AGENDA

CITY COUNCIL WORK SESSION

May 17, 2022

4:00 PM, City Council Chambers
427 Rio Grande Place, Aspen

CITY OF ASPEN

ZOOM MEETING INSTRUCTIONS

Join from a PC, Mac, iPad, iPhone or Android device:
Please click this URL to join.
https://zoom.us/j/95644646683?pwd=bVRKNnNueER0OHpDbGJ2YmFMT1Rodz09
Passcode: 81611

Or join by phone:
Dial:
US: +1 669 900 6833
Webinar ID: 956 4464 6683
Passcode: 81611

I. WORK SESSION

I.A. Elected Officials Transportation Committee - Meeting Preparation

I.B. Carbon - Council Goal: Fleet Electrification

I.C. Council Board Reports & Council Updates

Elected Officials Transportation Committee (EOTC)

Thursday, May 26, 2022 - 4:00pm

Location – Town of Snowmass Village Council Meeting Room

Host and Chair – Town of Snowmass Village

EOTC Background, Documents, and Packet Materials may be found here:
https://pitkincounty.com/1322/Elected-Officials-Transportation-Committ

EOTC Vision: We envision the Roaring Fork Valley as the embodiment of a sustainable transportation system emphasizing mass transit and mobility that contributes to the happiness and wellbeing of residents and visitors.

EOTC Mission: Work collectively to reduce and manage the volume of vehicles on the road and parking system and continue to develop and support a comprehensive multimodal, long-range strategy that will insure a convenient, equitable and efficient transportation system for the Roaring Fork Valley.

Summary of State Statute and Ballot Requirements: The 0.5% County Transit Sales and Use Tax shall be used for the purpose of financing, constructing, operating and managing a public, fixed route mass transportation system within the Roaring Fork Valley.

Public Comment Instructions:

This hybrid virtual / in person EOTC meeting will be broadcast on grassroots TV and available for viewing at https://tosv.com/193/Town-Meetings.

Please use the login information below to participate virtually or you may participate in person at:

Town Hall Council Chambers
130 Kearns Road
Snowmass Village, Co 81615

Microsoft Teams meeting
Join on your computer or mobile app
Click here to join the meeting
Or call in (audio only)
+1 720-617-3310,,116811676# United States, Denver
Phone Conference ID: 116 811 676#

I. 4:00 – 4:05 CALL TO ORDER AND ROLL CALL
(Conducted by Meeting Host Chair, Roll Call by Jurisdiction)

II. 4:05 – 4:10 APPROVAL OF March 24, 2022 ACTION MINUTES Page 3
(Motion, Second, and Roll Call Vote by Jurisdiction)

III. 4:10 - 4:20 PUBLIC COMMENT FOR ITEMS NOT ON THE AGENDA
(Comments limited to three minutes per person)

IV. 4:20 - 4:30 EOTC COMMITTEE MEMBER UPDATES

V. 4:30 – 5:15 PUBLIC HEARING: BRUSH CREEK PARK & RIDE TO AABC / ASPEN TRAIL CONNECTION – PUBLIC PROCESS OUTLINE REVIEW Page 17
David Pesnichak, Transportation Administrator
Project Partners: Pitkin County Open Space and Trails, and
City of Aspen Parks and Open Space
Decision Needed: Administrative Direction authorizing the Staff Recommendation to initiate the public process and data gathering phase of the AABC / Brush Creek Park and Ride trail connection.
(Motion, Second, and Roll Call Vote by Jurisdiction)

VI. 5:15 – 6:15 PUBLIC HEARING: HOV LANE ENFORCEMENT – STAFF ANALYSIS REVIEW Page 134
David Pesnichak, Transportation Administrator
Decision Needed: Administrative Direction to develop a plan for HOV lane compliance with CSP and the Pitkin County Sheriff's Office and include a financial request for EOTC review within the 2023 EOTC Budget as appropriate.
(Motion, Second, and Roll Call Vote by Jurisdiction)

VII. 6:15 – 6:30 INFORMATION ONLY: UPDATES (Q&A) Page 145
A. Near Term Transit Improvement Program – Progress Update
B. Food Truck at Brush Creek Park and Ride – Progress Update

VIII. ADJOURN MEETING
(Motion, Second, and Roll Call Vote by Jurisdiction)

*** Next Regular EOTC meeting is October 27, 2022 – City of Aspen to Host & Chair**

ELECTED OFFICIALS TRANSPORTATION COMMITTEE (EOTC)

AGREEMENTS & DECISIONS REACHED
REGULAR MEETING
March 24, 2022

Location (In Person and Virtual) – Pitkin County
Pitkin County - Host & Chair

- The agenda items contained in these minutes are written in an action only format.
- For a video production of this meeting, go to: https://youtu.be/FXAQEH-fFrM?list=PLYAoFMw_qLSv-q6AcF02Zi07y-aPnU3Mp
- To access the Elected Officials Transportation Committee meeting packet material, go to: https://drive.google.com/drive/folders/1kPdv-lUJ4z8o9qM7BNVZzknWhqS73Abh (or https://www.pitkincounty.com/1322/Elected-Officials-Transportation-Committ, then 'EOTC Archived Packets')

Elected Officials in Attendance:

Aspen – 3	**Pitkin County - 4**	**Snowmass - 5**
Torre	Steve Child	Bill Madsen
Skippy Mesirow	Francie Jacober	Tom Goode
John Doyle	Greg Poschman	Tom Fridstein
	Patti Clapper	Alyssa Shenk
		Bob Sirkus

Absent: Rachael Richards, Ward Hauenstein, Kelly McNicholas Kury

Note: - Pitkin County Commissioner, Francie Jacober, left the meeting before the vote for the first agenda item on the Brush Creek Park and Ride to AABC Trail Connection.
- Pitkin County Commissioner, Steve Child, joined the meeting following the vote on accepting the minutes from the October 28, 2021 meeting.

Agreements & Decisions Reached

CALL TO ORDER AND ROLL CALL

Chairwoman Clapper called the meeting of the Elected Officials Transportation Committee (EOTC) to order at 4.05 p.m. followed by a roll-call for attendance.

APPROVAL OF THE OCTOBER 28, 2021 ACTION MINUTES

Chairwoman Clapper called for discussion on the October 28, 2021 EOTC Agreements and Decisions Reached. Mayor Torre made a motion to approve the Agreements and Decisions reached from October 28, 2021. The motion was seconded by Councilor Doyle.

Pitkin County: The votes were: Francie Jacober, yes; Greg Poschman, yes; Patti Clapper, yes; motion carried.

Town of Snowmass Village: The votes were: Bill Madsen, yes; Tom Goode, yes; Tom Fridstein, yes; Alyssa Shenk, yes; Bob Sirkus, yes; motion carried.

City of Aspen: The votes were: Torre, yes; Skippy Mesirow, yes; John Doyle, yes; motion carried.

PUBLIC COMMENT FOR ITEMS NOT ON THE AGENDA

Chairwoman Clapper requested any public comment for items not on the agenda.

Toni Kronberg thanked each jurisdiction, particularly the Town of Snowmass Village for their work on the connectivity plan, the planned trails connecting the City of Aspen's lumberyard project, and Pitkin County's oversight of projects. Ms. Kronberg noted that the Town of Snowmass Village, the Airport and Aspen all need to be connected with an aerial connection. Ms. Kronberg noted that the EOTC should discuss the aerial tram at their upcoming retreat and requested that the EOTC undertake a feasibility study. Ms. Kronberg also asked that the court cases for the Entrance to Aspen Record of Decision be added to the EOTC website.

EOTC COMMITTEE MEMBER UPDATES

Councilor Sirkus noted that the Dynamic Message Sign (DMS) should be utilized to help promote bus ridership during the Maroon Creek Roundabout reconstruction in the summer of 2022. Mr. Pesnichak explained that the plan is to start utilizing the sign for the construction project starting in mid-April when construction starts. Mr. Pesnichak said that he would check in with CDOT and Pitkin County Public Works to see about moving up the utilization of the DMS.

Commissioner Poschman noted that McLain Flats Road is often already chocked with traffic even without the detour from the Maroon Creek Roundabout.

Commissioner Child noted that there are many parking spaces available at the Brush Creek Park and Ride and the buses are running frequently.

Mayor Torre asked for a published timeframe for the upcoming reconstruction on the Maroon Creek Roundabout. Mr. Pesnichak said that Tracy Trulove is the public information officer for CDOT on the Maroon Creek Roundabout project and that she is the best contact for construction schedules.

Commissioner Jacober identified that CDOT has a website called “projects” that has lots of information on CDOT projects.

Mayor Torre said that he wanted to see the information out in front of people and not just referring people to a website.

PUBLIC HEARINGS

Brush Creek Park and Ride to AABC Trail Connection
David Pesnichak - Transportation Administrator

Mr. Pesnichak explained the Pitkin County Open Space and Trails (OST) Department, the City of Aspen Parks and Open Space Department, and the Elected Officials Transportation Committee (EOTC) have jointly funded a feasibility study to connect the Brush Creek Park and Ride to the Aspen Airport Business Center (AABC) via a safe, hard surface trail. This trail connection has been scoped to meet the profile grade requirements in the American with Disabilities Act (ADA) for both recreationists and commuters. The project funding partners contracted with SGM to conduct this study.

The local project team consists of representatives from the City of Aspen Parks and Open Space Department, Pitkin County Open Space and Trails Department, the Town of Snowmass Village Parks and Recreation Department, and the Regional Transportation Administrator. This initial phase in 2021 and early 2022 consists of a feasibility analysis and a determination of possible alignment alternatives including estimated costs. The goal of this meeting with the EOTC is to discuss the options and determine if staff should move the project to a public process to obtain community feedback.

Improving bicycle and pedestrian connections from the Brush Creek Park and Ride was identified as an Upper Valley Priority by the EOTC within the Comprehensive Valley Transportation Plan (CVTP) adopted in 2020.

The results of this feasibility and alignment study were reported out to the Pitkin County OST Board in a joint meeting with the City of Aspen Parks and Open Space Board on February 24, 2022. The comments received from the joint Pitkin County OST Board and City of Aspen Parks and Open Space Board meeting held in February consisted of:

- Recommend moving forward with the public process in 2022 of the two identified technically feasible alignments
- Identified general preference for Option 1 (Twin Bridges)
- Identified additional information needed as project goes to public process:
    - Bike commute time to Aspen and not just to AABC.

- Need for commuter study to determine: a) how many cars could be taken off the road, and b) the feasibility of this connection as a winter commute route.
- Identify whether 10ft trail width will provide enough capacity if it is a commuter trail along with a recreation trail.
- Look at phasing overall project and identify a list of potential issues should the project be phased.

Mr. Pesnichak then turned it over to Gary Tennenbaum, Director of the Pitkin County Open Space and Trails Department, and Austin Weiss, Director of the City of Aspen Parks and Open Space Department to discuss the background and existing conditions.

Mr. Tennenbaum explained that in 2010 the Pitkin County Open Space and Trails Department did a trails gap analysis for the entire county. Through this analysis, many gaps including this one was identified. At this point, the Pitkin County Open Space and Trails Department was trying to create a hard surface trail connection from Aspen, the AABC, Snowmass Village, and down valley. Mr. Tennenbaum explained that this is a major recreation trail connection. Through this effort, the Open Space and Trails Department tried to identify possible options for connecting from the Rio Grande Trail to the Brush Creek Park and Ride. At the time, it was very expensive and the BOCC wanted to take a small step by paving the current non-direct route with lots of elevation change from the Brush Creek Park and Ride to the Rio Grande. While lots of recreational use is currently seen with this connection, due to the non-direct nature of the connection and significant elevation change, usage is limited.

