AGENDA ITEM SUMMARY

WORK SESSION MEETING DATE: September 7, 2021

AGENDA ITEM TITLE: Aspen Village Bridge Connection to Rio Grande Trail

STAFF RESPONSIBLE: Gary Tennenbaum and Jessie Young

ISSUE STATEMENT: The 2015 Rio Grande Trail Management Plan identified a management action to improve regional trail connections to the Rio Grande Trail including addressing the missing link to Aspen Village subdivision. Following the direction from this plan, staff engaged SGM engineers to evaluate the feasibility and costs of potential bridge alignments across the Roaring Fork River connecting the Hwy. 82 underpass to the trail. The goal of this connection is to enhance the safety of this important connection where currently users must navigate the narrow, high-traffic Gerbaz Way with significant blind corners and grade changes to access the trail.

BACKGROUND:
The Rio Grande Management Plan, adopted in 2015, identified a number of missing links between population centers throughout the valley and the Rio Grande Trail. Among these missing links is the connection to the Aspen Village neighborhood. A CDOT trail provides multi-use, separated trail access along the west side of Hwy. 82 to a highway underpass; however, on the east side of the highway, the path ends on Gerbaz Way leaving users to navigate the roadway down to the bridge across the river and back up to the Rio Grande Trail. Gerbaz Way is a narrow road without shoulders, a couple blind corners, and significant grade change creating safety concerns for residents accessing the Rio Grande Trail on foot or bike.

There are approximately 150 homes within the Aspen Village subdivision with additional potential users coming from Old Snowmass via Watson Divide. Staff received numerous requests to address this missing link during the public outreach for the Rio Grande Node Plan in 2019 and residents took it upon themselves to collect input from their neighbors to demonstrate the need and support for this project in the fall of 2020 (included as an attachment). After speaking with residents on both sides of the potential bridge project (including Aspen Village, Woody Creek, Phillips, and Lower River Road neighborhoods) they reported that "Overwhelmingly, the response was positive. There is a strong desire to see a direct bridge across the Roaring Fork River from each side. The trails on each side of the river are approximately at the same level. Removing the trek down to the water and back up to the other side's trail is seen as an important aspect of the connection."

Staff contracted SGM in 2020 to evaluate the options to connect the underpass path to the Rio Grande Trail. SGM evaluated three types of bridge designs and four alignment alternatives as well as the potential for an expanded shoulder along Gerbaz Way. The complete report describes the constructability, aesthetics, feasibility, maintenance needs and costs of each of the structures and alignments. Site visits with the engineers and the information provided in the alternatives analysis has led staff to recommend proceeding with the pre-fab, steel truss bridge and alignment

#2. This bridge would be the most affordable, easiest to construct, and matches others on our system. Additionally, because there is no interaction with the roadway (as in alignments #3 and #4) it is the safer option and is less visible from the highway. Based on these factors, staff recommends if this project is pursued, that we proceed with the design and construction of the pre-fab, steel truss bridge and alignment #2.

A similar project was completed in 2018 connecting the Lazy Glen neighborhood to the Rio Grande Trail across the Roaring Fork River. The Lazy Glen Bridge linked about 131 homes to the Rio Grande for similar construction costs totaling approximately $725,000 for the same type of steel truss bridge and a connecting trail.

To put this budget request in context of other large trail priorities, the following are future potential projects and estimated costs:

Brush Creek Park and Ride to Aspen Airport Business Center – This feasibility of this project is currently being pursued and staff will present options to the Elected Officials Transportation Committee (EOTC) and OSTB in March 2022. This is a partnership with City of Aspen and the EOTC, and costs have not been determined, but in a 2014 feasibility study, costs were between $8-15 million. We would look to partner on costs and seek grant funding.

Carbondale to Crested Butte Trail – The first phase from Redstone to McClure Pass is being evaluated by the Forest Service and if approved, we would then seek funding to complete this section. Costs will range from $1.4-2 million. There are no other phases being considered right now. If the BOCC and OSTB decide to move forward with future phases, the cost estimates in the Carbondale to Crested Butte Plan are $5.5-16 million, but this would be phased over the next 20 years.

Road safety improvements – Castle Creek Road to the Music School was the first section of road for which the Open Space program assisted Road and Bridge with improvements for safety. Other county roads that see significant bike traffic and would be prioritized for improvements with which OST can assist are the rest of Castle Creek Road, Maroon Creek Road, McLain Flats Road, Capitol Creek Road and Snowmass Creek Road. The costs have not been calculated, but this would be in partnership with Road and Bridge, and grant funding would be explored.

A current fund balance will be presented at the meeting.

LINK TO STRATEGIC PLAN:
The following "Core Focus Areas & Success Factors" are related to this item:
Flourishing Natural & Built Environment – Success Factors

1. Conserved natural resources and environment
2. Responsibly maintain and enhance county assets
3. Ease of mobility via safe and efficient transportation systems
4. Well-planned and livable built environment

KEY DISCUSSION ITEMS:
Evaluating the need for this project based on the existing conditions, community support and project costs.
Input regarding staff's recommended alignment #2 and the Prefabricated Steel Truss alternative.

BUDGETARY IMPACT: $700,000

RECOMMENDED BOCC / OSTB ACTION: Provide staff with direction on whether to include this project in the 2022 work plan and budget for anticipated construction in spring/summer of 2022.

ATTACHMENTS:

- Aspen Village Pedestrian Bridge Alternatives Report (June 2021) – prepared by SGM Engineering
- Public Comments collected in December 2020
- YouTube video: https://www.youtube.com/watch?v=HBL37kJ50NU

ALTERNATIVES REPORT

PITKIN COUNTY OPEN SPACE & TRAILS
ASPEN VILLAGE PEDESTRIAN BRIDGE

June 2021

Prepared by

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ALTERNATIVES REPORT

PITKIN COUNTY OPEN SPACE & TRAILS
ASPEN VILLAGE PEDESTRIAN BRIDGE

PREPARED BY

MARK C. FRYMOYER, PE

SGM Project # 2020-120.002

Introduction

Pitkin County Open Space & Trails (OSTs) asked SGM to investigate alternatives to connect the Aspen Village/Highway 82 bike path to the Rio Grande Trail. Currently, the best route for Aspen Village residents to access the Rio Grande Trail is to follow the Aspen Village/Highway 82 Trail 1/3 of a mile to the west, cross under Highway 82 using the underpass, and then follow Gerbaz Way east for 3/8 of a mile to the intersection with the Rio Grande Trail. Gerbaz Way is typically 24 feet between edges of pavement, has two striped traffic lanes with no shoulders, and sees significant traffic. For these reasons, OSTs is studying alternative routes for Aspen Village residents to provide a safer connection to the Rio Grande Trail. See Figure 1 for a map showing the project vicinity.

