

Trail Alignment Analysis Fact Sheet

WHAT WAS STUDIED:

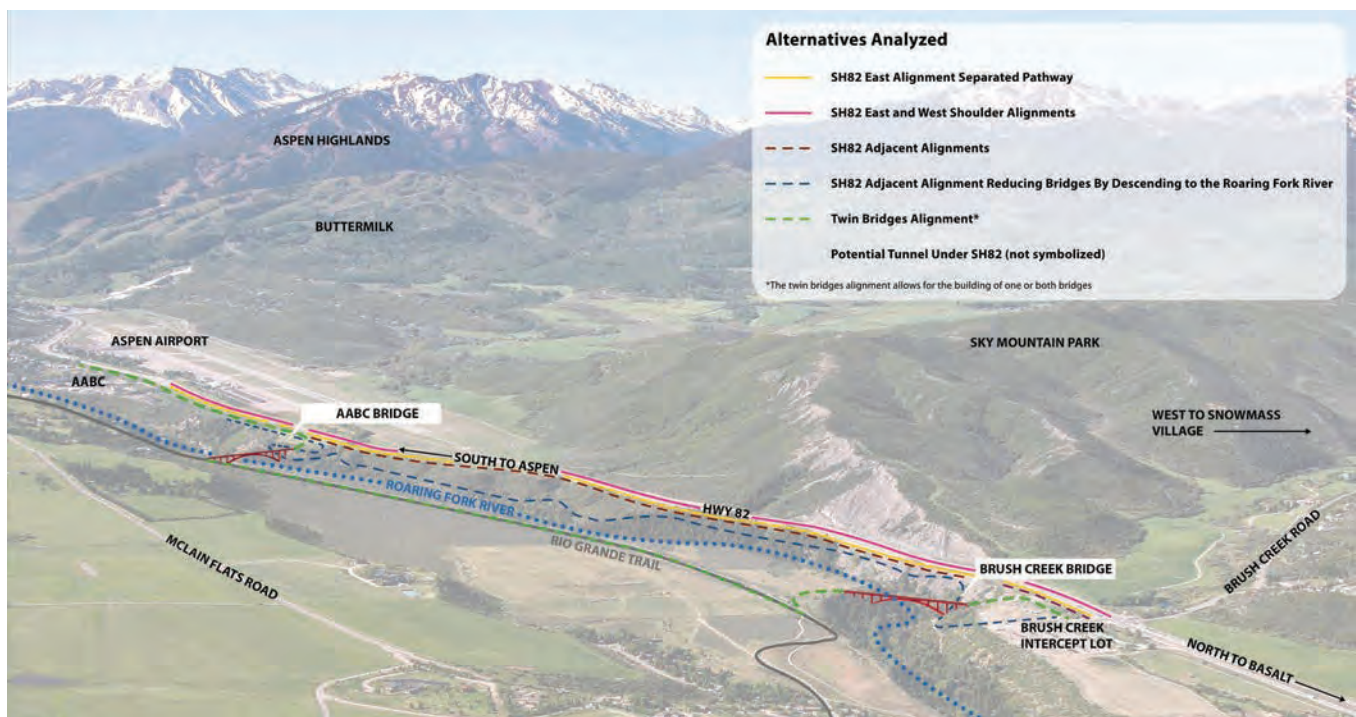
Six potential trail alignments were studied to determine the best connection between the Brush Creek Park & Ride and the AABC. The primary goal was to propose a trail that would safely and efficiently connect the two locations while minimizing total elevation change, ideally ADA compliant and 10-feet in width.

ALIGNMENTS STUDIED IN THE 2022 TRAIL FEASIBILITY STUDY

- 1 Twin Bridges Alignment with an analysis of the bridge locations**
 - Build one or two bridges to connect to the Rio Grande Trail
 - Option 1 in the Trail Feasibility Study
- 2 SH82 Adjacent Alignment**
 - Bridge and Trail Segments Adjacent to SH82 through Shale Bluffs
 - Option 2 in the Trail Feasibility Study
- 3 River Alignment - SH82 Adjacent Alignment Reducing Bridges By Descending to the Roaring Fork River**
 - Maintaining maximum grade of 5% to meet ADA guidelines

ADDITIONAL ALIGNMENTS STUDIED

- 4 SH82 East Alignment Separated Pathway**
 - Bi-directional on-highway separated path with a barrier separating path from vehicles
- 5 SH82 East and West Shoulder Alignments**
 - Using the shoulders with no barrier
- 6 Potential to tunnel under SH82**
 - Avoid as many bridges as possible



SIGNIFICANT FEASIBILITY ISSUES

ALIGNMENT REVIEWED	FEASIBILITY ISSUES
<p><i>Studied in the 2022 Trail Feasibility Study</i></p> <p>SH82 Adjacent Alignment</p>	<ul style="list-style-type: none"> • Longer bridge spans than the Twin Bridges Alignment. • Cost is 32% higher due to longer bridge spans, constructing piers in the shale, and not being able to use the existing Rio Grande Trail for a section. • Construction impacts to SH82.
<p>River Alignment - SH82 Adjacent Alignment Reducing Bridges By Descending to the Roaring Fork River</p>	<ul style="list-style-type: none"> • Maintaining ADA grade is difficult. • Major environmental impacts to riparian areas and hillside.

