Teton Pass Corridor Study

Central Federal Lands | Planning, Programming & Environment

Autumn 2023
Final Report - PUBLIC REVIEW DRAFT

Central Federal Lands, accessing America's treasures

U.S. Department of Transportation
Federal Highway Administration

A Word of Thanks...

This project was funded, in part, by the Wyoming Federal Lands Access Program. The project team would like the thank the Wyoming Programming Decision Committee for selecting this planning study for funding.

Central Federal Lands would also like to thank the project partners of Teton County, Wyoming, the Caribou-Targhee and Bridger-Teton National Forests, and the Wyoming Department of Transportation.

Finally, the project team would like to thank the numerous stakeholders and members of the public who participated in this study. Public participation is the foundation of sustainable, equitable, and accountable transportation planning.

The Federal Highway Administration & Federal Lands Highways

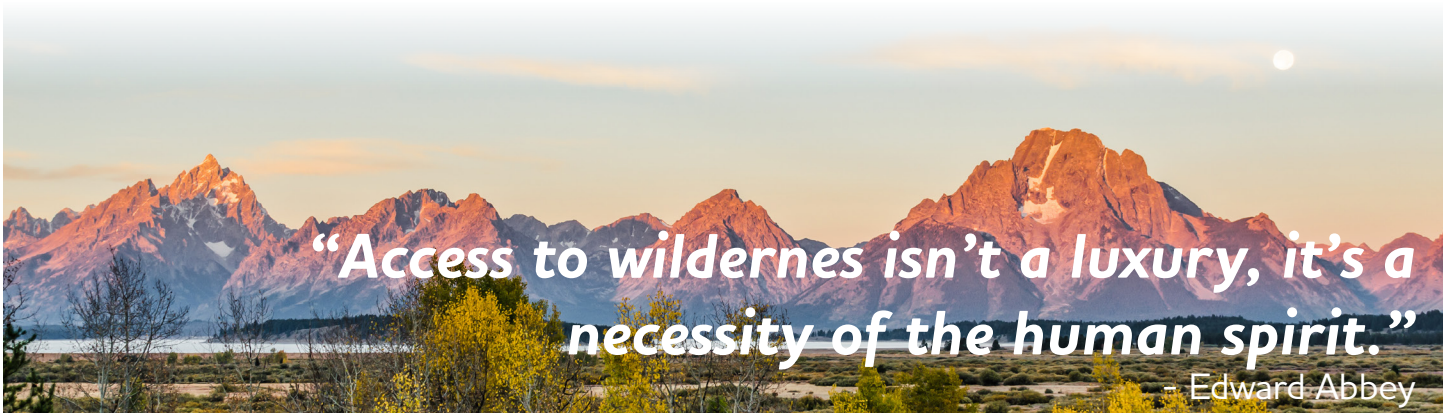
The Federal Highway Administration recognizes the central role transportation plays in the lives of the travelling public. Indeed, transportation influences many aspects of daily life from economic growth to public safety.

Thoughtful, long-term transportation planning is the first step in delivering projects that enhance the wellbeing and quality of life for Americans, residents, and visitors to the United States. Furthermore, multimodal transportation planning, particularly with respect toward non-motorized and active modes, is essential to creating a safe and efficient transportation network.

Federal Lands Highways, a division of the Federal Highway Administration, provides financial resources, planning, transportation engineering, and project delivery for mobility networks that service the transportation needs of US federal and tribal lands partners including the National Park Service, the US Forest Service, the US Fish and Wildlife Service, the Bureau of Indian Affairs and Tribal Governments, the Bureau of Land Management, the Department of Defense, the US Army Corps of Engineers, and the Bureau of Reclamation.

The agency's mission is to deliver effective, efficient, and reliable transportation systems, protect and enhance the Nation's natural resources, and to provide recreational access opportunities for the travelling public. These essential services are provided in all 50 states, the District of Columbia, Puerto Rico, and US Territories through the Headquarters, Eastern, Central, and Western Federal Lands Highway Division offices.

In the federal lands context, non-motorized and active transportation systems are not mere add-ons, but rather central to the outdoor experience and to responsible stewardship of the land. For these and many other reasons, Federal Lands Highways prioritizes the development of transportation infrastructure and services that blend harmoniously into the landscape and elevate the experience of being outdoors.



CONTENTS

Safety Signage
The Pass is Characterized by Extreme Roadway Geometry

CONTENTS

LIST OF FIGURES

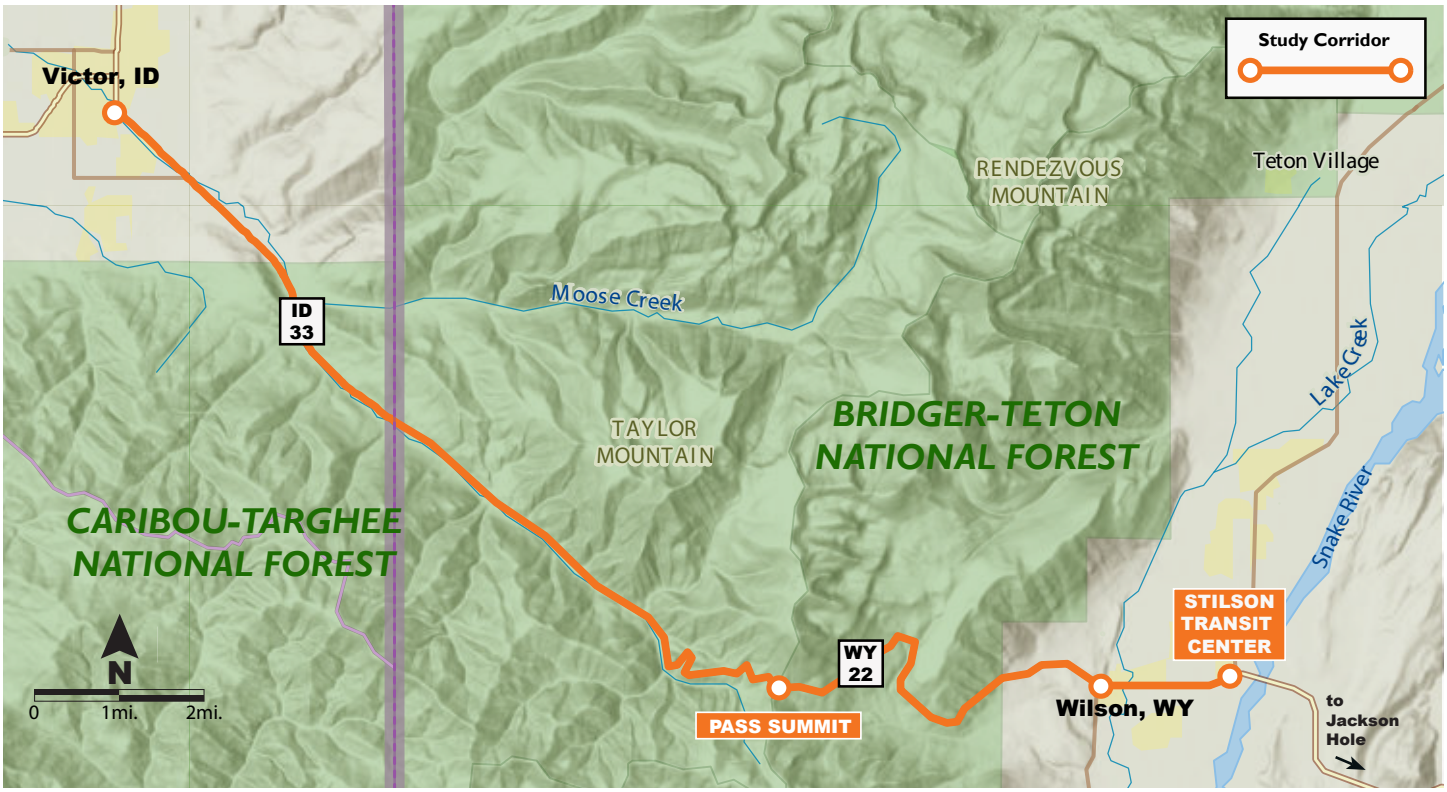
LIST OF IMAGES

PURPOSE & SCOPE

The Project & the Access Program

Teton County, Wyoming, along with the Wyoming Department of Transportation (WYDOT), and the Caribou-Targhee (CT-NF) and Bridger-Teton (BT-NF) National Forests (herein referred to as the Project Management Team, or PMT) received funding in March 2021 from the Federal Lands Access Program (FLAP) to execute a planning study of the Teton Pass corridor. The Federal Highway Administration's Central Federal Lands Highway Division (CFL) delivered the project as lead agency with support and direction from the PMT.

This study is intended to identify the full range of feasible interventions and improvements (both operational and capital), for eventual implementation by local decision-making bodies. Most identified projects includes planning-level cost estimates as well as safety and environmental impact considerations. Finally, this document can also serve as reference in support of project funding pursuits from either discretionary (grants) or non-discretionary (capital programs) sources. This study does not make any capital or operational recommendations, propose any specific actions, or evaluate alternatives. At the time a project (or package of projects) is proposed for action by local decision-makers, it will be subject to the required level of environmental and public review.



Jackson, Wyoming from Teton Pass

As a Wyoming-funded project, the primary study area includes the segment of WY State Highway-22 between the Idaho state line and the town of Wilson, Wyoming. However, several projects in this study may cause impacts across the Idaho state line along ID State Highway-33. For this reason, a segment of ID-33 is included as part of the study corridor.

The The Federal Lands Access Program (FLAP) was established in 23 U.S.C. 204 to improve transportation facilities that provide access to, are adjacent to, or are located within Federal lands. The Access Program supplements State and local resources for public roads, transit systems, and other transportation facilities, with an emphasis on high-use recreation sites and economic generators.

The Program is designed to provide flexibility for a wide range of transportation projects in the 50 States, the District of Columbia, and the Commonwealth of Puerto Rico. The Access Program is funded by contract authority from the Highway Trust Fund and subject to obligation limitation. Funds are allocated among the States using a statutory formula based on road mileage, number of bridges, land area, and visitation. Projects are selected by a Programming Decision Committee (PDC) established in each State. The PDCs request project applications through a call for projects, the frequency of which is established by the PDCs.

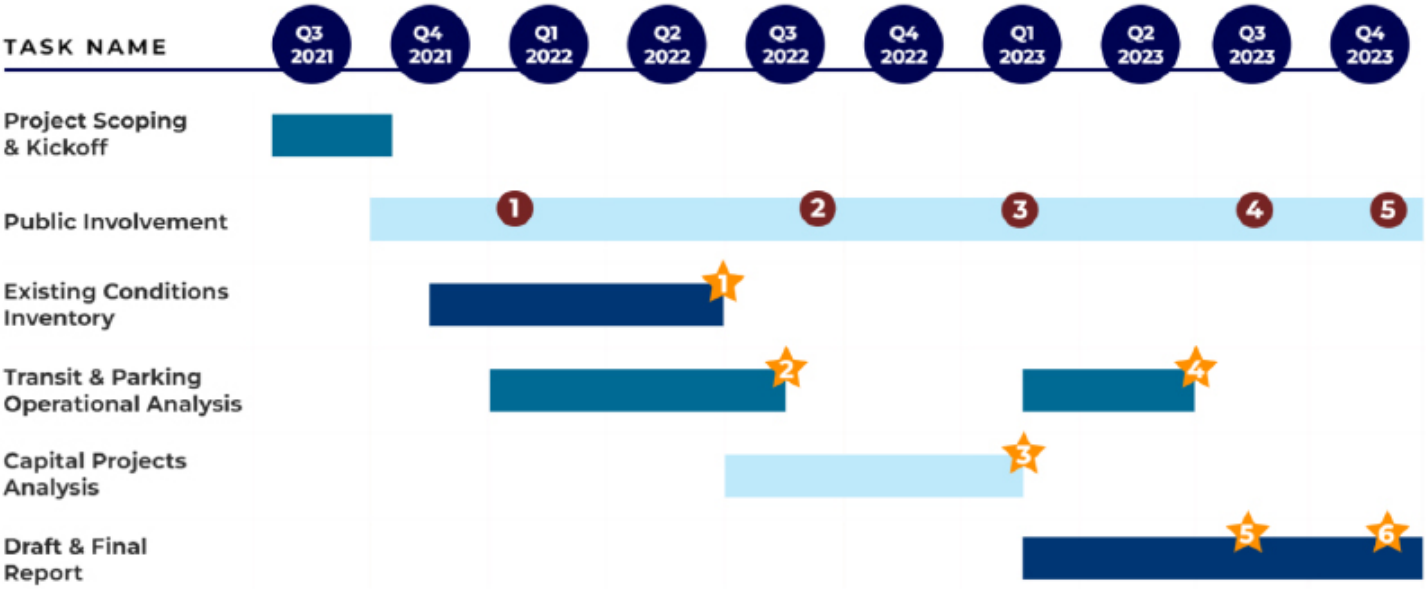
EXECUTIVE SUMMARY

Critical Lifeline, Backcountry Gateway

The Teton Pass corridor, composed of Wyoming State Highway-22 and Idaho State Highway-33, is a critical transportation artery for the residents and visitors of the Teton Valley region. The pass provides access and mobility for people and goods while also functioning as the gateway and portal to varied recreational opportunities.

The towns and communities that support recreation-based tourism must proactively plan for increased visitation and development pressures if they are to preserve the resources and experiential qualities that make the Teton Valley region a worldwide destination. This product is the first step in what will ultimately be a long-term process to implement forward-thinking transportation projects to enhance recreational access while preserving critical mobility needs for residents.

Project Timeline



PUBLIC INVOLVEMENT

1. **January 2022**
   Virtual Public Kickoff Meeting
2. **August 2022**
   In-Person Teton County Public Works Open House Event
3. **February 2023**
   In-Person Public Open House & Stakeholder Meetings
4. **August 2023**
   In-Person Project Closeout Presentation to Teton County WY & ID
5. **September 2023**
   30-Day Public Review & Comment Period

KEY DELIVERABLES

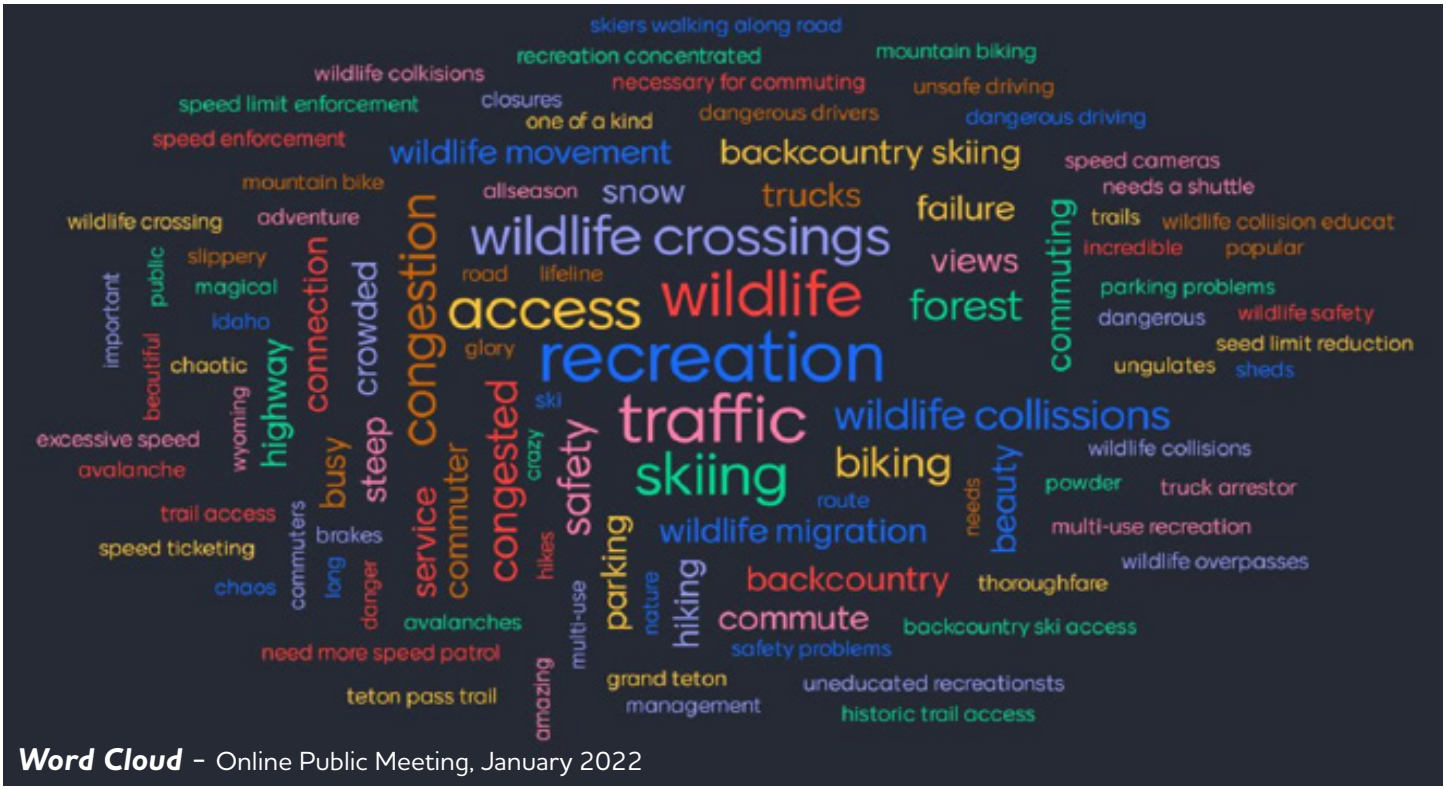
1. **May 2022**
   Existing Conditions Assessment
2. **August 2022**
   Concepts: Transit, Parking, and Capital Projects
3. **January 2023**
   Technical Review Document
4. **May 2023**
   Extend Transit & Parking Analysis
5. **June 2023**
   Final Document: Internal Review Draft
6. **September 2023**
   Final Study Deliverable

The FHWA Central Federal Lands team with support from the PMT kicked off the project in June 2021. The PMT met monthly for the duration of the project to discuss project deliverables, public meetings and other relevant topics. With the PMT's extensive local knowledge of the Teton Pass corridor, meeting monthly and coordination throughout the project timeline was essential to the success of delivering the final report. The figure above shows the project timeline that highlights key milestones for project deliverables and public involvement.

Public & Stakeholder Participation

Public participation is an integral part of the planning process which helps to ensure that any future decisions are made in consideration of and benefit to public needs and preferences. Continuous public involvement brings diverse viewpoints and values into the decision-making process. In brief summary, the PMT and CFL hosted two public meetings at key stages of the planning process, and CFL hosted a project website (with engagement and feedback tools) for the duration of the project.

In January 2022, the project was introduced through a virtual public meeting that served as a forum for gathering initial feedback about the study corridor. The meeting allowed the public to ask questions of the PMT and CFL teams, either during the event or by using an online form. Common themes generally related to matters of safety, recreational access and parking, commercial traffic, wildlife crossings and conflicts, snowsheds, and avalanche dangers. Participants were specifically prompted to provide a brief description of their thoughts about the Teton Pass corridor using 2-3 words.



Word Cloud - Online Public Meeting, January 2022

An in-person public open house in February 2023 presented conceptual capital (infrastructure) and operational (transit and parking management) improvements developed by the CFL team and captured in the technical review document (Teton Pass Corridor Management Concepts: Capital & Operational Options and Scenarios). Both before and after the open house, members of the public were invited to submit feedback related to the technical review document via an online form. Paper forms were also provided at the meeting.

The concepts offer local decision makers a variety of options for addressing safety, access, congestion, and parking concerns while maintaining the quality of recreational experiences along the corridor. All these concepts are presented, in detail, in the 'Operational Improvements and Interventions' and 'Capital Improvements and Interventions' sections of this study including recreational shuttle routes, parking management, and enhancements to existing access areas.

Further information about the public engagement elements of this project can be found in the Appendices.

Public Open House - Wilson Schoolhouse, February 2023

Guiding Principles

Based on robust public comment, extensive discussions with the PMT, and feedback collected from local/regional stakeholders, the following Guiding Principles informed development of the conceptual Considered Improvements in this study.

Key Study Considerations

The Teton Pass Corridor Study highlights significant challenges arising from population growth, employment opportunities, and increased traffic flow within the study corridor. These factors have led to congestion, safety concerns, and traffic-related issues, impacting both residents and visitors.

To address these challenges, the study identifies several key considerations:

- Implementing a seasonal Teton Pass Shuttle System catering to winter and summer recreational activities.
- Reconfiguring existing turnouts and adjacent areas as shuttle stops with proper circulation and space for vehicles with trailers.
- Exploring the relocation of parking areas onto US Forest Service-managed lands to minimize conflicts and improve access.
- Formalizing some existing turnouts to enhance vehicle circulation.
- Increasing signage and incorporating grade-separated crossings to minimize pedestrian conflicts.
- Expanding the Greater Yellowstone Trail along Teton Pass, potentially utilizing Wyoming Department of Transportation (WYDOT) rights-of-way.
- Identifying new areas for recreation access to enhance parking capacity and mitigate site obstructions.
- Exploring the incorporation of avalanche sheds, potentially combined with covered parking lots where applicable.
- Integrating wildlife crossings and fencing to address safety and conservation concerns.
- Considering safer integration of snowmobilers, particularly at popular locations like Phillips Canyon.

Ultimately, the study aims to provide local agencies with a range of options to pursue future funding opportunities. These considerations aim to enhance safety, alleviate congestion, protect natural resources, and improve the overall visitor experience along the corridor.

Projects & Improvements

The following operational and capital improvements represent the domain of feasible projects for the Teton Pass study corridor. Each has been thoroughly analyzed by the Project Partners and, individually or collectively, are considered to result in desired improvements to the safety, mobility, and access characteristics of the study area. Each project is further detailed in the main body of this study.

Project Type & Location	Improvement Description	Implementation Complexity (Cost)	Condition Improvement (Benefit)	Feasibility Cost / Benefit
Parking Full Corridor	Formalization of Parking Areas & Fee-Based Management Program	LOW	Revenue Generation Parking Utilization	STRONG
Transit East Corridor	Recreational Shuttle from Stilson to Victor	MID	Congestion Mitigation Parking Utilization Access Improvement	STRONG
Transit Full Corridor	Recreational Shuttle from Stilson to Coal Creek	MID/HIGH	Congestion Mitigation Parking Utilization Access Improvement	MID
Infrastructure West Side of Pass	Improvements to Existing Gravel Lot at Phillips Bench	LOW HIGH w UNDERPASS	Safety Access Improvement	MID
	New Alternate Access Lot at Phillips Bench	MID	Safety Access Improvement	STRONG
Infrastructure Summit Area	Improvements to Existing Summit Access Area	MID HIGH w UNDERPASS	Safety Access Improvement	MID
	Highway Realignment & Access Improvements	HIGH	Safety Access Improvement	STRONG
	New Alternate Access Lot at Shovel Slide	MID	Safety Access Improvement	MID
	Shoulder Widening	HIGH	Safety Access Improvement Connectivity	WEAK
	Snowsheds at Glory and Twin Slides	HIGH	Safety Delay Mitigation	MID
Infrastructure East Side of Pass	Improvements to Coal Creek Trailhead	LOW HIGH w UNDERPASS	Safety Access Improvement	STRONG
	HWY-22 Improvements	LOW	Safety	STRONG

Next Steps

The implementation of any individual or series of projects will require local leadership to determine priorities, build consensus, and seek funding opportunities.

The Federal Highway Administration and Central Federal Lands will continue to be a supportive partner in any future project implementation and will continue to extend funding through the Federal Lands Access Program (FLAP), for as long as the program remains funded by federal legislation.

The following actions are offered as potential next steps for Teton Pass stakeholders, governing agencies, and the public.

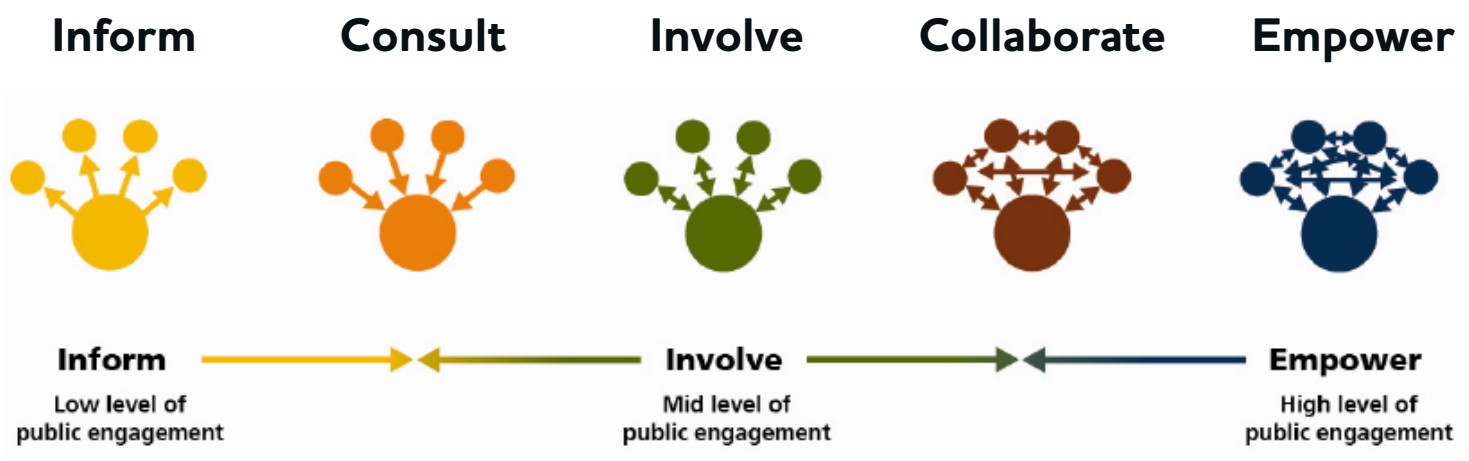
- Establish a formal advisory board or steering committee through a local resolution passed by an elected body (or bodies). It is recommended that any such committee include entities of both Wyoming and Idaho, local federal land managers, and the relevant State DOTs.

- Establish a shared vision for the corridor through a charter, or other foundational document (Statement of Values, etc.), that can provide guidance and a 'North Star' for any actions the committee proposes to take.

- Once a portfolio of projects is identified for implementation, determine which projects are highest priority and seek opportunities for partnerships and funding at the local, state and national levels.

- Identify the appropriate structures and mechanisms for advancing priority projects such as Public/Private Partnerships (P3s), and Special Use Permitting through the US Forest Service.

- Determine the level of public involvement (graphic below) and influence the committee will have and communicate expectations.



Stakeholder Acknowledgments

Leading up to both public meetings mentioned above, as well as early on in the study process, the PMT interviewed (both virtually and in person) key local and regional stakeholders to collect feedback and perspectives on the study corridor. The project team would like to thank each of the following for their time and the valuable information they provided.

- City of Victor, ID: Jeremy Besbris - Deputy City Manager and Carl Osterberg - City Planner
- Teton County, ID: Jade Krueger - Planner
- Friends of Pathways: Katherine Dowson - Executive Director and Chris Owens - Trails Program Director
- Greater Yellowstone Coalition: Kathy Rinaldi - Deputy Director of Conservation, Chris Colligan - Wildlife Program Director, Allison Michalski - Sr. Idaho Conservation Associate, and Teddy Collins- Western Wyoming Conservation Associate
- Wyoming Fish and Game: Alyson Courtemanch - Wildlife Biologist
- Idaho Transportation Department: Mark Layton, Jason Minzghor and Wade Allen
- Idaho Game and Fish: Jacob Grey
- Jackson Hole Ski and Snowboard Club: Alison Sehnert - Executive Director
- Jackson Hole Wildlife Foundation: Renee Seidler - Executive Director
- Mountain Bike The Tetons: Lindsay Nohl - Executive Director
- Southern Teton Rapid Transit: Jared Smith
- Teton Back Country Alliance: Gary Kofinas - Steering Committee Chair, Jen Reddy - Steering Committee Member, Tom Turiano - Steering Committee Member
- Teton County, ID: Michael Whitfield- County Commissioner
- Teton County, WY: Mark Newcomb - County Commissioner
- Teton County, WY: Luther Probst - County Commissioner
- Teton County, ID Public Works: Darryl Johnson- Executive Director
- Teton Freeriders: Harlan Hottenstein
- Teton Valley Trails and Pathways: Dan Verbeten
- US Forest Service Ambassador Program: Jay Pistono - Winter Ambassador
- US Forest Service Ambassador Program: Randy Roberts - Winter Ambassador
- Wyoming Pathways: Tim Young- Executive Director
- Advocates for Multi Use of Public Lands: Will Mook, Executive Director
- Grand Teton National Park Foundation: Ryan Kelly - Senior Director of Partnership Projects
- Wyoming Department of Transportation: Bob Hammond - Engineer, Darin Kaufman - District Traffic Engineer, Brenden Cronin - Avalanche Technician

EXISTING CONDITIONS

Local & Regional Context

The scenic and mountainous Teton Pass corridor is a critical transportation link between the Jackson Hole area in Wyoming and the neighboring Teton Valley in Idaho. While the corridor stretches twenty-four miles between these two community centers, the sixteen-mile section of highway between Wilson, Wyoming and Victor, Idaho (Wyoming HWY-22 and Idaho HWY-33) is currently grappling with substantial safety, access, and capacity challenges. The volume of recreational, commercial, and commuter traffic has risen in conjunction with the overall economic and demographic expansion of the region.

These challenges are exacerbated by the rugged terrain of the corridor and the frequency and intensity of severe winter weather. The route is characterized by steep mountainous topography with severe weather conditions in the winter months. This requires constant avalanche monitoring and maintenance by the Wyoming Department of Transportation.

The abundance of wildlife in the corridor are an important resource for the area. However, the issue of wildlife vehicle collisions (WVC) continue to be a concern for both the traveling public as well as a threat to native wildlife populations.

Administration of the transportation and land uses along the corridor is further complicated by numerous public agencies with overlapping jurisdictional responsibilities, including:

- Wyoming Department of Transportation (WYDOT)
- Idaho Department of Transportation (IDT)
- Bridger-Teton National Forest (BT-NF)
- Caribou-Targhee National Forest (CT-NF)
- Teton County, Wyoming
- Teton County, Idaho

Additionally, numerous non-governmental organizations are actively involved in various special-interest efforts including wildlife conservation, recreation, and backcountry management/stewardship.

Finally, the corridor has emerged as an increasingly sought-after hub for outdoor recreation. Activities like backcountry skiing, mountain biking, road biking, snowmobiling, and hiking thrive here. Notably, there's a nationwide surge in winter recreational skiing within backcountry locales.

Teton Pass, positioned roughly 5 miles directly south of the Grand Teton National Park boundary, stands on the international stage for its top-tier skiing opportunities, conveniently accessible via trailheads along the state highways. Over the past ten years, Teton County, WY has observed a substantial upswing in both winter and summer recreational usage on Teton Pass, with this trend projected to persist. While this boon often bolsters local economies, the imperative to anticipate and manage heightened demand across Teton Pass is evident, ensuring a secure passage for both residents and visitors.

Access to favored recreational hotspots along Teton Pass is hampered by parking availability. The predicament escalates notably during winter months, when there's a pronounced clamor for backcountry access. Ice covering and snowbanks along the highway corridor, coupled with regular snow clearance operations, curtail parking options and introduce safety hazards for both recreation enthusiasts and through-traffic.

Sociodemographic, Recreational, and Commuter Trends

The Teton Pass corridor directly serves two counties with a combined population of approximately 36,000 residents. The area accommodates a population comprising full-time residents, second homeowners, and seasonal workers.

This transportation linkage acts as an economic catalyst for the region, significantly contributing to the tourism sector. Apart from its role in tourism, the Teton Pass Corridor accommodates various businesses relying on the transportation network to ferry goods and services. Despite its thriving industries generating substantial revenue for the local economy, the region's rapid sociodemographic expansion exerts pressure on the existing transportation infrastructure.