The purpose of this report is to study the feasibility of potential alignments and to consider bridge alternatives over the Roaring Fork River along those alignments. The feasibility of each alignment and associated structures will be analyzed based on the following criteria:

- Constructability
- Aesthetics
- Feasibility
- Maintenance
- Cost

SGM considered four potential alignments which will be described in detail in the next section. For each alignment, the following structure types were considered: prefabricated steel through truss, timber tied arch, and steel suspension bridge

Figure 1: Vicinity map (imagery courtesy of Pitkin County GIS)

Alignment Alternatives

Four proposed alignments were considered. No survey or field measurements were taken so all measurements are based off Google Earth and should be considered approximate. We recommend that OSTs complete a survey once a preferred alignment is selected. The trail names used are taken from the Pitkin Outside trail finder application.

The alignments identified prioritized utilization of existing clearings, flat benches on which a bridge could be constructed, and compatibility with the existing Aspen Village/Highway 82 Trail. The alignments selected attempted to minimize the bridge length as this is the most expensive component. The four alignments considered are shown in Figure 2.

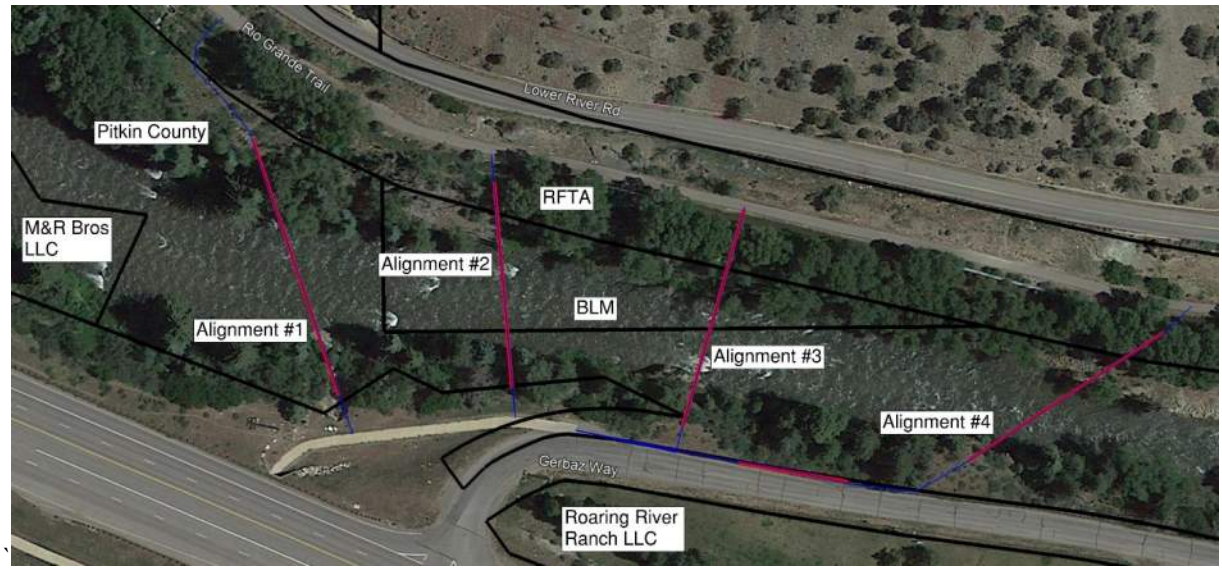

Figure 2: Proposed alignments (imagery courtesy of Google Earth and property lines from Pitkin County GIS)

Alignment 1

Alignment 1 departs the Aspen Village Highway Underpass Trail 90 feet northeast of the SR-82 underpass tunnel portal and directly east of the existing culvert headwall. The trail would depart from the existing Aspen Village Highway Underpass Trail on a 35-foot-long at-grade section on a northerly heading. The bridge would take off from a flat non-vegetated bench on the south side of the river and land on a flat non-vegetated bench on the north side of the river. The at-grade section on the north side would be 130 feet long and follow the edge of the clearing and tee into the Rio Grande Trail on a northeasterly heading. The measurements for this alignment are provided below and a plan view of this alignment is shown in Figure 3:

- Trail Length = 405 feet (Including Bridge)
- Bridge Length = 240 feet
- Bridge Skew = 30 Degrees to Thalweg of River
- Bridge Heading = N 20º W

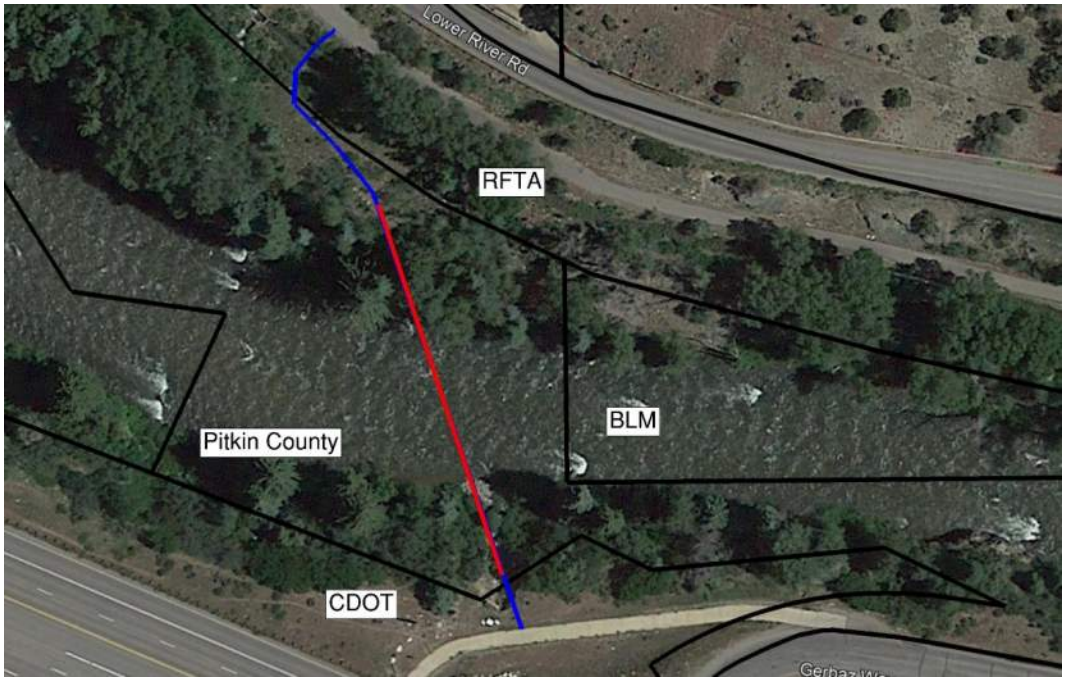

Figure 3: Alignment #1 (imagery from Google Earth and property lines from Pitkin County GIS)

