options for where to stay and how to travel into Leavenworth. Shifting transportation modes to transit would alleviate traffic congestion, particularly around summer weekends and events. Reducing motorized vehicle travel also has a relationship to reduced crash potential.

## Parking App

**Project Description:** As the City of Leavenworth transitions its on-street parking to a time limited and/or a paid parking environment as well as a more active approach to parking management, a parking application would benefit all users of the parking system. There are numerous parking applications from which to choose from; the app should be tied to meter rates (if applicable), off-street rates, locations, and real-time occupancy information (if possible) to allow users to determine which parking option is desired.

**Implementation Considerations:** To reinforce brand awareness, the parking application should display the City of Leavenworth’s wayfinding signage brand, so that drivers can quickly recognize and navigate the parking options as they drive to their desired parking stall. Coordination with parking meter technology and occupancy technology (if applicable) should be integrated with the parking application. Additionally, transportation options connections (Link Transit, bicycle, pedestrian) should be clear so that a parking once option is available. Therefore, pairing this project with the identified parking meter technology will facilitate a more efficient parking system – both Downtown and at park and ride locations.

**Potential Benefits:** This project would allow residents, employees and visitors to know their parking options before reaching Leavenworth along US 2. The benefits of allowing users to pre-determine their parking options are multiple; less congestion as drivers look for available parking; a more efficient parking system; fewer conflicts between vehicular, bicyclists, and pedestrian road users. Pairing this project with a strong marketing/public relations effort in and outside of Leavenworth would educate not only the locals, but the influx of visitors who travel along US 2.



Figure 5: Parking App Example. Source: Pinterest, 2020.

## Bicycle Parking

**Project Description:** This project would expand the bike parking network in the City of Leavenworth. The bike parking could be designed to be covered for all weather, corrals in high bike traffic locations, or artful and creative. Given Leavenworth’s Bavarian character, embracing bicycle parking as art would be a fitting step. The city could increase installations over time, with opportunities for public involvement by having the public vote on new bike parking installations.

**Implementation Considerations:** Locations for sidewalk bike parking should be identified near business and in high amenity pedestrian areas. Bike corrals could be located on-street (in a parking space) and in plazas adjacent to high-traffic business areas. Park & Ride lots, transit stops, and the train station are all great locations to add bike parking. Coordination with the City of Leavenworth, Link Transit and downtown businesses is key to identify the best locations for bike parking.

**Potential Benefits:** Providing bicycle parking encourages bicycle travel to businesses and expands the capacity of the overall parking supply. Bicycle racks are a visible indicator of a bike-friendly community, and can be artful and creative. Bike parking would support future efforts to expand the bicycle and trail network in City of Leavenworth and along US 2.

### Transit/Emergency Signal Preemption

**Project Description:** This project would install transponders on signalized intersections on US 2 (River Bend Drive, Chumstick Highway, and 9th Street) that would allow emergency responders and transit to preempt the traffic signal. By preempting the regularly operating traffic signal, first responders and transit would have a green light in the direction they are traveling allowing them to progress through the intersection without stopping.



Source: Pinterest, 2019

**Considerations:** Coordination between WSDOT, emergency services and the transit agencies will be required so that that the technology installed can be utilized by all groups. Installation of signal preemption would also support other projects, including the US 2 Ski Hill to River Bend Streetscape Improvements and Transit-on-Shoulders projects.

**Potential Benefits:** Signal preemption decreases response times for first responders, while also improving the safety at intersections. By prioritizing travel in the direction of travel for emergency responders and stopping conflicting traffic, emergency vehicles can proceed through the intersection without potential conflicts from other vehicles attempting to enter the intersection.

Signal preemption would also allow transit to operate more efficiently along the corridor. This would improve on-time operations, which paired with prioritized movement along the corridor could encourage mode-shift to transit reducing parking demand within Leavenworth and congestion on US 2.