Residential hubs in Jackson Hole and the Teton Valley have undergone remarkable growth in recent decades. From 2000 to 2020, the combined populations of Teton County (ID) and Teton County (WY) surged from 24,467 residents to 35,998, marking a 47.1% increase (Figure 1).

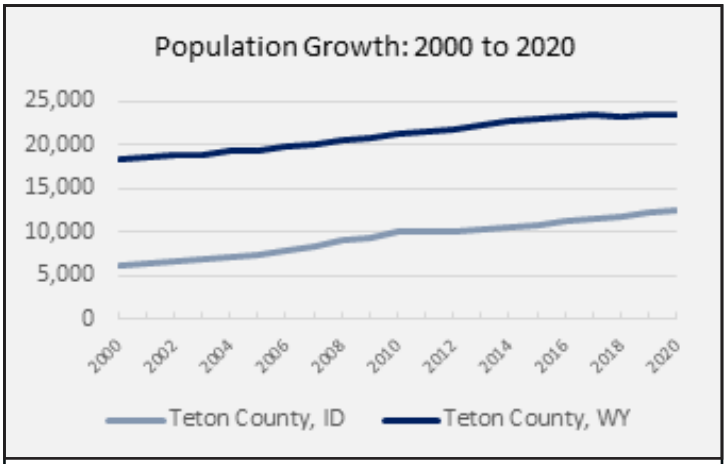


Figure 1: Teton County WY & ID population growth

Alongside population growth, the region has experienced proportionate employment expansion since the early 2000s. According to the most recently available data from the U.S. Census Bureau Longitudinal Employer-Household Dynamics (LEHD) Program, job opportunities in Teton County, ID, and Teton County, WY have surged by over 47% between 2003 and 2019.

While job numbers on the Idaho side of Teton Pass doubled from around 1,500 to 3,100, economic growth on the Wyoming side is being driven by job creation; over the same period, Teton County, WY added more than 5,800 new jobs (primarily in the service and hospitality sector).

Given the high cost of living on the Wyoming side of the state line, numerous individuals employed in and around the economic and tourist hub of Jackson, WY reside in Teton Valley, ID, commuting daily to work. Among the 20,086 workers employed in Teton County, WY, over half commute from outside the county. This statistic is noteworthy, especially considering that the WY-22/ID-33 corridor is the sole direct route connecting communities on either side of Teton Pass.

Over the past decade, Teton County, WY has witnessed a substantial surge in recreational usage of Teton Pass during both winter and summer, a trend anticipated to persist. Although this trend bolsters local communities economically, there is a distinct need to strategically plan for and manage the escalating demand across Teton Pass to ensure the safe traversal of the corridor and access to public land destinations for residents and visitors.

Highway Geometry and Design Characteristics

The study corridor is a two-lane rural roadway that provides a critical connection between Victor, ID and Jackson, WY. The roadway has a functional classification of 'minor arterial'. The travel lanes are typically 12 feet wide, and the shoulder widths vary from zero to 7 feet.

This mountainous roadway includes steep vertical grades as it climbs up over Teton Pass with grades steeper than 6%, with a significant length at 10% (Image 1). There are tight horizontal curves along the segment, with switchback curves having a minimum radius of approximately 17 feet. Sight distance obstructions along the route include cut slopes, vegetation, snowbanks, and horizontal and vertical curves. At lower elevations, the roadside is more forgiving, with recoverable side slopes and wider clear zones that allow errant vehicles to recover.

Image 1: Steep grades along WY-22 near Phillips Bench trailhead

At higher elevations, the roadside is less forgiving, with clear recovery areas limited to about 5 to 10 feet from pavement edge. At higher elevations, guardrail is present along the steep mountainous drop-offs.

There are numerous signs posted on the pass, including the following types:

- Regulatory, such as speed limit, parking restrictions, and avalanche control.
- Warning, such as advance curve warning signs with advisory speeds, truck speed limits, chevrons, steep grades, rock fall, pedestrian crossing, equestrian crossing, bicycles/share the road, and wildlife crossing.
- Guide, such as destination signs to Teton Village and Victor, ID.
- Other recreational signs, such as binocular symbol, 'be bear aware', and 'wildlife viewing area'.

Most of the corridor has double yellow centerline markings with white edge line markings. There are areas of passing zones where sight distance allows. Within Wilson, there is a striped two-way left turn lane, one marked crosswalk and one underpass, with a new underpass planned at the east entry to Wilson.

Steep grades exist over 5.2 miles of WY-22 prior to the town of Wilson. WYDOT has installed multiple measures on WY-22 to mitigate concerns for errant vehicles experiencing brake failure and restrictions on trucks with trailers including:

- A vehicle arrestor system installed near milepost 7.4, 1.9 miles west of Wilson (Image 2).

- Runaway truck ramps on the north side of WY-22 close to this vehicle arrestor system at mileposts 7.2 and 8.3 remain available.

- A weigh-in-motion scale and signage was installed to warn drivers in advance of the pass.

Image 2: Vehicle arrestor system at milepost 7.4 (buckrail.com)

- A scale and scale house are located on the west side of the pass at milepost 15.7 for use by law enforcement.

- There are numerous grade warning signs and weight restriction devices along the pass.

- Each year there are seasonal restrictions on Teton Pass: no trailer traffic is allowed over the pass from November 15 to April 1 (Image 3). The seasonal restriction may also be extended into fall and spring due to inclement weather.

- An alternate route exists when Teton Pass is closed and for the restriction for trucks with trailers from November 15 through April 1 over Pine Creek Pass and through Swan Valley, Idaho and Alpine, Wyoming along ID-26 and US-89 (Figure 2). For comparison this alternate route from Victor to Jackson takes approximately 1 hour 40 minutes and is 85 miles long compared to 25 miles long along WY-22 and ID-33.

Image 3: Existing signs on the east side of the Snake River Bridge on WY 22 (Photo Credit: Jackson Hole News & Guide)

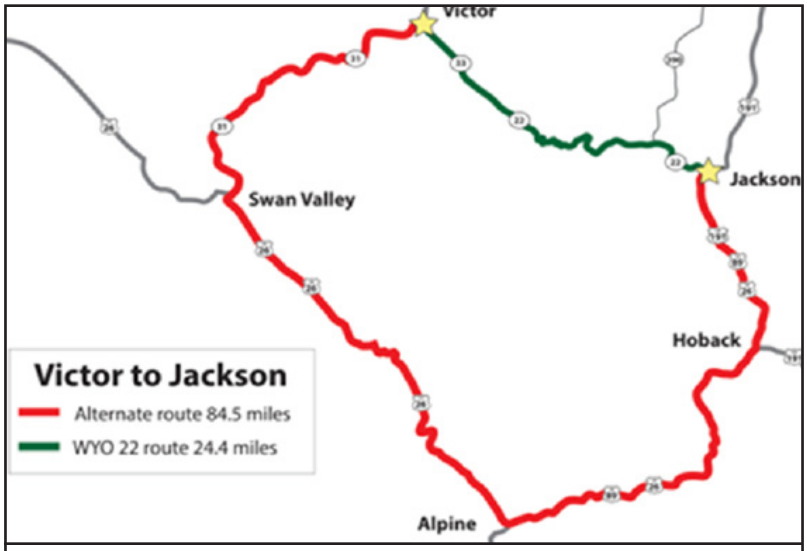


Figure 2: Alternate route around Teton Pass

Traffic Data

Traffic volumes are recorded by WYDOT and reported in the 2020 Vehicle Miles Book. The traffic volume data was sourced from the 2020 Vehicle Miles Book and is summarized in Figure 3.

	2009		2019	
	All Vehicles	Trucks	All Vehicles	Trucks
Teton National Forest, MP 5.6 to 11.021	4879	197	9185	325
Targhee National Forest, MP 11.021 to 17.494	5349	216	7524	325

Figure 3: Average daily traffic Volume (Source: WYDOT)

WYDOT has a traffic counter installed west of the WY-390 intersection (Moose Wilson Road) at milepost 4.75. Shown below, the average daily traffic volume recorded at this location in 2020 was 10,307 vehicles per day (Figure 4).

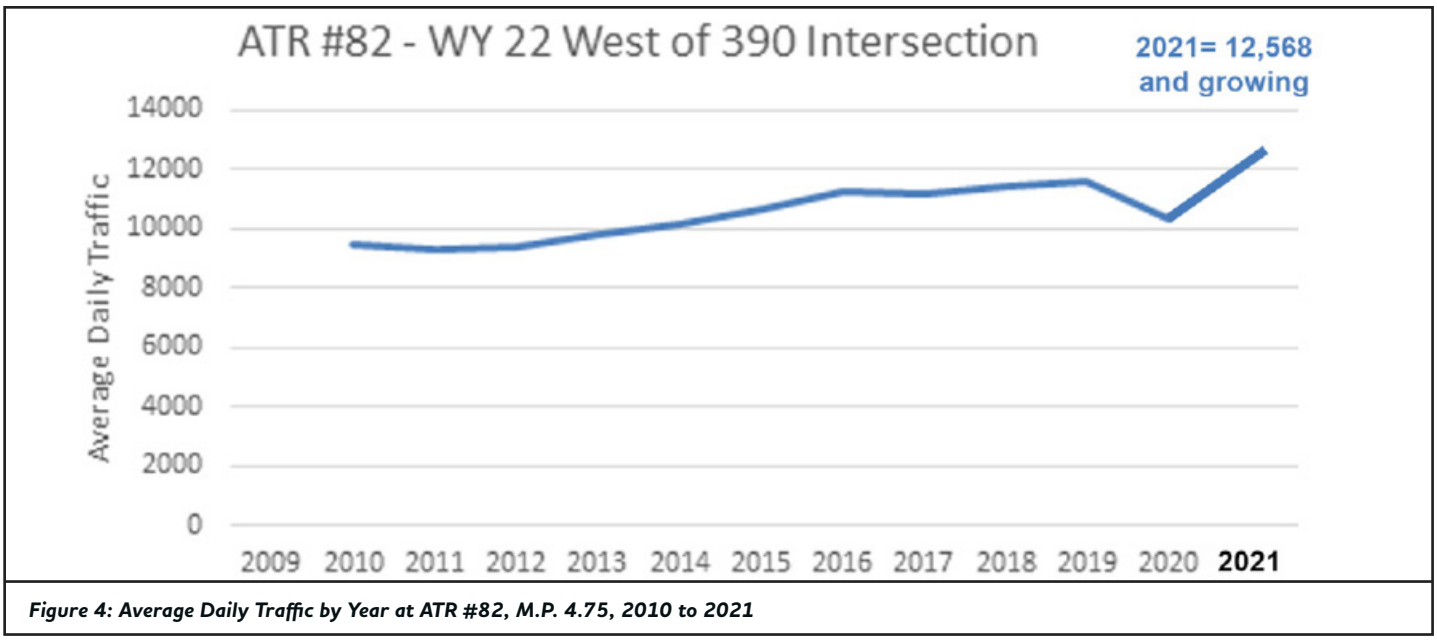


Figure 4: Average Daily Traffic by Year at ATR #82, M.P. 4.75, 2010 to 2021

Initial data from 2021 demonstrate an increase in traffic at this location, with a projected 2021 traffic volume of 12,568 vehicles per day. From 2011 to 2021, the average annual daily traffic increased at a rate of 35%.

Traffic volumes are recorded by Idaho Transportation Department (ITD) east of Victor at milepost 152.432 (ATR #102) (Figure 5). The average daily traffic volume in 2021 was 7,351 vehicles per day. From 2011 to 2021, the average annual daily traffic increased from 4,336 vehicles per day to 7,351 vehicles per day, an increase of 70%. The months with the highest traffic volumes are in the summer (June through September).

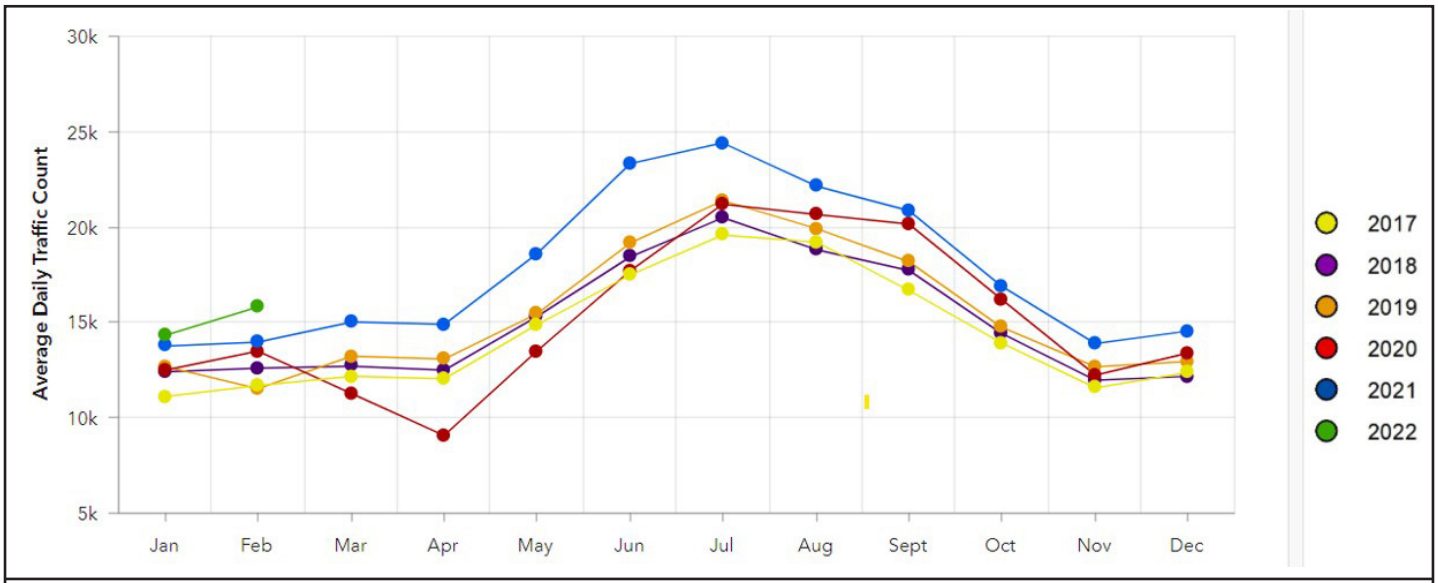


Figure 5: Average Daily Traffic by Month at ATR #102, 2017 to February 2022 (Sources: IDT, WYDOT)

The months with the highest traffic volumes are in the Summer (Figure 6).

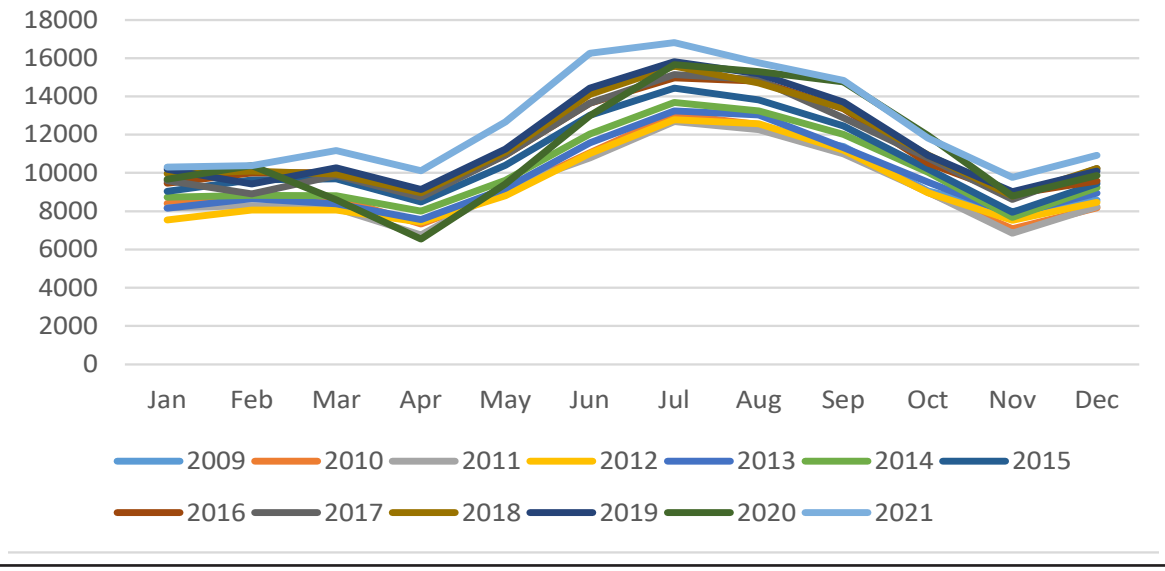


Figure 6: Average Daily Traffic by Month at ATR #82, 2009 to 2021 (Source: WYDOT)

In 2021, WYDOT completed a speed study on WY-22 from milepost 11 to 11.2, primarily focused on the top of Teton Pass. Prior to 2021, WY-22 had a posted speed limit of 55 MPH over the pass. The speed study included an analysis of existing roadway conditions, including roadway geometry, signs, and sight distance, and an analysis of vehicle speeds and pedestrian use. Data collected by WYDOT showed vehicle speeds at the top of the pass were typically less than 40 MPH. Based on the results of the speed study, WYDOT decided to reduce the posted speed to 45 MPH from the Coal Creek Trailhead (milepost 14) to the Old Pass Road intersection (milepost 6.6) near Wilson. The posted speed limit change occurred in Spring 2022.

During interviews with project stakeholders, speed was brought up as a concern at the following locations:

- Near Coal Creek Trailhead, the steep mountainous grades flatten out for vehicles traveling westbound, and drivers tend to increase speed to pass slower-moving vehicles. This is also a location where pedestrians cross WY22 from the Coal Creek Trailhead to access trails on the south side of the highway. This is also an area for wildlife crossings, notably moose. A future pedestrian underpass is set to be implemented at Coal Creek as part of the Greater Yellowstone Trail.

- In general, the speeds at the top of the pass were noted as remaining close to the posted speed. The concern is in the lower elevation, straight sections of road where drivers tend to exceed the posted speed. In passing zones, vehicles will speed up to pass slower-moving trucks, sometimes with unsafe passing maneuvers.

The IDT traffic counter east of Victor (ATR #102) also collects speed data:

- In January 2022, the average speed was 56 MPH and the 85th percentile speed was 63 MPH.
- In July 2021, the average speed was 58 MPH and the 85th percentile speed was 64 MPH.

Crash data for the study corridor was provided by both WYDOT (reporting period 2016 to 2020) and IDT (reporting period 2017 to 2020).

Summary findings for crashes along the ID-33/WY-22 corridor include:

- Common crash types include wildlife-vehicle collisions, roadway departure crashes, and rear end crashes.

- The total number of crashes included in this study is 340. Between 2016 and 2020, there were an average of 68 crashes per year along the corridor.

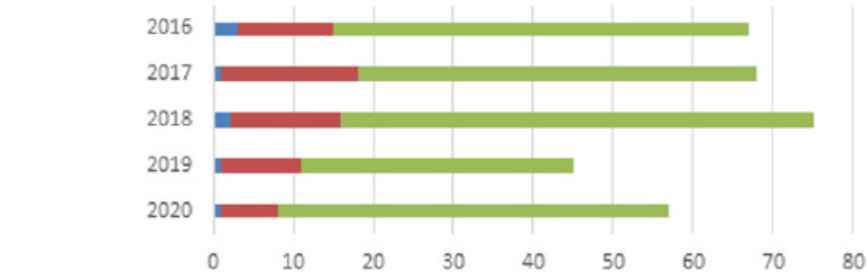
- Summer months have the highest traffic volumes and the highest number of crashes.

- There was one pedestrian-related crash in the crash data (fatal injury, occurred in Wyoming). This pedestrian crash involved an on-duty highway worker but was a non-highway related crash.

- Crashes occurred along the entire study area, with horizontal curves typically having more crashes than tangent sections.

WYDOT provided crash incident data on WY-22 from milepost 4 to 17.49 (Figure 7) for years 2016 to 2020.

Over this 5-year period, there were 8 fatal incidents, 60 incidents involving other injury (none involving bicycles), 78 crashes related to roadway junctions, and 244 events with property damage only (PDO) for an average of 62 crash event incidents (of all types) per year.



	2020	2019	2018	2017	2016
Severe Injury/Fatal	1	1	2	1	3
Other Injury	7	10	14	17	12
PDO	49	34	59	50	52

Figure 7: WY-22 Milepost 4 to 17.49 Crash Count by Severity and Year, 2016 to 2020 (Source: WYDOT)

Crashes are classified by severity based on the most severe outcome associated with the crash, with the following reported in the database (in descending order of severity): fatal, suspected serious injury, suspected minor injury, and PDO. Critical crashes include all fatal and serious injury crashes. Figure 8 presents crash count by severity over the 5-year period.

- Among reported crashes, 8 (3%) resulted in a critical crash (fatal or serious injury crash).
- Minor and possible injuries were reported in 60 (19%) of the crashes.

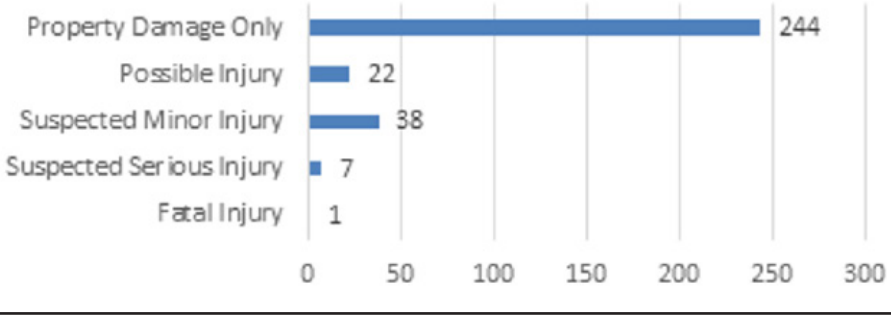


Figure 8: WY22 (Milepost 4 to 17.49) Crash County by Severity, 2016 to 2020 (Source: WYDOT)

The number of reported crashes each year between 2016 and 2020 ranged from 45 to 68, with the number of serious injury/fatal crashes ranging from 1 to 3 crashes per year. The months with the most crashes are November, July, and August. The months with the most serious injury/fatal crashes are May, July, and August. The time of day with the most crashes are 7 AM to 8 AM, 2 PM to 3 PM, and 4 PM to 6 PM. The number of crashes per day varies from 39 to 51, with the most crashes reported on Wednesdays and Thursdays.

According to the WYDOT Investigator's Traffic Crash Reporting Manual, the First Harmful Event (FHE) is defined as the first injury or damage-producing event that characterizes the crash type. The most frequent first harmful events were:

- Non-collisions (Overturn/Rollover)
- Collisions (Motor Vehicle in Transport on Roadway)
- Collision with fixed objects (Guardrail)
- Animals (Deer and Moose)

The five most frequent first harmful events in serious and fatal injury crashes were:

- Non-collisions (MC loss of control, Equipment failure)
- Collisions (Motor Vehicle in Transport on Roadway, Pedestrian)
- Collision with fixed objects (Guardrail)

The Idaho Transportation Department (ITD) provided crash data on ID-33 from the City of Victor to the WY/ID State Line and the reporting period was 2017 to 2020.

A total of 28 crashes is included in the data. There were no pedestrian or bicycle related crashes reported in the database.

Two crashes involved a motorcycle. Three crashes were related to an intersection. The number of reported crashes each year between 2017 and 2020 ranged from 5 to 9 (Figure 9).

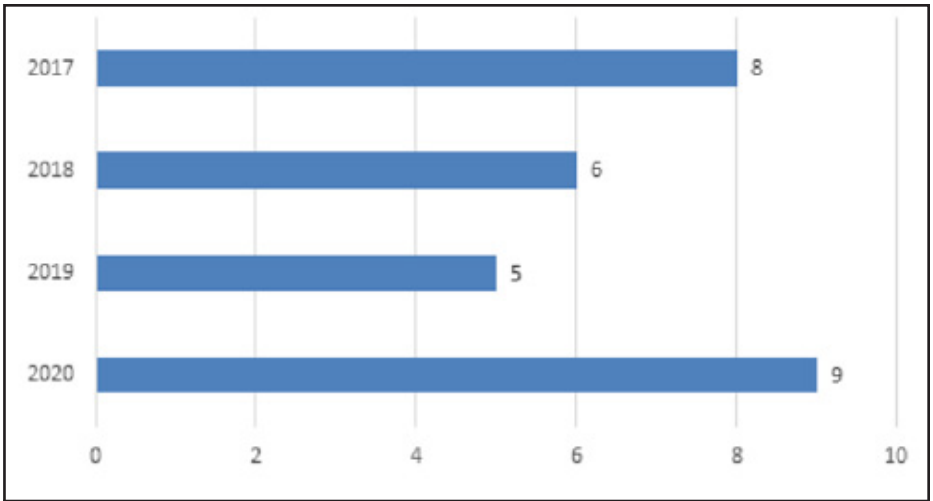


Figure 9: Figure 10: ID-33 Crash Count by Year, 2017 to 2020 (Source: IDT)

The most common contributing factor in reported crashes is an animal in the roadway (15 crashes, or 54% - shown in Figure 10)

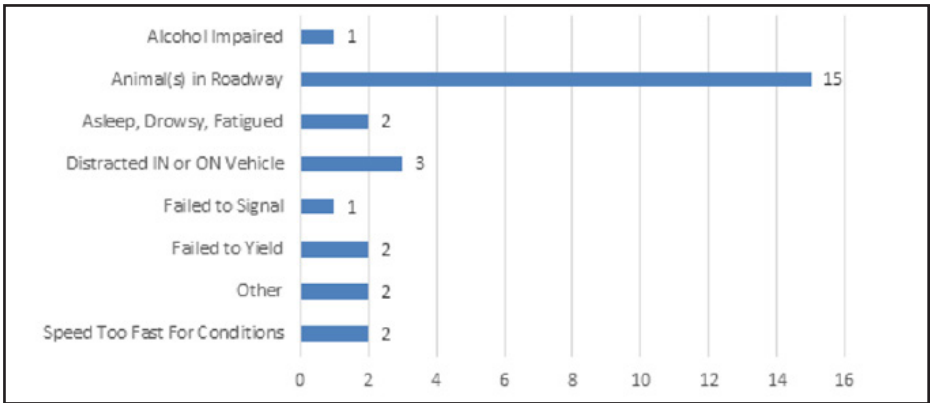


Figure 10: ID-33 Crash Count by Contributing Factor, 2017 to 2020 (Source: IDT)

Parking Capacity and Utilization

Parking along the Study corridor is highly coveted all year long, especially on high use recreation days. Turnout areas adjacent to popular trailheads are mostly on National Forest System land within a Wyoming State highway right-of-way (ROW).

Turnout parking areas within the WYDOT ROW are intended to be used for highway maintenance and operations, but many have evolved into de facto non permitted parking areas due to limited available space as well as significant demand for recreation along the corridor. Some days automobiles are parked illegally parallel to the highway and access roads, which present increased risks from limited site line distances, increase of automobile/pedestrian conflicts and potential collisions, pedestrian highway crossings, limited emergency vehicle access and others.

Below, Figure 11, displays assumptions for each column corresponding to the turnout areas in the following Winter and Summer use tables.

Turnout Area	Approx. total square feet (SF) of turnout area
Vehicle Capacity	Determined vehicle capacity numbers by coordinating with BTNF and CTNF
Max. Vehicle Capacity During Daylight Hours	**Winter (10 hours 8AM- 6PM):** Vehicle Capacity (assuming an hourly turnover rate) X 10 = Winter Max Vehicle Capacity **Summer (12 hours 8AM-8PM):** Vehicle Capacity (assuming an hourly turnover rate) X 12 = Summer Max Vehicle Capacity
Approx. Parking Duration (hrs)	A range of minimum to maximum parking duration (example set for below: 2 hours to 4 hours) >Max vehicle capacity divided by 4 hours = low end of parking lot turnover >Max. vehicle capacity divided by 2 hours = high end of parking lot turnover
Est. Daily Visitation	2.4 occupancy rate per vehicle Visitation is highly variable with peak use Dec-March and July-September

Figure 11: Parking Capacity and Utilization Analysis Assumptions

Maximum seasonal parking scenarios are defined in Figures 12 and 13 (below) and each scenario includes areas along the Study corridor where vehicles are parking to access recreation. These turnout areas include designated USFS trailheads, other trailhead access, as well as other areas like waysides and pullouts. Some of these areas are plowed in the Winter season by WYDOT, giving Winter recreationalists the ability to park and recreate. Some areas are not plowed and are only used for parking in the summer season due to avalanche concerns during the Winter months.

Based on trail counter data from Friends of Pathways and use estimates from JH Ski Club, estimated annual visitation in the Teton Pass area (Bridger-Teton National Forest and Nordic facility) is 263,000 people. There was a 14% increase in use on the National Forest between 2020 and 2021.

It is worth noting that not all Turnout Areas in each chart below are equally desirable from a recreation perspective, as some are a greater distance to a trailhead as compared to others.

SUMMER					
Turnout Area	**Turnout Area Total Est. SF**	**Vehicle Capacity**	**Vehicle Capacity Daylight Hours X12**	**Approx Parking Duration**	**Est daily Visitation (2.4)**
Bridger Teton National Forest					
Trail Creek Trailhead	19,692	30	360	(2-4hrs) 90 - 180	216 - 432
Below Truck Runaway	9,972	5	60	1hr 60	144
West of Truck Runaway	12,070	5	60	1hr 60	144
Close to Pond	10,919	5	60	1hr 60	144
Phillips North (along road)	10,523	8	96	3-4hrs 24 - 32	58 - 77
Phillips South (Gravel lot)	9,912	30	360	1-4hrs 90 - 360	216-864
Shovel Slide Access	12,000	34	408	1-2hrs 204 - 408	490 - 979
Top of Pass	20,447	55	660	1-2hrs 330 - 660	835 - 1584
TOTAL Bridger Teton	**105,535**	**172**	**2,064**	**738 - 1,820**	**2,146 - 4,368**
Caribou Targhee National Forest					
Weigh Station	3,220	5	60	2-4 hrs 15-30	36 - 72
Mail Cabin	24,386	52	624	2-4hrs 156-312	374 - 749
Coal Creek	28,392	68	816	2-4hrs 204-408	490 - 979
Waste Pit	26,540	55	660	1-3hrs 220-660	528 - 1,584
Trail Creek CG	5,385	10	120	1hr 120	288
Moose Creek GYT access	14,851	31	372	1-2hrs 186 - 372	446 - 893
Mike Harris	20,046	45	540	1 - 3 hrs 180 - 540	432 – 1,296
Total Caribou Targhee	**140,376**	**400**	**3,192**	**961 – 2,442**	**3,437 - 8,953**
Overall Total	**245,911**	**572**	**5,256**	**1,699 - 4,262**	**5,583 – 13,321**

Figure 12: Maximum Summer parking scenario

WINTER (includes only plowed areas)					
Turnout Area	**Turnout Area Total Est. SF**	**Vehicle Capacity**	**Vehicle Capacity Daylight Hours X10**	**Approx. Parking Duration**	**Est. daily Visitation (2.4)**
Bridger Teton National Forest					
Trail Creek Trailhead	19,692	30	300	(2-4hrs) 75-150	180-360
Phillips East pullout (winter)	12,801	30	300	(2hrs) 150	360
Shovel Slide Access	12,000	34	340	(2-4hrs) 85 - 170	204-408
Top of Pass	20,447	55	550	(2hrs) 275	660
TOTAL Bridger Teton	**64,940**	**149**	**1,490**	**160-745**	**384-1,788**
Caribou Targhee National Forest					
BPA Weather STA pullout	1,944	3	30	(1hr) 30	72
Coal Creek	28,392	61	610	2-4hrs 153 - 305	367-732
Weigh Station	3,220	5	50	2-4hrs 13 - 25	31-60
State Line	29,176	63	630	1-4hrs 158 - 630	379-1,512
Mike Harris	20,046	45	450	1-2hrs 225 - 450	540-1,080
Total Caribou Targhee	**82,778**	**177**	**1,770**	**879-1,900**	**1,670-4,560**
Overall Total	**147,718**	**326**	**3,260**	**944-2,645**	**2,054-6,348**

Figure 13: Maximum Winter parking scenario

Turnout areas along the corridor that are used for parking to access recreation in Figures 12 and 13 were identified by representatives from Caribou Targhee and Bridger Teton National Forests. The total vehicle capacity for both National Forests in these areas total to approximately 326 parking spaces for Winter and 572 spaces for Summer. Assuming an hourly turnover rate, max winter use in daylight hours could be as much as 3,260 vehicles, and because more space is available in summer due to the absence of snow, total daily vehicles could be as high as 5,256.