Alignment 2

Alignment 2 departs the Aspen Village Highway Underpass Trail 60 feet west of the intersection with Gerbaz Way. The trail would depart from the existing Aspen Village Highway Underpass Trail on a 25-foot-long at-grade section on a northerly heading. The bridge would take off from a flat non-vegetated bench on the south side of the river, shoot through a gap in the trees on the south bank, and land on a flat non-vegetated bench on the north side of the river. The at-grade section on the north side would be 25 feet long and tee into the Rio Grande Trail at the edge of the clearing along the same alignment. The measurements for this alignment are provided below and a plan view of this alignment is shown in Figure 4:

- Trail Length = 230 feet (Including Bridge)
- Bridge Length = 180 feet
- Bridge Skew = 10 Degrees to Thalweg of River
- Bridge Heading = N 5º W

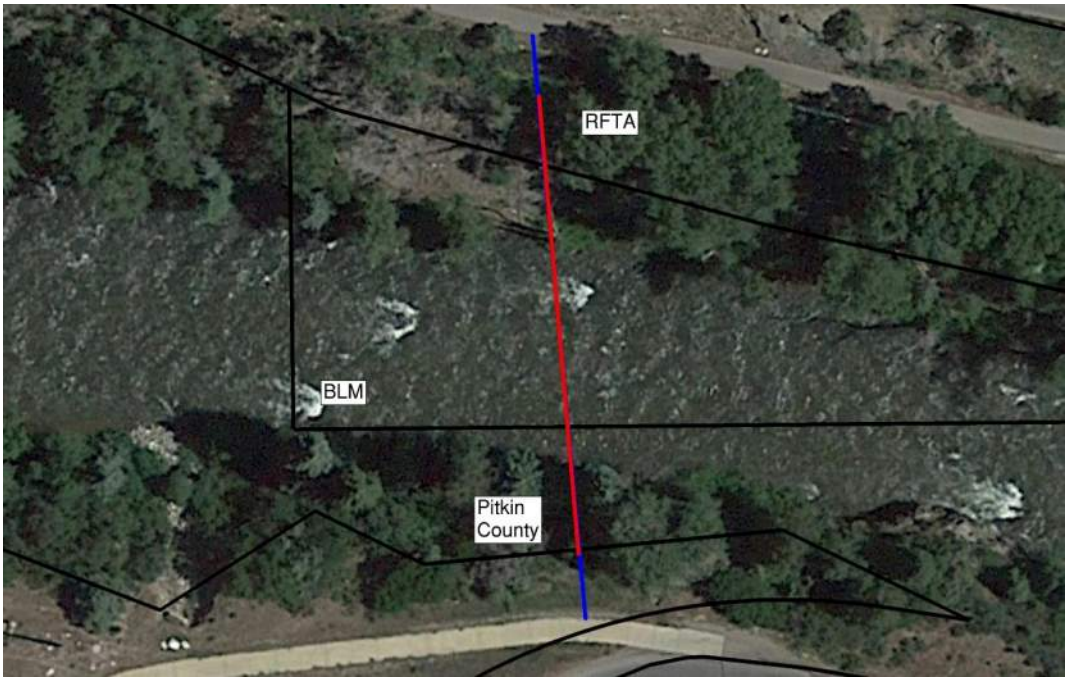

Figure 4: Alignment #2 (imagery from Google Earth and property lines from Pitkin County GIS)

Alignment 3

Alignment 3 continues east past the end of the Aspen Village Highway Underpass Trail along the north side of Gerbaz Way for 90 feet. The trail would turn away from Gerbaz Way onto a northerly heading. The at-grade trail section from the end of the Aspen Village Highway Underpass Trail to the south abutment of the bridge is 110 feet long. The bridge would take off from a flat non-vegetated bench on the south side of the river, shoot through a gap in the trees on the south bank, and land on a narrow flat bench next to the Rio Grande Trail over the Eli Cerise Ditch where it would tee into the Rio Grande Trail. The north abutment would need a block out to allow the ditch to pass through and the Rio Grande Trail would need to be built up to connect to the bridge grade. The measurements for this alignment are provided below and a plan view of this alignment is shown in Figure 5:

- Trail Length = 305 feet (Including Bridge)
- Bridge Length = 195 feet
- Bridge Skew = Normal to Thalweg of River
- Bridge Heading = N 15° E

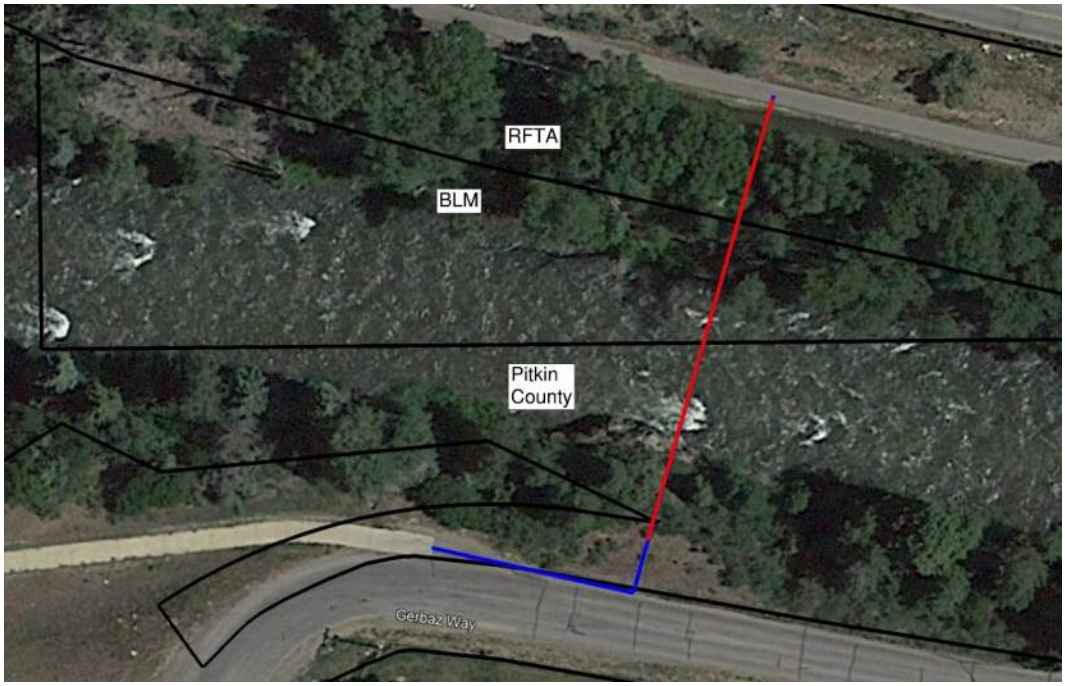

Figure 5: Alignment #3 (imagery from Google Earth and property lines from Pitkin County GIS)