Mr. Weiss noted that the City has the goal of reducing congestion and that with the Highway 82 construction projects that come up, it highlights the need to provide alternative routes for folks. In the recreation lens, the City has a lot of interest in the area of the Brush Creek Park and Ride as well with Cozy Point and other open spaces owned by the City of Aspen or jointly with the County with many recreational assets.

Chairwoman Clapper opened the discussion up to questions and comments from the Committee members before hearing from SGM on the feasibility study.

Commissioner Poschman asked to look into the assumptions and criteria because they have made this a very expensive undertaking.

Mr. Tennenbaum noted that these construction projects are expensive and are getting more expensive. In addition, this project has a large contingency since it would not be constructed for several years. Some of the other options evaluated included going closer to the river, but that required eliminating the ADA option and would have significant environmental impacts. The two options identified were the best that supported both commuters and recreationalists with minimal environmental impacts.

Mr. Weiss added that considering the commuter aspect, dropping to the river level and back up would significantly dissuade commuters.

Commissioner Poschman noted that specifically the assumptions of width, surface, and ADA compliance would make the project very expensive.

Commissioner Jacober said that if the purpose is recreational then users should be able to access the facilities farther down valley or via Cemetery lane. She went on to say that the distance should not be a big consideration for those riding for recreation. Further, Ms. Jacober questioned whether this facility would take that many vehicles off the road.

Commissioner Child noted that an alternative which had not been considered is putting the bike trail on the shale bluffs side of the Highway separated by delineators. Another option is to put the bike trail through a tunnel in order to protect the trail from snow and rockslides.

Mr. Tennenbaum said that SGM did look at putting the trail on the shale bluffs side but did not look at the tunnel.

Councilor Goode said that there used to be a bridge crossing to the Rio Grande trail from the AABC and asked whether the bridge still exists. Mr. Tennenbaum said that this bridge is currently still in use and is called the Stein Bridge and went on to say that there is always a 'do-nothing' option going forward.

Mayor Torre asked what the general scope of the next steps would be with the public outreach to try to understand commuting and recreational users.

Chairwoman Clapper noted that the Buttermilk Park and Ride is currently in place and users can park there to utilize the trail system.

Councilor Mesirow identified that there several types of users moving at different speeds and that building a trail system that segments these users is important. In addition, potentially putting in bike lockers may be a good idea at the Park and Ride.

Mr. Weiss said that it is important to identify how many cars could be taken off the road should this connection be built.

Councilor Doyle noted that there is a difference in where you can ride a road bike versus a mountain bike. There are viable routes for mountain bikes from the Brush Creek Park and Ride but not for road bikes and it is important to separate bikes and cars to reduce conflicts. As a

result, Mr. Doyle said that he is supportive of the trail connections in order to create a convenient, safe and enjoyable route for cyclists into town.

Commissioner Jacober left the meeting at this point.

Ashley Cline from SGM started the presentation on the feasibility study. Ms. Cline noted that two main options have been identified after flushing out many other options that were determined to not be feasible. Option 1 is the "Twin Bridge" alignment. Option 2 is the "Highway 82 East" alignment. Ms. Cline then described the options from the feasibility study.

Mr. Tennenbaum noted that the question of whether people would like the Rio Grande paved through Slaughterhouse would be part of the public process. In addition, Mr. Tennenbaum identified that phasing would also need to be part of the public process.

Chairwoman Clapper said that the public process should also include finding out what the public thinks about the aesthetic aspects of placing bridges over the Roaring Fork gorge.

Commissioner Poschman asked what the legal requirements are for ADA compliance of the trail. Mr. Tennenbaum noted that the Rio Grande Trail is ADA compliant. He went on to say that mountain bike trails do not need to be ADA compliant, but trails that connect to a Park and Ride should be ADA compliant. Ms. Cline also noted that ADA compliance is necessary for State and Federal funds.

Chairwoman Clapper noted that the options need to be presented in a very neutral fashion should the Committee decide to move forward into the public process.

Councilor Mesirow said that he would be concerned if the scope of the public process is "choice A or B". He went on to say that it is also important to identify why someone may or may not bike commute into Aspen or Snowmass in order to determine if there is a solution that does not require bridge construction.

Commissioner Child identified that the BOCC looked at the "high bridge" several years ago and voted against it because of the aesthetics. In addition, he noted that maybe the bike trail should go along the highway through just the shale bluffs section. Finally, he said that another option should be looking at a RFTA transit system going from Brush Creek Park and Ride into Aspen where bicycles and wheeled luggage can be wheeled onto the transit vehicle.

Mayor Madsen said that should it be looked at as a commuter option, maybe we can use one bridge to the Rio Grande and not come back to the AABC.

Councilor Sirkus identified that the $20 million price tag is a lot of money and would need to get a lot of cars off the road to make it cost effective and it is important to get that information.

Mayor Torre asked whether one bridge versus two bridges is a possibility. Mr. Weiss noted that phasing is something that can be vetted through the public process.

Chairwoman Clapper asked whether the elected officials could review the scope of the public process in advance of the next steps. Mr. Tennenbaum said that staff could bring back an overview of the public process.

Commissioner Poschman made a motion to have a draft scope of the public process come back to the EOTC in advance of beginning the public process.

Mayor Torre seconded Commissioner Poschman's motion.

Councilor Mesirow noted that he would not be looking for a complete review of the public process, but an outline of what we do not know now that we will know at the end of the process.

Chairwoman Clapper opened the meeting up for public comment.

Toni Kronberg noted that this connection is very important to her and thinks that Option 1, "Twin Bridges", is her preferred alternative.

The vote for Administrative Direction to come to the EOTC with a scope of the anticipated public process before proceeding was conducted by jurisdiction. The vote was as follows:

Pitkin County: The votes were: Steve Child, yes; Greg Poschman, yes; Patti Clapper, yes; motion carried.

Town of Snowmass Village: The votes were: Bill Madsen, yes; Tom Goode, yes; Tom Fridstein, yes; Alyssa Shenk, yes; Bob Sirkus, yes; motion carried.

City of Aspen: The votes were: Torre, yes; Skippy Mesirow, yes; John Doyle, yes; motion carried.

REQUEST FOR ACCESS THROUGH BRUSH CREEK PARK AND RIDE FOR PROPOSED ADJACENT DEVELOPMENT
David Pesnichak - Transportation Administrator

Prior to the staff presentation on this request, Councilor Shenk and Councilor Sirkus noted that while they are members of the Aspen Jewish Congregation, they have no monetary interest in the request.

Mr. Pesnichak began the staff presentation by providing an overview of the request and review process. He explained that the engineering firm, SGM, had contacted EOTC staff on behalf of their client, the Aspen Jewish Congregation (AJC), to request access through the Brush Creek Park and Ride in order to access Highway 82 at the Brush Creek Road intersection.

The proposed development is envisioned to consist of:

- 15,000 sf Worship / lobby / kitchen / restroom space
- 3,000 sf Hebrew school / restroom space
- 27,000 sf parking (75 spaces)
- Potential Day Care Facility

Mr. Pesnichak reviewed the Brush Creek Park and Ride ownership and management structure:

- The Colorado Department of Transportation (CDOT) is the property owner.
- The City of Aspen and the Roaring Fork Transportation Authority (RFTA) hold leases with CDOT for different areas of the CDOT property.
- RFTA leases the front portion of the Park and Ride property from CDOT, which is currently developed with the transit station and the access point onto Highway 82 at the Brush Creek Road intersection. RFTA is responsible for all maintenance and expenses within RFTA lease area.
- The City of Aspen leases the back portion of the Park and Ride property from CDOT, which is currently developed with paved and unpaved parking, lighting, landscaping and the City's carpool pass kiosk. The City of Aspen is responsible for maintaining the Aspen lease area while the EOTC is responsible for all expenses.
- The City of Aspen, Town of Snowmass Village, Pitkin County, and RFTA are party to a 2005 "Brush Creek Park-N-Ride Management, Maintenance, and Use Plan" Intergovernmental Agreement (IGA).

Procedurally, based on the 2005 Management, Maintenance, and Use Plan IGA, Mr. Pesnichak explained that it is Staff's opinion that a request to utilize the Park and Ride as a through access for an adjacent development can reasonably be considered a "change" of the Park-and-ride Lot use. As a result, this change in use requires: 1) unanimous approval of the member jurisdictions of the EOTC and RFTA, and 2) coordination with CDOT.

In addition to approval from the EOTC for access through the Brush Creek Park and Ride, the developer will also need to obtain approval from Pitkin County for the land use as well as CDOT for access to Highway 82.

Further, Mr. Pesnichak explained that it is understood that CDOT will request comments from the City of Aspen and RFTA as leaseholders once the developer makes an application for access to Highway 82 through the Brush Creek Park and Ride. As the City of Aspen and RFTA are parties to the 2005 "Brush Creek Park-N-Ride Management, Maintenance, and Use Plan" IGA, and the City of Aspen and RFTA are also leaseholders with CDOT, the comments and direction provided by the EOTC regarding this request for access through the Park and Ride is expected to be carried forward to CDOT when requested. Regarding the sequence of approvals, while it is understood that the developer has submitted a Traffic Impact Study to CDOT for initial review and has had preliminary discussions with the Pitkin County Community Development Department, the EOTC is the first step in the approval process.

The EOTC is first in this process for three main reasons:

1) The feedback and decision from the EOTC on access through the Park and Ride are to be carried forward by the City of Aspen and RFTA as leaseholders of this CDOT owned property when requested as a part of CDOT's Access Permit application review process, and;

2) The feedback and decision from the EOTC can impact the land use proposal to Pitkin County; and,

3) As the Pitkin County Board of County Commissioners (BOCC) are members of the EOTC and the BOCC is the ultimate authority for land use approval, this request needs to come to the EOTC before submission of a land use application as it becomes a quasi-judicial process once a land use application is submitted to the County.

Mr. Pesnichak went on to say that it is Staff's opinion that the proposed development and mitigation measures are too conceptual for Staff to be able to provide a recommendation on specific design elements at this time.

Further, due to the conceptual nature of the proposal to date, it is Staff's opinion that not enough information is available for the EOTC to make a determination (deny, approve, or approve with conditions) on this request at this time.

However, in the review of this proposal, EOTC staff drafted a list of standards that any developer requesting access through the Brush Creek Park and Ride should meet in order for the EOTC to consider allowing access.

At this point, Mr. Pesnichak said that Staff recommends that the EOTC provide Administrative Direction to follow the proposed standards in the review of access through the Brush Creek Park and Ride. These standards will assist Staff in the creation of a staff recommendation when this proposal comes back to the EOTC later for final approval, approval with conditions, or denial.

Mr. Pesnichak then reviewed the following proposed standards:

1 - Demonstration of Significant Public Benefit.
2 - All alternatives explored.
3 - Traffic operations at the Highway 82 / Brush Creek Road intersection shall not be impaired.
4 - Any traffic increases through the Park and Ride shall be demonstrated to not create any degradation to transit service and access, bicycle and pedestrian access and pathways, carpool kiosk access, and internal traffic queuing or delay.
5 - Development shall pay its own way.
6 - No increase in facility maintenance and/or operational costs.
7 - No conflict with existing City of Aspen lease, RFTA lease, or the Brush Creek Park and Ride Management, Maintenance and Use Plan Intergovernmental Agreement (IGA).
8 - Development access shall not hinder or impede the use of the facility for special event parking and staging.
9 - Any development shall comply with the parameters and requirements of any existing or new CDOT Access Permits.