There is also limited winter parking availability due to protection/parking restriction within avalanche paths Of course, if parking was formalized, then more lots would be plowed, and these numbers would be normalized across seasons.
Also, these numbers represent a maximum build out of parking for planning purposes, and it is unlikely that all theoretically available parking will be formalized.

The following are summary points related to parking and recreation connections:

- On high use recreation days, access between recreation areas and parking is sometimes restricted to walking alongside the highway corridor

- In the Winter months, walking (or skiing, snowshoeing, etc.) along the Highway shoulder increases conflict potential due to the snow berm build up

- Most all recreation use parking is informal and unpermited, meaning there is no formal designated parking stalls or circulation flow

- Recreational areas located on the opposite side of the informal turnouts create an unintended and unexpected crossing conflict potential.

- Signage in of themselves do no solve the issue, and only encourage unsafe crossings and false sense of security that WYDOT does not want to encourage, and also violates the MUTCD that state no crossings shall be on high speed high volume roadways.

Transit, Bike & Ride, and Park & Ride

Fixed-route and on-demand/micro transit services in the Jackson, WY region are provided by Southern Teton Area Rapid Transit (START), which has been in operation since 1987. START offers a variety of transit options for visitors and residents, including a free town (Jackson) shuttle, express routes to Teton Village, and weekday commuter services to Teton County, Idaho.

Over the past two decades START's ridership has grown significantly, increasing from approximately 200,000 in 1998 to nearly 1.1 million in 2019. Like most transit service providers, START experienced a sharp decline in ridership during the COVID-19 pandemic in 2020 and 2021, but system usage appears to be rebounding.

Currently, START does not provide transit service to recreation destinations along the Study corridor, however there are four stops currently along the Teton Valley to Jackson commuter service route within the study corridor in Wilson, WY and Victor, ID (highlighted in yellow in Figure 14) which consists of three eastbound runs in the morning commute period and three westbound runs in the evening commute period.

AM Trips

Driggs/Wilson/Jackson		TV1	TV2	TV3
78	Driggs Community Center	5:40	6:25	7:00
76	Victor Depot	5:52	6:37	7:12
74	Victor Transit Center	5:56	6:41	7:16
72	Wilson/Nora's	6:22	7:07	7:42
70	Village Rd Transit Center	6:25	7:10	7:45
56	Maple Way (formerly Kmart)	6:35*	7:20*	7:55*
54	Buffalo Way & Alpine	6:36*	7:21*	7:56*
49	Lodge at Jackson Hole	6:38*	7:23*	7:58*
36	49'er Inn	6:41*	7:26*	8:01*
30	Antler Inn	6:42*	7:27*	8:02*
16	Simpson & Willow	6:44*	7:29*	8:04*
10	Broadway & Stormy Circle	6:46*	7:31*	8:06*
9	Snow King & Willow	6:49*	7:34*	8:09*

PM Trips

Jackson/Wilson/Driggs		TV1	TV2	TV3
8	Snow King Center	3:45	5:05	6:00
11	St. John's Hospital	3:48	5:08	6:03
17	Simpson & Willow	3:50	5:10	6:05
31	Pearl & Glenwood	3:52	5:12	6:07
35	Pearl & Jackson	3:55	5:15	6:10
50	Scott & Broadway	3:58	5:18	6:13
53	Albertsons	4:01	5:21	6:16
55	Hampton Inn	4:02	5:22	6:17
70	Village Rd Transit Center	4:15	5:35	6:30
71	Wilson/Hungry Jack's	4:18	5:38	6:33
74	Victor Transit Center	4:44	6:04	6:59
77	Victor Depot	4:49	6:09	7:04
78	Driggs Community Center	5:01*	6:21*	7:16*

Figure 14: START Teton Valley Commuter Service Schedule

For context, Figure 15 below shows the START Bus System map with the area along the Teton Valley to Jackson commuter service route through the study corridor highlighted.

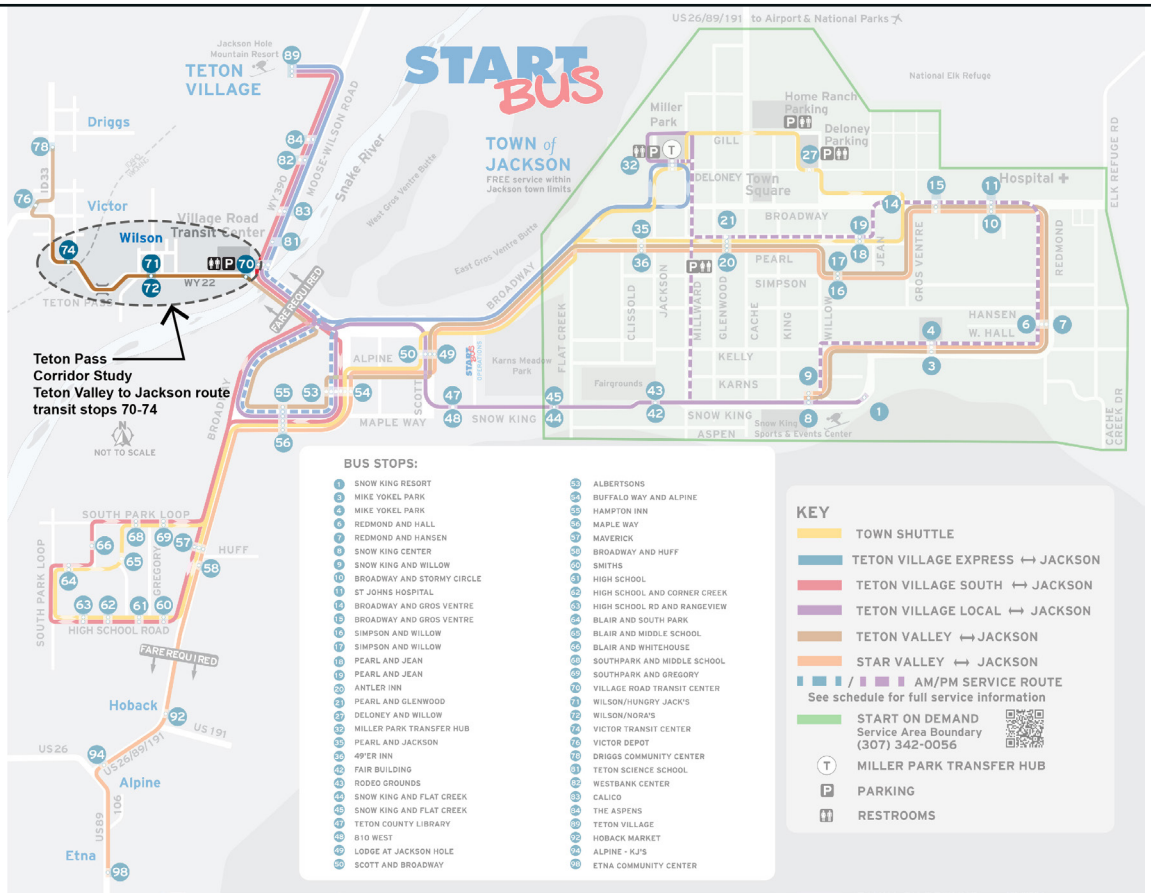


Figure 15: START Bus System Map (Source: Jacksonwy.gov/587/START-Bus)

At the base of both the eastern and western sides of the pass are two important parking and transit facilities. On the eastern side of the pass is the Stilson Transit Center (Image 4; stop 70 in Figure 15) which is a large (850 parking stalls) and developing surface-level parking and transit facility that mainly services the Teton Village ski area along and resort located north of the community of Wilson along WY-390 (not along the Teton Pass corridor study). This lot is secondarily used as a meeting point for backcountry skiers to carpool and travel up the pass and is a stop along various Southern Teton Area Rapid Transit (START) transit routes. The facility includes both secured and unsecured bicycle parking.

On the western side of the study corridor is the Victor Transit Center (Image 5, stop 74 in Figure 15). This facility is approximately $\frac{3}{4}$ of a mile southwest of downtown Victor and opened in 2012. There are 100 parking spaces available. There are no restroom or other amenities at present, but the city of Victor plans to add amenities in the near future. However, the facility is adjacent to the Kotler Ice Arena which, when open, has restroom facilities. There is bicycle and pedestrian access to the Victor Transit Center via the Centennial Trail segment of the regional Greater Yellowstone Trail system.

Image 4: Stilson Transit Center

Image 5: Victor Transit Center

Ride Hailing & Hitchhiking- ***Although a formal ride hailing service and/or app has not been established to serve recreationists wanting a ride to the top of the Pass, for many years informal 'hitchhiking' has been an alternative. Most people hail rides at an informal area just west of Wilson and across WY-22 from Old Pass Rd (see Figure 45). When the FHWA staff were on site in October 2021, they spoke to several recreationists and learned about the hitchhiking system.***

Anecdotal evidence suggests this informal hitchhiking system is well used and deemed safe. However, from a WYDOT operations perspective, hitchhikers can endanger themselves along the shoulders of the highway when snowplows are in operation and when visibility is poor in Winter conditions.

A more formal recreational ride hailing system in coordination with companies like Uber, Lyft or VIA could potentially support ride hailing as an alternative method to recreate along the corridor.

Image 6: Hitchiker along Teton Pass corridor (Source: Avalon7.com)

<u>Recreational Shuttle</u>- The concept for a Teton Pass recreational shuttle has been discussed, but not implemented, by local agencies and has been listed as a potential mitigating solution for congestion along the study corridor. The Teton Back Country Alliance (TBCA) conducted a user survey and found that most users were in favor of a recreational shuttle system. On January 26, 2020 the TBCA organized a free Teton Pass shuttle pilot to transport winter recreationists to the top of Teton Pass with the goal of collecting data and feedback for a potential long-term shuttle operation. The following takeaways on the pilot shuttle were provided by the TBCA Steering Committee Chair:

- *Before the shuttle was launched, WYDOT staff expressed concerns that a westbound shuttle crossing the highway center line into the drop-off area at the top of the Pass would create collision hazards.*
- *In response to WYDOT's concern, a decision was made to create a loop route, starting at the Old Pass Rd. trailhead, continuing to the top of the Pass, descending to Coal Creek, and then retracing the route over the Pass in the reverse direction to complete the loop.*
- *TBCA determined that two passenger vans would be sufficient rolling stock to service the demand.*
- *Exiting from the top of the Pass when traveling westbound is likely the riskiest maneuver on this route. Ascending from the west is also the preferred route for passengers. Making a stop at the "overflow" lot at the summit of the pass could potentially provide improved*

Environmental Context and Natural Hazards

The pass corridor traverses a region of the Teton mountain range that is rich in environmental and cultural values. The roadway is threaded between two congressionally designated wilderness areas with the Jedediah Smith Wilderness to the north, and the Palisades Wilderness Study Area to the south. The area is part of the Greater Yellowstone Ecosystem and home to a variety of wildlife including black and grizzly bear, big horn sheep, wolverine, moose, and elk.

The variety of uses and volume of traffic and activity along the corridor poses significant conflicts and obstacles to human life, property, and wildlife. Without mitigations, growth and development trends will continue to exert pressures on natural systems while increasing potential risks to travelers and visitors.

The majority of the Teton Pass corridor is within native habitat of various migratory ungulate species (Figure 16). Wildlife habitat fragmentation happens when parts of a habitat are destroyed or when hard barriers are created and access to the full extent of a native habitat is compromised.

What was once a contiguous habitat for many native animal species is now divided by the roadway corridor, and wildlife vehicle collisions (WVC) are becoming more frequent due to seasonal migratory movements. WVCs pose a hazard to traveling vehicles, but wildlife itself has been identified as one of the region's highest resource values and is critical for a tourism-based economy.

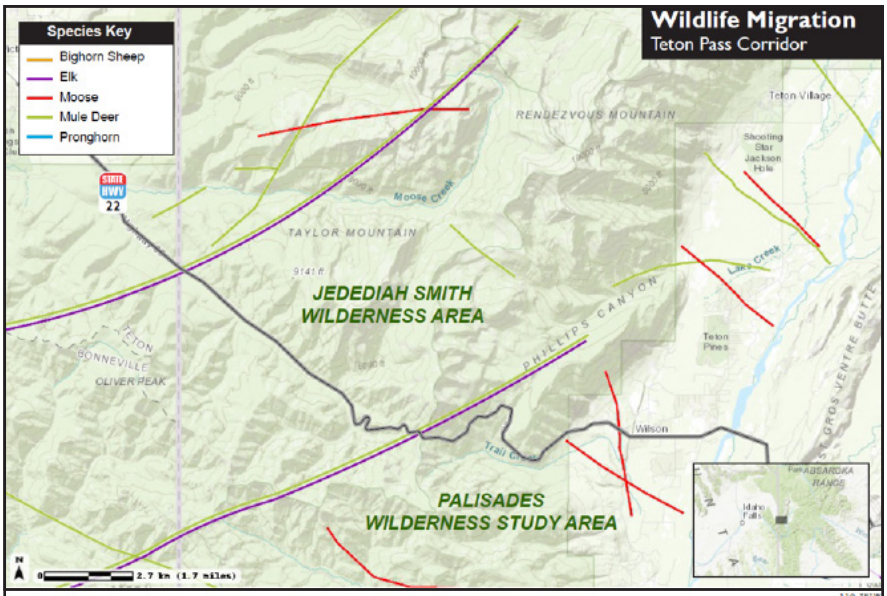


Figure 16: Wildlife migration along Teton Pass corridor (Source: Databasin.org)

Locally collected data show that between 1991 and 2020, researchers documented a total of 439 wildlife-vehicle collisions along this pass segment, with incidents steadily increasing over time (see Figure 17).

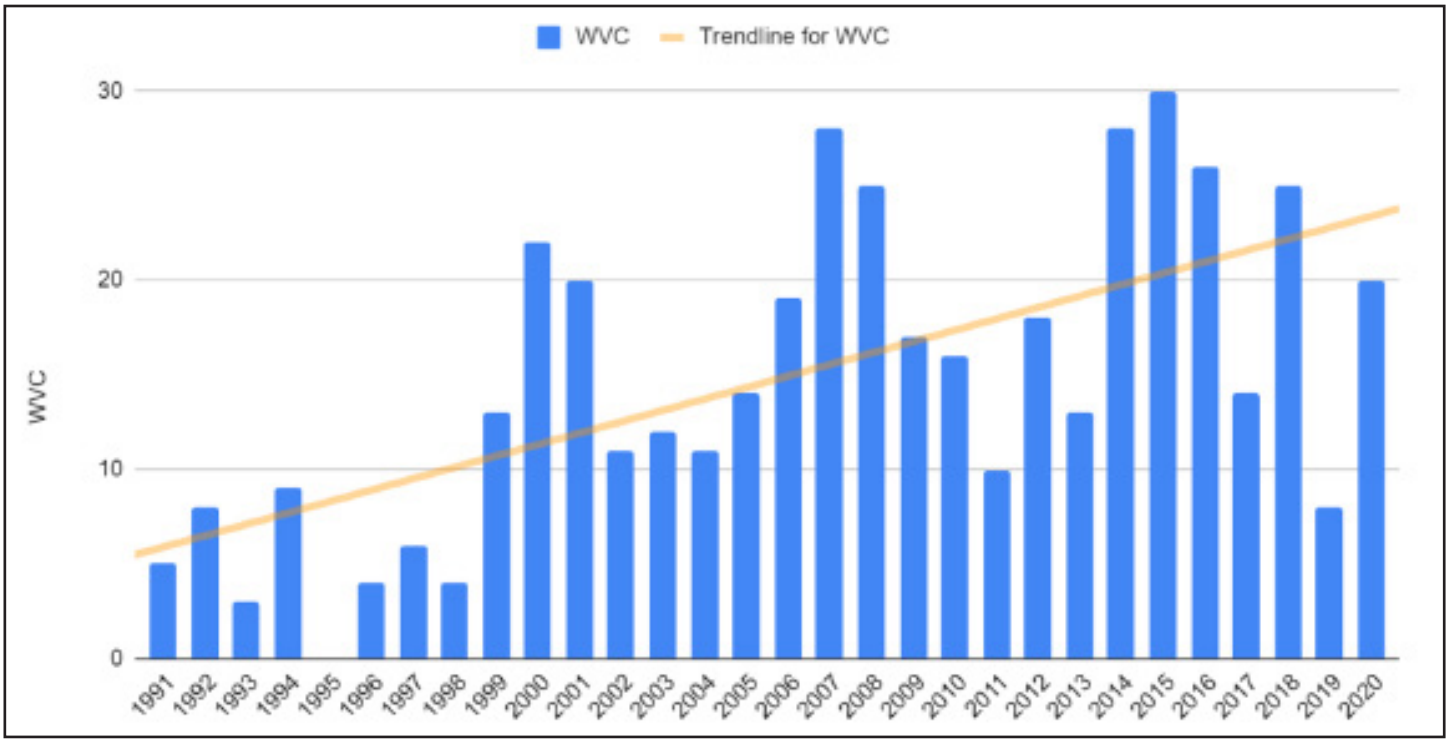


Figure 17: WVC by year
(Source: Greater Yellowstone Foundation)

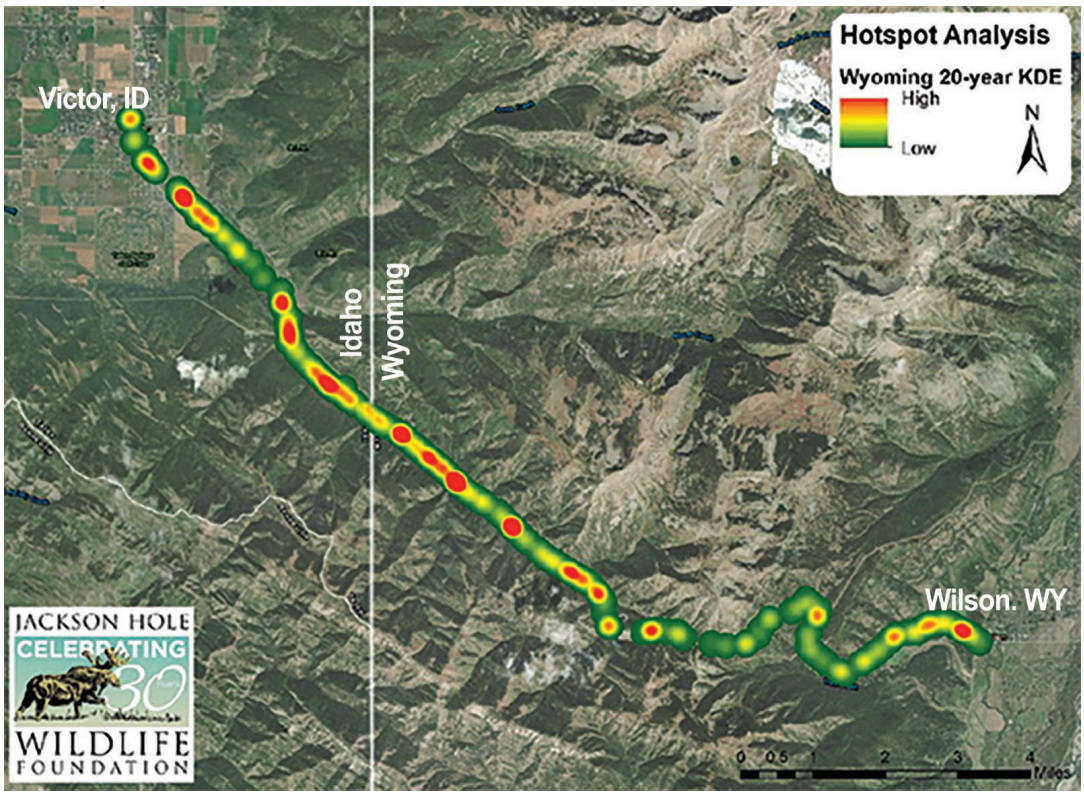


Figure 18: WVC hotspot analysis, 2002-2021
(Source: Jackson Hole Wildlife Foundation)

The Jackson Hole Wildlife Foundation has identified wildlife-vehicle collision "hotspots" for a 20-year period from 2002 to 2021 along the study corridor of WY-ss and ID-33 encompassing both the Wyoming and Idaho sides of the state line (see Figure 18).

Trails, Sidepaths, and Non-Motorized Infrastructure

The study area and surrounding region is abundant with non-motorized, bicycle, and pedestrian infrastructure with future plans for expansion. The area is also well-known for its mountain biking and hiking trails, which provide stunning views of the Teton Range and other outdoor recreational experiences. Additionally, the study area features a significant portion of the Greater Yellowstone Trail (GYT), a multi-use, paved, detached, and grade separated regional trail system that is envisioned to eventually span over 180 miles.

On the eastern side of the pass, the main trunk route of the GYT system connects the Teton Pass summit with the communities of Wilson and Jackson (WY), and continues north to Grand Teton National Park. On the western side of the pass, the main trunk-route of the system connects the communities of Victor and Driggs (ID) via the recently (2022) completed Centennial Trail segment.

The GYT is also connected to various recreational trail networks in the surrounding National Forest lands as well as the urban bicycle and pedestrian systems of the adjacent communities.

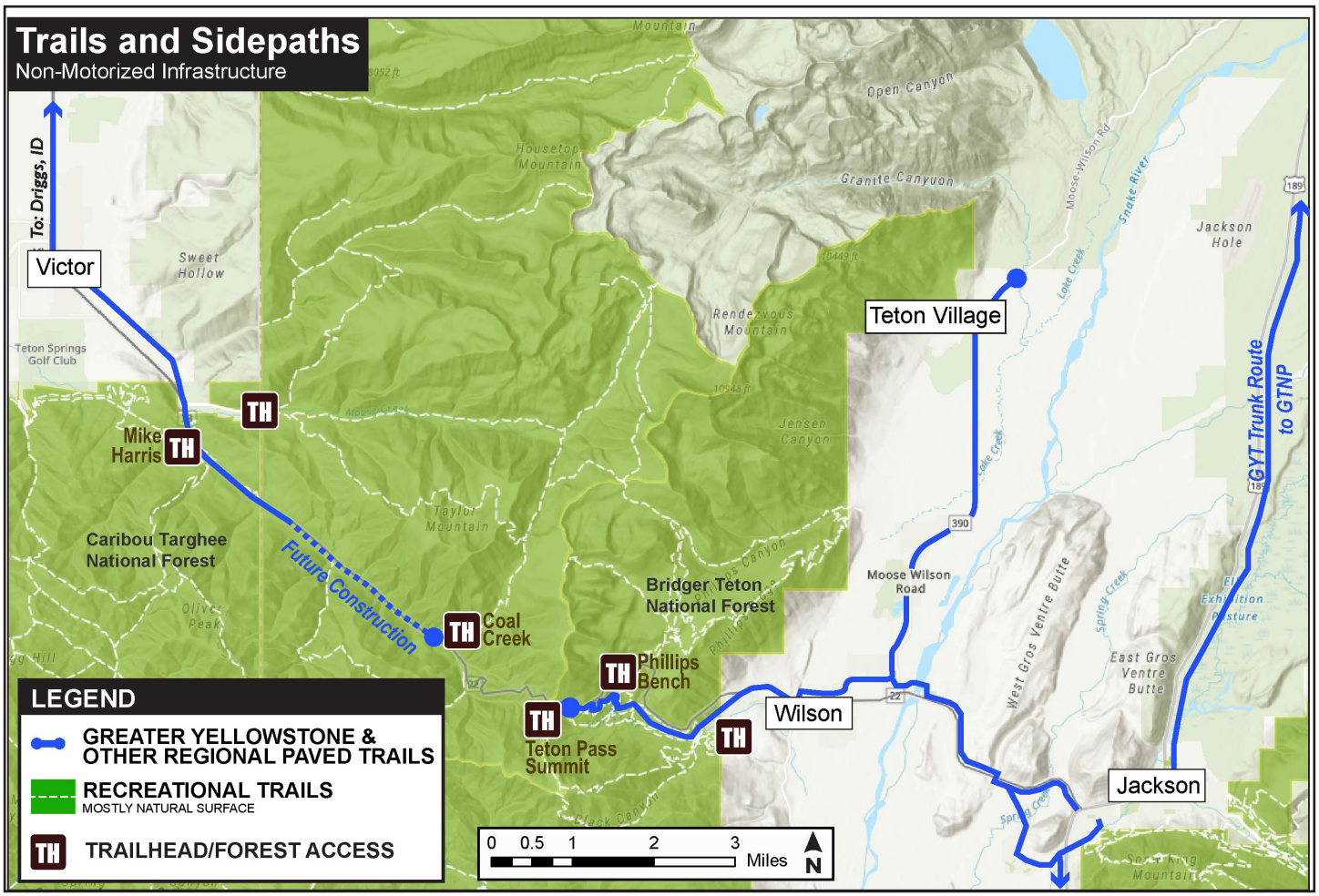


Figure 19: Trails and sidepaths surrounding study area

Towns on both sides of the pass have well developed bicycle and pedestrian infrastructure including off-street trails and sidepaths, the 'START' bike-share system in Jackson operated by B-Cycle, complete streets initiatives, and other bicycle and pedestrian improvements that enhance mobility and safety.

Image 7: Off-street trail infrastructure in Jackson, WY

The Bridger-Teton and Caribou-Targhee National Forests feature vast recreational trail systems. The Bridger-Teton National Forest offers an extensive network of hiking and mountain biking trails that range from easy nature walks to challenging backcountry routes. The Caribou-Targhee National Forest boasts more than 1,300 miles of trails suitable for various recreational activities, such as hiking, mountain biking, horseback riding, and snowmobiling.

The non-motorized trails and bicycle/pedestrian infrastructure in the Teton Pass corridor are an essential component to the infrastructure of the region. These facilities support a wide range of outdoor activities, such as commuting, transportation, and recreation. Their ease of access and world-class quality are leading to increased pressures on the infrastructure and natural systems that support their use and enjoyment.

The following key findings have been identified related to bicycle and pedestrian circulation in the study area:

- The safest, most desirable facilities to bike and walk along parts of the study corridor are along the paved multi-use paths

- Pedestrians frequently cross the highway at non formalized locations to recreate. Formalized ladder crosswalks are not allowed along this busy state highway. Grade separated crossings are most desirable

- There is limited signage along the highway to warn motorists of potential upcoming pedestrian congestion and potential crossings

- Approaches along the highway where pedestrians frequently cross have limited sight distances due to horizontal and vertical curves

- Pedestrians and skiers often use the narrow shoulders along the highway to get back to their vehicles which pose dangerous situations

- Pedestrians will use non-formal ride share (or hitchhiking) at non-formalized pick-up areas mostly at the base of the Glory Slide and Heidelberg

- The steep uphill mountainous grades of the roadway also enhances the motorists' ability to come to a stop for any conflict in the roadway

- WYDOT's 2020 Speed Limit Study at the top of Teton Pass indicate that "there is more than enough gaps in the traffic flow or at least one adequate gap per minute for the study period to safely cross the highway." Therefore, according to WYDOT's Pedestrian and School Traffic Control Manual, a marked crossing or pedestrian enhancements at the top of the Pass is not warranted.

- E-bikes are currently not allowed on the GYT segment in the study corridor. The USFS is determining if e-bike use will be allowed in the future.

OPERATIONAL IMPROVEMENTS

Transit & Parking Management

The issues resulting from the high levels of recreation demand discussed above have raised the potential need for more active operational management of recreational access. Specifically, a coordinated program including an intercept transit shuttle program along with a parking management program has been considered. A full discussion of the analysis of this strategy is presented as Appendix A.

The following presents a summary of the various operational options considered for the corridor.

- An "East Side Route" option that would provide service between Wilson (Stilson Lot) and Coal Creek versus a "Full Route" option between Wilson and Victor (Victor Depot).
- Service in winter versus summer.
- Service on weekends and holidays only versus seven-day-a-week.
- Various fare levels

Transit Route Options

Given the relative population and level of visitation, it is estimated that approximately 75 percent of the demand for a winter recreational shuttle program is generated on the Wyoming (east) side of the pass and the remaining 25 percent on the Idaho (west) side. As such, one option would be to provide a shuttle only from the east side of the pass. The conceptual route options are shown in Figure 20. The "East Side Route" option is shown in orange, while the "Full Route" option adds the portion shown in blue.

The East Side option would serve the following stops:

- Stilson Transit Center – A new facility currently being designed for construction by Teton County will provide six bus bays, more than adequate capacity to accommodate a Teton Pass shuttle program without impacting the other transit services.

- Wilson – At the existing START stops adjacent to Nora's Fish Creek Inn on the south side and Hungry Jack's General Store on the north side. These stops are intended to serve residents/guests in Wilson rather than park-and-ride activity, which should be directed to Stilson Ranch.

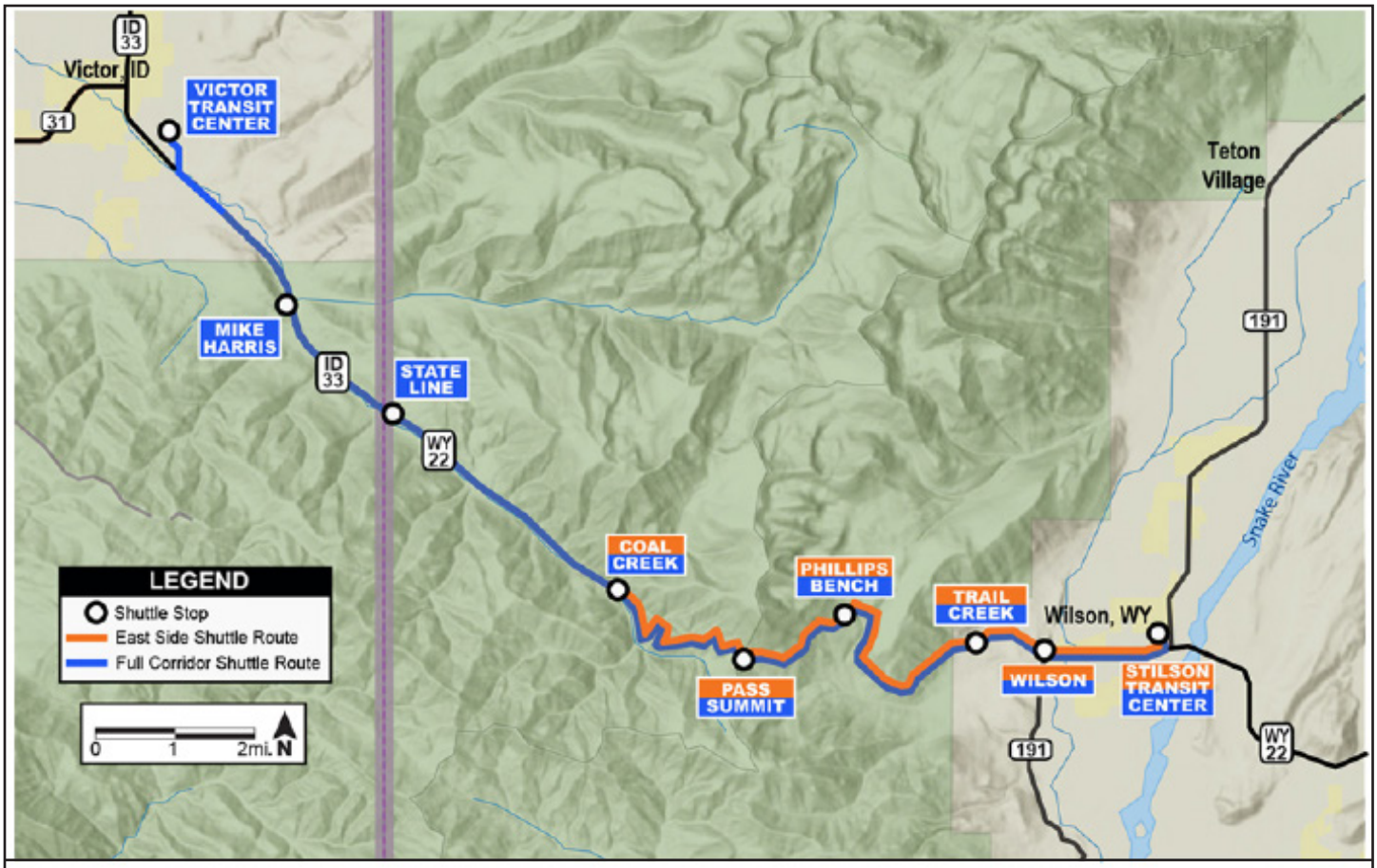


Figure 20: Recreational shuttle conceptual route options with stops

- Trail Creek – A stop at the intersection of Trail Creek Rd. and WY-22 or at the end of Trail Creek Rd.