<p><i>Additional Alignments Studied</i></p> <p>SH82 East Alignment Separated Pathway (on the roadway)</p>	<ul style="list-style-type: none"> • Need for a significant barrier between vehicle and trail users. • Cost is high due to the barrier. A full structural analysis is needed to handle the weight of the barrier. • The width is not sufficient for a 10-ft wide trail so the trail is reduced to 6-ft. • Safety and traffic issues due to the removal of the vehicle breakdown lane and proximity to vehicles going at 55+ mph.
<p>SH82 East and West Shoulder Alignments (using the shoulders)</p>	<ul style="list-style-type: none"> • Safety on the upvalley shoulder with high risk of shale debris coming down and blocking the road. This could force cyclists into a traffic lane. • Downvalley shoulder has drainage grates that would need to be modified for safety. • This option is already available but sees very little use.
<p>Potential to tunnel under SH82</p>	<ul style="list-style-type: none"> • Major issues with engineering a tunnel in shale under a highway. • Significant challenges on how to remove tunnel spoils with little impact to the river gorge.

ALIGNMENTS EXPLAINED (ADDITIONAL ALIGNMENTS STUDIED)

SH82 EAST ALIGNMENT SEPARATED PATHWAY

Brush Creek to Aspen Airport Business Center Feasibility Study Review of State Highway 82 Trail Alignment Memorandum

In August of 2022, SGM analyzed the potential of adding a trail connection from AABC to the Brush Creek Park and Ride **running parallel to SH82**. This alternative was explored due to the high cost of the twin bridge alignment. The hope was by using the existing highway shoulders a less costly, but feasible trail connection could be added. The trail would span **2.28 miles and consist of two, 10-foot wide trail sections at either end connected by a 6-ft wide trail section**. To accommodate the trail, the outside shoulder of the road would be reduced from 4 feet to 2 feet and the inside shoulder would be reduced from 10 feet to 4 feet a concrete barrier would protect trail users from traffic.

Challenges

- The loss of the 10-foot shoulder could significantly impact SH82 if a vehicle is broken down.
- Snow removal would be a challenge as snow plowed from the roadway would cover the trail.
- A pedestrian railing would need to be added to the down-valley traffic lanes.
- There is concern that trail experience would be degraded due to fast-moving traffic along SH82.

SH82 EAST AND WEST SHOULDER ALIGNMENTS

- Using the existing shoulders of SH82 is currently available but gets very little use due to safety and proximity to the highway concerns on both the upvalley and downvalley lanes.
- The upvalley lanes have major impacts from shale coming off the hillside and blocking the shoulder, forcing cyclists to ride in the highway. This is a major safety issue as this section of SH82 has a 55+ mph speed limit. Regular maintenance and sweeping the shoulders will be necessary and costly.
- CDOT has scaled some of the shale and put up rockfall fencing to keep the shale and larger rocks in the shoulder to avoid any road impacts. Further scaling is extremely expensive and the environmental costs of where to put the material and hauling it costs are significant.
- The other issue with using the upvalley shoulder is access. Cyclists can connect to the Brush Creek end of the shoulder via an underpass, but once near the Airport, cyclists have to cross both airport entrances and then navigate to the existing underpass to the AABC.
- The downvalley lanes have drains with grates, this is a hazard that forces cyclists to move towards the driving lanes; they would need to be replaced with more bike-friendly grates.

The ability to truly make the upvalley shoulder safer is extremely difficult and costly, both financially and environmentally. Due to these facts it's doubtful that more cyclists would use the shoulders if they were improved.

POTENTIAL TO TUNNEL UNDER SH82

The idea to tunnel under part of SH82 was considered, but the engineers felt the technical complexity of where a tunnel would go, the impact to current SH82 infrastructure since the existing piers cannot be compromised, how to deal with the material excavated to avoid impacts to the Roaring Fork Gorge, the high cost of tunneling, and the user experience of being in a tunnel make this alignment inferior to other options. Staff did not receive full Board support to analyze this option any further.