## Employee Transportation Demand Management Strategies

**Project Description:** There are a wide range of Transportation Demand Management (TDM) strategies to encourage methods of getting to work other than through driving alone. These strategies include incentivizing carpooling, transit, walking and biking. TDM strategies that could be applied for employees in Leavenworth include:

- » Public transit and private shuttle improvements through increased service.
- » Integrating park & rides, pedestrian and cycling seamlessly with transit.
- » Bicycle infrastructure improvements and secure bicycle parking at destinations.
- » Mobility hubs, including micro-mobility options such as bike share, scooter share and electric vehicles.
- » Implementing paid parking, permit parking, and/or time limit parking in downtown Leavenworth.
- » Offering incentives for carpooling to work, such as free parking (when paired with paid and permit parking).
- » Commuter financial incentives such as parking cash out or free transit passes to employees.

**Implementation Considerations:** To implement a successful TDM program, clarifying the goals and objectives for the program will help to identify the most appropriate TDM strategies to consider. Coordination between local employers, Link Transit, and the City is also critical in implementation of a successful TDM program.

**Potential Benefits:** Employee TDM strategies help to reduce congestion and are a lower cost alternative to expanding roads and parking facilities. Reducing traffic also lowers potential for crashes.



Figure 6: Downtown Leavenworth. Source: VRBO, 2019

## Delivery Hours/Permits

**Project Description:** Currently, deliveries for some businesses along US 2 in Leavenworth occur in the two-way left-turn lane in the existing US 2 right-of-way. One of the projects for evaluation is repurposing the right-of-way along US 2, which would remove the existing two-way left-turn lane. Instead, an on-street parking permit program would allow deliveries to occur on designated areas along the curb on local streets. Signage in these areas would state “30 Minute Commercial or Permit Vehicle Load Only.” Only commercial vehicles may load/unload for up to 30 minutes, and payment or a valid permit is required to use the space.

**Implementation Considerations:** The location of these zones needs to be carefully considered through consultation with local businesses. Impact to on-street parking and the use of curb space must also be considered as part of the implementation of this project.

**Potential Benefits:** This project would allow deliveries to continue in convenient locations for businesses along US 2 after the two-way left-turn lane is removed. The cost of a permit parking program would depend upon several factors, including administration and enforcement costs. However, costs could be partially or wholly recouped through permit fees.

### Bike Share/Scooter Share Program

**Project Description:** This project would create a bike or scooter share program with a focus on connecting key destinations within the City of Leavenworth. Both bike and scooter share could serve as a last-mile connection for visitors arriving in Leavenworth on transit or shuttles, or to connect visitors with parking outside of the Downtown core or off the US 2 corridor.

**Implementation Considerations:** Both bike and scooter share programs can be owned and operated by a local agency or operated by a private company permitted by the City. With the amount of coordination, infrastructure, and maintenance required, it is likely that a program operated by a private company would be the best option for Leavenworth.

While the program may be operated by a private company, the City must still set policy related to station types (dock less or docked systems), station locations, parking zones, monitoring and enforcement, and system operations.

Year-round operations should also be considered. While Leavenworth is a bike-friendly community

and easily traversed by a bike or scooter, visitors traveling to Leavenworth during the winter months may be less likely to utilize the program, resulting in program infrastructure being unused during winter months.

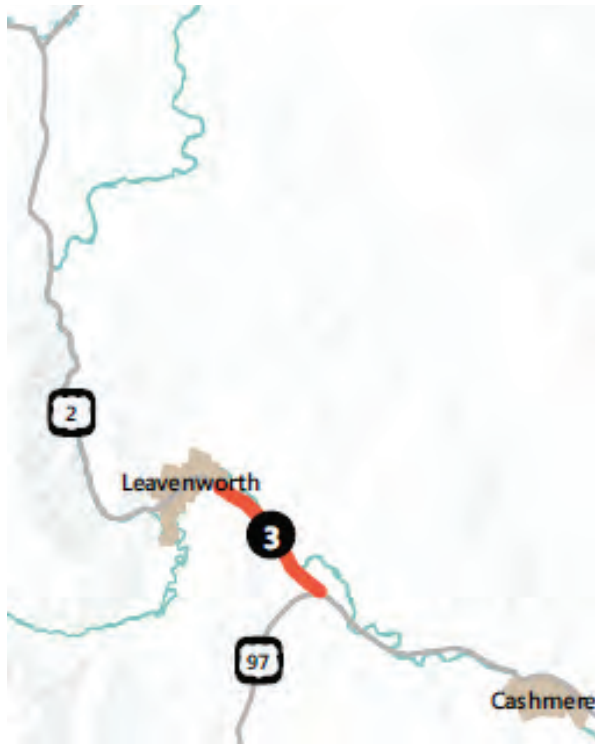
**Potential Benefits:** An option to use bike or scooter share system would allow visitors to travel between key destinations in Leavenworth with a five to ten minute ride and would pair well with other corridor investments, including enhanced shuttle and/or transit service and enhanced multimodal facilities along the US 2 corridor.