- Phillips Bench – The optimal location for a stop is at or near the existing Phillips Bench Road. However, a stop at this location may not have adequate sight distance for drivers to turn left (east) given the horizontal curve just to the west that limits the ability to judge an adequate gap in the high-speed downhill eastbound traffic. If the considered parking area on the north side of the highway at the western end of this area (Figure 28) is designed with an access point to the west of this curve, it would be possible to provide drivers exiting the parking area with adequate sight distance in both directions.

- Pass Summit – A stop on the south side of the highway, served in both directions. If a pedestrian underpass is provided, the westbound stop could be on the north side.

- Quarter Mile East of Pass – A stop in the considered parking lot on the south side of the highway (Figure 34) could take place instead of a stop at the Summit.

- Coal Creek – A stop accommodated at the Coal Creek Trailhead, which could provide a good location to turn around the bus on the East Side route option.

The Full Route option would add the following stops:

- State Line – A stop in the parking area on the south side in both directions. This stop could also serve Trail Creek Campground a quarter-mile to the east.
- Mike Harris – A stop in the parking area on the south side in both directions.
- Victor Transit Center – the west end of the shuttle route just off of ID-33 along S. Agate St. southeast of downtown Victor.
- This route is 20.9 miles in length (including Trail Creek Trailhead) and requires 33 minutes to drive one-way under good conditions. Including time to serve the 10 stops in each direction, to load/unload passengers and gear, and to provide a driver break, a 2-hour round-trip time would be required.

Transit Span of Service Options

The overall seasonal span of winter service considered is mid-December through the end of March, while the summer span is Memorial Day Weekend through Labor Day Weekend.

Within these spans, options were considered for weekend/holiday only service as shown in Figure 21.

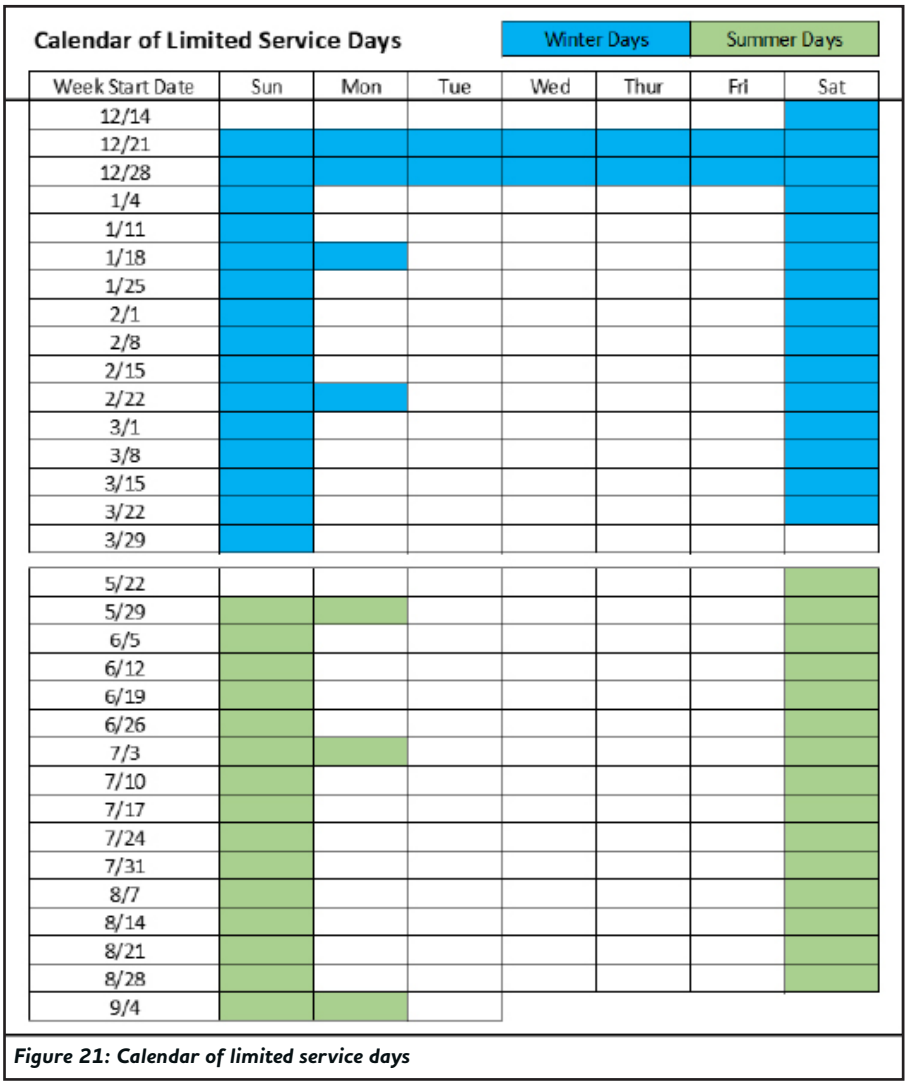


Figure 21: Calendar of limited service days

Transit Service Configuration: Winter Service

The optimal service plan given the ridership demand, required service frequency, route length and round trip cycle times discussed above would be as follows:

- For the East Side scenarios, two buses would cycle between Stilson Lot and Coal Creek, stopping in each direction at Trail Creek Trailhead. Each bus would make 9 round trips per day, with the first westbound departure at 8:00 AM and the last eastbound departure at 5:00 PM.

- For the Full Corridor scenarios, four buses would be used to provide half-hourly departures over a two-hour cycle length from 8:00 AM to 5:00 PM. This would provide sufficient capacity on weekdays. On weekends and holidays, a fifth bus would operate between Stilson Ranch and Coal Creek (without stops at Trail Creek) to provide adequate capacity on the east side. This additional bus would not be shown in the schedule as a separate departure time, but rather would be operated flexibly as a "tripper" bus responding on the published half-hourly schedule as needed to accommodate variation in demand.

Teton Pass Transit Service Winter Alternatives

December 14 Through March 31

	# Days of Service	Daily Hours of Service			Route Round Trip Length (Mi)	Daily Round Trips	Annual			Number of Vehicles	Route Cycle Length (Hours)
		Start	End	# Hours			Vehicle-Hours of Service	Vehicle-Miles of Service	Transit Operating Cost		
Weekend Only Alternatives											
East Side Focus											
Half-Hourly Service	42	8 AM	5 PM	9	18	18	756	13,608	$66,200	2	1.00
Full Corridor											
Half-Hourly Service	42	8 AM	5 PM	9	41.8	18	1,512	31,601	$135,500	4	2.00
Tripper Bus - Stilson to Coal Creek	42	8 AM	5 PM	9	19.6	9	378	7,409	$33,500	1	1.00
TOTAL							1,890	39,010	$169,000	5	
7-Days-A-Week Alternatives											
East Side Focus											
Half-Hourly Service	107	8 AM	5 PM	9	18	18	1,926	34,668	$168,700	2	1.00
Full Corridor											
Half-Hourly Service	107	8 AM	5 PM	9	41.8	18	3,852	80,507	$345,300	4	2.00
Tripper Bus - Stilson to Coal Creek	42	8 AM	5 PM	9	19.6	9	378	7,409	$33,500	1	1.00
TOTAL							4,230	87,916	$378,800	5	

Figure 22: Transit service winter route alternatives

The annual vehicle-hours of service ranges from 756 for weekend/holiday East Side service up to 4,230 for consistent service over the entire corridor. Vehicle-miles of service each year ranges from 13,608 up to 87,916.

Using the existing unit costs of the START service as a basis, the service alternatives range in cost from $66,200 per year up to $378,800 per year. Note that these figures do not include any administrative costs, such as for contract administration.

Transit Service Configuration: Summer Service

The analysis of summer service options is presented in Figure 23, using the same methodology as discussed above. One vehicle would be operated hourly between the Stilson Lot and Coal Creek. If operated weekends only, this would incur a cost of $29,900, while expanding to 7-day-a-week service increases the cost to $94,400.

Teton Pass Transit Service Summer Alternatives

June 1 through Labor Day Weekend

	# Days of Service	Daily Hours of Service			Route Round Trip Length (Mi)	Daily Round Trips	Annual Vehicle-Hours of Service	Annual Vehicle-Miles of Service	Annual Transit Operating Cost	Number of Vehicles	Route Cycle Length (Hours)
		Start	End	# Hours							
Weekend Only Alternatives											
Hourly Service	31	8 AM	7 PM	11	18	11	341	6,138	$29,900	1	1.00
7-Days-A-Week Alternatives											
Hourly Service	98	8 AM	7 PM	11	18	11	1,078	19,404	$94,400	1	1.00

Figure 23: Teton Pass transit service summer route alternatives

Transit Fares

Fares would take the form of a day pass, as well as a season pass. A range of potential fare levels were evaluated, with a day pass of $5 and a season pass of $25 used as the base, conservative case.

Parking Management Options

A range of potential parking fee options were evaluated, including entrance kiosks, pay-and-display meters, an iron ranger self-registering approach and a corridor access pass program. This latter approach, similar to the Northwest Forest Pass program in Oregon/Washington and the Adventure Pass program in southern California, is probably the most feasible option. A day pass rate of $10 per vehicle and a season pass rate of $60 is identified. Passes could be available online (through printing out a pass) or in person at local offices, such as the following:

- Caribou-Targhee NF Teton Basin Ranger District Station in Driggs
- Bridger-Teton NF Jackson Ranger District in Jackson
- Stilson Lot Transit Center
- Victor Depot
- County offices
- Chambers of Commerce

There may also be the possibility of selling passes through retail establishments (outdoor equipment stores, etc.) for a handling fee.

Conclusion

In sum, this evaluation indicates that a shuttle and parking management program can be financially self-sustaining, scenarios that are revenue positive are shown below in green. Between transit passenger revenues and parking fees, the operational costs of the program (both transit and parking management costs) could be covered. With a relatively modest level of subsidy funding ($48,500 per year), the winter scenario could be implemented for the full corridor. It should also be noted that a consistent 7-day-a-week service would be easier for a transit service operator to staff, as it would provide a more consistent employment opportunity.

Revenue Negative Scenarios | Revenue Positive Scenarios

WINTER WKND&HOLIDAY FULL ROUTE	WINTER 7 DAY/WEEK FULL ROUTE	WINTER WKND&HOLIDAY EAST CORRIDOR	SUMMER WKND&HOLIDAY EAST CORRIDOR	SUMMER 7 DAY/WEEK EAST CORRIDOR	WINTER 7 DAY/WEEK EAST CORRIDOR
NET REVENUE	NET REVENUE	NET REVENUE	NET REVENUE	NET REVENUE	NET REVENUE
-$61,900	-$48,350	-$22,800	$11,600	$13,600	$20,800

CAPITAL IMPROVEMENTS

Access, Mobility & Safety Infrastructure

As the study corridor increasingly becomes a year-round world-class recreation destination, it has experienced a surge in vehicle and foot traffic at the most popular access points to the backcountry. This surge is due to limited parking availability, leading to conflicts between vehicles and pedestrians.

The primary focus areas for capital improvements revolve around enhancing recreational access in three key zones that witness the highest recreational activity along the study corridor: Phillips Bench, Teton Pass Summit, and Coal Creek.

Furthermore, there are growing environmental concerns related to wildlife habitat degradation and an increasing frequency of wildlife-vehicle collisions (WVC), particularly along the 5.3-mile stretch between the Coal Creek Trailhead in Wyoming and the Mike Harris Campground in Idaho. Avalanche dangers pose a recurrent threat to the safety of both the traveling public and recreationists, resulting in disruptions and delays in commuting traffic along the corridor, especially at the Twin Slides at milepost 11 and the Glory Slide at milepost 10.2. This section of the study outlines contemplated capital project improvements along the corridor, as depicted in Figure 24 below:

- Improved Access Areas: These encompass existing access points requiring formalization and safety enhancements for vehicle and pedestrian circulation, as well as provisions for potential recreational shuttles.

- Alternate Access Areas: These refer to undeveloped areas in close proximity to existing access points that, with appropriate development, could alleviate current problems related to pedestrian and vehicle circulation, enhance safety for all users and visitors, and accommodate potential recreational shuttles.

- Potential Safety Enhancements for Future Studies (with evaluation):

- Wildlife Crossings: Considering the persistent threat of wildlife collisions to both human safety and wildlife conservation, the implementation of wildlife crossings could help mitigate these conflicts.

- Avalanche Management: The construction of avalanche sheds could reduce safety hazards for the traveling public, significantly minimize temporary highway closures, and decrease traffic delays during commuting.

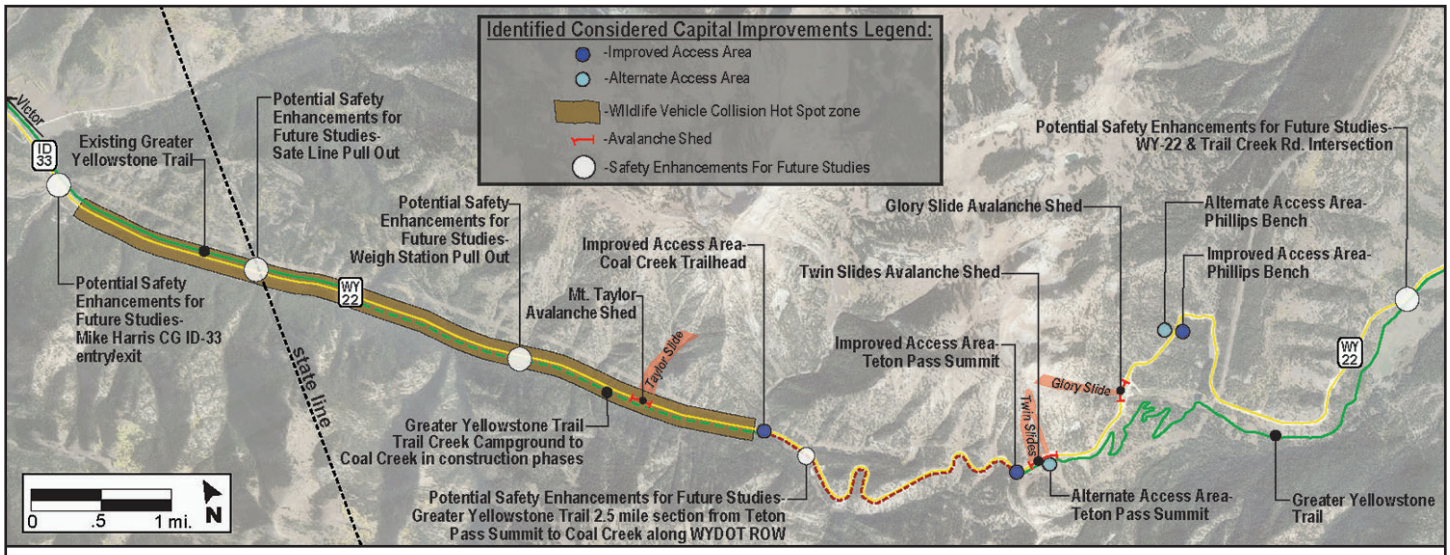


Figure 24: Potential capital improvement areas/projects

East Side of Pass: Phillips Bench Area

Existing Conditions

The Phillips Bench area of the corridor has connections to the popular recreation areas around Phillips Ridge that include the popular Ski Lake Trail on the north side of the highway, and to popular mountain bike trails and the paved Greater Yellowstone Trail on the south side of the highway. There are three main access areas that accommodates vehicles around this area. These include and titled for this report as Phillips Ridge Rd., Gravel Lot and Snowmobile Access (Figure 25).

Figure 25: Phillips Bench identified improvement areas

Phillips Ridge Rd.

Phillips Ridge Rd. (aka Forest Rd. 30972) provides direct access to the Phillips Canyon recreation areas on the north side of the highway which include the popular Ski Lake and Phillips Ridge areas. Visitors park on both sides of the road, for the first 400 feet up to the existing USFS kiosk. Visitors do park further up the road but most of that is associated with dispersed campsites and not trailhead use. Although this forest road does not get snow plowed, there is still winter recreation activity that includes growing snowmobile use as well as snowshoeing and backcountry skiing opportunities. Summer activity includes hiking, mountain biking, camping and some equestrian use.

- Approximate SF for parking and circulation: 10,523 SF
- Approximate vehicle capacity: 25

Image(s) 8 below shows how conditions can become congested on a non-Winter conditions day, with some vehicles spilling out and illegally parked along the highway corridor.

Image(s) 8: Congestion during non-Winter conditions at Phillips Ridge Rd.

Gravel Lot

The 'Gravel Lot' directly across the highway from Phillips Ridge Rd. is a WYDOT owned material staging area. This area is not a formalized designated parking area, but WYDOT does currently allow recreational access parking here.

The area provides direct south access to the Phillips Connector trail which leads to the regional paved Greater Yellowstone Trail as well as to intermediate to expert level mountain bike specific trails. The area is not snow plowed.

- Approximate SF for parking and circulation: 9,900 SF (excluding the center dirt/gravel piles)
- Approximate vehicle capacity: 28

Image(s) 9 below shows how conditions can become congested at the Gravel Lot especially with limited vehicle capacity due to the center piles of gravel and dirt.

Image(s) 9: Gravel lot congestion & overflow parking

Snowmobile Access Lot

The only access area along the entire study corridor that is informally used for snowmobile access and parking for vehicles carrying snowmobiles is a the 'Snowmobile Access' pullout area. This area is approximately a quarter mile along the highway to the east of Phillips Ridge Rd. and is plowed in the Winter for emergency parking. Other than occasional overflow parking for the Gravel Lot and Phillips Ridge Rd., this lot does not get a lot of use in the Summer months, but Winter use is seeing an increasing number of snowmobile users.

Vehicles park and unload their snowmobiles here, ride across the highway, and either ride along the informal snow bank adjacent to the north side of the road or ride along the west bound travel lane or shoulder along the highway, all to get to Phillips Ridge Rd. and the snowmobile trails up around Phillips Ridge.

- Approximate SF for parking and circulation: 12,800 SF (snow plow build up can reduce this)
- Approximate vehicle capacity: 36 (larger pickup trucks hauling snowmobiles can drastically reduce this parking capacity)

Image(s) 10 below shows the comparison of the Snowmobile Access area in Winter and Summer conditions

Image(s) 10: Snowmobile Access seasonal comparisons

Safety Risks

Consistent with the entire study corridor, the Phillips Bench area is seeing significant increases in recreational access and use. With this increased use comes potential conflicts and safety risks especially for Wintertime snowmobile access and Summertime mountain biking and hiking access. High traffic volumes, limited gaps, roadway grades, horizontal curves and sight obstructions with a near 90-degree curve in between the access areas present increased vehicle-pedestrian conflict potential.

Figure 26 (below) diagrams some of the potential safety risks for accessing the Phillips Bench access areas. Other risks include:

- Pedestrian traffic across the highway to access recreation areas is a potential safety concern.
- Limited snowmobile parking capacity, limited sight distance, and limited turning radii entering/exiting the highway (see Image(s) 10).
- In busy summer months, because of the lack of parking capacity, the Gravel Lot and Phillips Ridge Rd access areas can overflow, which lead to potential vehicle conflicts and accidents, and encroachments into the highway.
- The Gravel Lot is not level and has an approximate 15 ft. elevation change across the site which limits vehicle capacity and circulation, and limited refuge area for considered recreational shuttle staging.

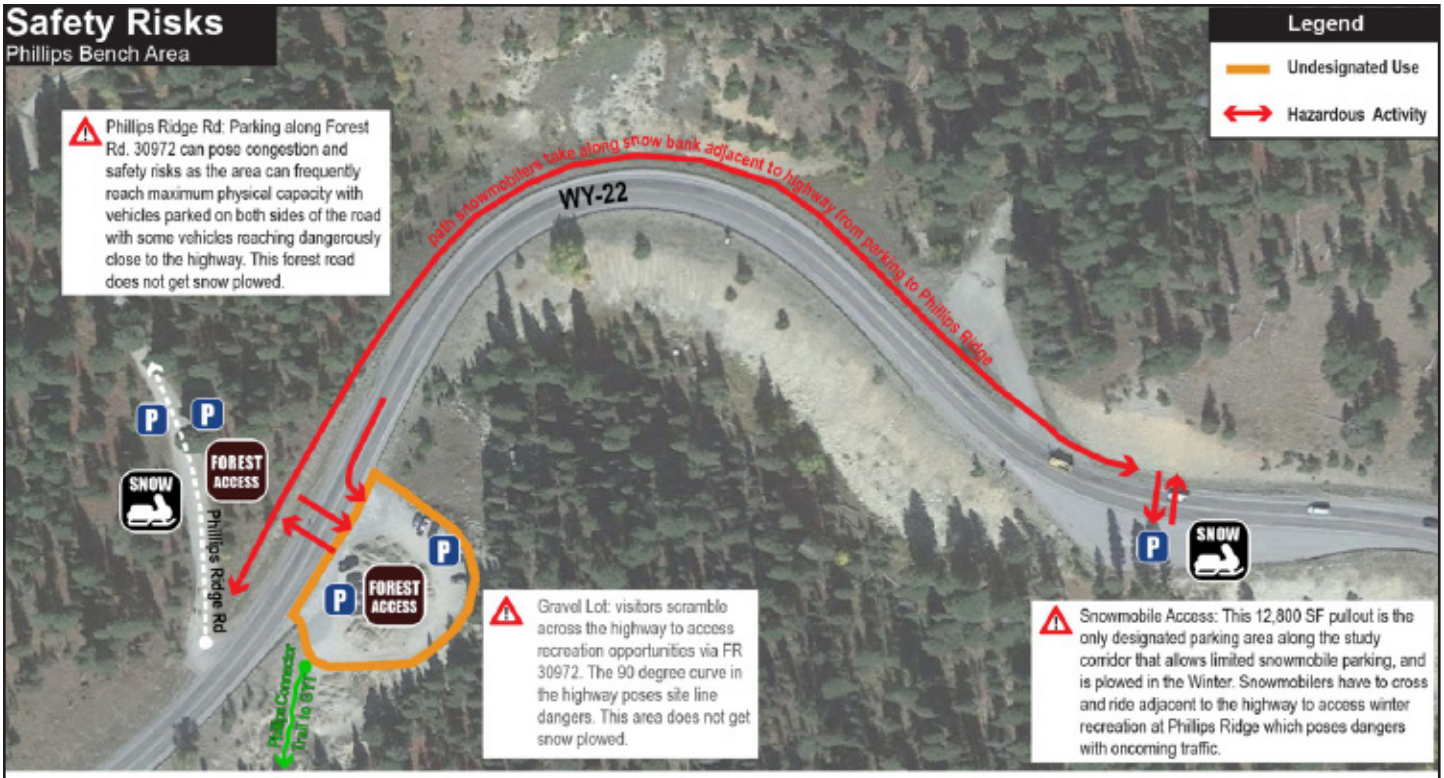


Figure 26: Phillips Bench area safety Risks

Considered Capital Improvements - Phillips Bench

The following considered capital improvements aim to make vehicle and pedestrian circulation safer for accessing recreation around Phillips Bench that includes navigating the access areas themselves and approaching the access areas from the highway, as well as accommodating potential recreational shuttle operations. The following improvements include improving the existing access area at the Gravel Lot and a considered alternate new access area adjacent to Phillips Ridge Rd. to the west.

Improved Access Area- Phillips Bench Gravel Lot

As the demand for recreation access increases to the Phillips Bench area, considered improvements maximize pedestrian and vehicular circulation and access to and from the existing Gravel Lot. These improvements include:

- A formalized and paved access area graded evenly across the site
- A site that would maximize recreational staging and circulation
- Removing pedestrian-vehicle conflicts with grade separated crossing

FHWA engineer's high level cost estimate (2023 USD) for design, engineering, and construction:

- All elements and improvements: $5.7 Million
- Pedestrian undercrossing only cost estimate: $3 Million

Figure 27 below diagrams the considered site improvements at the Gravel Lot.

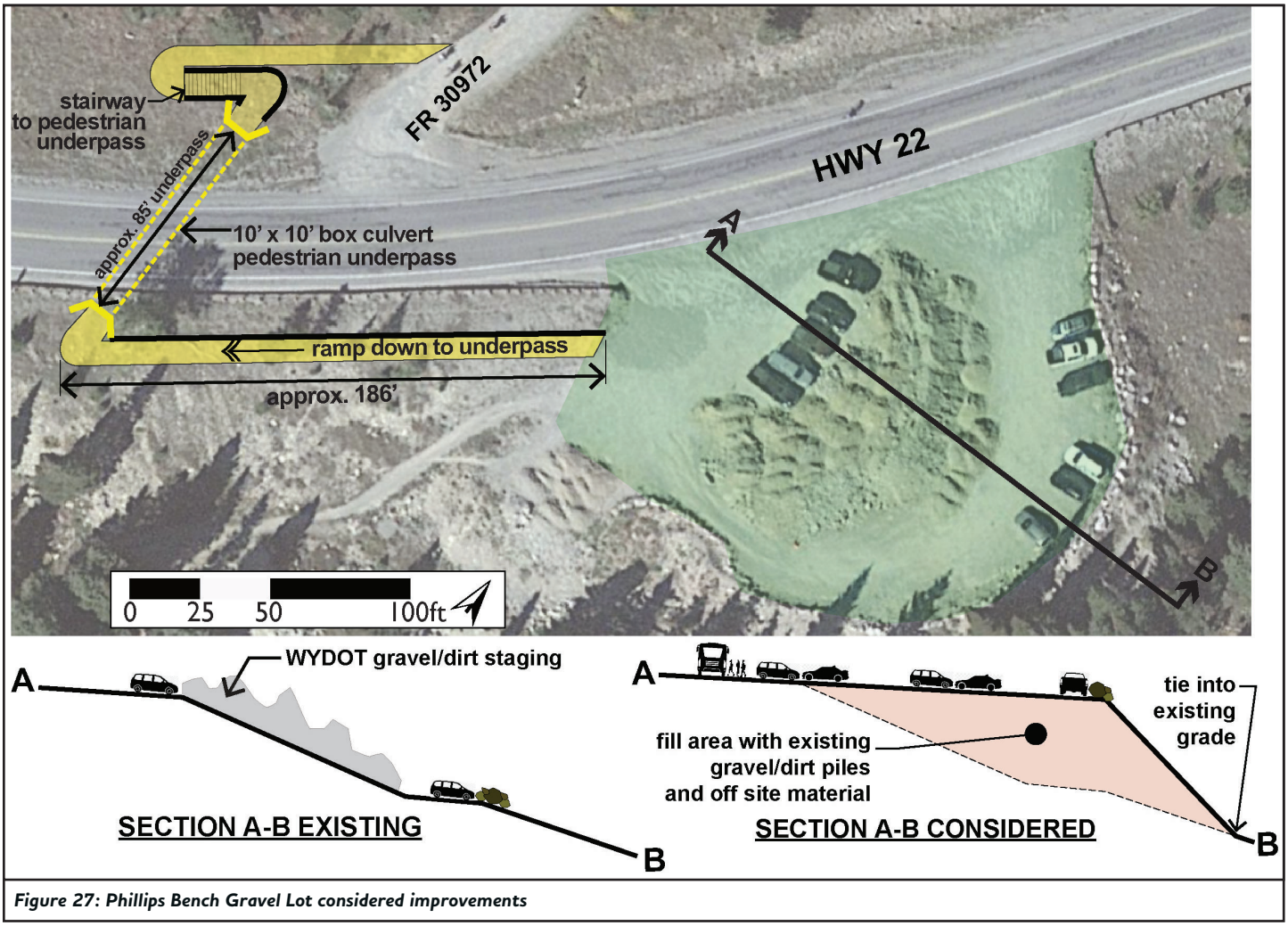


Figure 27: Phillips Bench Gravel Lot considered improvements

Below (Image(s) 11) is a pedestrian undercrossing project recently installed in the study corridor. This undercrossing is part of the Centennial Trail, a FHWA Western Federal Lands completed project in Summer 2022 under Idaho Highway 33 and adjacent to Mike Harris campground.

Image(s) 11: Existing pedestrian undercrossing along the study corridor

Opportunities & Constraints at Gravel Lot

Opportunities:

- An evenly graded and formalized site would maximize parking efficiency and accommodate vehicle circulation more efficiently and safer

- The present area for parking (not counting center dirt/gravel piles) area is around 9,900 SF which accommodates approximately 28 vehicles. An evenly graded site (flattening dirt gravel piles) would accommodate this existing parking and circulation much more safely and not as constricted as what is present

- An evenly graded and formalized access area would safely accommodate a potential recreational shuttle service's circulation space and essential amenities

- Accommodating more parking by grading the site evenly would mitigate parking congestion along Phillips Ridge Rd. and potential parking alongside the highway

- An undercrossing connecting the Gravel Lot with Phillips Ridge Rd. would mitigate pedestrian-vehicle conflicts

Constraints:

- Another area would be needed for WYDOT material storage
- Agreements would need to be made to formalize this area into a USFS trailhead, if applicable
- Some environmental damage caused by pedestrian underpass built into side slope
- Right-of-way maintenance agreements and responsibilities
- NEPA and geotechnical stability study would be needed
- Underpass lighting power source needed
- Erosion and drainage concerns

Alternate Access Area – Phillips Bench

There are potential conflicts, as well as a lack of efficient circulation for both pedestrians and vehicles accessing areas at Phillips Ridge Rd., the Gravel Lot, and Snowmobile Access. To mitigate some of these concerns for efficient circulation for all modes and a potential recreational shuttle, an Alternate Access Area to Phillips Bench is considered (Figure 28).

The alternate access area is located adjacent to WY-22 and Phillips Ridge Rd. The current condition is an approximate 38,000 SF non-developed site with an 25% slope and around 25% tree cover (Figure 29).