Councilor Mesirow noted that over time we would likely expand parking at the Park and Ride. Similarly, as the food truck experiment starts to unfold, it is important that this request not hinder that development. In addition, it is important if any of the adjacent properties are developable whether this approval could set any kind of precedent.

Commissioner Child noted that an event at the proposed community center could impede commuter traffic through the Park and Ride and onto Highway 82. Also, he asked whether the community center parking could be used for public parking or overflow parking from the Park and Ride.

Chris Bendon, representative for the developer, indicated that he is interested in working with staff to find mutually beneficial solutions. He noted that the Aspen Jewish Congregation is currently in their due diligence phase. Further, they understand the need for potentially additional parking, ability to drive through the facility and other things that may be mutually beneficial. Mr. Bendon then introduced Jason Schnissel, Executive Director of the Aspen Jewish Congregation.

Mr. Schnissel provided background on the Aspen Jewish Congregation. He noted that their interest at this point is to determine if this is a viable project. He went on to say that the Congregation is interested in being available to assist in community needs such as parking onsite and with a pre-school with 4-6 classrooms that are open to the public.

Chairwoman Clapper opened the meeting to members of the public wishing to speak.

Mayor Torre asked about access to the property. Mr. Bendon noted that the access is not currently adequate for this facility. Mayor Torre then asked for more information on whether they can use this access for the Congregation.

Commissioner Child asked about whether the current driveway can be used as the access recognizing the need for a CDOT access permit and possible improvements.

Council Fridstein noted that as this development is right next to the Park and Ride that it is transit-oriented development.

Councilor Mesirow asked whether the current access has a crossing. Mr. Bendon noted that there is a crossing of Highway 82 at the current access point.

Chairwoman Clapper noted that approval to move forward here tonight is not approval of overall access through the Park and Ride and that there is still significantly more work to be undertaken. She went on to say that there is a good amount of open space nearby and it is outside the urban growth boundary.

Mayor Torre made a motion to approve Administrative Direction for Staff to utilize the proposed standards in the review of this proposal with the additions as discussed.

Councilor Mesirow seconded the motion.

The vote for Administrative Direction to utilize the staff proposed standards for review of access through the Brush Creek Park and Ride with the noted amendments was conducted by jurisdiction. The vote was as follows:

Pitkin County: The votes were: Steve Child, yes; Greg Poschman, yes; Patti Clapper, yes; motion carried.

Town of Snowmass Village: The votes were: Bill Madsen, yes; Tom Goode, yes; Tom Fridstein, yes; Alyssa Shenk, yes; Bob Sirkus, yes; motion carried.

City of Aspen: The votes were: Torre, yes; Skippy Mesirow, yes; John Doyle, yes; motion carried.

EOTC 2022 RETREAT UPDATE
David Pesnichak – Transportation Administrator

Mr. Pesnichak provided the following overview of logistics for the upcoming retreat:

Retreat logistics:

When: April 28, 2022 from 12.15 to 5pm
Optional: Lunch from 12.15-1pm (In-Person Only)
Retreat Sessions: 1-5pm

Format: Hybrid In-Person or Virtual
(Virtual Links to be Provided Prior to Retreat)

In-Person Location: New Aspen City Hall, Pearl Room

Facilitator: Mark Collins

The goals that staff have identified for the retreat are:

a) To reestablish a baseline understanding of the EOTC purpose, requirements, structure, funding, operations, and current project programming;
b) Take a deep dive into the outcomes from the Integrated Mobility System (IMS) study; and,
c) Identify and refine a long-term (11+ years) transit oriented conceptual direction based on the IMS study recommendations.

Mr. Pesnichak noted that a pre-retreat packet will be distributed in advance of the retreat.

At this time, staff is looking for the following feedback from the Committee:

- Roster of who is planning on attending.
- If planning on attending, do you plan to attend In-Person or Virtual?
- If planning to attend In-Person, do you plan to attend lunch from 12.15-1?

Councilor Shenk noted that being in person is very important for visioning meetings.

Councilor Mesirow said that he will not be able to attend in person and will attend virtually if possible. However, he can submit written comments if it is only in person.

Commissioner Poschman noted that he plans to attend virtually.

Commissioner Child noted that the pandemic is still not over and that it is important to maintain a virtual option.

Mr. Pesnichak identified that he will send out an email to all Committee members to get a final roster.

INFORMATIONAL SECTION OF PACKET (Q&A)

Mayor Torre read a letter from Councilor Richards who was not able to attend this meeting. Ms. Richards noted that she supports the Buttermilk Underpass due to safety concerns. Ms. Richards went on to support the need to move forward with the Entrance to Aspen Record of Decision particularly as additional Federal money is coming available. She also identified the importance of the upcoming EOTC retreat even though the Entrance to Aspen is not the focus of the retreat. Ms. Richards then asked for the conversation on the Entrance to Aspen to come to the EOTC at a later date.

ADJOURN REGULAR MEETING

Mayor Torre moved to adjourn the regular meeting of the Elected Officials Transportation Committee at 7:05 p.m. John Doyle seconded the motion. Motion passed with 11 yea votes.

City of Aspen

_____
Torre, Mayor
City Council

_____
Nicole Henning
City Clerk

Town of Snowmass Village

_____
Bill Madsen, Mayor
Town Council

_____
Megan Boucher
Town Clerk

Pitkin County

_____
Patti Clapper, Chair
Board of County Commissioners

_____
Julia Ely
Clerk to the Board of County Commissioners

_____
David Pesnichak
Regional Transportation Administrator

AGENDA ITEM SUMMARY

EOTC MEETING DATE:	May 26, 2022
AGENDA ITEM TITLE:	Brush Creek Park and Ride to AABC / Aspen Trail Connection Review – Feasibility and Alignment (Public Process Outline Follow-Up)
STAFF RESPONSIBLE:	David Pesnichak, Transportation Administrator

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ISSUE STATEMENT: This memo is a follow-up to the direction provided by the EOTC at the March 24, 2022 meeting. The goal of the March 24, 2022 EOTC meeting was to discuss the options and determine if staff should move the project to a public process to obtain community feedback. The EOTC requested that staff first come back to the Committee with an outline of the public process before moving forward. The attached outline represents an overview of the public process and path forward to obtain additional information.

BACKGROUND: The Pitkin County Open Space and Trails (OST) Department, the City of Aspen Parks and Open Space Department, and the Elected Officials Transportation Committee (EOTC) have jointly funded a feasibility study to connect the Brush Creek Park and Ride to the Aspen Airport Business Center (AABC) via a safe, hard surface trail. This trail connection has been scoped to meet the profile grade requirements in the American with Disabilities Act (ADA) for both recreationists and commuters. The project funding partners contracted with SGM to conduct this study.

The local project team consists of representatives from the City of Aspen Parks and Open Space Department, Pitkin County Open Space and Trails Department, the Town of Snowmass Village Parks and Recreation Department, and the Regional Transportation Administrator. This initial phase in 2021 and early 2022 consists of a feasibility analysis and a determination of possible alignment alternatives including estimated costs.

Improving bicycle and pedestrian connections from the Brush Creek Park and Ride was identified as an Upper Valley Priority by the EOTC within the Comprehensive Valley Transportation Plan (CVTP) adopted in 2020.

Filling this difficult system gap is important to the creation of a safe, seamless and attractive bicycle and pedestrian experience between Snowmass Village, the City of Aspen, the AABC, the valley wide Rio Grande Trail, and the Brush Creek Park and Ride.

As the EOTC may recall from the October 2020 and 2021 budget meetings, this partnership project started in 2021 and has been led by the Pitkin County OST department. The results of this feasibility and alignment study were reported out to the Pitkin County OST Board in a joint meeting with the City of Aspen Parks and Open Space Board on February 24, 2022. The comments received from the joint Pitkin County OST Board and City of Aspen Parks and Open Space Board meeting held in February are included later in this memo.

The study conducted by SGM is attached and outlines the identified feasible trail alignment options and cost estimates.

Existing Conditions and Planning Overview

The Pitkin County Open Space and Trails Department has created a management plan for both the Roaring Fork Gorge and the Rio Grande Trail and this connection has been identified as a potential in the final plans. A feasibility report was created in 2014 that looked at how to create a hard and soft surface connection to the City of Aspen from the W/J hill where McLain Flats Road crosses the Rio Grande Trail. There were many options that were considered.

The main goals for the 2014 study included looking at a sustainable soft surface, a hard surface through Slaughter House Canyon, bike lanes on McClain Flats Road, and multiple bridge options to the AABC from the Rio Grande Trail. An add-on to this feasibility study was to look at the connection to the Brush Creek Park and Ride and how to connect to the AABC.

A robust public process was undertaken at that time and the community supported a hard surface connection from down valley to Aspen, but was split on paving the section through Slaughterhouse Falls.

When the Roaring Fork Gorge Management Plan was adopted the Board of County Commissioners (BOCC) did not choose to pursue a crossing to the Brush Creek Park and Ride or from the Rio to the AABC at that time. The BOCC decided to provide a dual surface trail from McClain Flats Road to the pinch point on Shale Bluffs and then increase maintenance of the soft surface/crusherfines trail to Stein Park.

This has been the current condition for the past five years. With discussions on how to improve the Brush Creek Park and Ride to better accommodate commuters and the County goals for a connected trail system from the Town of Snowmass Village and the communities down valley to Aspen, there is still a gap between the Brush Creek Park and Ride and the AABC and Aspen.

Highway 82 has wide shoulders through shale bluffs, but with the amount of traffic and drainage and rockfall from shale bluffs, very few cyclists and pedestrians use this as a connection and the ability to better manage these conditions is very limited. There is also a trail connection from the Brush Creek Park and Ride to the bottom of Smith Hill Road at Jaffee Park, but this requires a major elevation drop and gain to get either to or from the Rio Grande Trail. Cyclists do use this as a recreational trail, but use is limited since you have to drop and climb over 240-feet and travel approximately 2 miles to get to the same point on the other side of the Brush Creek Park and Ride.

To gauge the community's interest in a connection to the Brush Creek Park and Ride, specific questions have been asked in the Pitkin County Community Survey in 2016, 2018 and 2021. These questions were to determine the community desire for a hard surface connection both from down valley and the Brush Creek Park and Ride and 75.8% thought it was very or somewhat important in 2021, 79% thought it was very or somewhat important in 2018, and 80% thought it was very or somewhat important in 2016.

Overview of Comments Received from the Joint Pitkin County OST Board and City of Aspen Parks and Open Space Board held on February 24, 2022

- Recommend moving forward with the public process in 2022 of the two identified technically feasible alignments
- Identified general preference for Option 1 (Twin Bridges)
- Identified additional information needed as project goes to public process:
    - Bike commute time to Aspen and not just to AABC.
    - Need for commuter study to determine: a) how many cars could be taken off the road, and b) the feasibility of this connection as a winter commute route.
    - Identify whether 10ft trail width will provide enough capacity if it is a commuter trail along with a recreation trail.
    - Look at phasing overall project and identify a list of potential issues should the project be phased.