Alignment 4

Alignment 4 continues east past the end of the Aspen Village Highway Underpass Trail along the north side of Gerbaz Way for 145 feet. The trail would cross a gully feature that would require a bridge or a retaining wall to widen the roadway. The trail would continue along the north side of Gerbaz Way for 60 feet before it turns away on a northeasterly heading. It would continue at-grade for 50 feet to a flat non-vegetated bench where the bridge would start. The bridge would take off from the bench on the south side of the river and land in a small clearing on the northside of the river adjacent to the Rio Grande Trail where it would tie in at an angle. The north abutment would need a block out to allow the ditch to pass through and the Rio Grande Trail would need to be built up to connect to the bridge grade. The measurements for this alignment are provided below and a plan view of this alignment is shown in Figure 6:

- Trail Length = 590 feet (Including Bridge/Wall #1 and Bridge #2)
- Bridge/Wall #1 Length (Over Gully Feature) = 95 feet
- Bridge #2 Length (Over Roaring Fork River) = 205 feet
- Bridge Skew = 45 Degrees to Thalweg of River
- Bridge Heading = N 55° E

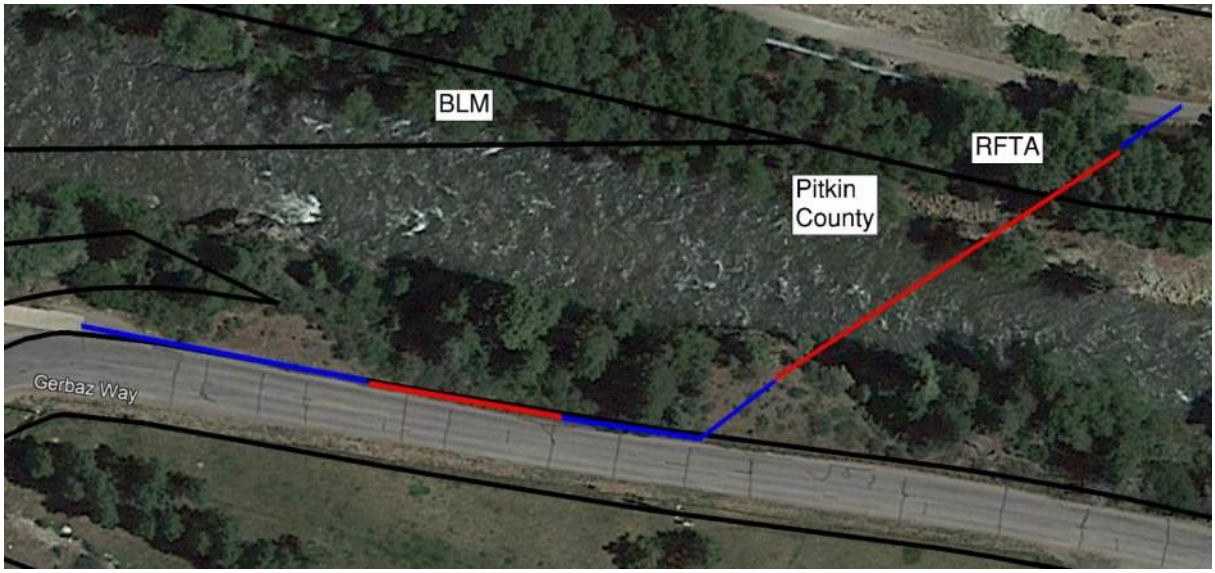

Figure 6: Alignment #4 (imagery from Google Earth and property lines from Pitkin County GIS)

Gerbaz Way Expanded Shoulder Alignment

An alternate version of Alignment 4 was also considered. In this alternative, Gerbaz Way would be shifted to the south edge of the right of way and the trail would be located on the existing pavement at the north side. This would eliminate the need for a structure over the gully feature. However, based on a property corner located in the field and a preliminary review of the parcel boundaries (see Figure 7), we determined that there was not enough room to shift Gerbaz Way and fit the trail. With that said, if Alternative 4 is advanced for final design, it would be prudent to do a boundary survey and fully understand the property lines. If this could fit, elimination of the structures along the north side of Gerbaz Way would result in a significant cost savings.

Safety

Alignments #1 and #2 are the safest because they are completely separated from traffic while Alignments #3 and #4 are mixed with vehicular traffic. With that said, a concrete curb or bollard could be used to provide a physical barrier. All four alignments are likely an improvement over the current condition.

Eli Cerise Ditch

The Eli Cerise Ditch runs parallel to the Rio Grande Trail on the north side of the Roaring Fork River. Most sections are open while others are conveyed through a suspended corrugated metal pipe. Each alignment considered will cross the ditch at an open section. Either a bridge over the ditch, a new pipe section, or a block out in the proposed abutments will be required to pass the ditch. A permit and coordination with the irrigation company will likely be required.

Right of Way

A preliminary review of the property boundaries was completed using the Pitkin County Web View GIS Application and the parcel boundary map is shown in Figure 7. These should be considered approximate and used only for preliminary planning purposes. There are two parcels that may be of concern during the design. The triangular shaped BLM parcel over the river and the north bank will likely be crossed by Alignments #2 and #3. The Roaring River Ranch LLC parcel on the south side of Gerbaz Way will likely prevent the possibility of shifting traffic on Gerbaz Way to the south to make room for a trail on the north.

Figure 7: Adjacent parcel boundaries (courtesy of Pitkin County Web Viewer)

Structure Alternatives

We considered three structure types that could be used to cross the Roaring Fork River on the alignments described above. The total bridge length for each alignment varies from 195 to 240 feet. We assumed that putting a bridge pier in the Roaring Fork River was not feasible. Therefore, the minimum bridge span length is that required to span the river to piers on the banks. That minimum span length is 100 to 150 feet for the alignments described.

The three structure types considered were a prefabricated steel through truss, timber tied arch, and steel suspension bridge. A precast prestressed concrete bridge could span this length. However, they are significantly heavier than steel and timber. Because we anticipate long crane picks to place these spans over the river, precast pre-stressed concrete was considered non-feasible. The following section describes each of the structure alternatives.