FHWA engineer's high level cost estimate (2023 USD) for design, engineering, and construction:

- All elements and improvements: $3 Million

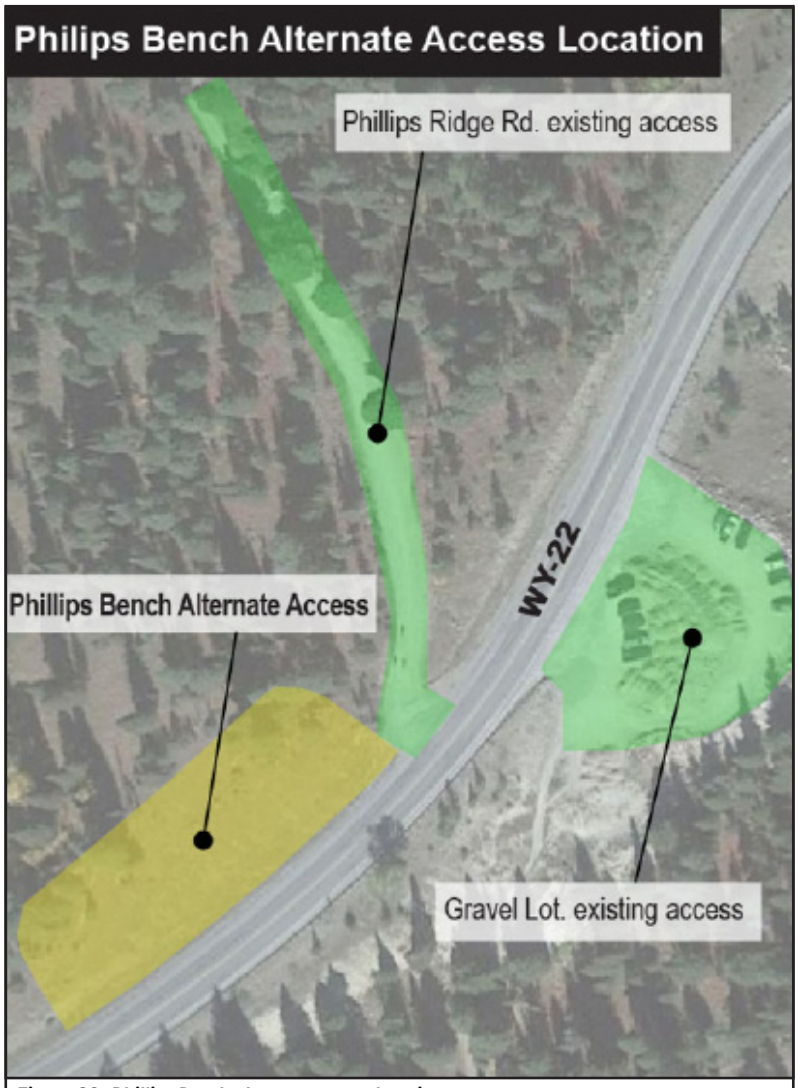


Figure 28: Phillips Bench alternate access location

Figure 29 below diagrams the considered site improvements at the Phillips Alternate Access.

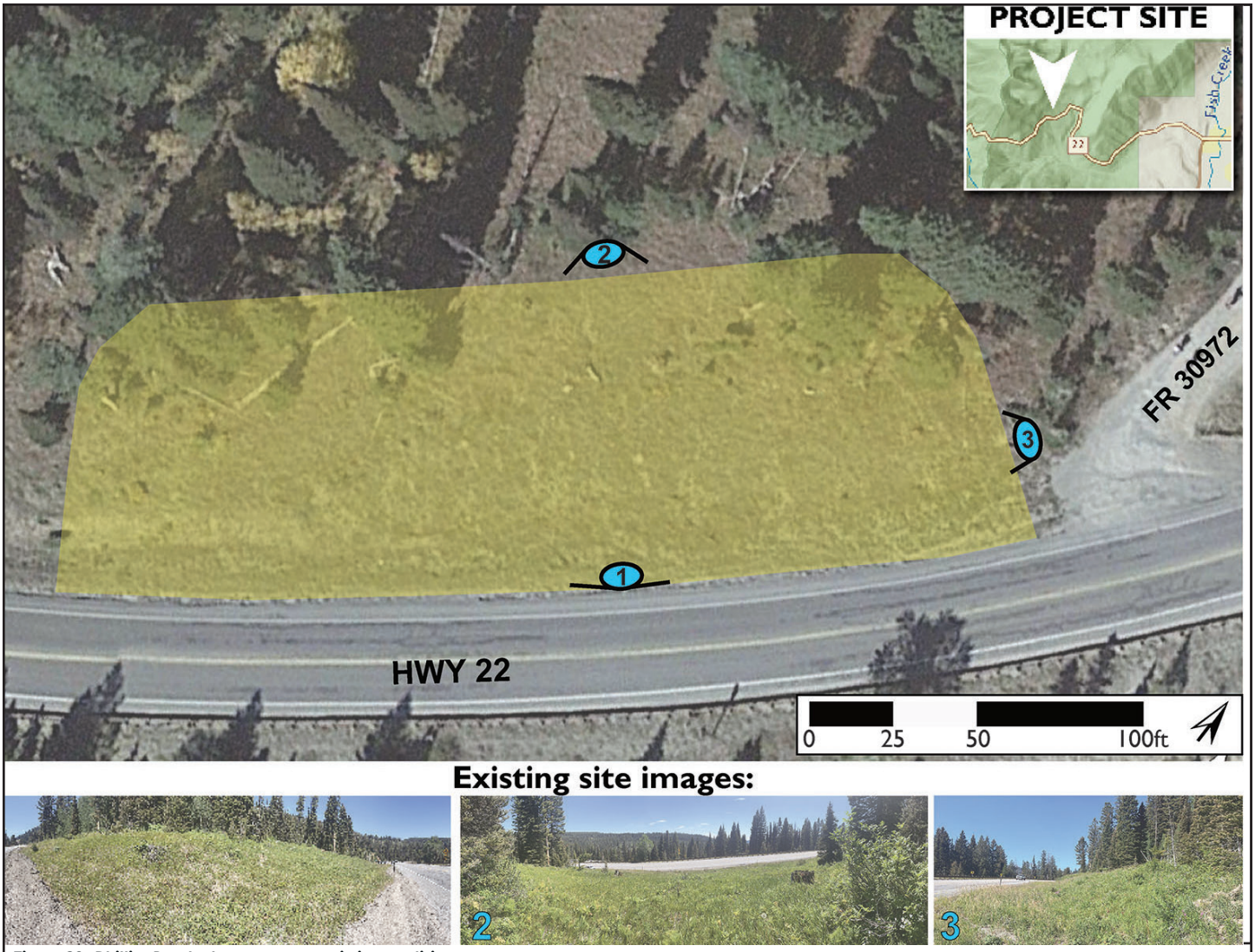


Figure 29: Phillips Bench alternate access existing conditions

Opportunities & Constraints at Phillips Bench Alternate Access

Opportunities:

- The only available snowmobile access area along the study corridor exists at a small pullout a quarter mile east of this of this location on the south side of the highway. This considered new location would increase parking capacity as provide a much safer access area compared to what is present.
- Would accommodate shuttle drop-off and pick-up safely and more efficient.
- Site has minimal site line distance and obstruction issues.
- A formalized parking area that would accommodate approx. 68 spaces.
- Would eliminate and separate maintenance conflicts with parking at Gravel Lot.

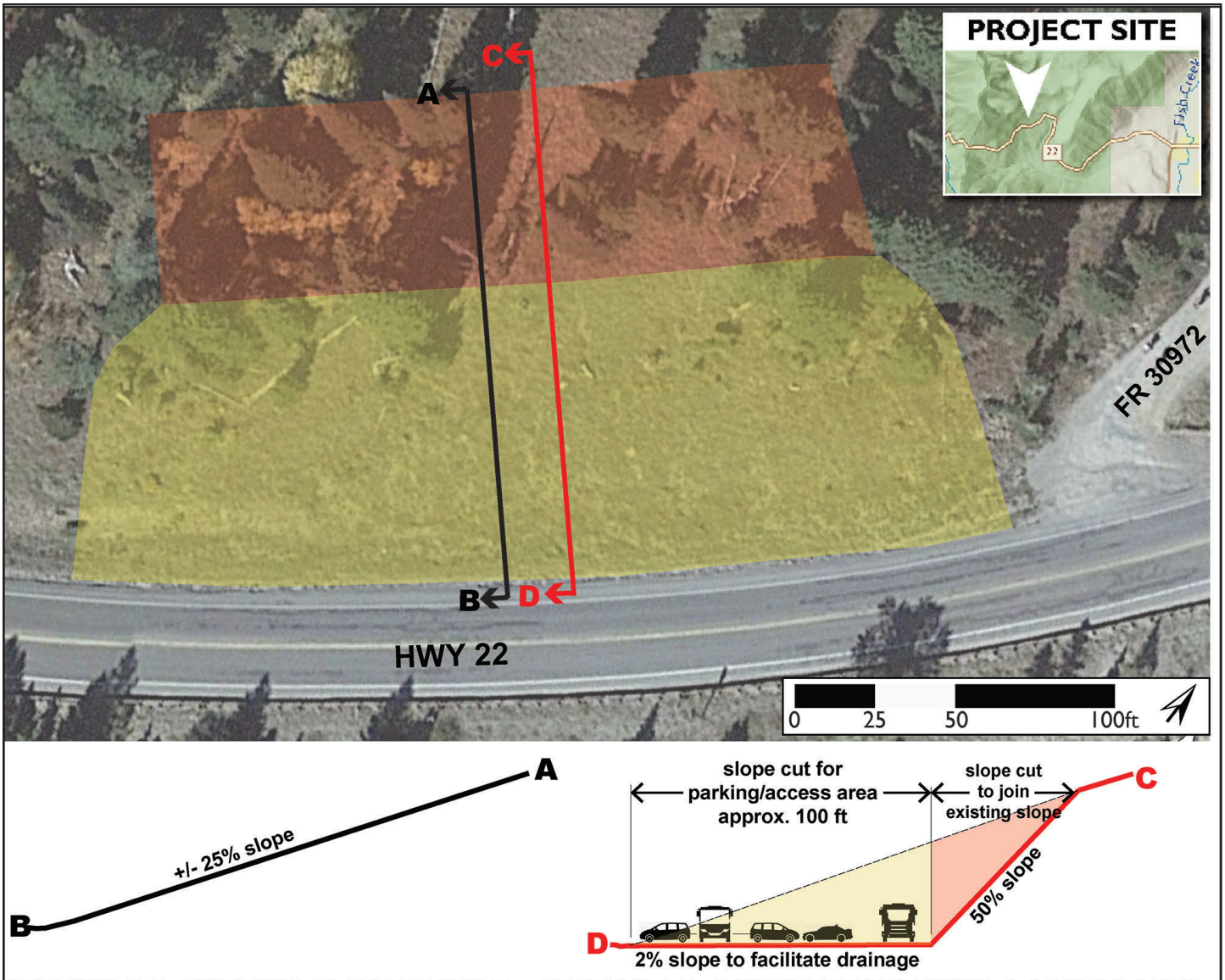


Figure 30: Phillips Bench considered alternate access area cross sections

Constraints:

- Would require grading and earthwork, and removal of around 12 trees
- Still need safe pedestrian crossing of highway to access recreation on south side (if Gravel Lot improvements in Fig. 27 are not implemented together with this improvement)

Project precedent: Image 12 to the right is a parking and recreation access area at Berthoud Pass in the Arapaho National Forest in Colorado and represents an example of what a new Phillips Bench access area could resemble.

Image 12: Berthoud Pass

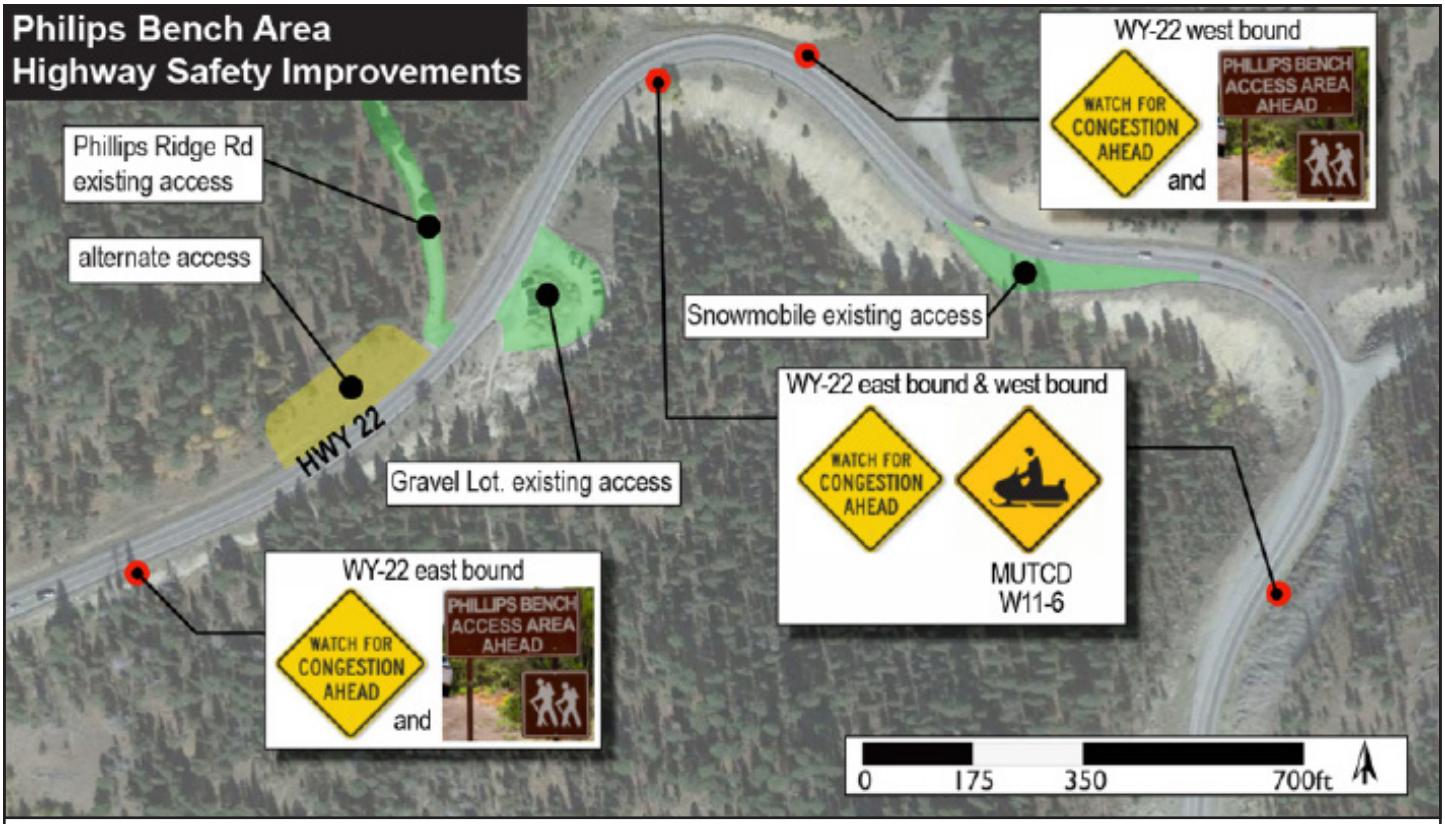


Figure 31: Phillips Bench area considered Highway safety Improvements

Considered Improvements Along Highway 22 Corridor

As recreation activity and traffic flow increases around the Phillips Bench access areas, so do the potential conflicts between automobile and pedestrians. There is minimal highway signage that warns motorists of pedestrian activity so this study considers adding MUTCD or other signage as vehicles approach active areas (Figure 31).
Notes on considered signs:

- The lack of safe pedestrian crossings and adequate stopping sight distance may be the reasons why no pedestrian ahead warning signs are present.

- MUTCD recommends not to encourage pedestrian crossings on high speed high volume roadways, as this creates a false sense of security and promotes activities that are not in the best interest of the pedestrian.

- The MUTCD sign to warn of snowmobile activity ahead (W11-6) could be a winter months seasonal sign. Snowmobiles are considered motor vehicles and must abide by rules of the road when yielding to other traffic when entering or exiting highway.

- Considered USFS typical brown signs approaching Phillips Bench access areas which includes a 'Watch For Congestion Ahead' sign, if applicable.

Top of Pass - Summit and Surrounding Area

Existing Conditions

The Teton Pass Summit area of the corridor consists of the main Summit area and the Shovel Slide access area approximately a quarter-mile to the east along the highway from Summit (Figure 32).

Figure 32: Teton summit existing access areas

Summit Access Area

The Teton Pass summit at an elevation of 8,431 ft is the highest point on the Teton Pass corridor. The area provides direct access to popular backcountry ski routes north of the highway to Mt. Glory and south of the highway along Ridge Road. The area is also very popular for hiking access to Mt. Elly and Mt. Glory as well as for mountain biking and road biking, as the singletrack Black Canyon Trail as well as the paved regional Greater Yellowstone Trail both currently culminate at the Summit. The area is technically owned by the USFS but has long beenimportant from a highway, emergency response, and recreation perspective serving as a brake check area, pull-out for slow-moving vehicles, staging area for search and rescue, and parking for access to summer trails and winter backcountry skiing. However, with the substantial increase in recreation use and commuter/commerce traffic, adequately serving highway, emergency, and recreation needs has become increasingly problematic. No-parking is signed and enforced along the north side of the highway. The area is also very popular for tourists as they stop to take in the vista and take pictures of the iconic "Howdy Stranger" sign (Image 13).

Image 13: Iconic 'Howdy Stranger' sign

- Approximate SF for parking and circulation: 20,500 SF
- Approximate vehicle capacity: 58

This stretch of WY-22 can also be subject to temporary closure due to avalanches from the Twin Slides path that cover the road as well as from WYDOT avalanche management operations procedures. Image(s) 14 below shows recreation access conditions in Winter and Summer months at Teton Pass Summit.

Images 14: Summit Winter and Summer conditions

Shovel Slide Access Area

The Shovel Slide access area is owned by the USFS but WYDOT possesses a right of way easement for operation and maintenance activities. The area is fairly flat and has a dirt/gravel surface (Images 15). The area was improved by WYDOT in the late 2000s to accommodate snowplows during the winter season. However, the area quickly became an overflow recreation parking area and is primary used during the winter with some use during the summer by mountain bikers accessing trails from this location.

- Approximate SF for parking and circulation: 24,900 SF
- Approximate vehicle capacity: 71

Images 15: Shovel Slide overflow access area

Safety Risks

The summit location presents vertical and horizontal site line obstructions for all vehicles and pedestrians navigating the area. As Winter time is the most active for recreationists, the potential for vehicle-pedestrian conflicts increase when vehicles are parked on the south side of WY-22 and when backcountry skiers navigate across the highway to the north side to the Mt. Glory boot pack trail (Image 16).

Image 16: start of boot pack trail to Mt. Glory

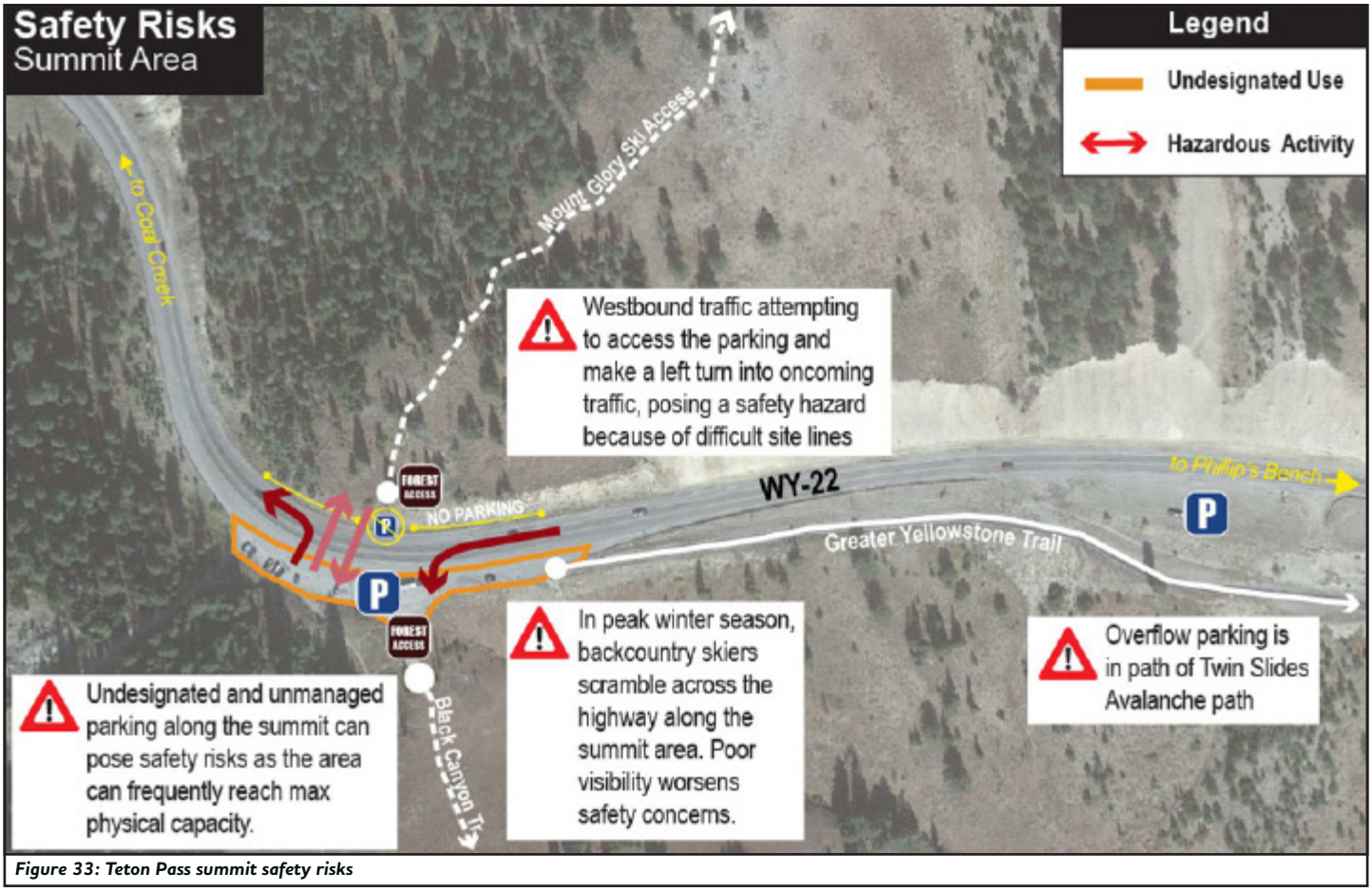


Figure 33: Teton Pass summit safety risks

Figure 33 (above) diagrams some of the safety risks for accessing the Summit access areas. Highlighted risks include:

- Pedestrian traffic generated by the recreational access areas across the highway (boot pack trail, Image 16) is a potential safety concern
- Absence of a separated pedestrian crossing over the highway
- Vertical and horizontal site line issues along the highway at the Summit
- The overflow lot is in the path of an avalanche slide
- In busy months, the Summit access area can overflow, which lead to potential vehicle conflicts and accidents, and encroachments into the highway

Considered Capital Improvements - Summit Area

The following considered improvements propose to minimize vehicle-pedestrian access conflicts at the Teton Pass Summit and Shovel Slide areas, as well as accommodate proposed recreational shuttle operations.

Improved Access Area - Teton Pass Summit

As the demand for recreation access and vehicular traffic at the Summit area increases, improvements are considered to minimize conflicts and maximized capacity for recreational shuttle drop-off, pick-up and staging zones, and pedestrian circulation and crossings (Figure 34; existing and considered cross sections Figure 35). These improvements include:

- A site that will maximize capacity of recreational shuttle staging and circulation
- Mitigating vehicle-pedestrian conflicts with a grade separated crossing
- Improvements in site line distances

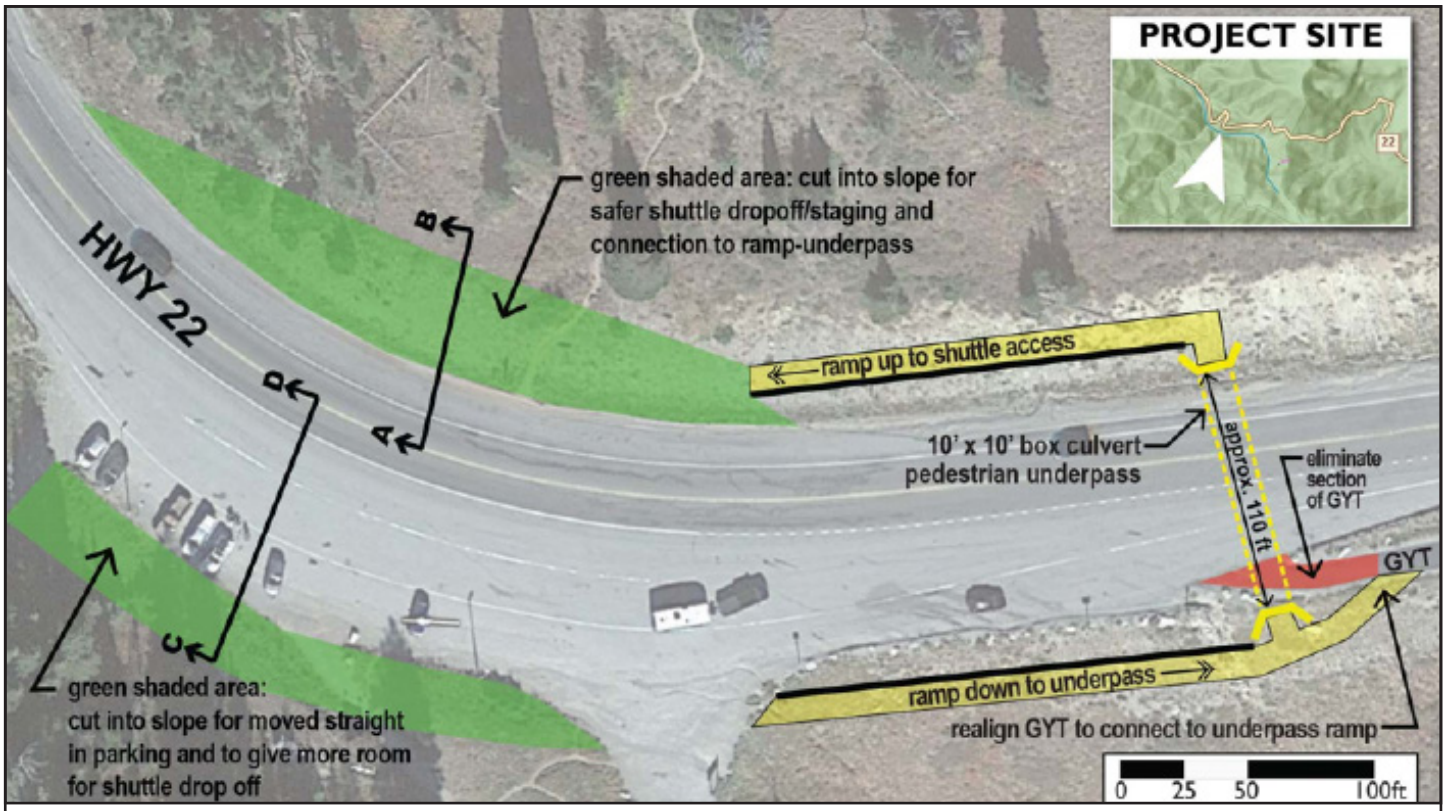


Figure 34: Teton Pass summit considered improvements

FHWA engineer's high level cost estimate (2023 USD) for design, engineering, and construction:

- All elements and improvements: $11.3 Million
- Pedestrian undercrossing only cost estimate: $3 Million

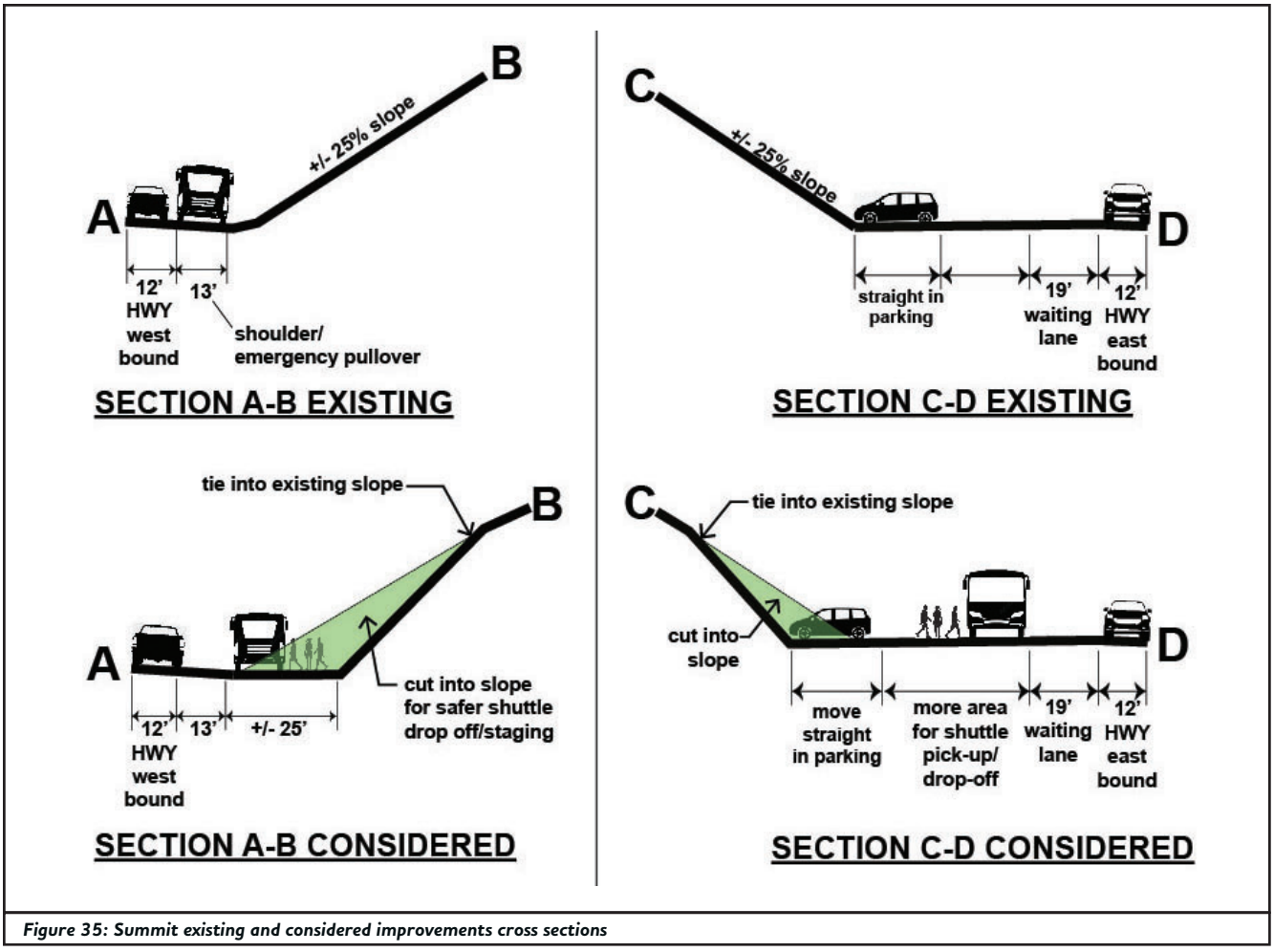


Figure 35: Summit existing and considered improvements cross sections

Opportunities & Constraints of Summit Improvements

Opportunities:

- Provides safer areas on both sides of highway for potential recreational shuttle access
- Maximizes parking capacity
- Undercrossing would provide much safer crossing of highway for pedestrians and mitigate vehicle-pedestrian conflicts
- Cut into north slope could provide for better site line distance

Constraints:

- Some environmental impacts from cutting into the north and south slopes
- Cutting into south slope may disturb historical site
- Underpass would most likely not get used in Winter with deep snowpack
- Right-of-way maintenance agreements and responsibilities
- NEPA and geotechnical stability study would be needed
- Underpass lighting power source needed
- Erosion and drainage concerns

Improved Access Area Summit Alternative - Highway Realignment

As Winter recreation access is continually congested at the Summit with increased visitor parking on the south side of the highway and recreationists mostly crossing the highway for backcountry skiing at Mt. Glory, this consideration would realign the highway to the south and place the majority of the parking and circulation on the north side (Figure 36).