Staff Recommendation

The next step is to move forward with public engagement and gather other pertinent information around the technically feasible alignments. The EOTC, the City of Aspen Parks and Open Space Department, and the Pitkin County Open Space and Trails Department have each budgeted $25,000 ($75,000 total) for this next phase of the review should it move forward.

Based on the outcome of the SGM study, the recommendation received from the joint Board meeting in February, and feedback received from the EOTC in March, staff recommends that the EOTC provide Administrative Direction to staff to initiate the public process to gauge the public's desire for this connection based on the current design options as well as gather other pertinent information as identified in the attached outline.

This direction would authorize the currently budgeted expenditure of up to $25,000 of EOTC funds in 2022 for this public input phase. This next phase will continue to be a funding partnership between the Pitkin County Open Space and Trails Department, the City of Aspen Parks and Open Space Department, and the EOTC. It is worth noting that obtaining the additional information may require additional funding beyond what has already been budgeted. Should additional funds be necessary, Staff will bring that request back to the EOTC in October for consideration in the 2023 budget cycle. The results of this public input and data gathering phase would be reported back out to all partners when it is complete.

RECOMMENDED EOTC ACTION:
- Administrative Direction authorizing the Staff Recommendation to initiate the public process and data gathering phase of the AABC / Brush Creek Park and Ride trail connection.
(Motion, Second, and Roll Call Vote by Jurisdiction)

Adoption of Administrative Direction by the EOTC requires the direction be affirmatively authorized by a majority vote of each jurisdiction.

ATTACHMENTS:
1. Public Process and Additional Information Outline
2. SGM Feasibility and Alignment Study

AABC to Brush Creek Park & Ride - Public Process Scope

Proceed with a study of return on investment and public process. This will inform the elected officials on the public's desire for this connection and the potential recreational and commuter benefits. This process will take the remainder of 2022 and into 2023 before a report to the Open Space and Trails boards and EOTC is scheduled.

Available Budget: $42,000 in 2022. Depending on studies initiated a budget request for additional funds will most likely be necessary for 2023.

Requirements:

- Statistically Valid Survey and public process. This will be more expensive, but due to the high cost for this project it is necessary to ensure the survey and public process is done in a way to accurately measure the public's thoughts and not just a popularity contest.
- Return on Investment Study. Possible outcomes: draw to P&R for recreational and commuter users, impact to regional travel patterns, health benefits of increased cycling / walking, change in access for communities across Roaring Fork River from BC P&R, change in overall users on Rio Grande Trail and Highway 82 trail into Aspen, monetary value of increased cycling / trips caused by connection of Rio Grande Trail, AABC, BC P&R and trail to Snowmass.

Project Goals:

- At the conclusion of the public process the goal is to provide a recommendation to the Pitkin County and City of Aspen Open Space Boards who will then forward a recommendation to the EOTC on whether or not to proceed with one of the potential options for a paved, multi-use path to Aspen/AABC. To do so it will be important to understand:
    - Public interest in a hard surface connection and preferred option - taking into consideration the cost, aesthetics/scenic impact, phasing potential, use dynamics (access to transit/regional recreation/upper valley recreation, other barriers to cycling / walking from BC P&R / AABC, etc.)
    - Potential commuter and recreational use - both from a community user perspective as well as a modeling projection
    - Funding/financing sources, including grant opportunities, and the public's willingness to support/pay for the project

BRUSH CREEK PARK AND RIDE TO ASPEN AIRPORT BUSINESS CENTER
TRAIL FEASIBILITY STUDY

PITKIN COUNTY OPEN SPACE & TRAILS

FINAL REPORT: MARCH 2022

Prepared by

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1.0 Executive Summary

The trail section from the Brush Creek Park and Ride to the Aspen Airport Business Center represents a significant missing link for commuters and recreational trail users. Pitkin County Open Space and Trails assembled a team of agency partners, consultant engineers, and stakeholders to review alignment alternatives to create a grade separated multi-purpose trail between the Brush Creek Park and Ride and Aspen Airport Business Center. The primary trail design criteria was to have a 10-foot minimum width hard surface trail that meets the profile grade requirements in the Americans with Disabilities Act (ADA). The following three trail alignment options were considered by the project team:

- Option 1 – Twin Bridges Alignment
  - Exits the south end of the Brush Creek Park and Ride
  - Bridge crossing of the Roaring Fork River east of the Brush Creek Park and Ride
  - Continues east to the existing Rio Grande Trail
  - Follows the existing Rio Grande Trail south
  - Bridge crossing back over the Roaring Fork River south of Owl Creek
  - Continues south along the flat bench east of State Highway 82 until it connects with existing infrastructure at the Aspen Airport Business Center
  - Total length of connection = 2.55 miles, Total length of new trail = 1.54 miles
- Option 2 – SH82 East Alignment
  - Exits the south end of the Brush Creek Park and Ride
  - Continues south roughly parallel to and east of State Highway 82 using bridges, elevated trail sections, and retaining walls along much of its length to cross the steep and rugged terrain
  - Continues south along the flat bench east of State Highway 82 until it connects with the existing infrastructure at the Aspen Airport Business Center
  - Total length of connection = 2.28 miles, Total length of new trail = 2.28 miles
- Option 3 – River Alignment
  - Exits the south end of the Brush Creek Park and Ride
  - Gradually descend to a relatively flat area on the west bank of the Roaring Fork River
  - Follows the west bank to the south
  - Gradually ascends back up to the approximate elevation of State Highway 82 at the relatively flat bench east of the highway
  - Continues south along the flat bench east of State Highway 82 until it connects with the existing infrastructure at the Aspen Airport Business Center

The project team considered and compared the three options based on the following criteria: cost, maintenance, user experience, constructability, and environmental impacts.

Option 3 – 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 River and the significant elevation change along the alignment (approximately 175 feet). To maintain ADA grade requirements, switchbacks were required which increase the total length of trail. Since it was dismissed early on, a preliminary alignment, profile, and cost were not presented in this report.

Option 2 – 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 State Highway 82, it would have significant maintenance challenges due to the terrain and would require significant approval and coordination with CDOT to build. 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.

Option 1 – Twin Bridges Alignment is the preferred alignment option. This alignment would require the construction of two major 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. We believe this option best aligns with Pitkin County Open Space & Trails mission to create purposeful multi-modal routes while preserving the region's character. The estimated construction cost of the trail and structures, based on 2025 construction, is $17.3 million, estimated design and construction engineering cost is $3.5 million.

For the chosen alignment option, three bridge types were considered for the crossings of the Roaring Fork River. The following three bridge types were considered:

- Weathering Steel Deck Arch-This option was modeled off the Terral Wade Bridge (Tiehack Bridge) connecting Buttermilk to the Aspen Recreation Center.
- Painted Steel Deck Truss-This option was modeled off the Deception Pass and Canoe Pass Bridges connecting Fidalgo Island and Whidbey Island in Washington State.
- Multi-span Prefabricated Steel Truss-This option used typical prefabricated truss option to create three long spans at each crossing of the Roaring Fork River.

The Painted Steel Deck Truss was dismissed by the project team due to its more industrial and heavy aesthetic, higher anticipated maintenance cost, high anticipated construction cost and construction duration. The Multi-span Prefabricated Steel Truss was dismissed due to the aesthetics, shorter span capability over the river resulting in piers closer to the river's edge, challenge of utilizing an "off the shelf" option in this setting, and requirements of large cranes to pick and assemble these heavy spans.

The Weathering Steel Deck Arch was the selected structure type for the crossings of the Roaring Fork River. The project team determined that this structure would provide the best aesthetic and continuity with the Terral Wade Bridge just up valley. Also, it is the most constructible bridge type, has the least environmental impact, and is cost competitive with the other bridge types considered.

Based on the complexity of the structural design and constructions risks, Pitkin County should consider the Construction Manager/General Contractor project delivery method.

2.0 Project Background and Environmental Assessment

2.1 Project Overview/Previous Study

Pitkin County Open Space & Trails (OST), the City of Aspen, and the Elected Officials Transportation Committee (EOTC) are partnering to study the feasibility of a trail connection from the Brush Creek Park and Ride (BCPR) to the Aspen Airport Business Center (AABC). An overview of the project area is provided in Figure 2-1.

This trail connection was first evaluated as part of a trail study in 2012-2013 that considered a larger project area to create a paved trail connection to Aspen. The *2012 Rio Grande Trail Connection Engineering Feasibility Study* by Loris and Associates looked at overall trail improvements from W/J Hill to Stein Park. Options using the existing Rio Grande Trail (RGT), adding climbing lanes along McLain Flats Road, and adding new trail connections that cross the Roaring Fork River were all considered. The study considered trail alignment, safety, cost, environmental impact, right-of-way requirements, geologic conditions, and utility crossings. The study divided the project into eight segments and then grouped the segments into improvement options which were evaluated against each other.

The 2013 Addendum to the Study investigated three new segments, using the same evaluation criteria as the main study. One of the new segments included in the addendum was the trail connection between the BCPR and the AABC. The alignment would parallel SH82, starting at the BCPR and ending at the AABC. Other alternatives in the addendum were connections to the RGT from the BCPR via a bridge over the Roaring Fork River and then back across the river near the existing Stein Bridge at the AABC.

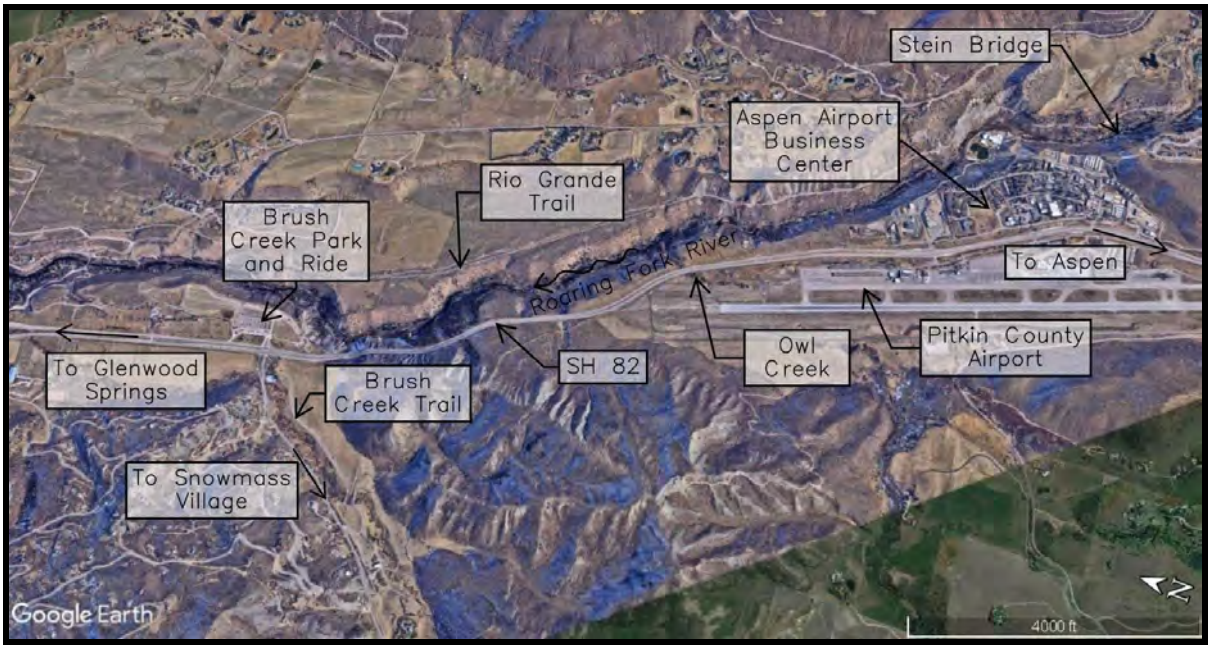


Figure 2-1: Overview of Project Area
(Imagery Courtesy of Google Earth)

2.2 Project Purpose

The purpose of this project is to provide a trail connection between the BCPR and the AABC. The purpose of this study is to determine a preferred alignment that best fits the connection. Completing this missing link to the trail network will provide connectivity and community access which is a key component of Pitkin County Open Space and Trails' mission:

> "*The mission of the Open Space and Trails program is to acquire, preserve, maintain and manage open space properties for multiple purposes including, but not limited to, recreational, wildlife, agricultural, scenic and access purposes; and to acquire, preserve, develop, maintain and manage trails for similar purposes. The program was founded in 1990 with the passage of a Pitkin County property tax devoted to acquiring open spaces and developing trails. The program has since conserved more than 20,000 acres, either as open space or through conservation easements. In addition, it maintains some 84 miles of trails and 60 miles of Nordic trails."*

The Pitkin County Strategic Plan includes a Climate Action Plan which includes initiatives to reduces emissions. The goal of this project is to reduce vehicle trips and replace them with pedestrian, bicycle and/or public transit trips. Construction of this trail will reduce greenhouse gas emissions by facilitating a more direct route to and from the Aspen Airport Business Center.