Figure 7: Example of a commercial permit sign. Source:(SDOT, 2015).

→ **Segment 3 – Leavenworth to SR 97**

The projects summarized in this section would improve the stretch of US 2 between Coles Corner and Leavenworth's city limits.



**Transit-on-Shoulders**

**Project Description:** This project would widen US 2 between SR 97 and Leavenworth to accommodate transit operating on the shoulders in the westbound direction. An additional six feet would be added to the shoulders to create the 12-foot lane needed to accommodate buses. During congested conditions on US 2, buses, shuttles, and emergency services could operate on the shoulder reducing travel time and increasing reliability.

**Implementation Considerations:** Widening of this segment of US 2 would require right-of-way acquisition, rock blasting and widening of two bridges. This project could be implemented in phases to support other projects including Parking Management and the US 2 Ski Hill to River

Bend Streetscape Improvements project.

**Potential Benefits:** It is estimated that a bus, operating at the maximum speed limit allowed for transit operating on the shoulders (35 miles per hour), would save eight minutes of travel time between the SR 97 interchange with US 2 under congested conditions. With a savings of eight minutes, transit reliability (a barrier to event/seasonal transit usage) would be improved making transit a more attractive travel choice.

During high-congestion periods on US 2 when queues can extend to SR 97, emergency services struggle to navigate the portion of the corridor between SR 97 and Leavenworth, which greatly increases emergency response times. With this project in place, emergency services would have priority for operating on the shoulder, resulting in improved response times.

**Bus Stop Snow Removal**

**Project Description:** This programmatic improvement would add Link Transit stops to the list of locations identified for snow removal. Snow removal would include the roadway and pedestrian facilities adjacent to stops so that that bus service is not interrupted during winter storms.

**Implementation Considerations:** Coordination between Link Transit and the agencies currently responsible for snow removal in the area would be required to identify high priority stops, and responsibility of cost for additional snow removal efforts.

**Potential Benefits:** Snow removal at transit stops would allow transit service to continue during winter months. When snow removal does not occur or the storage of snow makes stops inaccessible, transit service can be disrupted for long periods during the winter months. The ability to operate more reliably would help maintain ridership and create more robust travel options during winter events (the Tree Lighting Festival).

### **Bicycle Shoulder Treatments (Also Identified for Segment 4)**

**Project Description:** This project would add edge-line rumble strips on US 2 between Leavenworth and Cashmere. Edge-line rumble strips would overlap with edge line of the travel lane to provide the most space possible for bicyclists without forcing them to navigate the rumble strips.

**Implementation Considerations:** It is recommended that there be at least four feet between the edge of rumble strips and edge of the shoulder, which is the area of the roadway occupied by cyclists. There may be some areas along US 2 between Leavenworth and SR 97 where the shoulder is not wide enough to accommodate four feet. In those areas a smaller rumble strip should be considered.

Rumble strips can be designed for bicyclists, but often bicyclists voice concern. To navigate public outreach to bicyclists within the community, a public awareness campaign should accompany further investigation or implementation of this project.

This project would conflict with the Transit-on-Shoulders between SR 97 and Leavenworth, discussed above. That project would proposed to improve the westbound shoulders to allow transit to operate on the shoulders during periods of heavy congestion. When that project is implemented, wayfinding signs directing bicyclists off of US 2 in the westbound direction before SR 97 should be considered.