ALIGNMENTS EXPLAINED (2022 FEASIBILITY STUDY)

SH82 ADJACENT ALIGNMENT

The proposed alignment would exit the Brush Creek Park & Ride at the south end and follow a path generally parallel to and east of SH82. This alignment would use bridges, elevated platforms, and retaining walls along much of its length to cross the steep and rugged terrain. Eventually, it would reach the flat bench east of SH82 and follow that south until it connects with the existing infrastructure at the AABC.

Total length of connection = 2.28 miles

- Technically challenging
- User experience and maintenance concerns
- High construction risks due to steep shale slopes and coordination with CDOT
- Higher construction and maintenance costs

SH82 East Alignment has major challenges. The Shale Bluffs area is extremely steep, rugged, and prone to landslides. This alignment alternative would require a significant length of bridge, elevated trail structure, and retaining wall. The user experience would be reduced due to its proximity to SH82, it would have significant maintenance challenges due to the terrain and would require significant approval and coordination with CDOT to build since SH82 will need to be used to construct this alignment. The estimated construction cost of the trail and structures, based on 2025 construction, is \$22.9 million, estimated design and construction engineering cost is \$4.6 million.



Figure 3-13: Rendering of Proposed Shale Bluffs Crossing Looking South



Figure 3-14: Rendering of Proposed Shale Bluffs Crossing Looking West



Figure 3-10: Trail Alignment Option 2 – SH82 East Alignment

ALIGNMENTS EXPLAINED (2022 FEASIBILITY STUDY)

RIVER ALIGNMENT -SH82 ADJACENT ALIGNMENT BY DESCENDING TO THE ROARING FORK RIVER

This potential alignment would exit at the Brush Creek Park & Ride at the south end and gradually descend to a relatively flat area on the west bank of the Roaring Fork River. The alignment would follow the bank to the south. The trail would gradually ascend back up to the approximate elevation of SH82. It would continue along the flat bench of south Owl Creek and east of SH82 until it connects with the existing infrastructure at the AABC. River Alignment was **dismissed due to the environmental impacts, the disturbance the trail would cause to one of the most remote sections of the Roaring Fork Gorge and the significant elevation change along the alignment (approximately 175 feet)**. To maintain ADA grade requirements, switchbacks would be required, which increases the total length of trail.

OVERVIEW OF PROJECT AREA



Figure 2-1: Overview of Project Area
(Imagery Courtesy of Google Earth)

ALIGNMENTS EXPLAINED (PREFERRED)

TWIN BRIDGES ALIGNMENT WITH AN ANALYSIS OF THE BRIDGE LOCATIONS

Twin Bridges Alignment is the preferred alignment option. This proposed alignment would bridge the Roaring Fork River at the southeast corner of the Brush Creek Park & Ride and continue east to connect with the existing Rio Grande Trail (RGT). It would follow the existing RGT south and then bridge back across the Roaring Fork River south of Owl Creek. The trail would continue south along the flat bench east of SH82 until it connects with the existing infrastructure at the AABC. This is the most aesthetic, efficient, and constructible. The preferred alignment will require the least maintenance among the alternatives considered.