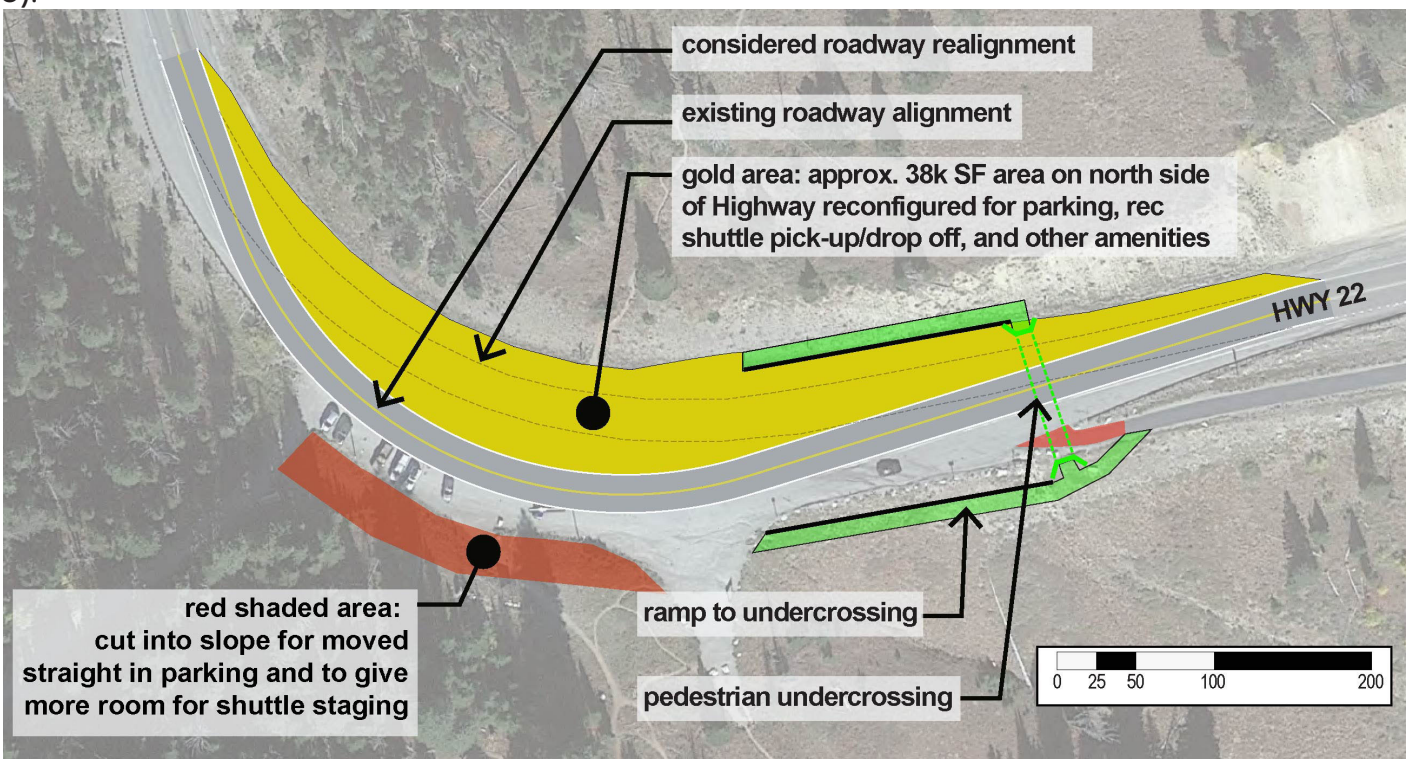


Figure 36: Considered summit highway realignment

FHWA engineer's high level cost estimate (2023 USD) for design, engineering, and construction:

- All elements and improvements: $22 Million
- Pedestrian undercrossing only cost estimate: $3 Million

Opportunities & Constraints of Summit Highway Realignment:

Opportunities:

- The new access area on the north side of the highway would maximize parking capacity, improve circulation and accommodate recreational shuttle staging more efficiently
- Would accommodate shuttle amenities, and drop-off and pick-up safely and more efficient
- Realigning roadway to south could present opportunity to improve vertical and horizontal site obstructions which would minimize conflicts for both vehicles and pedestrians
- For Winter recreation access to Mt. Glory, visitors do not have to cross highway

Constraints:

- There is more summer hiking and mtn. biking recreation access on the south side of the highway so more visitors would cross the highway for access in Summer if underpass is not implemented
- Less circulation room and parking for short stops to view the vista and take pictures of the "Howdy Stranger Yonder is Jackson Hole" sign on south side
- Cutting into south slope may disturb historical site and cause some environmental damage
- Right-of-way maintenance agreements and responsibilities
- NEPA and geotechnical stability study would be needed
- Underpass lighting power source needed

Alternate Access Area at Summit - Shovel Slide

As Winter recreation access continually increases congestion at the Summit, moving the main access area a quarter mile to the east to a formalized Shovel Slide location (Figure 37) could reduce this congestion and improve capacity. FHWA engineer's high level cost estimate (2023 USD) for design, engineering, and construction:

- All elements and improvements: $800K

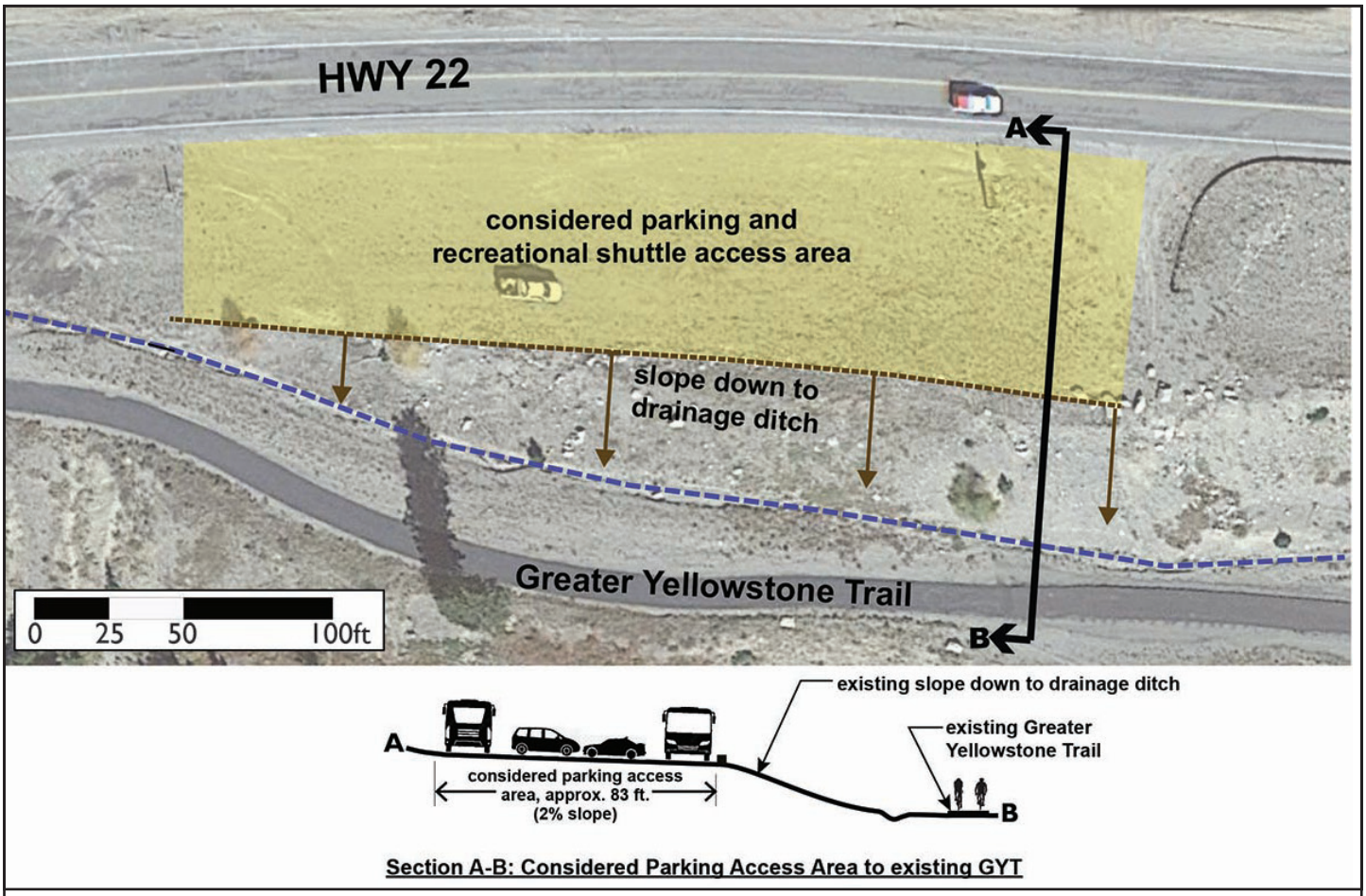


Figure 37: Summit alternate access area - shovel slide

Opportunities & Constraints of Alternate Access Area at Summit:

Opportunities:

- Would be much safer as the prime access area rather than the present Summit because of minimal site obstructions and safety issues
- Area is mostly flat (approx. 2% slope) so minimal grading required to formalize lot
- Would accommodate approximately the same amount of vehicles as what is present at the Summit with room for more, as well as recreational shuttle operations
- Area could be combined with an avalanche shed and parking structure
- Area is directly adjacent to existing Greater Yellowstone Trail which provides direct access to the Summit

Constraints:

- Area is in direct line with Twin Slides avalanche path

Considered Improvements Along Highway 22 Corridor

As recreation activity and traffic flow increases around the Summit, so do the potential conflicts between automobile and pedestrians. There is minimal highway signage that warns motorists of pedestrian activity so this study considers adding signage as vehicles approach active areas (Figure 38).

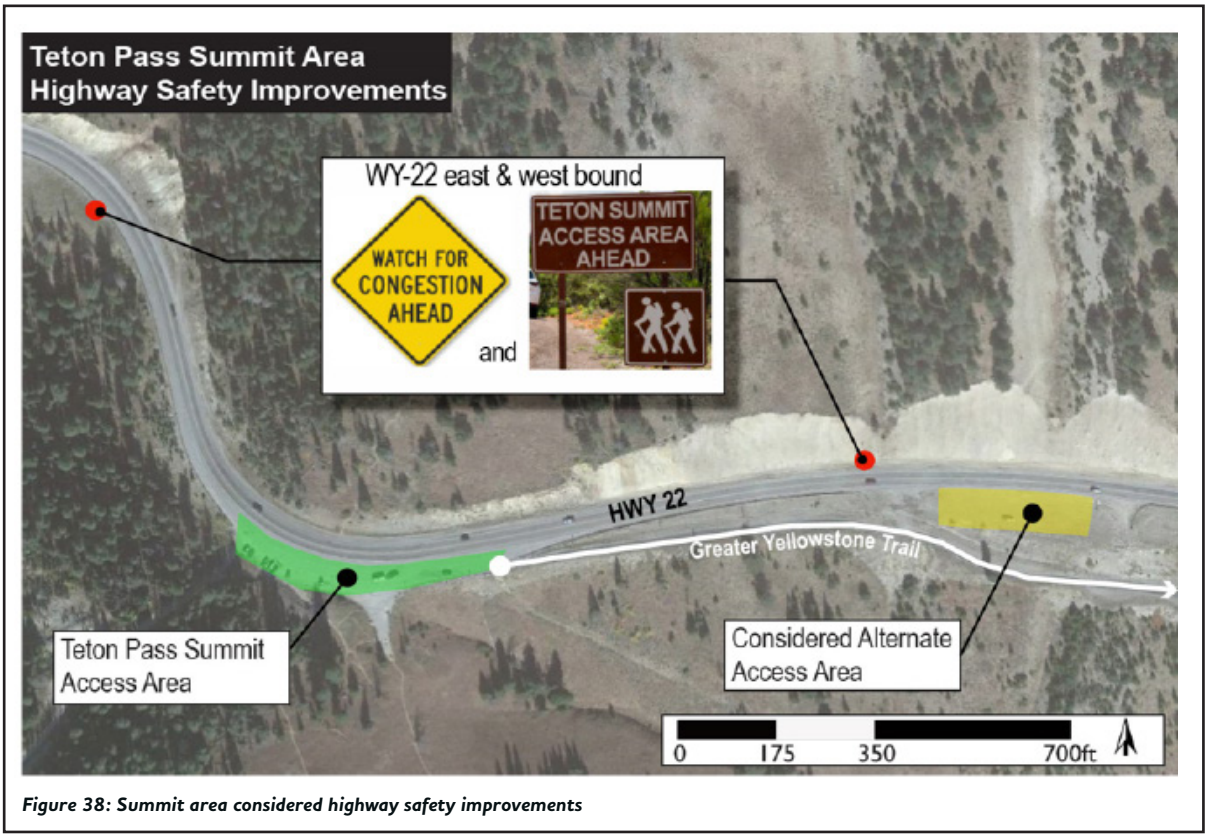


Figure 38: Summit area considered highway safety improvements

West Side of Pass: Coal Creek Trailhead

Existing Conditions

Coal Creek Trailhead is operated by the Caribou-Targhee National Forest and is a popular access point for recreation all year long. This includes Summer hiking and backcountry skiing. Winter time access is exceeding Summer time visitation and sometimes the area gets overly congested with vehicles parking dangerously close to the highway (Image(s) 17). The area is 1.25 miles west of Teton Summit and is along a fairly flat part of the highway, compared to the steep mountainous terrain at the Summit.

- Approximate SF for parking and circulation: 28,500 SF
- Approximate vehicle capacity: 82

Images 17: Coal Creek trailhead in Winter and Summer

Considered Capital Improvements - Coal Creek Trailhead

As explained in the Considered Operational Improvements & Interventions section of the report, the flat topography along the straight section of the highway makes Coal Creek an ideal location for a recreation shuttle turn around for the East Corridor shuttle route.

Considered improvements include formalizing the whole lot, accommodating shuttle pick-up/drop-off and circulation, and re-purposing the center green area as a waiting area complete with shuttle and other amenities (Figure 39).

FHWA engineer's high level cost estimate (2023 USD) for design, engineering, and construction:

- All elements and improvements: $700K

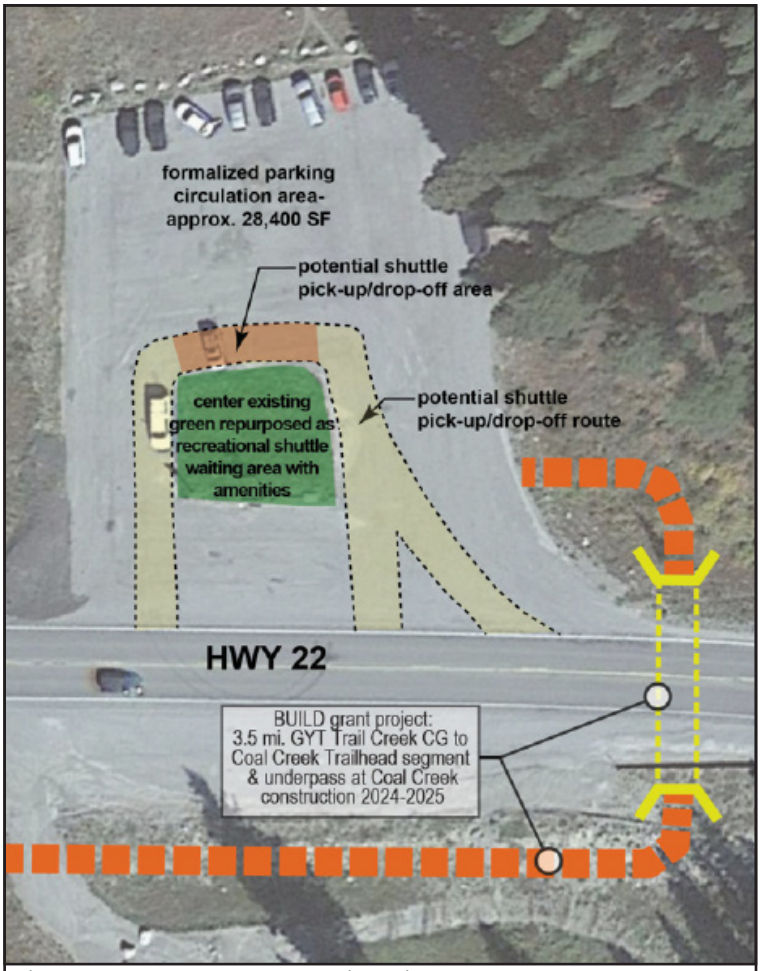


Figure 39: Coal Creek access area considered improvements

Opportunities & Constraints of Coal Creek Improvements:

Opportunities:

- Serve as the terminus for the East Corridor recreation shuttle service
- More inviting, formalized trailhead with refurbished pavement conditions
- Center green area as a recreational and shuttle amenity

Constraints:

- The Coal Creek parking area is potentially undersized to function as an intercept lot for a recreational shuttle system

Coal Creek Area Highway Safety Improvements

As recreation activity and traffic flow increases approaching Coal Creek Trailhead, so do the potential conflicts between automobile and pedestrian interaction. This is especially true during Winter as visitation is increased and visitors access recreation on both sides of the highway. There is minimal highway signage that warns of pedestrian activity, so this study considers adding signage as vehicles approach active areas (Figure 40).

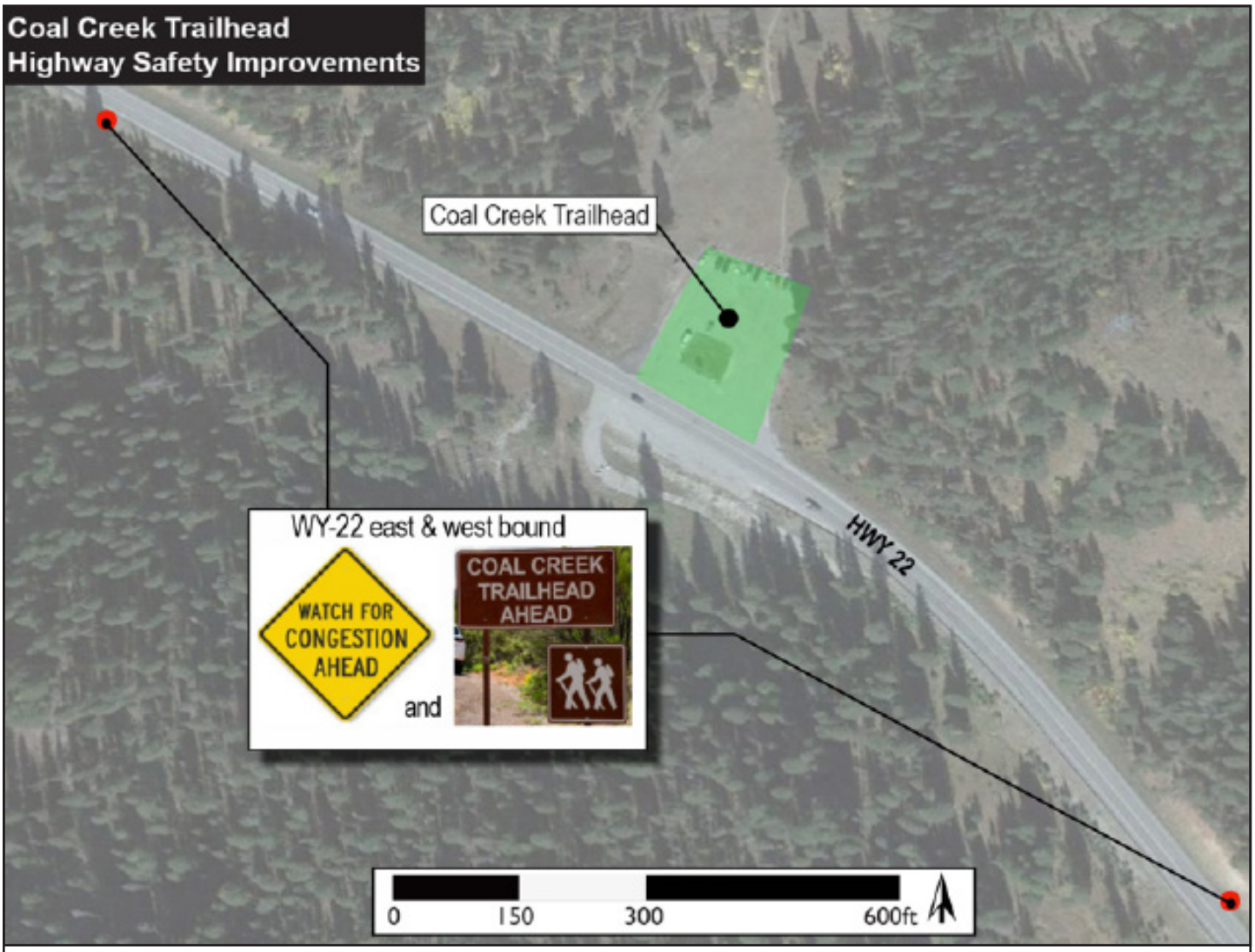


Figure 40: Coal Creek area highway safety improvements

Note on considered sign placement:

- Guidelines from the Manual on Uniform Traffic Control Devices for advance placement of warning signs suggests that signs on 45 MPH highways should be around 775 feet before activity area to give the time needed for detection, recognition, decision and reaction

- Considered USFS typical brown signs approaching Phillips Bench access areas which includes a 'Watch For Congestion Ahead' sign, if applicable.

ADDITIONAL CONSIDERATIONS

Active Transportation & Greater Yellowstone Trail

Transportation plans and policies for Teton County (WY), Teton County (ID) and the cities of Victor, Wilson and Jackson all support bicycling and walking as viable modes of transportation. Although there is biking, walking, skiing, etc. along the highway corridor, mostly to retrieve recreational user's parked automobiles, it is not safe mainly because of high-speed limits, limited site distances, limited adjacent shoulder width and the lack of a completed and separated multi-use trail along the highway corridor. The safest route for cyclists and pedestrians is along the existing Greater Yellowstone Trail or GYT (Image 18).

Existing Conditions

Image 18: Greater Yellowstone Trail approaching Teton summit

The Greater Yellowstone Trail (GYT) represents an ambitious 180-mile regional multi-use trail system designed to ultimately connect significant natural areas such as Grand Teton National Park, Yellowstone National Park, Bridger Teton National Forest, Caribou Targhee National Forest, two state parks, various regional parks, and multiple towns and municipalities in the broader Yellowstone region spanning Wyoming, Idaho, and Montana. The original GYT concept plan was finalized during the spring of 2015. The overarching vision entails establishing a world-class regional trail system that not only elevates the quality of life but also effectively links communities to public lands, fostering economic development opportunities within the distinctive and multifaceted corridor. GYT development efforts have spanned more than a quarter-century. Within this defined study corridor, the GYT takes the form of separated pathways, recognized as the Jackson Hole Community Pathway System, and low-traffic roadways from the Stilson Transit Center to Wilson, WY.

Starting from Wilson, the GYT follows a separate path on the south side of WY-22 until reaching Trail Creek Rd. (also known as Old Pass Rd.), at which point it transitions into a shared-use roadway, continuing along Trail Creek Rd. until its terminus at the Trail Creek Trailhead. From Trail Creek, Old Pass Rd. has undergone a comprehensive transformation, resulting in a 10 ft. wide pathway spanning 3.5 miles up to the Teton Pass Summit (Image 18). This particular section underwent a full repaving in 2020.

From from the Victor (ID) Transit Center, the GYT incorporates a combination of separated pathways and shared-use roadways, primarily along the sparsely-used Old Jackson Hwy for an approximate 3-mile stretch, extending just beyond Moose Creek Ranch. This section of Old Jackson Hwy, classified as a two-lane rural roadway, underwent extensive reconstruction to establish a complete street facility.

A recently completed 2.5-mile, 10-foot wide separated pathway situated on the north side of ID-33 and WY-22, with a section separated from the highway by Jersey barrier (Image 19), extends to the Trail Creek Campground, just east of the state line in Wyoming. Known as the Centennial Trail project, it reached completion in September 2022, with funding secured through the Federal Lands Access Program (FLAP). This section additionally includes a bicycle and pedestrian underpass (Image 20) that connects to the south side of the highway, facilitating access to Mike Harris Campground and Trail Creek Campground and another underpass that connects to Trail Creek Campground.

Image 19: Jersey barrier separating GYT

Image 20: Bicycle/pedestrian undercrossing accessing Mike Harris CG

Starting from Trail Creek Campground, located on the south side of WY-22, the design phase is currently at a 50% completion milestone for the 3.5-mile segment of the GYT extending east to Coal Creek Trailhead. Construction is scheduled for the 2024-2025 season, with funding secured through the BUILD grant.

The Better Utilizing Investments to Leverage Development (BUILD) Transportation Discretionary Grants program funds investments in transportation infrastructure. BUILD grants were awarded in 2018, 2019, and 2020. The RAISE Discretionary Grant Program has taken the place of BUILD starting in 2021. In September 2020, Teton County, WY and six other funding partners were awarded a $25 million USDOT BUILD grant for the Teton Mobility Corridor Improvements project for projects spanning over 30 miles from Jackson, WY to Driggs, ID along the WY-22 and ID-33 state highway corridors. (https://tetonbuildgrant.com/)

Current & Ongoing Projects

Figure 41 (below) shows existing and planned active transportation and other multimodal projects within the study corridor. Projects include from east to west:

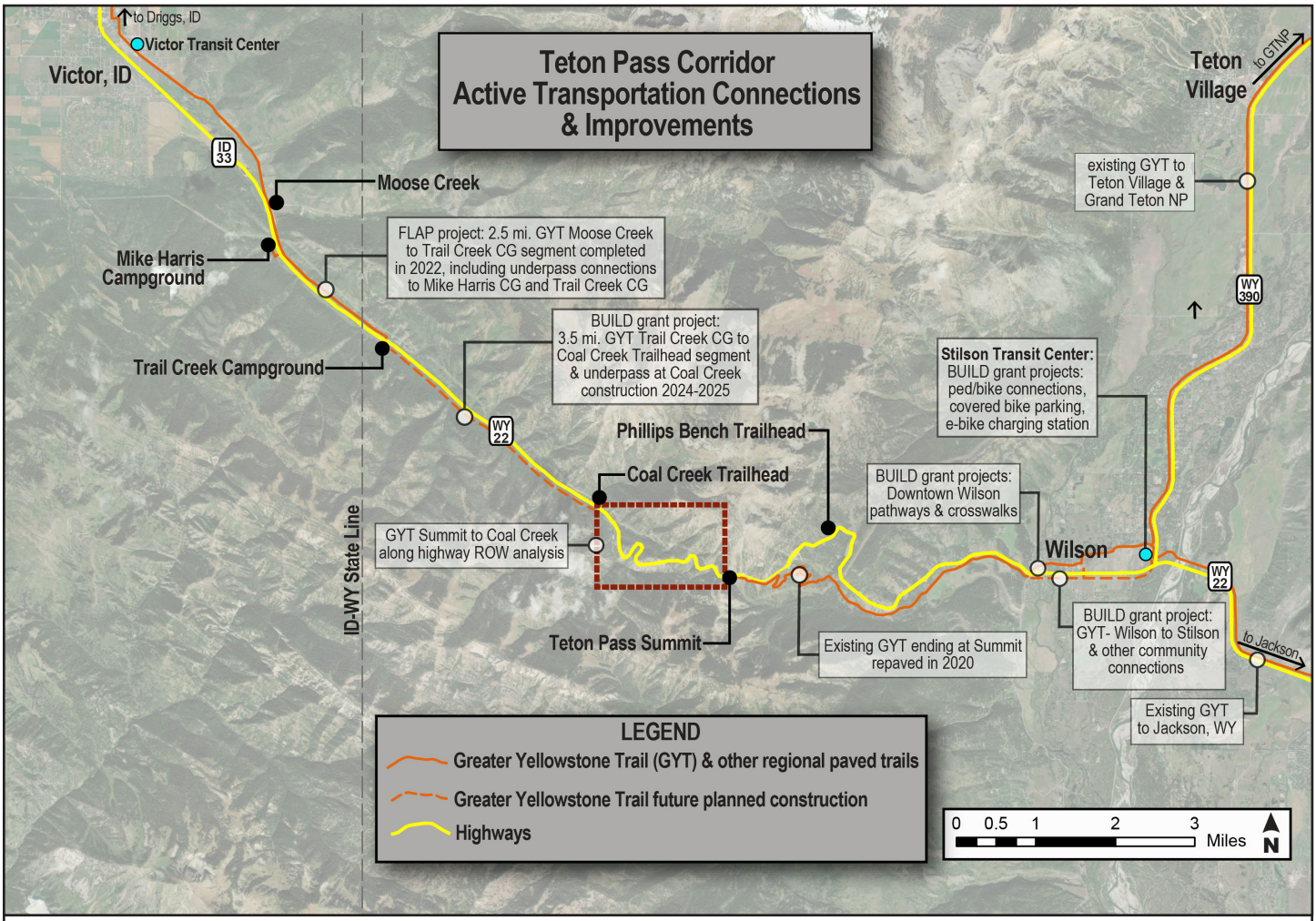


Figure 41: Study corridor active transportation projects

- Stilson Transit Center (BUILD funded): Acquisition of 5.7 acres of land and construction of a 2,700 square-foot 6-bay transit center, with a dedicated 403-space paved public park 'n ride lot, car-charging stations, pedestrian and bicycle pathway interconnections, covered bicycle parking, bike repair stand, e-bike charging, and a new transit signal study in separate warrant analysis at WY-390 that is yet to be determined by WYDOT. The project is anticipated to be complete by 2026.

- GYT Wilson to Stilson Transit Center (BUILD funded): Construction of pathway and underpasses below WY-22 linking Wilson to the planned Stilson Transit Center.

- Downtown Wilson (BUILD funded): Construction of continuous active transportation facilities through Wilson linking regional pathways.

- GYT Wilson to Teton Summit: Existing 3.5 miles of repaved GYT (in 2020) from Trail Creek to Teton Pass Summit.

- 3.5 mile GYT from Coal Creek CG to Trail Creek CG including underpasses (BUILD funded): Anticipated completion in 2025.

- 2.5 GYT from Trail Creek CG to Moose Creek including two underpasses (FLAP funded): Completed in 2022.

Other investments:

- Purchase of four START commuter buses with bike racks serving the Teton Valley commuter route (BUILD funded).

- Existing GYT from Moose Creek through Victor, ID to Driggs, ID.

<u>The Rise of E-Bike Use & Technology</u>- A connected and physically separated GYT can not only provide another recreational amenity with supporting infrastructure along the study corridor, but with the rapid rise in its technology, E-Bike use could start to become a viable and more sustainable transportation alternative. The E-Bike industry continues to benefit from advancements in technology, leading to improved battery life, range, and power, as well as greater affordability for consumers:

'The revised Electric Bicycle Incentive Kickstart for the Environment (E-BIKE) Act (H.R. 1685/S. 881) recently reintroduced in Congress would give a refundable tax credit of 30 percent on the purchase of a new e-bike, up to $1,500, on bikes that cost less than $8,000. Individuals making less than $150,000 or $300,000 in joint households are eligible for this tax credit.'

Currently along the GYT in the study corridor, E-Bike use along paved multi-use trails is not allowed (Image 18). This study recommends a considered revaluation for guidelines on E-Bike use on paved trails.