Prefabricated Steel Through Truss

This is the “standard” prefabricated steel pedestrian bridge type and is a weathering steel or painted through truss. These bridges are designed, fabricated, and delivered by companies such as Contech (formerly Big R Bridge), Wheeler, or Bridge Brothers. See Figures 8 through 10 for examples of this bridge type. The longest spans will have sway bracing above the deck level while shorter spans will be an open pony truss. These bridges are light for their span capability and are the most cost-effective superstructure type for this application. The maximum span length is 200 to 220 feet but can be increased to 240 feet with design deviations. This structure type could span the total bridge length in a single span for each alternative or could be used in a multi-span configuration with tall piers on the riverbanks. See Figures 11 and 12 for a schematic showing the difference between the single span and multiple span configurations.

Constructability-The constructability challenges are similar for all three bridge types and alignments and will be described in general in this section. Issues unique to each structure type will be described in their respective sections.

Site Description-This site is characterized by steep, rocky, and heavily vegetated riverbanks which are 50 feet high. The alignments tried to utilize flat benches clear of vegetation. However, all alignments will require significant clearing and grading to provide a flat bench for the abutments.

Construction Access-The benches above the steep riverbanks on the south side have good construction access. However, the north side is only accessible from the Rio Grande Trailhead on Gerbaz Way ¼ to ½ mile east of the project site. A quick assessment in the field indicated that the corridor was wide enough to get most construction equipment in. Since this is an old railroad bed, the subgrade is likely adequate to support heavy equipment. The ability to move heavy equipment along this section of the Rio Grande Trail should be explored in detail during final design.

All bridge types for each alternative could be constructed on the riverbanks. However, it would be challenging to get heavy equipment down the steep riverbanks. Ideally, shallow pier

foundations could be constructed on bedrock because only excavation equipment would be needed. Rebar and lumber could be lowered from above with a crane and concrete could be pumped from above. The rest of the work could be done by manual labor. A concrete or steel pier could be built up using the same method. If the bridge was founded on deep foundations, it would be a significant challenge to get a pile driving or drill rig down to the riverbanks.

Crane Access-Due to the steep riverbanks and heavy vegetation, we were concerned about the feasibility of erecting the bridge. To help assess this, Houston Burk with PSI Crane met us on site. His conclusion was that erecting a bridge along each alignment was challenging but feasible. His preference was a multi-span bridge with piers on the banks instead of a single span. This would reduce pick weights, length of structure maneuver, and reach. Two cranes on each bank would likely be required to erect the main span.

Aesthetics-Opinions on aesthetics are highly subjective. The following is our opinion and generally informed by feedback from clients and the public.

This type of structure has the most industrial and generic appearance of the types considered. This is because these are off the shelf designs while the other two structure types are custom designs. Most people will have seen similar structures in other places. With that said, these structures are attractive, and the open truss provides good sight lines and natural light. Weathering steel or paint can be used to provide a finish that matches the environment and desired aesthetic.

The span configuration will also impact the aesthetic. The single span option provides a large clear opening under the bridge making it less visually obtrusive. On the other hand, the members of the single span will be larger, deeper, and may have bracing above the deck. The multiple span option will have tall piers visible to river users, but the truss would have smaller and shallower members without bracing over the deck. Once a structure type and alignment are chosen, we recommend doing a rendering to help determine that the aesthetic requirements of the project are met.

Feasibility-This structure type is the most feasible of the three. This type of structure has been used many times for similar applications. Since it is an off the shelf option, it is the easiest way for OSTs to control costs and many local contractors have experience with this type of bridge.

Maintenance-These are low maintenance structures. The primary maintenance item is that the weathering steel or paint, which provide corrosion protection for the steel, will eventually fail and require repainting.

Figure 8: Rendezvous Development Bridge over the Fraser River in Winter Park, Colorado (courtesy of Big R Bridge)

Figure 9: Colorado Riverway Bridge in Moab, Utah. Multi-span prefabricated weathering steel pony truss (courtesy of Contech Engineered Solutions)

Figure 10: 14th Street Pedestrian Bridge in Glenwood Springs, Colorado. This is a more custom option with a main span deck truss and through trusses in the approach spans.

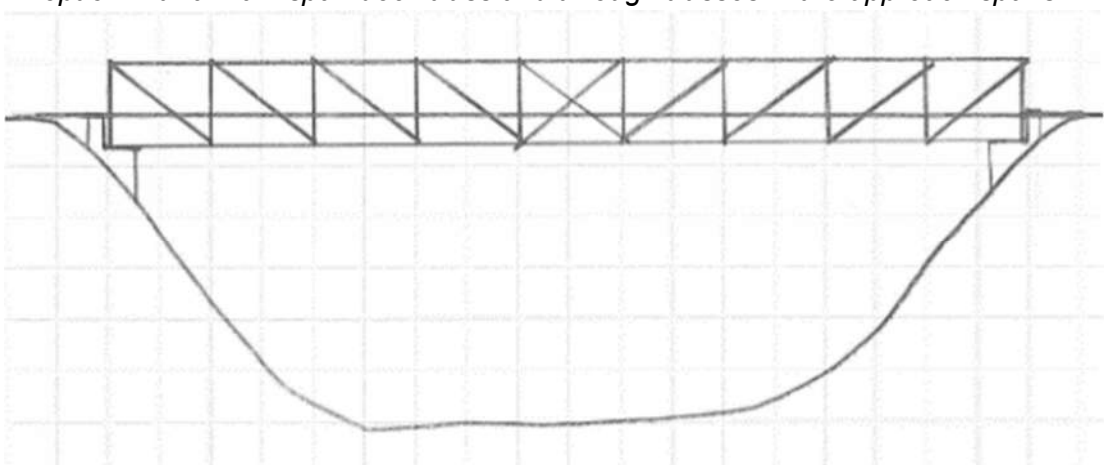

Figure 11: Schematic of single span bridge configuration.

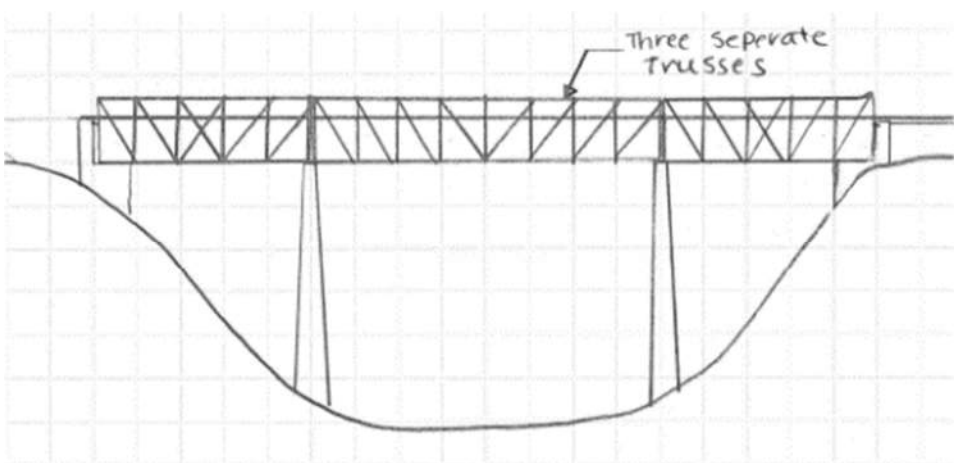

Figure 12: Schematic of multiple span bridge configuration.