This segment of trail was identified in the 2012 OST Recreation Inventory and Analysis.

> *"GOAL 8 - Continue to plan and develop trail connections, linking desirable destinations and population centers, creating loop systems, providing opportunities for non-motorized commuting and serving multiple user groups.*
>
> *Rio Grande Trail dual-surface trail connection into Aspen (See Goal 6) - This missing link was one of the top five identified in the 2011 Visitor Use Survey. On this same survey over 75% of the respondents were in favor of looking at creating a safe, hard surface connection into Aspen. Planning documents as old as the 1979 Aspen/Pitkin County Trails Master Plan (an amendment to the 1966 Aspen Area General Plan) have called for a paved trail connection between Basalt and Aspen. And this connection would work towards the County's Strategic Plan Success Factor calling for efficient multi-modal transportation systems linking municipalities. Safe, dual surface trail connection from the ABC to the Rio Grande Trail - This missing link was one of the top five identified in the 2011 Visitor Use Survey. This connection would work towards the County's Strategic Plan Success Factor calling for efficient multi-modal transportation systems linking residential areas."*

The EOTC has also identified "Bike and Pedestrian Connections to Transit Stops and Brush Creek Park and Ride" as an Upper Valley Priority within their 2020 Comprehensive Valley Transportation Plan.

2.3 Project Partners

The study was led by Pitkin County Open Space and Trails with additional funding and partnership provided by the City of Aspen, the EOTC, and the Town of Snowmass Village. The project partners share many of the same goals. While Pitkin County is facilitating this

study, the project partners listed above also have a joint interest in seeing this project come to fruition. The construction of this project will better connect the communities within the Roaring Fork Valley.

2.4 Project Engineering Team

SGM is leading the consultant engineering team and developed this report, trail alignments, cross sections, bridge alternatives and cost estimate. ERO Resources Corporation led the environmental review, provided the Natural Resources Assessment report, and the Cultural Resources Memorandum. Golder Associates provided an assessment of the geotechnical conditions and geologic hazards in the project vicinity. DHM provided visualizations of the trail concepts including the bridge renderings.

2.5 Description of Existing Facilities

2.5.1 Rio Grande Trail (RGT)

The RGT is a rails-to-trails project built along the Aspen Branch of the historic Denver and Rio Grande Western Railroad. The RGT is 42-mile-long mixed-use trail that travels from Glenwood Springs at the north end to Aspen at the south end. The north end of the trail also connects to the Glenwood Canyon Recreation Path. Except for at-grade crossings, the trail is mostly separated from vehicular traffic along its full length.

This study focuses on the area of the existing RGT between Jaffee Park at the north end and the Stein Trail at the south end. The RGT through this corridor includes a 10-foot-wide asphalt hard surface trail with a parallel separated soft surface trail. The existing RGT can be utilized as part of the trail connection from the BCPR to the AABC. This segment of the RGT is owned and maintained by Pitkin County Open Space and Trails. This segment also meets the Americans with Disabilities Act (ADA) grade requirements.

2.5.2 State Highway 82

State Highway 82 (SH82) is an 85.3-mile-long highway connecting Interstate 70 and US Highway 6 in Glenwood Springs at the west end to US24 at Twin Lakes at the east end. The highway parallels the Roaring Fork River along most of its western half and serves as the primary transportation route through the Roaring Fork Valley. This study focuses on the area of SH82 south of Brush Creek Road and north of the Aspen Airport Business Center. This section crosses the Shale Bluffs area as well as historic landslide paths and drainages. Many of the portions are elevated on either bridges or retaining walls.

2.5.3 Aspen Airport Business Center

The Aspen Airport Business Center is a residential and commercially zoned area located across SH82 from the Pitkin County Airport. The mixed-use development connects to the RGT via the Stein Trail and Stein Bridge over the Roaring Fork River. The existing Stein Trail is not paved nor is it ADA compliant and requires steep switchbacks to descend from the AABC to the west bank of the Roaring Fork River. The AABC also connects to the City of Aspen via the AABC Trail. While the AABC has paved and ADA connectivity through the SH82 corridor to Aspen, the connection to the RGT is not a paved ADA route and there is no direct connection to the BCPR to the north.

2.6 Environmental Assessment

SGM has worked in conjunction with ERO Consultants to better understand the environmental impacts of all trail alignment options throughout the project corridor. ERO has provided a Natural Resources Assessment and a Cultural Resource Memo that can be found in Appendix D and E. A summary of the key findings is included below.

2.6.1 Wetlands

Wetlands occur in the project area along the narrow banks of the Roaring Fork River and Owl Creek. Wetlands were also observed in the stormwater pond to the south of the Brush Creek Park and Ride. None of the proposed alignments would affect the wetlands located adjacent to the Roaring Fork River. It is recommended to avoid impacts to Owl Creek and the stormwater pond. Wetlands occurring within Owl Creek would be considered a jurisdictional (waters of the U.S) wetland whereas the stormwater pond wetlands are likely non-jurisdictional.

2.6.2 Threatened, Endangered, and Candidate Species

The project area contains potential habitat for Monarch butterfly and Ute Ladies' Tresses Orchid (ULTO). It is recommended to avoid wetlands in order to avoid potential impacts to the Monarch butterfly or ULTO habitat. While no habitat was present, there is potential for milkweed plants (Asclepiadoideae) and ULTO to occur within the wetlands in the project area due to the presence of commonly associated species, and alluvial soils, and due to the presence of known ULTO populations downstream near Carbondale.

2.6.3 Other Species of Concern

No migratory birds' nests were observed in the project area during the September 2021 site visit. However, because of the variability in the breeding seasons of various bird species, there could be nests present at other times of the year. It is recommended to conduct a nest survey one week before any construction take place. The project area occurs in the winter range for the bald eagle, in the osprey foraging area, in the overall range of American elk, mule deer, and mountain lion, and in the human conflict area and fall concentration area of black bear. The proposed trail alignments parallel to Highway 82 or that cross the Roaring Fork River and utilize the Rio Grande Trail would minimally impact these species. The alignment closer to the Roaring Fork River has greater potential to disturb these species.

3.0 Trail Connection Options

3.1 Summary of Alignment Options

Multiple trail alignments were looked at to determine the best connection between the BCPR and the AABC. With the alignments considered, the primary goal was to propose an ADA compliant hard surface trail with a width of 10 feet that would safely and efficiently connect these two locations while reducing total elevation gain and loss. The following three alignment options were considered. Options 1 and 2 are shown in Figure 3-1:

- **Option 1 – Twin Bridges Alignment**: This proposed alignment would bridge the Roaring Fork River at the southeast corner of the BCPR and continue east to connect with the existing 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.

- **Option 2 – SH82 East Alignment**: This proposed alignment would exit the BCPR 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 existing infrastructure at the AABC.
- **Option 3 – River Alignment**: This proposed alignment would exit the BCPR 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 south of Owl Creek and east of SH82 until it connects with the existing infrastructure at the AABC.

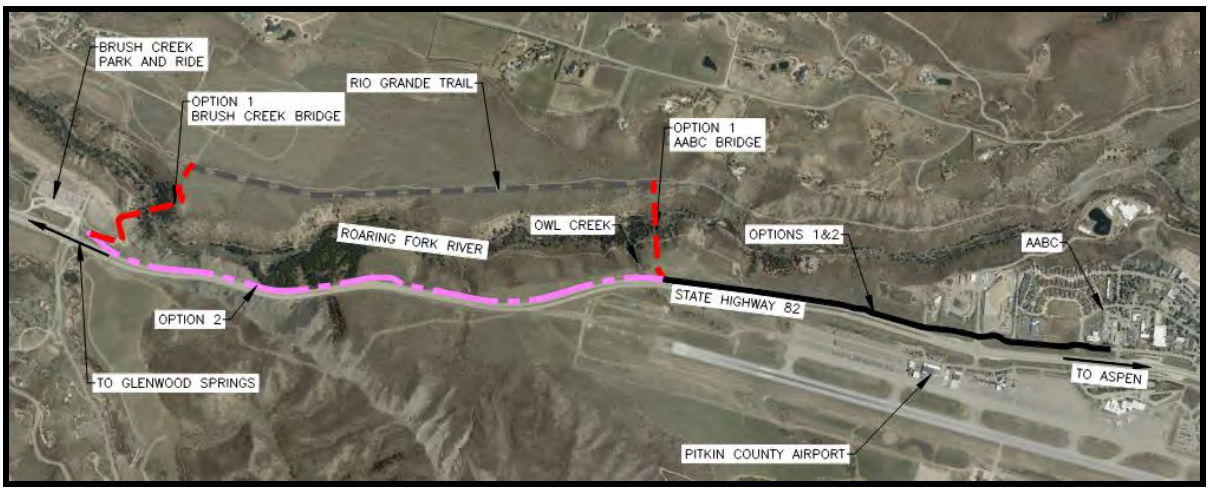


Figure 3-1: Overall Site Map with Alignment Options 1 and 2

3.2 Trail Typical Sections

Typical sections representing each alignment option were developed to determine the feasibility and cost. More complex sections result in added cost, constructability issues, and varying degrees of land disturbance. A longer trail with less complex sections could be less expensive and easier to construct than a shorter more complex trail. Typical sections were rated based on their construction complexity using the familiar system found at mountain areas: least difficult (green), more difficult (blue), and most difficult (black). Most civil contractors should be able to construct the least difficult or green sections while specialized contractors would be required to construct the most difficult or black sections. A cost per linear foot was developed for each typical section. Costs were based on asphalt, base course, presence of railings, presence of walls, and type of retaining walls. Detailed cost information per typical section can be seen in Section 5 of this report. An overall site map with alignment difficulty levels can be seen in Figure 3-2 below. A complete set of typical sections is included in Appendix A.