**Potential Benefits:** Edge-line rumble strips would alert drivers with noise and vibration when they are departing from the travel lane. As bicyclists on US 2 must use the shoulders in Segment 3 and 4, this warning for drivers would lower the potential for vehicles to drift into the space being occupied by bicyclists.

### **Maximize LINK Bus Route 22 Efficiency**

**Project Description:** The replacement of the existing deficient 85-year-old West Cashmere Bridge is currently under contract and scheduled for construction in 2020 and 2021. The new bridge will be constructed in approximately the same location as the existing bridge and will include an all abilities connection for pedestrians. The new structure will remove the height and weight restrictions needed for the current bridge, including allowing for transit to use the new bridge. In addition to the bridge replacement, there are opportunities to improve transit route efficiency to serve west Cashmere and add a Park and Ride on the north side of the Wenatchee River.

**Implementation Considerations:** This project is tied to the completion of the West Cashmere Bridge replacement, for which construction is expected to begin in spring 2020 and end in fall 2021. The project requires coordination with WSDOT, Chelan County, Link Transit, Chelan Douglas Transportation Council and the City of Cashmere.

**Potential Benefits:** The project would increase transit ridership, allowing visitors and commuters traveling to Leavenworth to park in the Park & Ride, and alleviate parking capacity concerns in the City during busy summer weekends and events. To encourage transit use, this project pairs best with reallocating right-of-way to allow transit on shoulders between Cashmere and Leavenworth.

### **Provide Parallel Facilities for All Modes (Also applies to Segment 4)**

**Project Description:** This project would identify a parallel trail corridor parallel to US 2, from Chumstick Highway to Peshastin. This trail would serve as an alternative route for pedestrians and bicyclists instead of US 2. Installing a parallel trail would provide vulnerable road users separation from motor vehicles and provide comfort for travelers of all modes.

**Implementation Considerations:** This would require multiple jurisdictions to work together, including Chelan County and local municipalities. Moreover, road crossings will need to be carefully designed for each of the respective road users. If there is enough right-of-way around the railroad southeast of North Road, one consideration could be a more direct and level bicycle and pedestrian trail along the existing railroad alignment.

**Potential Benefits:** Currently, US 2 does not accommodate walking and biking due to vehicle speeds and right-of-way constraints. Designing a trail parallel to US 2 would remove vehicle and vulnerable road user and increase the comfort of walking and cycling, meeting the current demands for people visiting the corridor.

### Spot Treatments at Local Access Driveways

**Project Description:** This project would identify spot treatments at local access points along US 2 with a high collision density. Improvements could include: dedicated lanes for vehicles turning into or out of driveways, allowing only right-turn movements at driveways where sight distance on US 2 is a concern, advanced signage warning drivers of upcoming local access points, lower speed limits, and acceleration lanes for vehicles merging onto US 2.

**Implementation Considerations:** Additional data collection should be completed to understand the number of vehicles turning into and out of driveways along US 2 to identify the appropriate improvements.

Also, widening to accommodate dedicated lanes for vehicles turning into driveways could eliminate space for the Transit-on-Shoulders project. Widening could also narrow shoulders making it harder for cyclists to use the shoulders and creating potential conflicts with turning vehicles.

**Potential Benefits:** Crashes occurring between Leavenworth and SR 97 increases in areas where

local businesses have driveways with direct access to US 2. Improving access at business driveways through additional signage, dedicated storage space for vehicles turning into the driveways from US 2 and acceleration lanes for vehicles merging onto to US 2 could reduce crash potential on this portion of US 2.

### → Segment 4 – SR 97 to Hay Canyon Road

Projects identified for this segment would improve accommodation for bicyclists on US 2 and reduce crash potential on US 2. Improvements identified for Segment 4 include:

- High Friction Surface Treatments
- Bicycle Shoulder Treatments
- Provide Parallel Facilities for All Modes

The projects identified for this segment, were also identified as improvements for both Segment 1 and Segment 3, project descriptions, benefits, and implementation considerations can be found in the prior sections.





US 2 Upper Wenatchee Valley  
TRANSPORTATION STUDY

US 2 Upper Wenatchee Valley

# Transportation Corridor Study



FEHR PEERS