Timber Tied Arch

The timber tied arch consists of primary curved arch ribs connected to a longitudinal tie which prevents the arch rib from straightening under load. The deck and floor system are hung from the arch rib. See Figures 13 and 14 for an example of this type of bridge. All structural members except the hangers would be glue laminated timber. These bridges are light for their span capability and could span the total bridge length. However, for the cost estimate the arch is assumed to span between piers on the riverbanks and have glue laminated stringer approach spans.

Constructability-The main challenge is erection of the ribs. They would likely be erected in two pieces with two cranes on opposite banks and connected at the crown. Once that connection is made, the ribs would be connected to the ties and abutments or piers. Then the hanger cables and floor system can be installed. This structure type would require significant field assembly before erection and large staging areas would be needed on both sides of the river. Lastly, a contractor would need to come up with a way to get laborers out in the middle of the span where the two ribs would connect and to install the ties.

Aesthetics-A tied arch would provide an elegant structure that would blend in well with the natural environment. This is more of a signature bridge aesthetic than the prefabricated steel truss bridge. It has a less bulky appearance than the prefabricated steel truss bridge but more bulky appearance that the steel suspension bridge. The adjacent Gerbaz Way and Smith Way vehicular bridges are also glulam timber arches, although traditional arches rather than tied arches) so it would provide continuity in this section of river.

Feasibility-This structure type is considered feasible but more challenging than the prefabricated steel truss. The primary challenges are the heavy pick weights, long reaches, need for two cranes, and the need to have a laborer out at midspan. Also, many local contractors would have limited experience working with this type of structure.

Maintenance-This type of structure is higher maintenance than the steel options. The preservative treatment will eventually break down and a field treatment will need to be applied. Also, issues such as insect infestation or rot are common with these structures.

Figure 13: Orenco Nature Park Bridge in Hillsboro, Oregon. Tied arch bridge with concrete piers and glulam beam approaches (courtesy of Western Wood Structures)

Figure 14: Tioga Bridge over the North Umpqua River in Oregon. Tied arch bridge with concrete piers (courtesy of Western Wood Structures)

Steel Suspension Bridge

The steel suspension bridge is one of the most elegant structure types for spans of this length. It consists of a main steel cable spanning between two towers and anchored in concrete blocks buried in the ground behind the towers. Suspender cables hang off the main cable and support the floor system and deck. This type of structure is a completely custom design but would consist of standard steel sections. See Figures 15 and 16 for examples of this structure type. This structure type could span the length required for any of the alignment alternatives.

Constructability-The main challenge with this structure type would be the construction of the towers and thrust blocks which anchor the main cables. The towers on a suspension bridge take significant lateral loads. Accessing the riverbanks to construct these towers would be a challenge as described above, especially if a deep foundation were required.

The thrust blocks which anchor the cables also create a significant challenge because a significant amount of room is needed off the end of the bridge to anchor the cables. On the south end of the bridge at Gerbaz Way, this room likely exists. However, at the north end of the bridge, the room to anchor the cables is tight. The cables would either need to be anchored south of the Rio Grande Trail. If they were anchored north of the Rio Grande Trail, they would need to pass over the trail with enough overhead clearance and be anchored into the hillside between the Rio Grande Trail and Lower River Road.

To construct this type of structure, the towers and anchor blocks would first be constructed. The main cable would be threaded from one thrust block, over the towers, and anchored in the other thrust block. The suspender cables would be installed, and the deck and floor system would be hung from those suspender cables. A crane on each riverbank would likely be required to install the main cables.

Aesthetics-A steel suspension bridge would provide a light and elegant aesthetic that would blend well with the natural environment. This is a signature bridge and would be one of the few in the Roaring Fork Valley. It is the least bulky of the three structure types.

Feasibility-Provided that there is enough room for the thrust blocks and that the towers can be installed on the riverbanks, this could be feasible. Geotechnical investigation and an understanding of the loads on the tower would be necessary to determine if the tower is feasible. The other major challenge is that it would be a custom design and most local contractors would have limited experience working with this type of structure.

Maintenance- These are low maintenance structures. The primary maintenance item is that the weathering steel or paint, which provide corrosion protection for the steel, will eventually fail and require repainting.

Figure 15: Elevation view of the suspension bridge at the Needleton Trailhead, San Juan National Forest, CO

Figure 16: Ravine Gardens Suspension Bridge in Bellevue, Washington

Cost

Tables 1 provides the summary of total costs for each alternative rounded to the nearest hundred thousand dollars and Table 2 provides the detailed breakdown of costs. These are conceptual and based on square foot bridge and trail costs developed from our experience and discussions with contractors, fabricators, and suppliers. The costs include mobilization, design and construction engineering, and a contingency. The design engineering, construction engineering, and contingency vary for each structure type based on their relative complexity. All costs assume a multiple span option for the prefabricated steel truss and timber tied arch. The single span option for these two structures is anticipated to be within 10%-15% of the costs provided.

	Total Cost		
Alignment	**Prefabricated Steel Truss**	**Timber Tied Arch**	**Steel Suspension Bridge**
#1	$ 900,000	$ 1,900,000	$ 2,500,000
#2	$ 700,000	$ 1,400,000	$ 1,900,000
#3	$ 700,000	$ 1,500,000	$ 2,100,000
#4	$ 1,100,000	$ 2,000,000	$ 2,600,000

Table 1: Summary of costs

The prefabricated steel truss is the lowest cost structure alternative followed by the timber tied arch and the steel suspension bridge. The lower cost is because these are standardized designs and many contractors could bid the work. The higher costs of the timber tied arch and suspension bridge are because they are more custom designs and would require a more specialized bridge contractor. Alignments #2 and #3 are the lowest cost trail alignments because they have the shortest bridge spans.