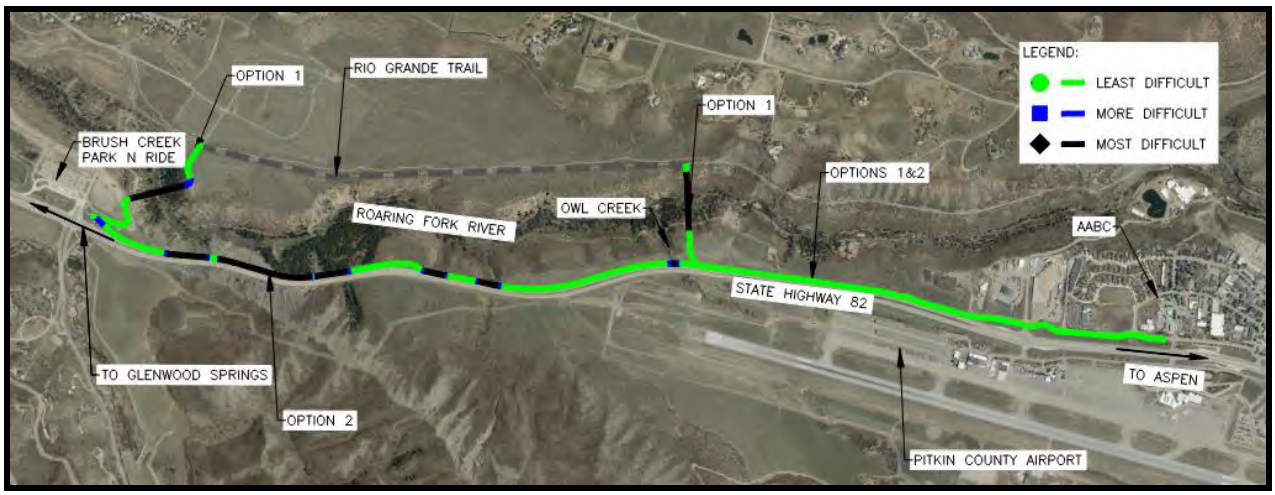


Figure 3-2: Overall Site Map with Alignment Difficulty Levels

"Least Difficult" segments of trail will consist of a 10-foot width with 1-foot shoulders and 3:1 or 2:1 horizontal to vertical slopes. The trail will consist of placing a weed barrier and aggregate base course under a layer of asphalt pavement. Pedestrian railing may or may not be needed in these sections depending on the slopes adjacent to the trail. These sections will be the least expensive to construct. An example of a "Least Difficult" trail segment is shown in Figure 3-3 below.

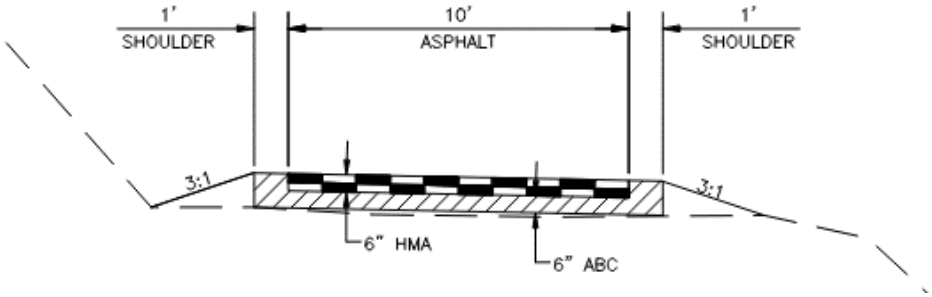


Figure 3-3: Least Difficult Section Example

"More Difficult" segments of trail will be defined similarly to the above sections but with the addition of retaining walls. These sections will be made up of uphill and downhill walls. Walls will likely consist of some combination of boulder, MSE (mechanically stabilized earth), large block, cast-in-place concrete, and soil nail walls. Boulder walls would be used for wall heights less than 4 feet. Gravity block, MSE walls, or cast-in-place concrete walls would be used for taller walls. Sections with especially steep slopes that require a top-down construction method would likely be soil nail walls. These sections will be more expensive than the "Least Difficult" sections to construct, but less expensive than the "Most Difficult". These sections will require more earthwork and materials to create a workable area wide enough to construct the pavement and wall sections. An example of a "More Difficult" trail segment is shown in Figure 3-4 below.

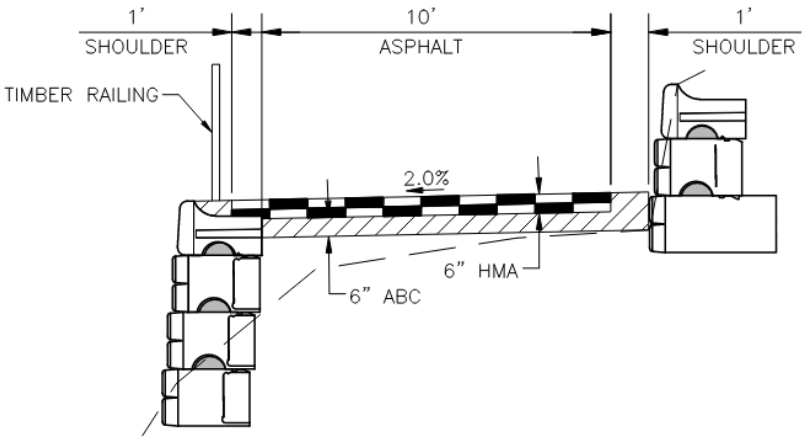


Figure 3-4: More Difficult Section Example

"Most Difficult" segments of trail will consist of elevated concrete walkways, prefabricated steel truss bridges or steel deck arch bridges. Bridges and elevated concrete walkways will be 12-feet wide with a concrete deck. These structures will be the costliest to construct. An example of the "Most Difficult" trail segments is shown in
Figure 3-5 below. The bridge crossings will be explored in greater detail in the next section.

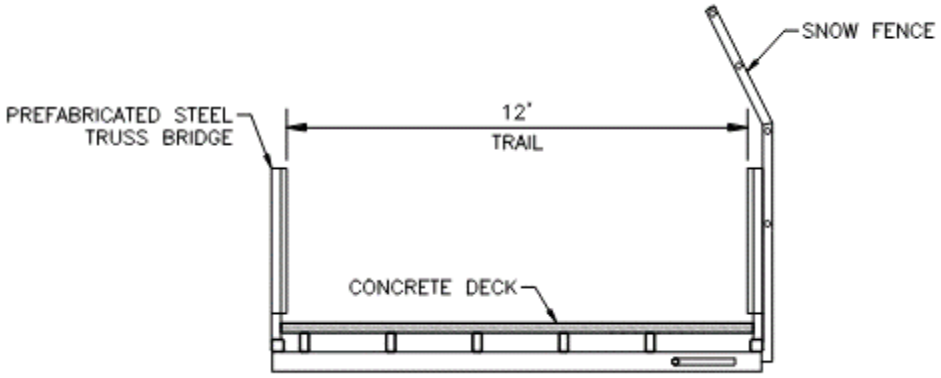


Figure 3-5: Most Difficult Section Examples

3.3 Option 1 – Twin Bridges Alignment

A 10-foot-wide trail would depart from the existing Brush Creek Trail at the southeast corner of SH82 and Brush Creek Road and traverse the open space to the south of the BCPR. A long span steel bridge, called the Brush Creek Bridge, would cross the Roaring Fork River and the 175-foot-deep gorge. The bridge would land on the northwest corner of Aspen Consolidated Sanitation District's Property and then join the RGT. The alignment would use the existing paved portion of the RGT for 5,340-feet. A second long span steel bridge, called the AABC Bridge, would depart the RGT and cross back over the Roaring Fork River north of the Sardy property landing on Pitkin County property. The trail would then follow the east side of Highway 82 until its termination at the AABC. An overview of this alignment is shown in Figure 3-6 below. The trail will be located within CDOT ROW, but outside of the traveled lane clear zone so that guardrail or safety barriers are not required. This alignment provides

RGT users with a direct connection to both the BCPR and AABC. An additional benefit to this alignment option is providing the W/J Ranch neighborhood (on the east side of the Roaring Fork River) a more direct connection to the BCPR.

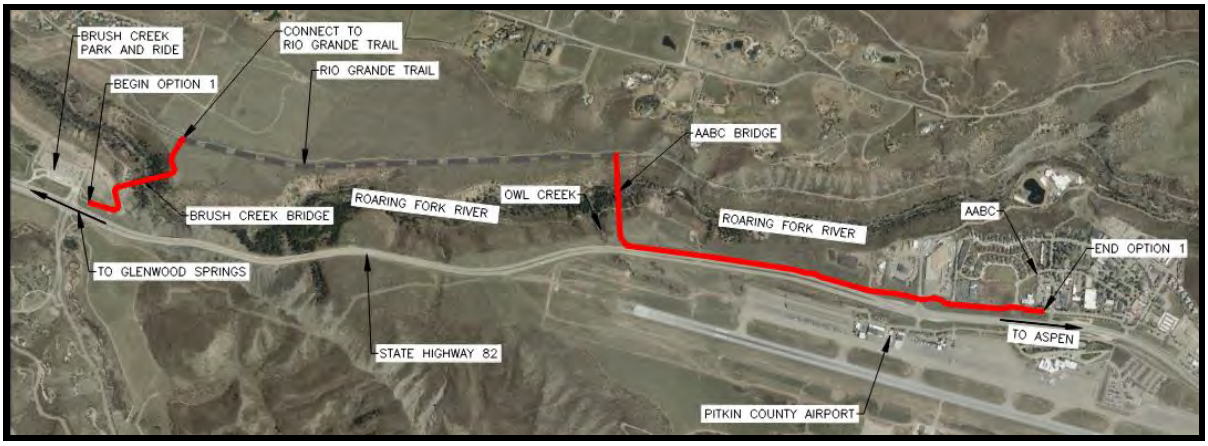


Figure 3-6: Overview of Trail Alignment Option 1 – Twin Bridges Alignment

A combination of "Least Difficult" and "Most Difficult" sections would be required to construct this alignment. Generally, the "Most Difficult" sections would be the bridge crossings of the Roaring Fork River and the rest of the alignment would be least difficult sections. The trail surface would consist of 10-foot asphalt trail and 12-foot concrete bridge deck. The total length of the alignment would be approximately 2.55 miles and the total length of new trail would be approximately 1.54 miles. Trail length by section type is summarized in Table 3-1.

Table 3-1: Trail Alignment Option 1 – Segment Length by Construction Difficulty Level

Trail Segment/Difficult	Trail Length (LF)
Least Difficult	**6,806**
More Difficult	**70**
Most Difficult	**1,248**
Rio Grande Trail (existing)	5,340
Total Length of Connection	13,464
Total Length of New Trail	8,124

3.3.1 Structures

Multiple bridge locations were evaluated to determine the preferred alignment across the Roaring Fork River. Two bridges are needed to cross the Roaring Fork River in this alignment. Bridge locations were selected based on how they would look against the natural topography of the area, trail grade, and span length. To minimize span lengths, both bridges are placed perpendicular to the Roaring Fork River in locations that the gorge narrows. To ensure the bridges blend in with the surrounding topography they have been tucked into their launch points. Pitkin County expressed that a primary aesthetic goal was to limit visibility of the bridges from SH82. The trail grade was set such that the bridges could be tucked into their surroundings while still meeting ADA requirements. The Brush Creek Bridge and AABC Bridge would have longitudinal grade of 1.25% and 3.50% respectively. A

rendering of these two bridges is provided in Figure 3-7 and Figure 3-8 below. Bridge types, span lengths and location choices are discussed in greater detail in Section 4.