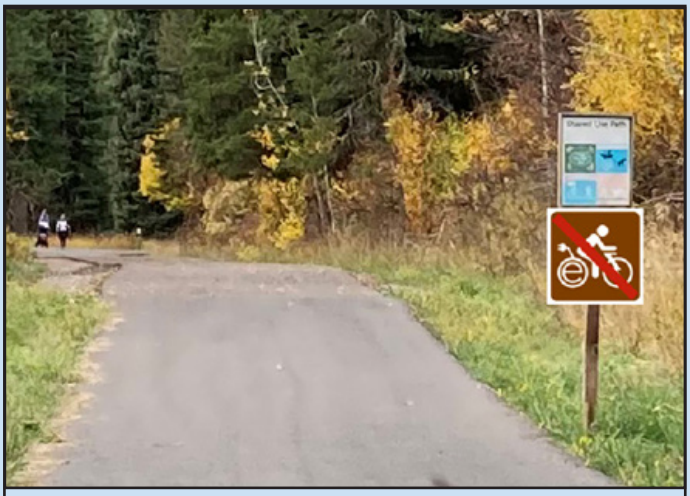


Image 21: No E-Bikes allowed sign on GYT past Trail Creek Rd. Trailhead

GYT Summit to Coal Creek ROW Analysis

Several alignment options to connect the GYT from Teton Pass Summit west to Coal Creek have been explored including using existing gravel-dirt roads converted to paved trail, but currently the only permissible alignment by area agencies is the 2.7 miles of WYDOT right-of-way along WY-22 (see Figure 41 for approximate area). At an initial high level, Figures 42 (upslope study) and 43 (downslope study) start to examine the feasibility of placing a 10-foot 2-way separated GYT along the highway ROW from a slope analysis by viewing the 'Cal Topo' app as well as from images from site visits by FLH staff and Google Street View images. The feasibility categories by slope with corresponding high level approximate cost estimates (2023 USD) per Linear Foot (LF) include:

- GREEN: flat to minor slopes: $100-200 LF
- YELLOW: intermediate 5-15% slopes: $500 - 1K LF
- RED: major 15% + slopes: $5K – $10K LF
- MAROON: significant slopes that are at or near vertical: $11K LF

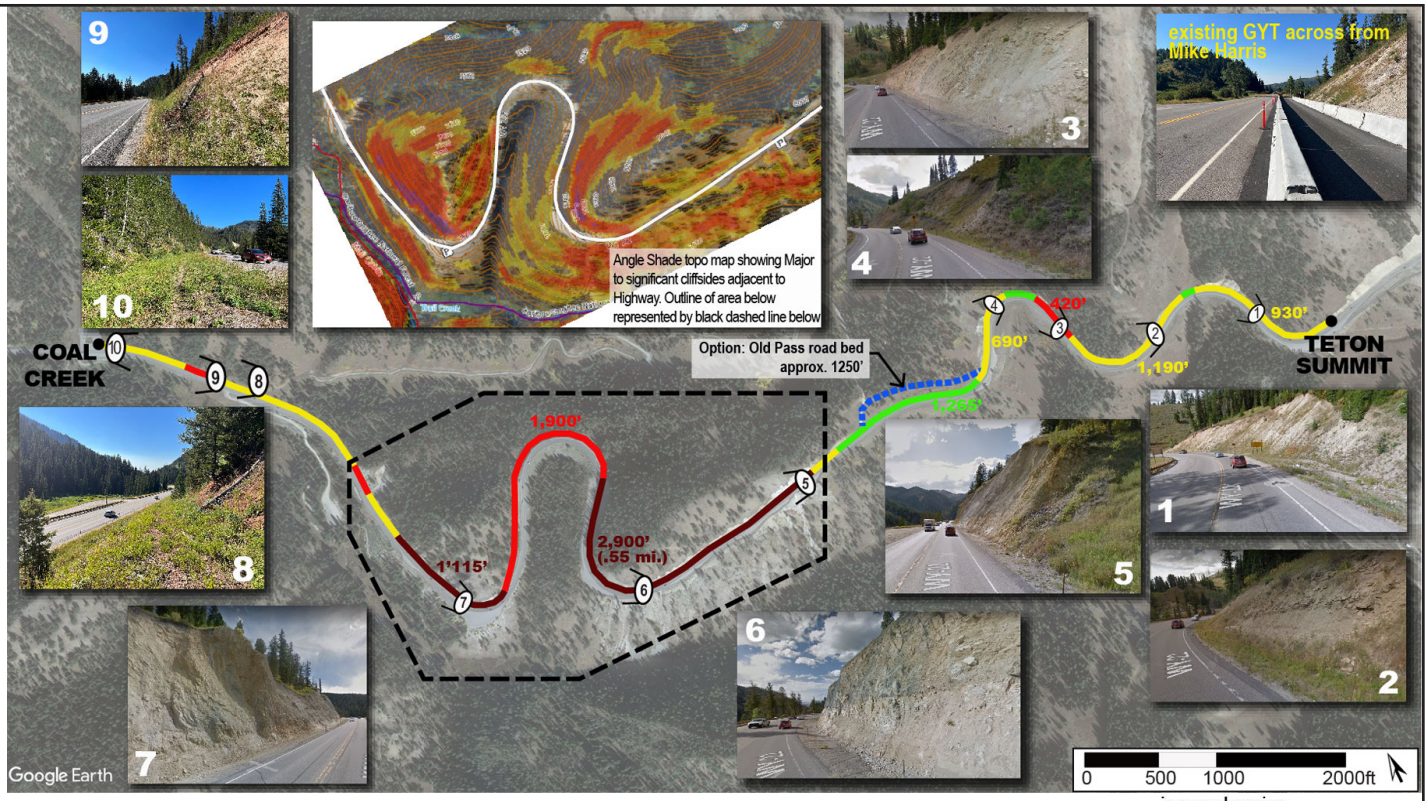
Below are existing examples of color slope ratings along the study corridor:

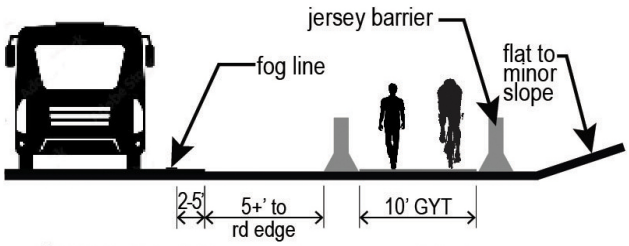
Image 22: GREEN slope example MP 11.4 (downslope)

Image 23: YELLOW slope example MP 12.8 (downslope)

Image 24: RED slope example MP 11.2 (downslope)

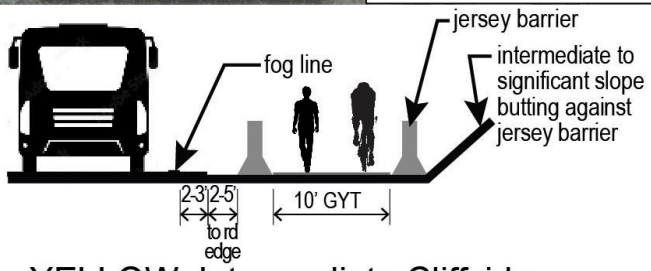
Image 25: MAROON slope example MP 13.2 (upslope)





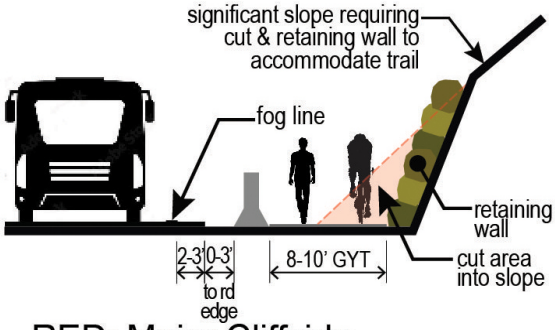
GREEN: Minor slope or Flat

- slope starts outside of required trail footprint
- trail footprint starts 5'+ from roadway edge
- jersey barriers may not be needed



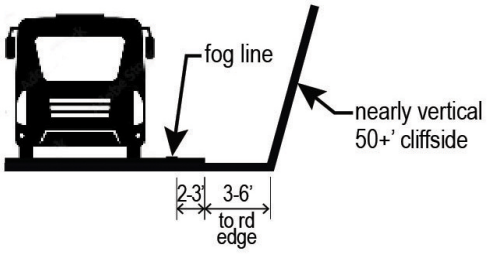
YELLOW: Intermediate Cliffside

- requiring standard earthwork and/or minor retaining wall
- jersey barrier 2 - 5' from road pavement edge
- see existing example pic above located across from Mike Harris CG



RED: Major Cliffside

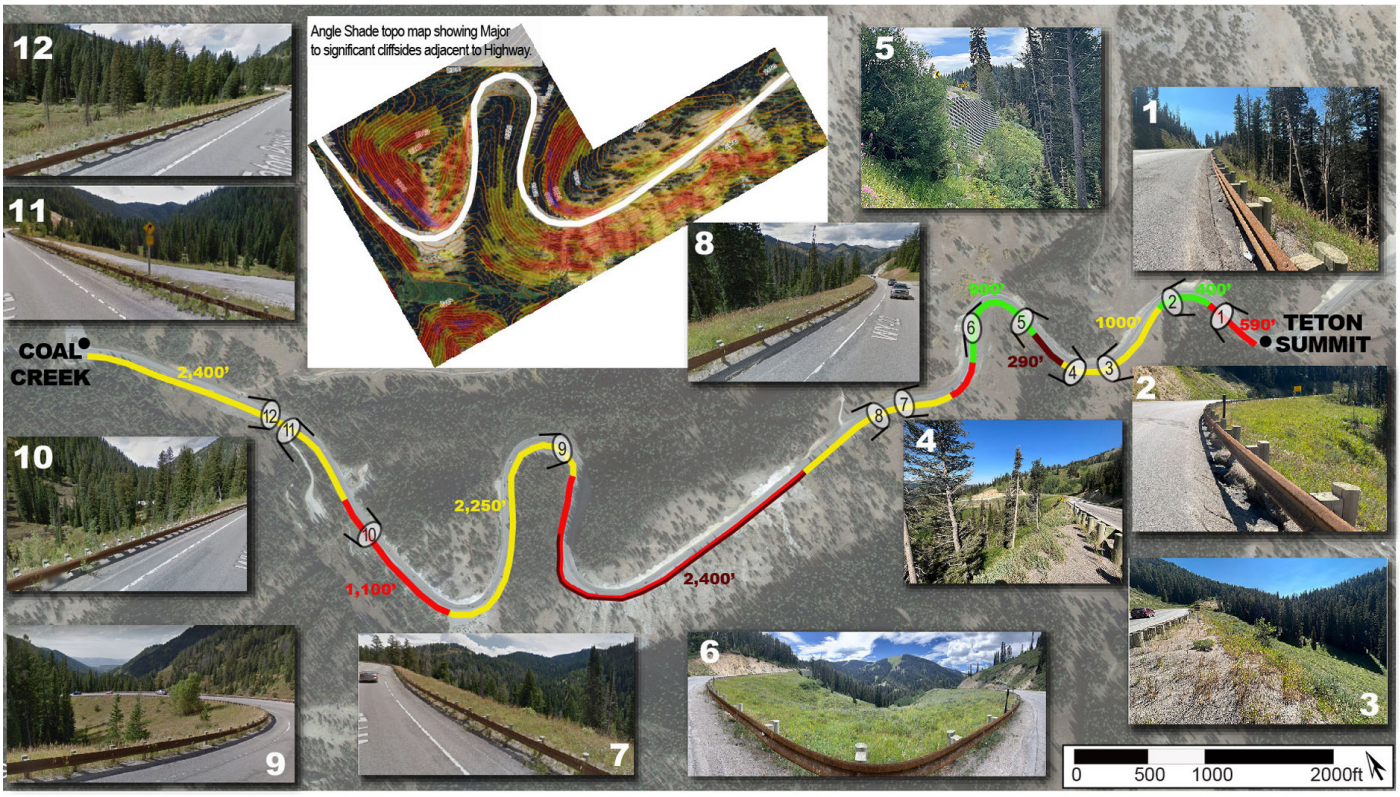
- close to highway requiring significant earthwork and retaining wall
- jersey barrier 0 - 3' from road pavement edge

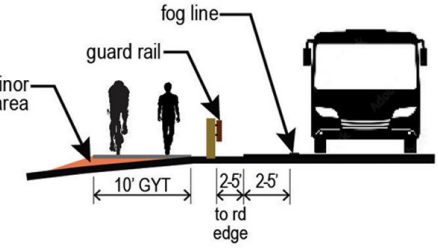


MAROON: Significant, Vertical Cliffside

- nearly vertical cliffside
- cut into cliffside impossible
- falling debris dangers

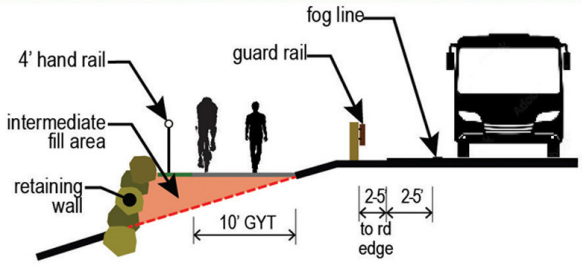
Figure 42: GYT along WYDOT ROW upslope study





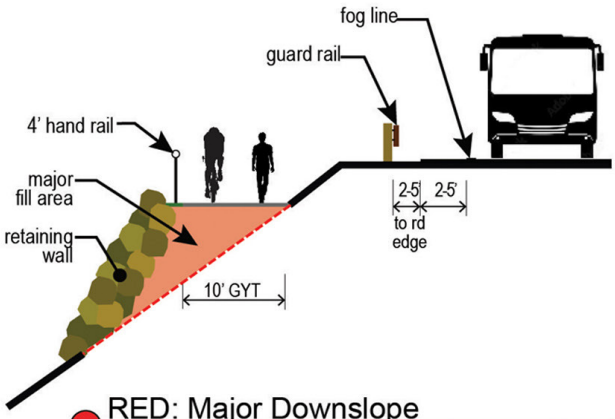
GREEN: Minor Downslope or Flat

- trail on flat grade or minor fill area
- 5% or less slope area



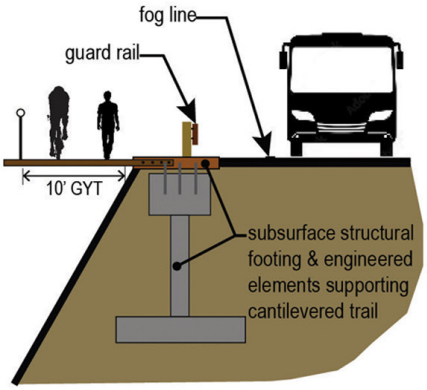
YELLOW: Intermediate Downslope

- trail on fill from 5-15% downslope
- intermediate retaining wall



RED: Major Downslope

- trail on fill from 15%+ downslope
- major retaining wall



MAROON: Significant, Downslope

- nearly vertical ciffside downslope
- cut into cliffiside impossible
- siginificant expense to build

Figure 43: GYT along WYDOT ROW downslope study

Cost Efficient Considerations to Connect the GYT

As recreationalists all year long hike, bike, and ski along the roadway corridor's shoulders for various reasons, it is recommended that an Road Saety Audit (RSA) be conducted on the full study corridor and especially on the 2.7-mile section of WY-22 between the Teton Pass Summit and Coal Creek where the GYT will connect along the highway corridor for the near term. An RSA should be focused on multimodal use and what feasible recommendations can be considered to make the roadway safer for all modes including cyclists, pedestrians (including skiers) and vehicles.

A Road Safety Audit (RSA) is the formal safety performance examination of an existing roadway by an independent, multidisciplinary team. It qualitatively estimates and reports on potential road safety issues and identifies opportunities for improvements in safety for all road users. An RSA Team considers how roadway, traffic, environmental, and human factors impact safety, within the context of mobility, access, surrounding land use, and aesthetics. For more information on RSAs visit the FHWA Highway Safety Programs page at:

Considerations for improvements could include:

Widened Shoulders: Numerous incidents involving non-motorized users can be attributed to their coexistence with motorized traffic along the roadway. To mitigate such risks, the introduction of paved shoulders featuring ample widths is proposed for consideration. These widened shoulders facilitate the segregation of motorized and non-motorized users along the highway corridor, a strategy that has demonstrated efficacy in reducing various types of collisions. A minimum design width of 4 feet, with a preference for exceeding 5 feet is reccommeded (see Figure 44). According to findings presented in the Federal Highway Administration's document titled 'Safety Benefits of Walkways, Sidewalks, and Paved Shoulders,' the advantages of enhanced paved shoulders include:

Figure 44: WY-22 Milepost 12.7 existing and considered improved shoulder treatments

- Heightened comfort levels for bicyclists.
- Provision of space for maintenance operations and snow storage.
- Decreased demands on shoulder maintenance.
- Diminished incidents of pedestrian accidents (pertaining to individuals walking alongside the roadway).

Image 26: Edgeline rumble strip

Edgeline Rumble Strips: FHWA's 'Non-Motorized User Safety: A Manual for Local Rural Road Owners' recommends implementing edgeline rumble strips (Image 26 & Figure 44) placed on the outside of the fog-line and adjacent to the shoulder to improve safety for non-motorized users traveling along the shoulder and mitigate run-off-the-roadway vehicles into the shoulder.

Image 27: WY-22 milepost 12.8 site line issues

MUTCD Signage: As recreation activity continues to increase along the whole study corridor, there will likely be an increase in roadside bicycle and pedestrian activity.

MUTCD W11-1 signs (Image 28) should be considered along the 2.7mi section of WY-22 between Teton Pass Summit and Coal Creek that connects the GYT along the roadway shoulder to alert motorists where unexpected entries into the roadway might occur by cyclists.

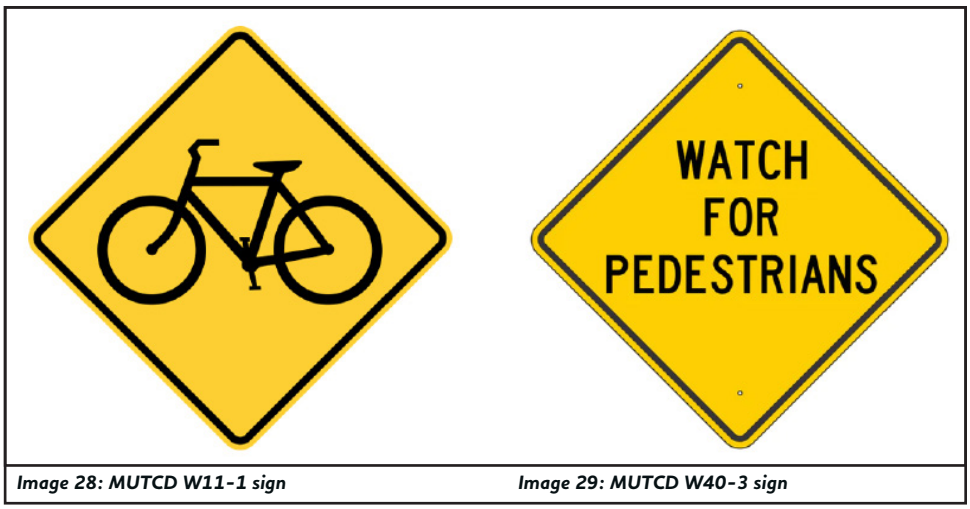


Image 28: MUTCD W11-1 sign *Image 29: MUTCD W40-3 sign*

Adding MUTCD W40-3 (Image 29) signs at strategic locations can help to alert motorists of potential pedestrian activity ahead, particularly where Winter time plowed snow build up along sharp curves can lessen site line distances like at Milepost 12.8 along WY-22 (Image 27).

Safety Hotspots

Trail Creek Rd. and WY-22 Intersection

Currently, the intersection of WY-22 and Trail Creek Rd. (also known as Old Pass Rd.) serves as the primary access point to several key facilities and areas. These include the Trail Creek Nordic Training Facility, Trail Creek Ranch which features numerous Nordic trails, and a formalized trailhead located at the road's terminus providing direct access to the Greater Yellowstone Trail. Additionally, on the north side of WY-22, there exists an informal yet highly frequented area in front of the Heidelberg. This area is unofficially used for ridesharing and hitchhiking pick-up and drop-off.

While the historical record of accidents at this location remains minimal, with only three documented incidents reported by WYDOT, it is crucial to acknowledge that the intersection faces several safety challenges. These challenges become particularly pertinent given the anticipated increase in recreational access and overall traffic. Some of the key safety risks include (refer to Figure 45):

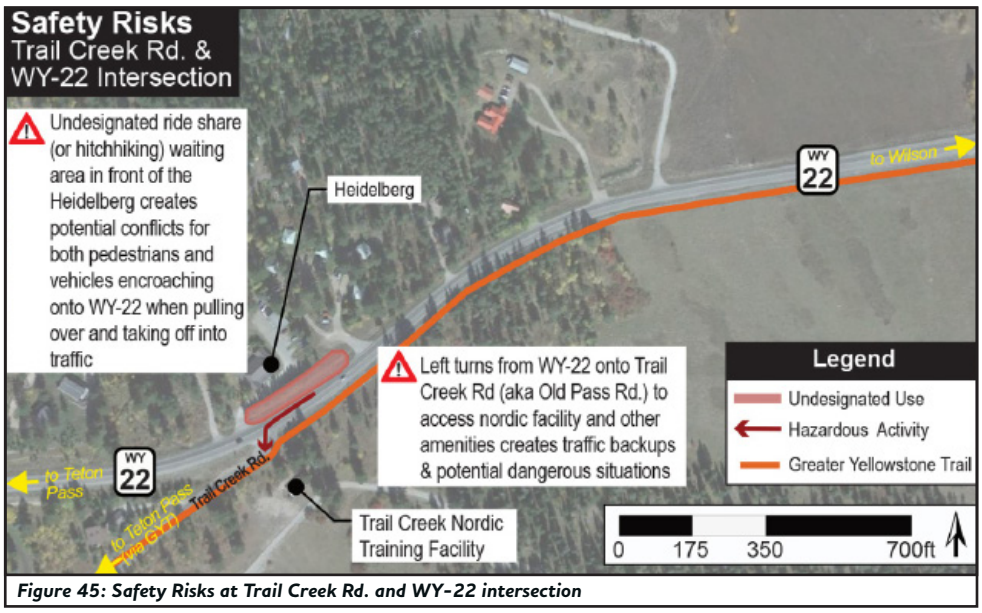


Figure 45: Safety Risks at Trail Creek Rd. and WY-22 intersection

- ***Potential Left-Turn Conflicts:*** There is a notable absence of a designated left-turn refuge on WY-22 at this intersection. This deficiency presents a potential risk of conflicts when vehicles attempt left turns, possibly impeding the flow of traffic.
- ***Traffic Congestion Hazards:*** The intersection's layout and usage patterns introduce the potential for traffic congestion. Such congestion, if not managed effectively, could lead to a heightened risk of accidents.
- ***Undesignated Waiting and Hitchhiking Area:*** Directly across from Trail Creek Rd., an undesignated area serves as a waiting and hitchhiking spot. This location generates potentially hazardous situations for pedestrians, especially when vehicles pull over to pick up passengers and subsequently merge back onto WY-22 amidst ongoing traffic flow.

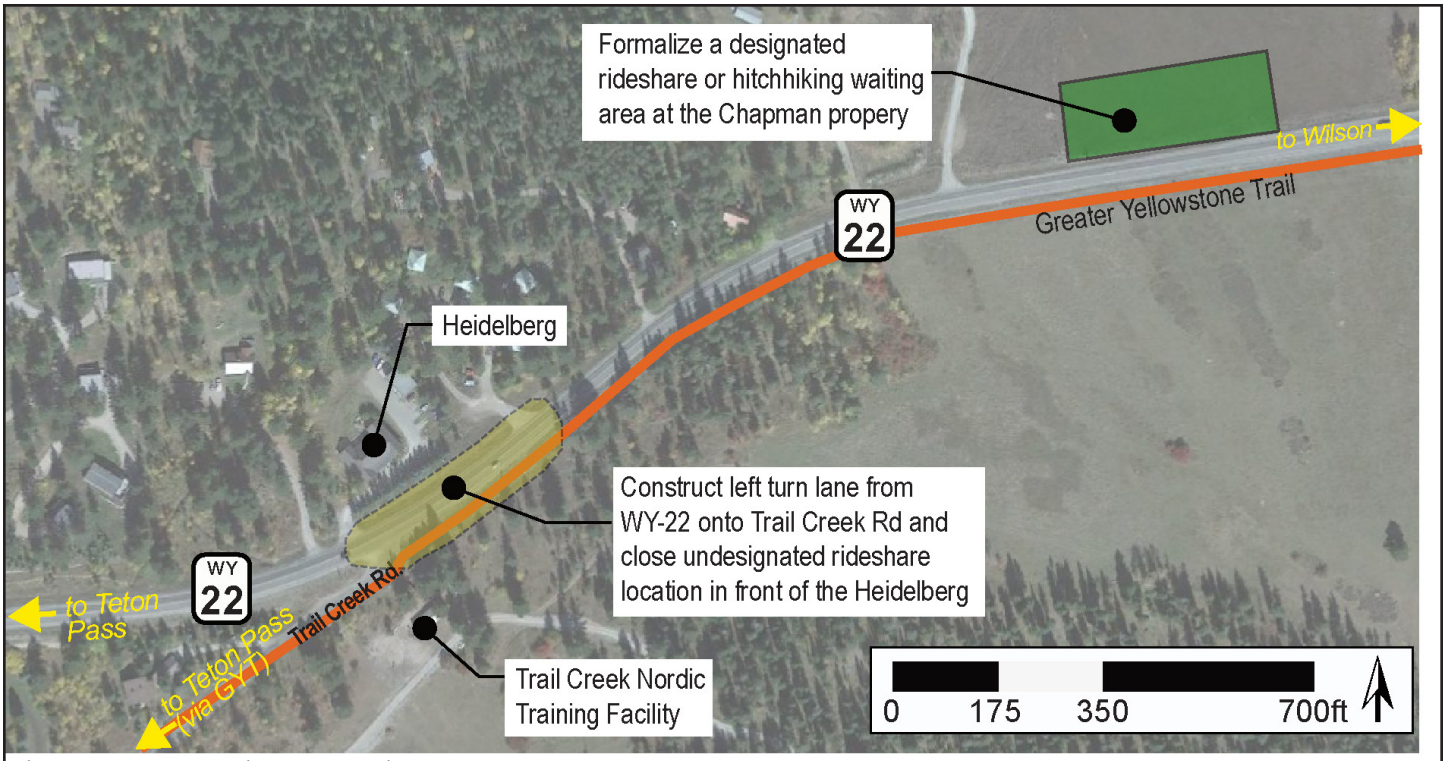


Figure 46: WY-22 and Trail Creek Rd. considered Improvements

Considered Improvements at WY-22 & Trail Creek Rd. Intersection: To minimize vehicle and pedestrian conflicts, the following are proposed for consideration (Figure 46).

- Create a left-turn lane from WY-22 onto Trail Creek Rd.
- Close the undesignated ride share and hitchhiking access area at the Heidelberg site and designate a formalized ride-share location at the Chapman property or in Wilson.

Weigh Station

The Weigh Station is a pullout area off the southern side of WY-22 and is utilized and managed by WYDOT for commercial truck traffic control. Along the western portion of the pullout is a small, unofficial parking area for recreationalists. This location is sometimes utilized during high avalanche danger as overflow for the Coal Creek parking area to access the backcountry trails in the Winter, south of the highway (Figure 47).

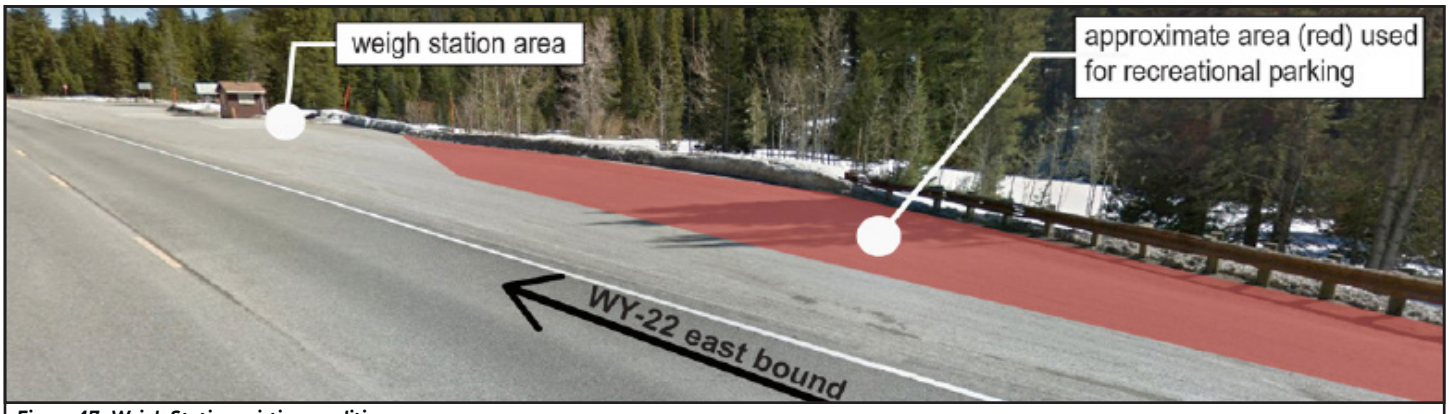


Figure 47: Weigh Station existing conditions

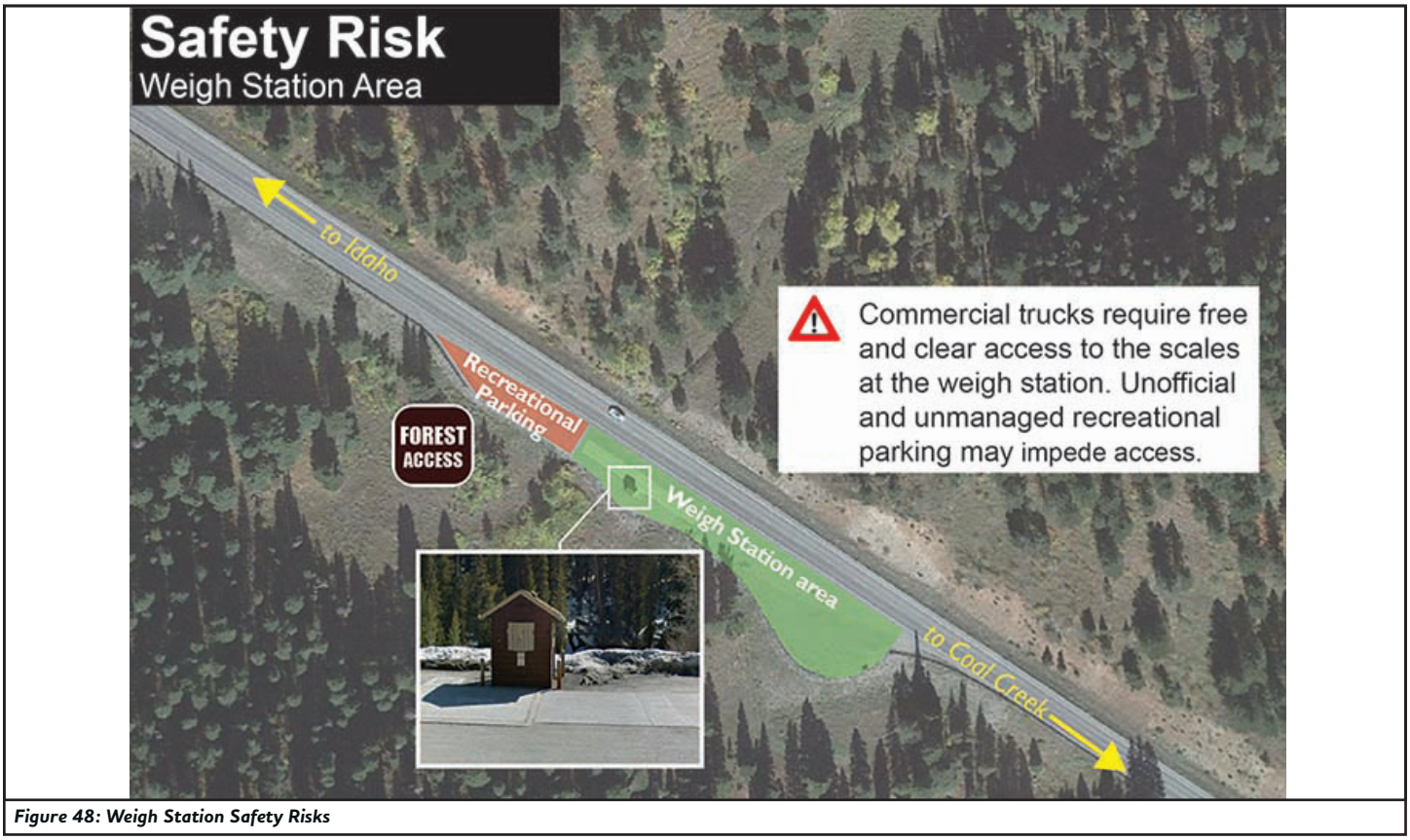


Figure 48: Weigh Station Safety Risks

Safety Risks: The unofficial and undesignated recreation access parking area pose some minimal safety concerns for commercial truck traffic to access the scales (Figure 48).