Alignment	Structure Type	Trail Width (ft)	Trail Length (ft)	Trail Area (ft^2)	Trail Cost ($/$ft^2$)	Trail Cost	Bridge Width (ft)	Bridge Length (ft)	Bridge Area (ft^2)	Bridge Cost ($/$ft^2$)	Bridge Cost	Contingency	Const. Subtotal	Design Engr.	Constr. Engr.	Total
#1	Prefabricated Steel Truss	8	165	1320	$ 20	$ 26,400	10	240	2400	$ 250	$ 600,000	20%	$ 751,680	10%	10%	$ 902,016
	Timber Tied Arch									$ 480	$ 1,152,000	25%	$ 1,471,680	15%	15%	$ 1,913,184
	Steel Suspension Bridge									$ 550	$ 1,320,000	30%	$ 1,747,680	30%	15%	$ 2,534,136
#2	Prefabricated Steel Truss	8	50	400	$ 20	$ 8,000	10	180	1800	$ 250	$ 450,000	20%	$ 549,600	10%	10%	$ 659,520
	Timber Tied Arch									$ 480	$ 864,000	25%	$ 1,089,600	15%	15%	$ 1,416,480
	Steel Suspension Bridge									$ 550	$ 990,000	30%	$ 1,296,600	30%	15%	$ 1,880,070
#3	Prefabricated Steel Truss	8	110	880	$ 20	$ 17,600	10	195	1950	$ 250	$ 487,500	20%	$ 606,120	10%	10%	$ 727,344
	Timber Tied Arch									$ 480	$ 936,000	25%	$ 1,191,120	15%	15%	$ 1,548,456
	Steel Suspension Bridge									$ 550	$ 1,072,500	30%	$ 1,415,370	30%	15%	$ 2,052,287
#4	*Gully Bridge	8	290	2320	$ 20	$ 46,400	10	95	950	$ 250	$ 237,500	20%	---	---	---	---
	*Prefabricated Steel Truss							205	2050	$ 250	$ 512,500	20%	$ 955,680	10%	10%	$ 1,146,816
	*Timber Tied Arch									$ 480	$ 984,000	25%	$ 1,570,680	15%	15%	$ 2,041,884
	*Steel Suspension Bridge									$ 550	$ 1,127,500	30%	$ 1,806,430	30%	15%	$ 2,619,324

*A prefabricated steel truss bridge is assumed for the crossing of the gully feature.

**Contingency of 20% used for trail

Table 2: Detailed breakdown of costs

Conclusions

Alignment #2 appears to be the lowest cost alignment and separates the trail traffic from the vehicle traffic. However, we recommended that a survey be completed to confirm that this truly is the best alignment and to get a full understanding of the topography, required tree removal, and earthwork.

The prefabricated steel truss is the lowest cost structure alternative, most feasible, and likely the lowest risk to OSTs. However, if OSTs is looking for a more aesthetic option, the timber tied arch appears to be the best choice. While it is higher maintenance, the upfront cost is significantly less. The steel suspension bridge may also be feasible but significantly more expensive. To truly assess the structural feasibility, a preliminary design must be completed including a geotechnical study and survey. This would help to determine if the tower is structurally feasible and if there is room for the anchor block on the north side.

A preliminary geotechnical investigation and survey is also recommended to determine if the single span or multiple span configuration for the prefabricated steel truss and timber tied arch is the best configuration. The multiple span configuration would be preferred but would require enough space for piers and competent bearing material near the surface. If this does not exist, a single span would be the only option for the prefabricated steel truss and the timber tied arch and a steel suspension bridge would not be feasible.

This report was developed based upon our site observations, a review of the documents provided, and our experience with projects of this type. Unseen defects or conditions may exist that could change the conclusions reached. We believe this work was conducted to the standard of care. No warrant is made, express or implied.

Comments received:

The connector bridge is something that we have been looking forward to for a long time, ever since the underpass and bike path from Watson to Aspen Village was in place.
This was something that my mother, Dolores Stutsman fought for and unfortunately she passed away this August and will never see it finished. It would be absolutely wonderful to have the connection to the Rio Grande Trail without having to go onto the road.

We would absolutely use the trail!

I've always thought that the Rio Grande Rails-to-Trails was THE best addition to the active Roaring Fork valley community. I've been using it for decades - running, biking and hiking. I've lived in Aspen Village over 50 years and enjoy this part of the valley. An upgrade would be great!

I would love to have a connection to the Rio Grande trail. I live in Aspen Village and there would be 2 people using it from my home.
I hope you will consider doing this.

YAY!! I am very excited to hear that you will be connecting us up to the Rio Grande! I think I am one of the only locals that rides the path every weekend all summer long. Now I have my two boys riding with me, they use the Lazy Glen path to get to the Rio Grande. THANK YOU!!

I have lived at 87 Aspen Village since 1994 and have always wondered why the trail just ends right there on Gerbaz Way. I know it wouldn't be inexpensive to put a bridge over that section of the river, but I think it would be such a great benefit to improve people's access, safety, and encourage them to get outside and take advantage of our wonderful weather.
I ride my bike often along that same route and must take Gerbaz Way to the bike path. It's not too bad on a bike, but I see people walking along that road and think that it doesn't seem too safe. I have some elderly neighbors that walk that route as well. It would improve their safety. I am in full support for this.
Please, Please

My husband and I would be very interested in using the trail down to Rio Grande. We also have 2 sons that visit often in the summer and skiing months. Thanks for thinking of our community. This is exciting.

I am writing in support of this proposed improvement as my family uses this access to Rio Grande to ride and walk frequently. It is quite dangerous to walk or ride to rio grande. There is no room and the traffic is consistent. There is poor visibility because of the curves and there are some extreme hill features that also limit visibility. The fact that this is being considered is amazing and the improvement in safety will be greatly appreciated by this entire community.

My two children and I live at 118 Aspen Village. One of our favorite activities is to ride bikes. Having a connector trail to Aspen Village from the Rio Grande bike trail would mean the world to me because it would keep my children safe. My son and my daughter have recently discovered the freedom of riding their bikes along the trail without me-which I love and, quite honestly, was one of the primary reasons that I think I fell in love with riding my bike at a young age. I feel fine about their safety on the bike path however it is extremely nerve wracking, as well when I think about them wobbling and possibly swerving their bikes up the hill on the road.
Your consideration of adding a connector trail from Aspen Village is of great importance to my children and myself. We appreciate your consideration and we thank you for your time.

What a fantastic idea!

This would be a great addition for the residences and tax payers at Aspen Village, in addition to people who would like to park at the Aspen Village bus stop.

We frequent this with our 6 and 8 year old children and would love to have a safer option.

I fully support the initiative to connect the Rio Grande Trail with Aspen Village. - there will be 2+ people who would use this connection on a regular basis.

I am in favor of extending the bike trail.

We have 4 people in the household that would use the connection trail from the Aspen Village/Gerbazdale bike path to the Rio Grande Trail.
I believe this is a safety issue and would allow our family and children to bike safely on the Rio Grande Trail.