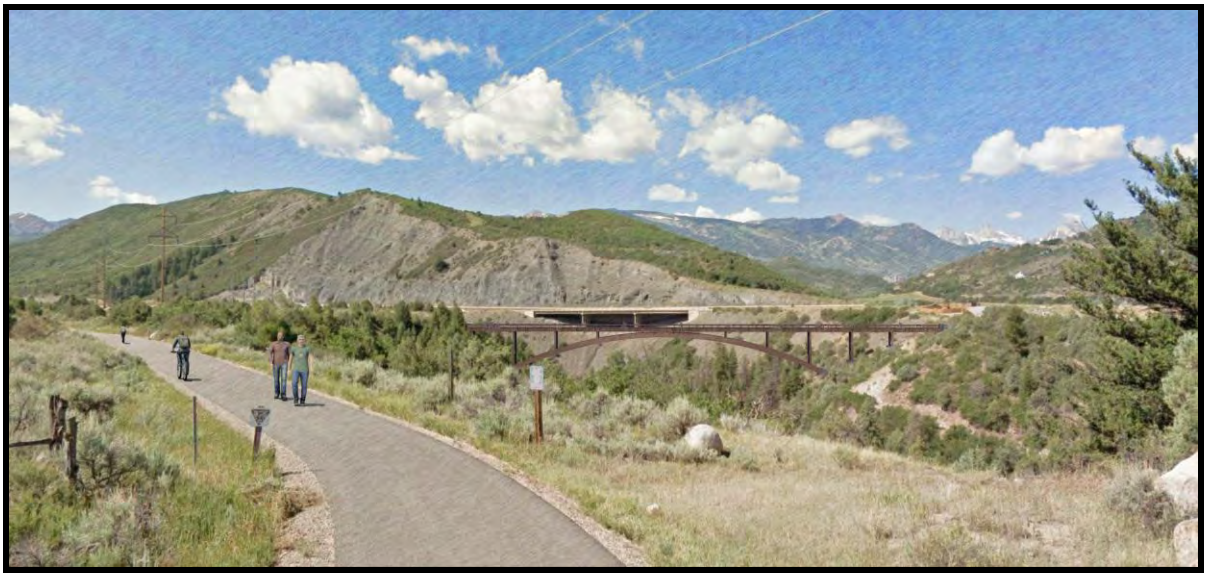


Figure 3-7: Rendering of the Brush Creek Bridge from the RGT Looking Southwest

Figure 3-8: Rendering of the AABC Bridge from the RGT Looking Southwest

An alternative alignment in which the AABC Bridge was pushed further south on the RGT was initially considered. This alignment would have had two key benefits: it would have significantly reduced the span length and the bridge would have landed closer to the AABC. However, this crossing is located within the unpaved portion of the RGT where slopes adjacent to the trail steepen and the trail width narrows. The narrow trail and difficult terrain would make construction in this location significantly more difficult and extensive closures to this section of the RGT may be required. In the winter months, the RGT is groomed and used for Nordic skiing. This bridge location would not leave room for a Nordic skiing route.

This bridge alignment was ultimately deemed unfeasible due to all the reasons mentioned above. See Appendix A for a layout of this alignment.

3.3.2 Permitting and Easements

The east abutment of the Brush Creek Bridge and the trail connection to the RGT is located within Aspen Consolidated Sanitation District Property. An easement agreement will be required for the trail. The City of Aspen held preliminary discussions with the Aspen Consolidated Sanitation District, and they are in support of the project. They have requested that the trail alignment be located as close as possible to the north property line to better accommodate any future use of the site. The bridge will also span over the southern end of the Snowmass Water and Sanitation District parcel. This would be an aerial crossing and no structures would land on that parcel. The County will be undergoing discussions with the District regarding aerial access to this parcel.

The BCPR is owned by CDOT. The trail connection will require a CDOT ROW Permit and EOTC approval. The portion of trail adjacent to SH82 and south of the AABC Bridge is primarily located within CDOT right-of-way, which will also require a CDOT ROW Permit. CDOT is supportive of multi-purpose trail projects within the region that reduce vehicle trips. Preliminary discussions with CDOT Region 3 Engineer did not indicate any issues with the proposed trail alignment.

The west abutment of the Brush Creek Bridge and trail in the BCPR is owned by CDOT and leased to the City of Aspen. Pursuant to a 2005 IGA (Intergovernmental Agreement) for the Park and Ride between the City, Town, County and RFTA, the landing and trail through the P&R also need to be approved by the EOTC.

3.3.3 Utilities

On the west side of the Roaring Fork River there is a Black Hills Energy large regulator station with several incoming and outgoing high pressure and transmission gas mains that are 6” or 10” inches in diameter. If there is impact to this area two department representatives from Black Hills Energy will need to be involved. Holy Cross Energy also has a pair of underground electric transmission lines that are in proximity to the Black Hills Energy regulator station. On the east side of the Roaring Fork River there is a pair of Holy Cross Energy overhead electric 115-kV transmission lines that generally run parallel to the Rio Grande Trail. The lines are owned by Holy Cross Energy, however they have an Operations and Maintenance agreement with Xcel Energy, so any impacts will also require coordination with Xcel. These lines are close to the Brush Creek Bridge east abutment. It is not anticipated at this time that there will be any impacts to these lines during construction of the Brush Creek Bridge. However, the east abutment of the AABC Bridge will conflict with these electric lines and they are anticipated to need to be relocated.

Figure 3-9 below shows an overview of the utilities along this alignment. This alignment may also benefit utility providers. If desired, the two bridges could carry utility lines across them for the City of Aspen, Town of Snowmass Village, or other private utility companies.

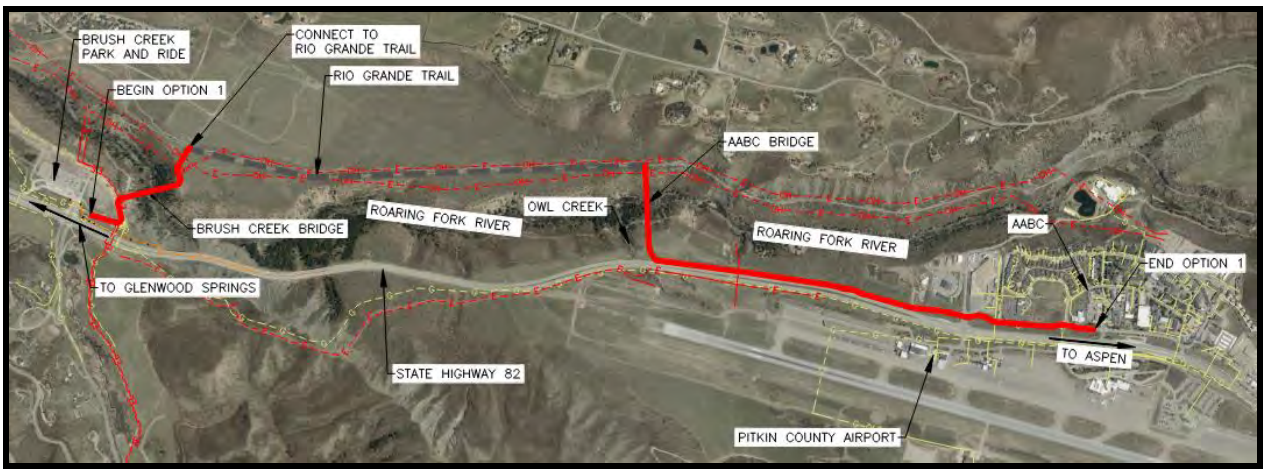


Figure 3-9: Overview of Utilities Along Alignment Option 1

3.4 Option 2 - SH82 East Alignment

A 10-foot-wide trail would head south from the BCPR and parallel SH82. This alignment would cross the Shale Bluffs area with numerous bridges, elevated walkways, and extensive retaining walls. It would bridge Owl Creek and then continue south terminating at the AABC. Figure 3-10 provides an overview and Figure 3-11 provides an aerial view of this alignment. This alignment was included in the 2013 Addendum study prepared by Loris, denoted as "Segment 12". Prior to this study, this alignment seemed to be the unofficial preferred alignment by the public. It provides the shortest connection between BCPR and AABC.

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

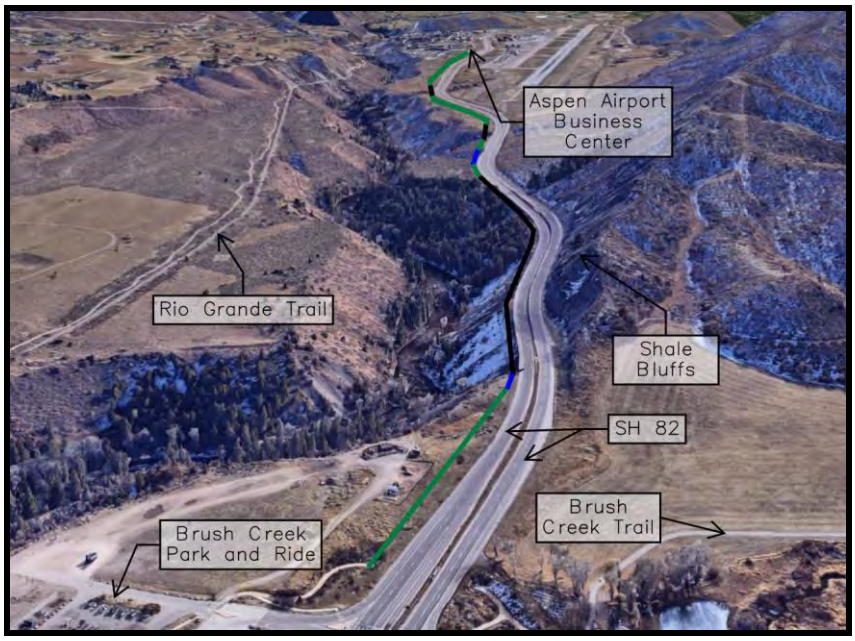


Figure 3-11: Aerial of Alignment Option 2 – SH82 East Alignment Looking South

While it seems prudent to align the proposed trail next to existing infrastructure, the topography creates significant challenges. An extensive length of bridge, retaining wall, and elevated structure would be required to maintain ADA grades through the undulating terrain. These structures would be challenging and expensive to construct and maintain. The user experience and safety would be impacted by the trail's proximity to a high-volume expressway and the geologic hazards in this area. Snowplow operations may require a snow fence to be installed on the SH82 side of the trail structures. The snow fence would also serve as a throw fence to prevent objects being thrown on to vehicles traveling on SH82. During the winter months, the trail will be shaded by the shale bluffs which could make the trail surface icy. To demonstrate some of the challenges associated with this alignment, DHM Design developed the renderings of the Shale Bluffs crossing shown in Figure 3-11 through Figure 3-13 below.