Considered Improvements at Weigh Station: The Weigh Station's primary objective is to manage commercial truck traffic, but as the western part of the area is used for recreation access, improvements should be made to distinguish the areas and uses. Considered improvements include (Figure 49):

- Sign the approximate 3,200 SF western part of the area for Parallel Parking Only
- Distinguish the parking area and weigh station area with paint hatch and No Parking signage
- Option: eliminate informal rec parking and relocate and create new in another location in close proximity of rec area.

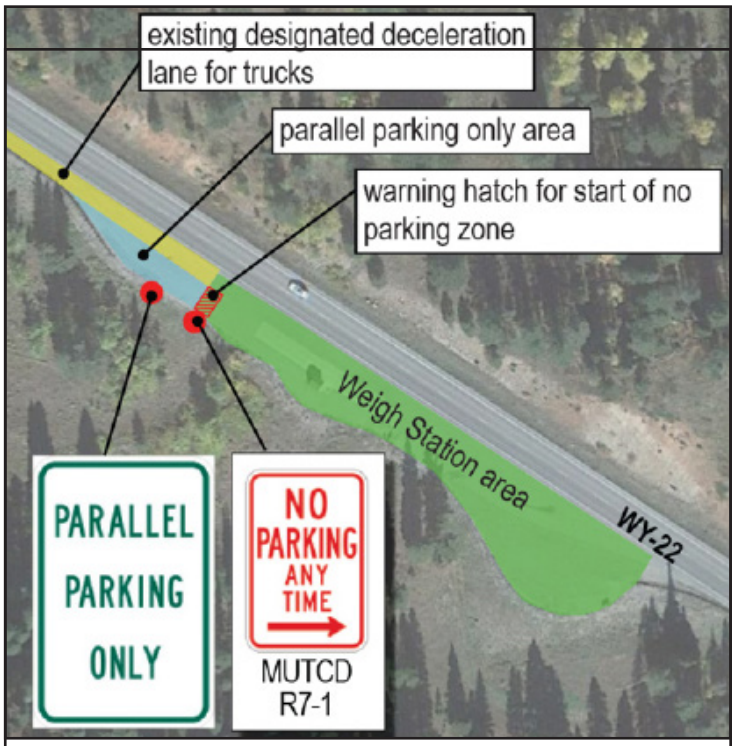


Figure 49: Weigh Station considered improvements

State Line

Images 30: Existing conditions at State Line

The State Line area is an approximate 229,200 SF pullout off the southern side of the highway that accommodates approximately 83 vehicles (Images 30). It is officially managed by WYDOT as a chain-up station during the Winter months. The site is regularly used for recreation parking, especially in Winter months for backcountry skiing access to Mt. Oliver and other slopes on the north side. With the adjacent and newly built Greater Yellowstone Trail located on the north side, recreation access numbers could change especially for cycling and mountain biking access. Also, Idaho and Wyoming "Welcome To" signs are placed on both sides of the highway here and are a popular prop for photographs.

Safety Risks: The safety concerns primarily arise from westbound vehicles pulling out of the travel lane and

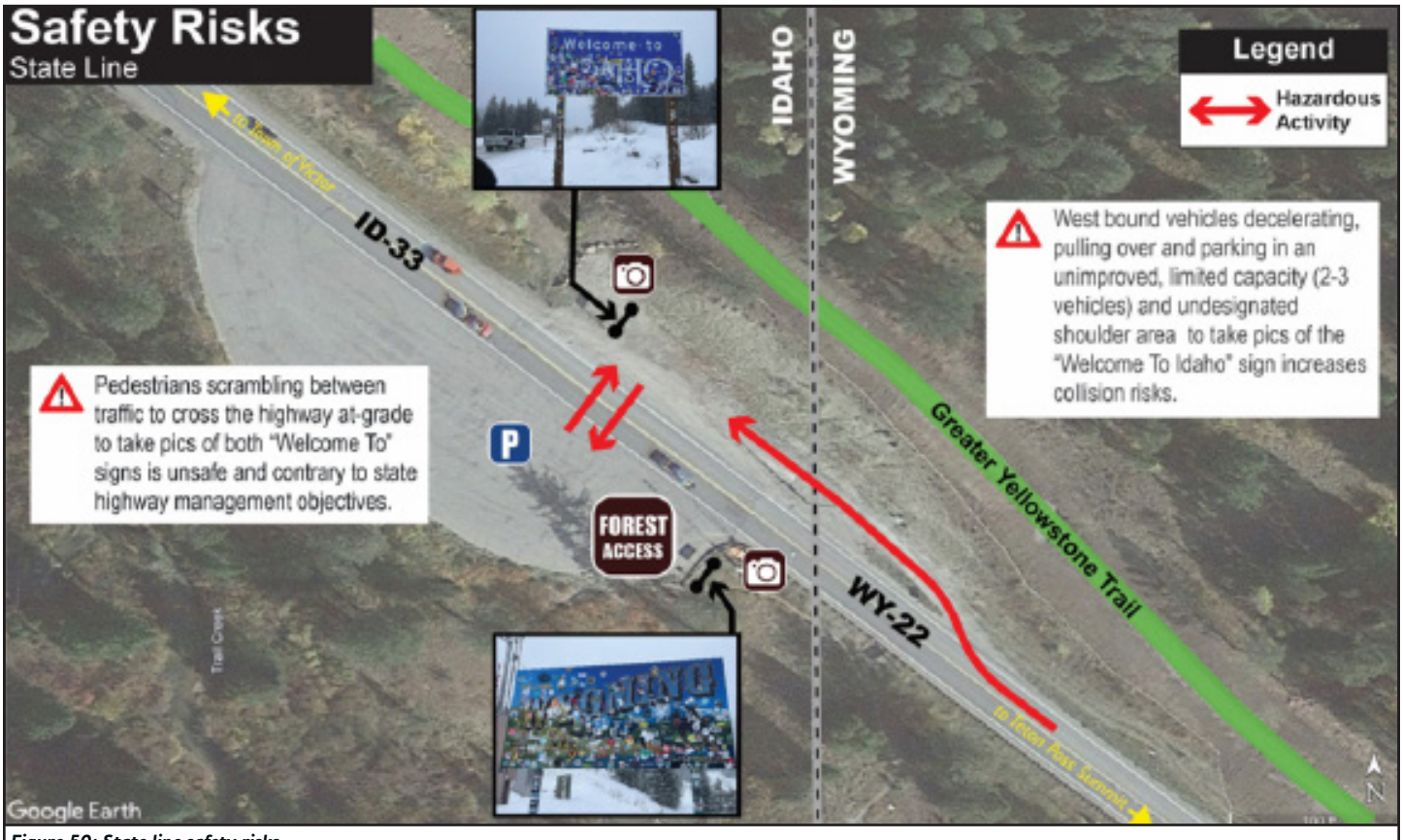


Figure 50: State line safety risks

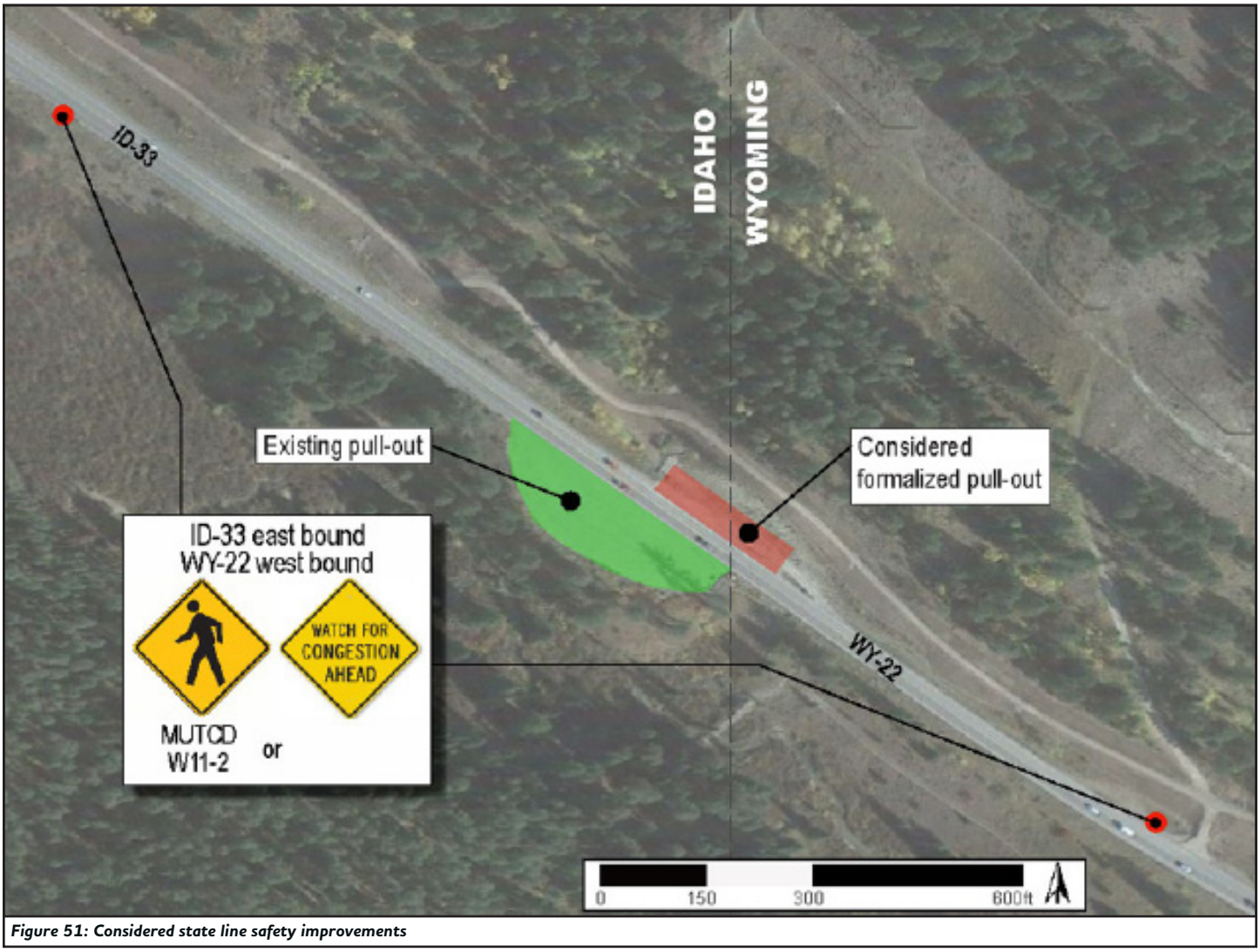


Figure 51: Considered state line safety improvements

into an undesignated, unimproved, and limited capacity (2-3 vehicles) roadside area to take photos of the "Welcome To Idaho" sign and lack of pedestrian congestion ahead signs (Figure 50).

Considered Improvements at State Line: As visitation increases along the corridor, so does the likelihood that visitors will want to pull over at the state line to take pictures of the "Welcome To" signs as well as park to recreate in the area. The following considered safety improvements include (Figure 51):

- Adding MUTCD W11-2 or other signage to notify approaching vehicles of roadside activity
- Formalized pullout area on north side of highway
- Considered parking plan with striping and signage on south side of highway

Mike Harris Campground

The Mike Harris Campground, a well-frequented facility under the jurisdiction of the Caribou Targhee National Forest (NF), is situated within the state of Idaho. Positioned in close proximity to Victor, ID, the campground's entrance is located approximately 1.5 miles west of the Idaho-Wyoming state line, adjacent to Idaho Highway 33.

The primary parking area, of approximately 20,000 square feet, is capable of accommodating approximately 45 vehicles. Notably, this area experiences robust visitation throughout the summer and winter seasons and is subject to snow plowing operations during the winter months.

A notable addition to the site's amenities is the inception of a novel mountain biking trail system, introduced around 2020. This trail system offers direct accessibility from the principal parking area and establishes linkages to an extensive network of trails within the surrounding backcountry.

Additionally, the Mike Harris Campground is seamlessly integrated with the Greater Yellowstone Trail. This connectivity is achieved through the construction of a newly established extension, facilitating uninterrupted passage. Noteworthy features of this connection encompass an underpass infrastructure and a dedicated segment linked to the primary entrance road, intersecting Idaho Highway 33 (refer to Image 31).

Image 31: New GYT undercrossing accessing Mike Harris campground

Importantly, this particular trail segment has been situated within the highway's right of way, along both sides of the thoroughfare.

Safety Risks: The safety concerns come from west bound vehicles turning into Mike Harris without a designated turn lane, no acceleration lane leaving Mike Harris, and no deceleration lane entering Mike Harris from the west, all which create backups and queuing onto the highway and potential dangerous situations (Figure 52).

Considered Improvements at Mike Harris Entry: As visitation at Mike Harris continues to rise throughout the year, coupled with increased traffic flow along the highway due to daily commuters, it becomes imperative to contemplate the incorporation of supplementary turn, acceleration, and deceleration lanes. These improvements would alleviate congestion and

reduce the risk of accidents at an increasingly popular recreation access area.

- Separate turn lane for west bound travelers entering Mike Harris.
- Deceleration lane for east bound vehicles entering.
- Acceleration lane exiting and east bound.

Opportunities and constraints of these improvements include:

Opportunities:
- Makes for better traffic flow
- Decreases chances for vehicular crashes

Constraints:
- Added turn lanes would require major earthwork on the west side of the highway
- With the newly built Greater Yellowstone Trail segments, aka Centennial Trail, built closely adjacent to both sides of highway, it would be impossible to widen roadway to build these added lanes without ripping up and moving these new GYT segments

Figure 52: Mike Harris CG and WY-22 intersection Safety Risks

Environmental Risk Mitigation: Wildlife

Wildlife Crossings

As shown in Figures 16, 17 & 18 in the Existing Conditions section, wildlife vehicle collisions (WVC) along WY-22 and ID-33 are prevalent along the study corridor. Currently there are wildlife warning signs along the corridor, but they have had little effect in reducing WVC. The Teton County Wildlife Crossings Master Plan, dated May 2018, has identified wildlife fences in combination with grade-separated wildlife crossing structures as the most effective and robust mitigation measures for addressing human safety and biological conservation concerns. Additionally, the plan outlines several priority locations for recommended wildlife crossings within Teton County, Wyoming, and WY-22 within the study corridor is among these identified priorities.

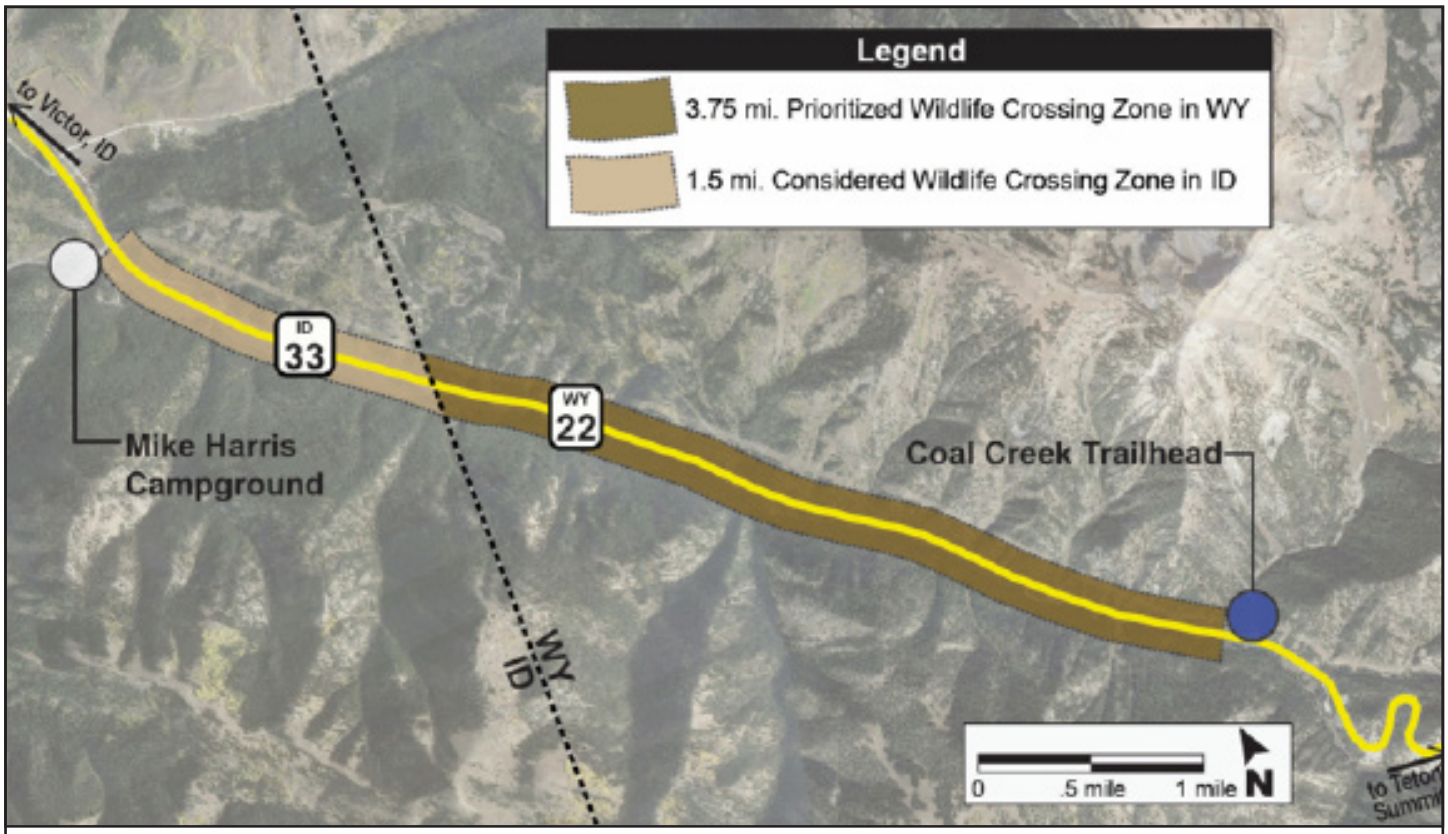


Figure 53: Prioritized and considered wildlife crossing zones

Considered Wildlife Crossing Improvements: The approximate 3.75 mile stretch of WY-22 from Coal Creek Trailhead west to the Idaho state line is chosen through an ongoing 30% Teton County wildlife crossing implementation study as a prioritization area. For this study and based on data provided by Jackson Hole Wildlife Foundation, it is recommended to extend this wildlife crossing prioritization area west into Idaho to the Mike Harris Campground entry area approximately 1.5 miles for a total of a 5.25 mile wildlife crossing prioritization area (Figure 53). Based on the current Teton County, Wyoming implementation study, this stretch was chosen due to the high number of WVCs, high traffic, and other projects

planned in the area. The target species are moose, elk, deer, carnivores, meso mammals, and aquatic species. The mitigation recommendations for this area are a system of multiple wildlife crossings with continuous fencing.

Wildlife crossing structures and fencing are known to be the most effective mitigation, resulting in reductions of collisions with wildlife by up to 90% or more while allowing wildlife to move under or over a roadway. However, crossing structures are not universally feasible due to their cost as well as other terrain or land use considerations, in which case other types of mitigation strategies may be warranted, alone or in combination with crossings. Recommended mitigation solutions will be integrated with community needs and values including highway mobility and safety, recreation, viewsheds and aesthetic concerns, and landowner and stakeholder interests. Wildlife over and undercrossing and fencing examples are shown in Images 32.

Image(s) 32: Wildlife crossing AND FENCING examples

Below are high level cost estimates (2023 USD) for various wildlife crossing types:

- Arch overpass for 2-lane highway: $3-8 Million
- Arch underpass for 2-lane highway: $1.5-2.5 Million
- Box culvert underpass: $1.5 Million
- Wildlife fencing (includes ramps and gates): $130K per Mile
- Wildlife guard: $35K Each

Opportunities & Constraints for Wildlife Crossings

Opportunities:

- Reduces wildlife-vehicle conflicts and improves driver safety
- Increases permeability for wildlife across the highway even as traffic volume increase
- Protects landscape connectivity and wildlife movement paths that are essential to population resilience and adaption to changing conditions
- Coordination with BUILD Grant projects

Constraints:

- Terrain: landslides, steep slopes, waterways, and other natural features can impact constructibility and cost
- Snow depth, snowplowing, and avalanches
- Protecting recreation access while ensuring the functionality of the wildlife mitigation system

The FHWA Wildlife Crossings Pilot Program (WCPP) is a competitive grant program with the goal of reducing Wildlife Vehicle Collisions (WVCs) while improving habitat connectivity for terrestrial and aquatic species. The WCPP provides funding for construction and non-construction projects.

The Bipartisan Infrastructure Law (BIL), enacted as the Infrastructure Investment and Jobs Act of 2021 (Pub. L. 117-58, November 15, 2021) authorized $350 million total in Federal-aid contract authority funding for Federal Fiscal Years (FY) 2022 through 2026 to be awarded by the U.S. Department of Transportation, through the Federal Highway Administration, for the WCPP.

Eligible entities for the WCPP include:

- ***State Departments of Transportation***
- ***Metropolitan Planning Organizations***
- ***Units of local government***
- ***Regional transportation authorities***
- ***Special purpose districts or public authorities with a transportation function***
- ***Indian tribes***
- ***Federal Land Management Agencies***
- ***A group of any of the above entities***

For more information visit:
https://highways.dot.gov/federal-lands/programs/wildlife-crossings

Environmental Risk Mitigation: Avalanche

Avalanche Sheds

Avalanches are a reoccurring concern along Teton Pass during the Winter and Spring thaw months. According to WYDOT historical data, there have been a total of 690 avalanches along Teton Pass from 2008 to 2021 with the two most problematic and frequent paths being the Glory and Twin Slides. Since 2008, WY-22 has been closed a total of 582 hours from these avalanche occurrences, with 71 closure hours coming in 2020 and 2021.

Avalanche, or snow, sheds (Images 33 below) have been effectively utilized in similar contexts as the study corridor. They are technically a bridge built over transportation corridors to divert avalanches over the top which can make a transportation corridor safer for the traveling public and minimize highway closures. Avalanche sheds are passive in the sense that they do not, unlike avalanche forecasting and active/explosives control, require human intervention to operate or perform their task during the period of avalanching.

Image(s) 33: Avalanche Shed examples

Opportunities & Constraints for Avalanche Sheds

Opportunities:

- One or two avalanche sheds could be constructed below the two slide hazard areas to maintain free flow of traffic, enhance safety, and mitigate delays caused by roadway obstruction
- Auxiliary parking and transit infrastructure could be incorporated with an avalanche shed near the pass summit (Figure 55)
- The structures offer an opportunity for branding, placemaking, wayfinding, and/or public art

Constraints:

- Costs of construction, operations, and maintenance of the structures can be significant
- The sheds can act as a dam, impeding the function of natural drainages, this could impact vegetation and wildlife at lower elevations

With information gathered from WYDOT's Avalanche Team, there are two major avalanche slide paths that affect the study corridor. They are the Twin Slides and Glory Slides in between Teton Pass Summit and Phillips Bench (Figure 54).

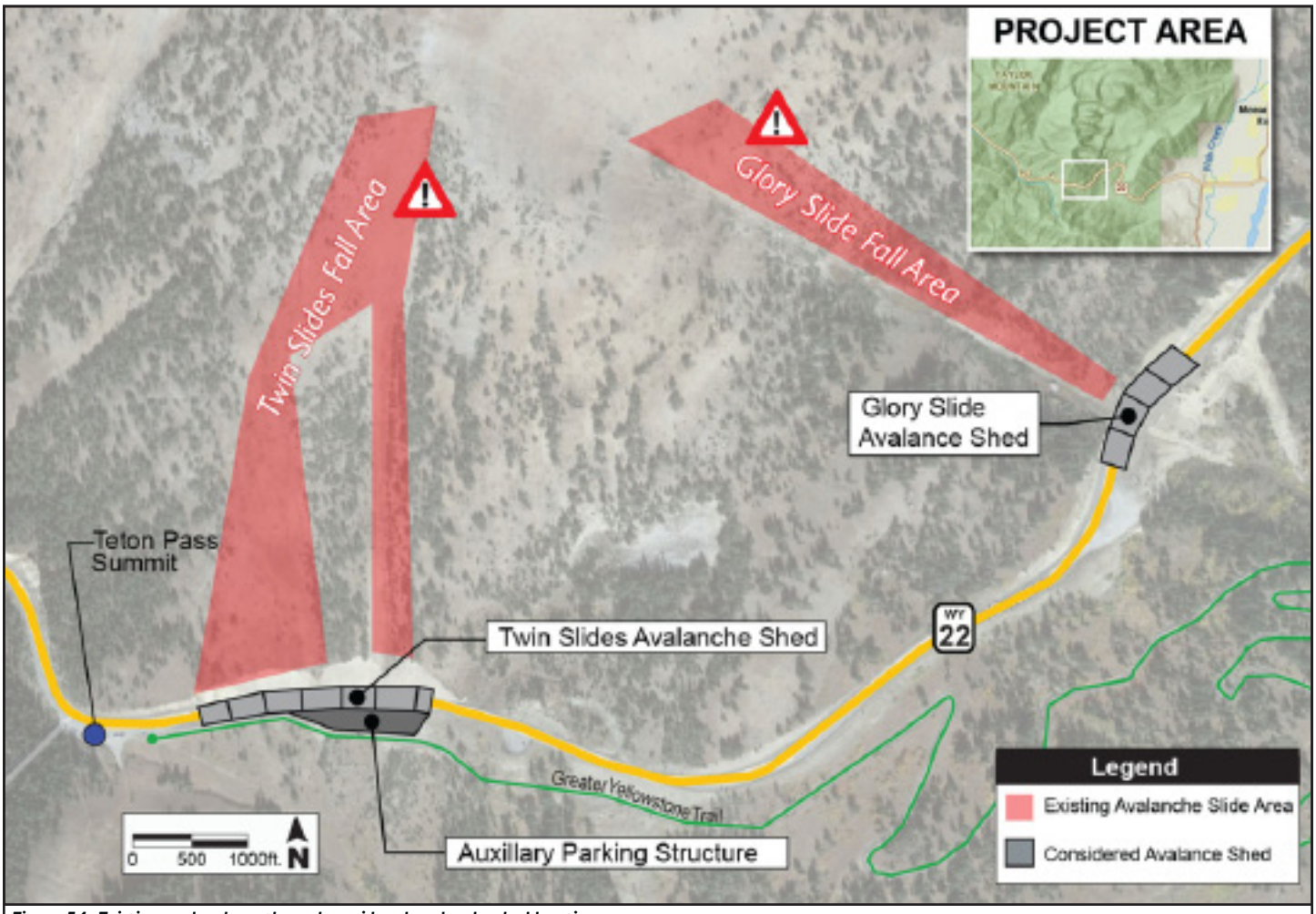


Figure 54: Existing avalanche paths and considered avalanche shed locations

An alternate access area for Teton Pass Summit is considered (Figure 37) but the area is directly in the path of the Twin Slides avalanche path. To improve safety and access for this considered access area, an avalanche shed with a directly adjacent parking structure could be an option as displayed in the photo-simulation below (Figure 55).

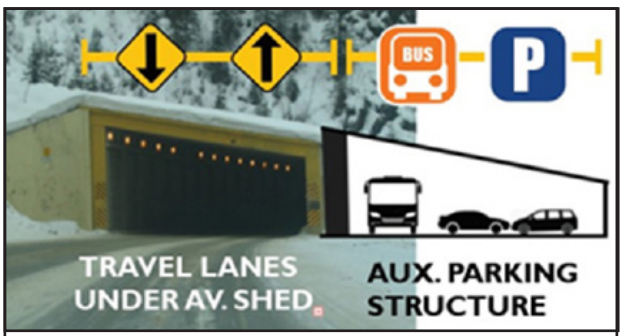


Figure 55: Avalanche shed with auxiliary parking structure concept

FHWA's High level cost estimate (2023 USD) for design, engineering and construction for avalanche sheds:

- Twin Slides Avalanche Shed (with no auxiliary parking structure): $23.5 Million
- Twin Slides Avalanche Shed (with auxiliary parking structure): $32.5 Million
- Glory Slide Shed: $20.7 Million

NEXT STEPS

1. Establishment of a Formal Advisory Board or Steering Committee

Actions:

- Draft and pass a local resolution(s), endorsed by relevant elected bodies in Wyoming and Idaho, to establish a formal advisory board or steering committee.
- Ensure that the committee includes representatives from Wyoming and Idaho, local federal land managers, and State Department of Transportation (DOT) officials.
- Task the committee with overseeing the coordination and execution of the Teton Pass Corridor projects.

Rationale:

A formal advisory board will provide the necessary governance structure to facilitate collaboration among diverse stakeholders. Inclusion of representatives from both states and relevant agencies ensures a comprehensive approach to corridor development.

2. Development of a Shared Vision

Actions:

- Create a charter or foundational document (Statement of Values, etc.) that outlines a shared vision for the Teton Pass Corridor.
- The vision should encompass goals related to safety, sustainability, accessibility, and economic development.

Rationale:

A shared vision serves as a guiding "North Star" for the committee, ensuring alignment among stakeholders and project objectives.

3. Prioritization of Projects

Actions:

- Identify and catalog a portfolio of projects for implementation within the corridor.
- Assess the criticality and potential impact of each project.
- Prioritize projects based on their significance and feasibility.
- Seek funding opportunities at local, state, and national levels for the highest priority projects.

Rationale:

Prioritization allows for efficient allocation of resources and ensures that the most critical projects receive immediate attention. Diverse funding sources enhance financial viability and reduce the burden on a single funding stream.

4. Exploration of Funding Options Including Public/Private Partnerships (P3s)

Actions:

- Identify possible funding sources for priority projects, build local coalitions to apply for state and federal funding programs.
- Evaluate the feasibility of Public/Private Partnerships (P3s) for select Teton Pass Corridor projects, namely the recreational shuttle/parking management system.

Rationale:

P3s can bring innovative financing and operational expertise to corridor projects. Collaboration with private partners can expedite project implementation.

5. Special Use Permitting through the US Forest Service

Actions:

- Collaborate with the U.S. Forest Service to identify projects that require special use permitting within the Teton Pass Corridor.
- Any project that affects federal lands within the corridor, such as road improvements or recreational facilities (such as trailheads), may require a special use permit under the authority of the Grainger-Thye Act (16 U.S.C. §§ 497-497b).
- Participate in consultations and discussions with U.S. Forest Service officials to address any concerns, requirements, or conditions related to the special use permitting process.

Rationale:

Special use permitting is essential for projects that impact federal lands within the corridor. Efficient permitting processes ensure timely project execution.

6. Public Engagement and Communication

Actions:

- Determine the extent of public involvement in Teton Pass Corridor projects, following best practices for community engagement.
- Communicate clearly with the public regarding project goals, timelines, and expected outcomes.
- Seek public input on project priorities and design when appropriate.

Rationale:

Public engagement fosters transparency and community support for corridor initiatives. Involving the public in decision-making ensures that projects align with community needs and values.