I think this would be fabulous! I am in support of it.

We will definitely use this new trail.
We have 4 family members that will use the trail.

3 household members would be using the trail. Both my husband and I and our foster child currently and regularly use the Rio Grande Trail by way of Gebazdale Way. My husband and I are in our late 60's and as we appreciate the trail from our home to Gerbaz Way Road, I am always nervous about the section that we have to travel on the road to then get to the Rio Grande Trail. In addition to us 3, we have local family members who come to visit us via the bike trail.

We frequently use the Rio Grande Trail, and feel it is Very Important for safety and access to develop a Pedestrian/Bike connection from Aspen Vlg to the Rio Grande Trail.

There are 2 adults and 2 children and 1 dog in our household. We will all use the bike path. Please build it.

I live in Aspen Village and use the path every weekend. My sons now live in Lazy Glen and we meet up at the junction of the Rio Grande and the Lazy Glen spur. (Thank you for that too!).
We are in full support of creating a safe connection from Aspen Village to the Rio Grande Trail.

I am in favor of connecting the Aspen Village Trail to the Rio Grande Trail. It would be great to get off the paved 2 lane road and have a safer access to the trail. We would definitely use the connection often.

I am writing to voice my support for access to the Rio Grande Trail from Aspen Village.
My wife and I, as well as son and daughter-in-law access the RG trail regularly for biking and walking. The walk along Gerbaz Road to access the trail is sketchy at best, as there are several blind curves on the way.
Direct access would be great.

...we all travel the Rio Grande and would love our housing development to be connected more easily than to have to go on Gerbazdale Way.

Although no one in my household would use the trail I am in support of the project.

To the Open Space & Trails Board of Trustees:

I'm writing to voice my enthusiasm about creating a connection between the cement biking/walking path that heads downvalley from Aspen Village and the Rio Grande trail. Having lived in Aspen Village with my family for nine years, and Aspen for 11 years before that, I've spent plenty of time on the Rio Grande trail biking, running/walking, and cross country skiing. Riding between my house and downtown Aspen is a favorite summer activity of mine, and this summer my husband and I rode from our home to downtown Basalt and back with our daughters, ages 9 and 12, for lunch. We are thrilled that our daughters are finally both at an age where we can relax a bit more on the stretch of Gerbaz Way that connects where the cement path ends to a junction with the Rio Grande Trail. That road might not be particularly narrow, but there isn't much of a margin for error in the way of shoulders when it comes to a slightly wobbly kid on a bike. These days our family rides that stretch carefully but swiftly, since cars and trucks on that road that pass us have to pull significantly into the opposite lane to give us a wide berth, for which we're grateful. Even still on the way back home there's a blind corner heading uphill that continues to give us the heebie jeebies as our daughters' pedaling slows down going uphill. My family of four would get a lot of use out of some sort of trail connection that gets us out of the way of cars, providing access to one of our favorite resources in the valley. It's exciting to know that you're looking into it!

I would like to voice my support for a connection from Aspen Village to the Rio Grande trail. We have lived in Aspen Village for over 30 years, and even though it’s a beautiful spot, it’s not easy to get to a trail to walk or bike. It was nice that they added a trail section by the highway, but it’s

by the highway, so not so beautiful or peaceful, and it goes nowhere. I would love to walk or bike a bit further, and a bit easier, so thank you for considering this connection to serve 150 homeowners in Aspen Village.

We would like to voice our support for the Rio Grande Trail connection. Aspen Village serves a vital need for affordable housing in the upper valley. Unfortunately, we are also isolated from open space and trail access. Creating the Rio Grande Trail connection would help create an easy and safe path for ourselves and neighbors to easily access the biking path and points beyond. We use this trail in all seasons for biking, running, Nordic skiing and commuting to work.

I am 100% in favor of completing the missing link in the Rio Grande Trail. Having lived in Aspen Village for nearly 40 years, I remember with horror the days when we had to bicycle along Hwy 82 to the Gerbaz Way turn-off. Happily, in 1996 the part of the trail along Hwy 82 was completed.. However, a very dangerous stretch still exists along Gerbaz Way until it connects with the Rio Grande Trail. It is high time we complete the job! Pitkin County, please finish the last leg of the trail from Aspen Village to Rio Grand Trail as soon as possible -- for the safety of our children. I bicycle from Aspen Village to Woody Creek. In addition, when my son, his wife, and their one-year-old daughter visit, they do also -- with the little girl in a child trailer behind one of their bicycles. So, in my family, four people will be using the missing link when completed.

We enthusiastically endorse the idea of connecting the existing bike and walking path from Aspen Village to the Rio Grande Trail!!! My wife and I are so grateful for the section of trail that leads to Watson Divide, and often walk down to see and feed the horses, or ride our bikes over Watson Divide into the Old Snowmass valley. We also love to ride our bikes on the Rio Grande Trail, often riding to Woody Creek, Basalt or Carbondale for lunch or to visit friends. In the winter, we often cross-country ski up to Woody Creek and beyond. We agree that the Rio Grande Trail is one of the valley's most valuable amenities, both for residents and guests who visit our area. We also concur that the section from the Gerbazdale pedestrian underpass to the Rio Grande poses an unquestionable safety risk, and that riding on the narrow Lower River Road (with virtually no shoulders) to reach the Rio Grande is often dangerous and certainly intimidating with vehicular traffic. It is even more harrowing in the winter, walking with skis along the road from the parking lot near the bridge up the hill to access the trail! We encourage and fully support the idea of securing and developing a dedicated right-of-way to safely connect our neighborhood to the Rio Grande Trail. Please add us to the list of supporters of this worthwhile project, and please keep us posted of any developments on this wonderful idea! We are totally on board!

[I] use the Rio Grande regularly and have many friends Living in Aspen Village. I also drive on Gerbaz to get to Hwy 82 and am frequently surprised by pedestrians on the blind curves on that short stretch, it is a hazard and this would be a great safe way to link those 2 trails together.

We would use the new trail connection primarily for recreation. Although it would create a safer bike ride option to get to a RFTA bus, there's not much value add to my "commute" from Woody Creek Tavern. If I lived in Phillips trailer park or some of the other APCHA homes in the River Road valley, I would be very excited about this new project from a commuting to work perspective.

We live in Phillips Hillside and walk to the bus stop at Aspen Village and we walk up Watson Divide often. Thanks for even thinking about it. Sure would be safer.

We would like to see a direct bridge across the Roaring Fork River from each side. The trails on each side of the river are approximately the same level. Removing the trek down to the water and back up to the other side's trail is an important aspect of the connection. Safer and definitely more accessible for everyone.

https://www.youtube.com/watch?v=HBL37kJ50NU