Total length of connection = 2.5 miles, Total length of new trail = 1.5 miles

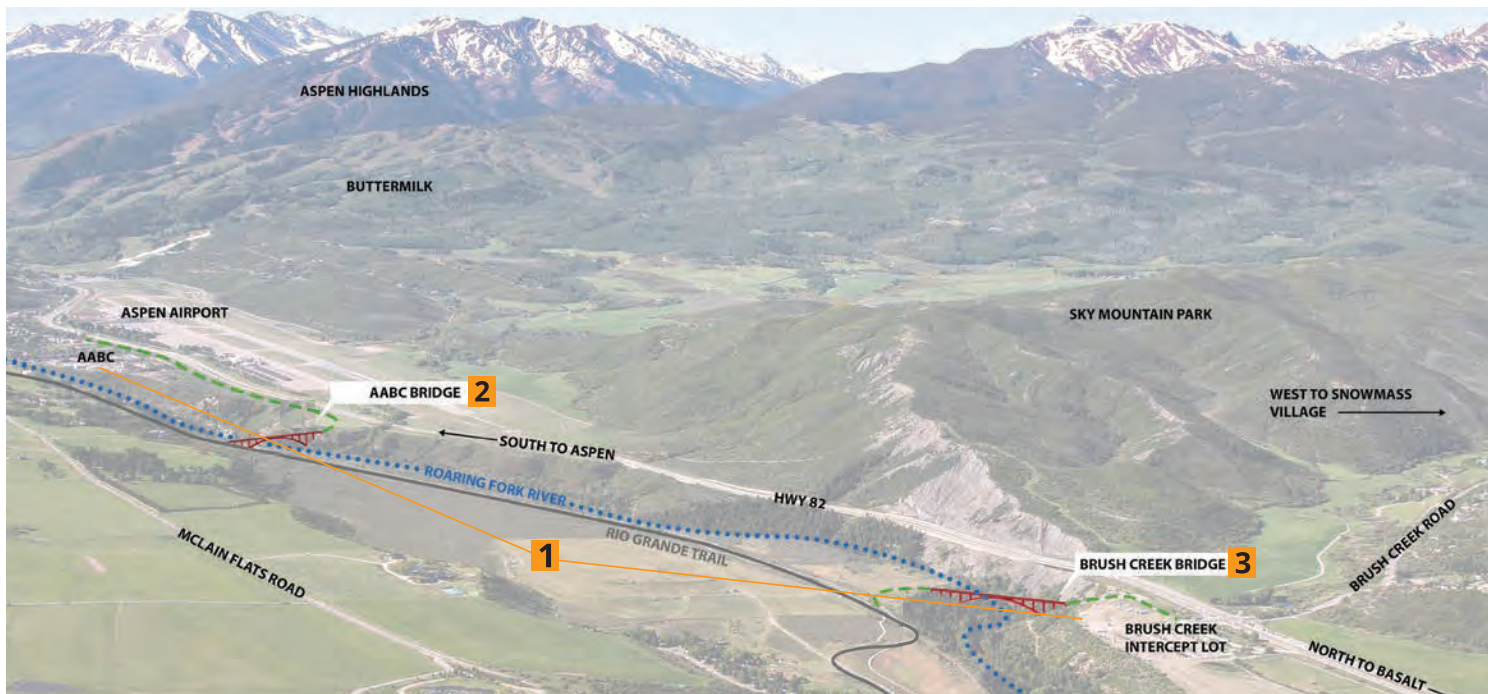
- Most effectively meets project criteria
- More technically feasible
- Creates the best user experience
- Lower construction risks
- Least environmental impact
- Most cost-effective that meets the goals of the project
- Allow for phasing or choosing just a part of the alignment

This alignment would require the construction of two bridges over the Roaring Fork River. However, it requires the **smallest length of new trail construction, best utilizes existing infrastructure, provides the best user experience, causes the least environmental impact, and requires the least agency coordination.** The elevation change between the Brush Creek Park & Ride and the Aspen Airport Business Center is relatively small. This option best aligns with the project goal to create seamless trail connections that meet ADA requirements while preserving the region's character. The estimated construction cost of the trail and structures, based on 2025 construction is \$20-\$25 million.

UPDATED COST ESTIMATES ON PAVING THE RIO GRANDE TRAIL

Paving the Rio Grande Trail through the Slaughterhouse Falls section has been considered as a way to improve connectivity into Aspen from downvalley communities and complete the full paved connection between Aspen and Glenwood Springs. This investment to turn the 2.6-mile section of the crusher-fine surfaced Rio Grande Trail to a multi-use paved trail with a soft surface shoulder totals approximately \$7.5 million.

PREFERRED ALIGNMENT



OPTION 1 Two new bridges: AABC Bridge and Brush Creek Bridge

Estimated Cost: \$20 - \$25 million

The new trail connects AABC to the Brush Creek Park & Ride via the Rio Grande Trail.

OPTION 2 One new bridge: AABC Bridge

Estimated Cost: \$11.3 million

Provides connectivity from the AABC to the Rio Grande Trail. Does not connect Rio Grande Trail back to the Brush Creek Park and Ride.

OPTION 3 One new bridge: Brush Creek Bridge

Estimated Cost: \$10.2 million

Provides connectivity into Aspen along the unpaved section of the Rio Grande Trail. Connects subdivisions in Woody Creek / McLain Flats to the Park and Ride.

OPTION 4 No new trail connection.

TWIN BRIDGES ALIGNMENT BRIDGE LOCATION

Multiple bridge locations were explored during the feasibility studies. The recommended location was chosen due to:

- Space for landings on both sides of the bridge
- Lowest cost due to non-constrained construction
- Separated soft surface and paved trails, so no new paving necessary
- Minimal impacts to Nordic trails since there is a separated soft surface trail
- Property ownership by Pitkin County Open Space and Trails on both sides
- Existing AABC trail provides recreation connection to Aspen

Figure 4-1: Bridge Location Aerial Overview
(Imagery Courtesy of Google Earth)



Figure 4-2: Vicinity Map – Brush Creek Bridge



Figure 4-3: Vicinity Map – AABC Bridge