Figure 3-12: Rendering of Existing and Proposed Shale Bluffs Crossing Looking South

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

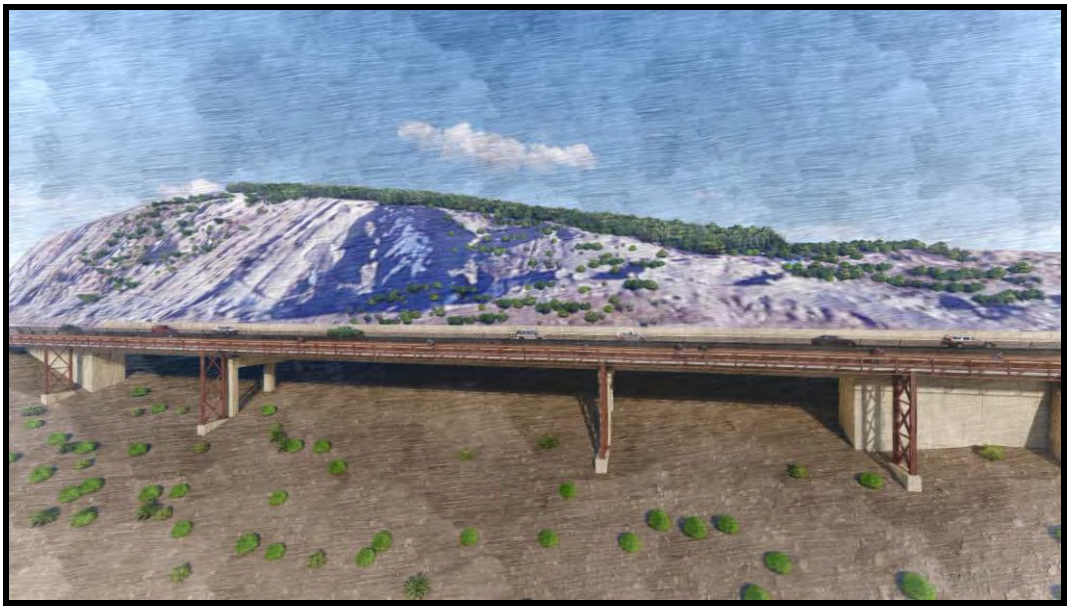


Figure 3-14: Rendering of Proposed Shale Bluffs Crossing Looking West

Primarily “More Difficult” and “Most Difficult” sections will be utilized for this alignment. “Least Difficult” sections will be used south of the Owl Creek crossing. “More Difficult” segments would be constructed before and after bridge and elevated structures. “Most Difficult” segments would be constructed across the Shale Bluffs area as well as known drainages. Any bridge or opening under SH82 would be mimicked in the adjacent trail to reduce impacts. The trail surface would consist of 10-foot asphalt trail and 12-foot concrete bridge decks and elevated walkways. The total length of the alignment would be approximately 2.28 miles. Trail length by section type is summarized in Table 3-2.

Table 3-2: Trail Alignment Option 2 – Segment Length by Construction Difficulty Level

Trail Segment/Difficult	Trail Length (Linear Feet/LF)
Least Difficult	**9,249**
More Difficult	**418**
Most Difficult	**2,378**
Total Length of Connection	12,045

3.4.1 Structures

The main challenge would be the crossing of Shale Bluffs. However, other structures would be required throughout most of this alignment to cross drainages, terrain features, steep slopes, and to maintain ADA grades.

The Shale Bluffs area represents a significant geological hazard that would make construction and maintenance of any structure built along this alignment challenging and expensive. The shale in this area is highly erodible and prone to frequent and significant rockfall. Any structure crossing this feature would have to mitigate rockfall and do so without causing a safety hazard for trail users. For these reasons, construction of this alignment would be extremely challenging.

Based on preliminary conversations with the CDOT Region 3 Resident Engineer, CDOT is in support of projects within their ROW that would reduce vehicle trips. However, there are significant concerns with attaching the trail to existing CDOT structures. Primarily, CDOT would only approve this if it could be shown that it would not significantly reduce the load rating of those existing structures. It is unlikely that this could be demonstrated. Additionally, if CDOT were to widen or replace the existing structures, then the connected trail structure would have to be removed.

For these reasons, an alignment adjacent to SH82 with independent structures was considered. While the trail alignment would be separate from the SH82 roadway, the highway would need to be utilized during construction of the trail. This would involve significant impacts to SH82 such as a northbound lane closure to allow for cranes and other construction equipment to build the trail platform. Nighttime closures may also be necessary for critical construction work such as erecting the bridges that have higher risks of being completed safely with adjacent traffic. Significant approvals from and coordination with CDOT would be required and may not be feasible.

If SH82 were used for the construction of an independent structure, it would be beneficial to have the independent structure as close to the existing structures as possible. This would reduce the reach required for construction equipment. However, the closer the independent structure is to the existing structure, the more problematic it would become. The structure would be more impacted by a future CDOT widening or replacement. A trail structure built closer to the existing structures would have a reduced user experience due to road noise and would be harder to maintain.

It is uncertain if an alternative construction access that doesn't utilize SH82 is feasible. The terrain is extremely steep and unstable, and it is unlikely that heavy construction equipment could be safely brought in on a bench built across Shale Bluffs. If an access independent of

SH82 was feasible, it would require significant environmental impacts. To get a better understanding of the terrain along this alignment, Figure 3-15 through Figure 3-18 below provide pictures of the existing conditions.

Figure 3-15: Looking South at Existing Shale Bluffs Bridge

Figure 3-16: Looking West at Shale Bluffs and SH82 Bridge
(Imagery Courtesy of Google Earth)

Figure 3-17: Looking North at Existing Box Culvert under SH82

Figure 3-18: Looking South at Existing SH82 Wall and Box Culvert

3.4.2 Permitting and Easements

CDOT clearance will be required for any bridge or wall constructed within their ROW. This typically involves a detailed process which includes multiple reviews, documentation of structure type selection, submittal of calculations, addressing of review comments, and designing to the relevant CDOT standards. Also, CDOT environmental, utility, and ROW clearances are required. Except for the southern connection to the AABC, the entire trail alignment would be located within the CDOT ROW. The trail will require a CDOT Special Use Permit.

The trail section crossing the BCPR will require approval by the EOTC.

3.4.3 Utilities

Comcast, CenturyLink/Lumen, Holy Cross Energy, and CDOT all have facilities that run through the SH82 Corridor in this area. There are two Variable Message Signs (VMS) operated by CDOT with electric lines feeding them located adjacent to SH82. Holy Cross Energy also has an underground primary electric line that crosses SH82 on the south end of the Sardy Family Holdings property. Comcast and CenturyLink/Lumen facilities are located around Service Center Drive in the AABC. It is not anticipated that any utilities would be disturbed in the construction of this alignment.
Figure 3-19 below shows an overview of the utilities along this alignment.

Figure 3-19: Overview of Utilities Along Alignment Option 2

3.5 Option 3 – River Alignment

This alignment would follow the existing topography of the river gorge from the top of the gorge to approximately 60 feet above river level. It would maintain a maximum grade of 5.0% to keep in compliance with ADA guidelines but would lose roughly 80 vertical feet in elevation over 1600 linear feet and be built with a great deal of “more difficult” and “most difficult” sections. This alignment would not be conducive to commuter traffic due to the steep grade going down to the river level and then returning back up on either end of the project limits. While some recreational users may prefer this alignment, ultimately it does not fulfill the goals of the project to provide connectivity, nor does it meet Open Space and Trails mission to preserve open space for wildlife.

This alignment ultimately was determined to be a non-viable trail location due to the difficulty of construction, the large disturbance of untouched river corridor, and extreme grade changes making the route difficult for commuters. This section of river is one of the most pristine and remote sections of the Roaring Fork. A desire to protect the sensitive natural environment within the gorge led the project stakeholders to abandon this alignment.

3.6 Geologic Hazard Assessment

The proposed project area runs along the Roaring Fork River within a U-shaped, glacial valley. Post-glacial, gravel terraces of differing ages are interrupted by outcroppings of the lower Mancos Shale Formation. In general, the alluvial gravel terraces consist of medium to dense, polygenetic, sand, gravel, cobbles, and boulder-sized materials. The bedding in the shale formation has a generally easterly dip between 12 to 15 degrees. Some layers within

the formation have low shear strength, which can result in natural or man-made slopes that exist near stability equilibrium, depending on the orientation, steepness and height of the slope. The residual soils derived from the Mancos Formation are often low strength and problematic due to the high percentage of fine particles of sand, clay and silt. It may be difficult to achieve target moisture content and density if used in fills. Rock fills made of shale can be subject to consolidation as the particles weather.

The Twin Bridges Alignment option is relatively free of geological hazards and foundation conditions for walls and bridges are favorable on the high strength gravels. There are potential constructability and global stability issues with construction of bridge footings or thrust blocks on the steep slopes, but the geological materials are generally favorable. If structures require foundations on the shale, which is possible on the west side of the river, special considerations may apply. Shale foundations may require a deep foundation, such as drilled shafts, depending on the orientation of the slope and distance to the edge.

The SH82 East Alignment runs along the downhill side of eastbound SH 82 through the Shale Bluffs and has more geological difficulties. The north end, next to the largest bridges, will probably require drilled shaft foundations. Accessing permanent or temporary bents will be very difficult on the 45° slopes. Some locations along the alignment will have exposed bedrock and others will consist of a relatively thick layer of weak overburden soils. An access road sufficiently wide and stable enough to support a caisson rig will be very difficult to construct and reclaim. A micropile foundation, using smaller equipment, would lessen the requirements but would need to be designed to provide the required lateral resistance.

The shear strength of the bedding in the shale is low and all cuts, fills, walls, and foundations will require analysis of global and local stability. There is a large landslide on the southern end of the bluffs at SH 82 milepost 35.8. The slide is approximately 400 feet wide where it crosses the highway. The upper limit of the slide is about 100 feet above the westbound roadway and the slide extends to the river below the road. It is a historic slide that was reactivated during the highway construction in the 1990's. Cuts into the slope within the slide boundaries may cause severe movement of the slope and the highway.

The gravel terrace widens south of the Shale Bluffs providing room to construct the trail on flatter, more stable terrain. This part of the alignment is relatively free of geological hazards.

4.0 Bridge Alternatives

Based on initial evaluation that showed Alignment Options 2 and 3 had significant challenges, Alignment Option 1-Twin Bridges was determined to be the preferred alignment. Due to the environmental impacts, not meeting project goals and costs, the structural bridge details were not fully evaluated for alignments Options 2 and 3. Discussions regarding relevant structures for Alignments 2 and 3 are included in their respective trail alignment sections.

The following bridge alternatives are presented for the preferred trail Alignment Option 1 which includes two bridges crossing the Roaring Fork River. The AABC Bridge is approximately ¾ of a mile north of the Aspen Airport Business Center. The Brush Creek Bridge is located just to the southeast of the BCPR. The two river crossings on Alignment Option 1 are relatively similar in length and height above the river. For this reason and for continuity within the corridor, a similar bridge type will be selected for both crossings. See

Figure 4-1 for an aerial overview of the bridge crossings and Figure 4-2 and Figure 4-3 for a vicinity map of each bridge location.

The total bridge length varies slightly for each bridge alternative. The AABC Bridge is 625-655 feet and the Brush Creek Bridge is 565-592 feet. The bridge length varies based on the abutment location which is dependent on the structure depth. The shorter bridge lengths require longer wingwalls and/or retaining walls to support the trail at the approaches. For all alternatives considered, the bridge piers are located outside of the Roaring Fork River flood plain.

Each bridge structure type is evaluated based on the following criteria:

- Constructability
- Aesthetics
- Feasibility
- Maintenance
- Cost

Three potential structure types were considered at each crossing, which will be described in detail in the following section. For both river crossings, the following structure types were considered: steel deck arch, steel deck truss, and prefabricated steel deck truss. Only steel structures were considered due to the long span lengths and the difficult construction access created by the steep slopes of the gorge. Other long span structure types such as a through truss, cable stay, or suspension bridge were not considered. OST's direction was to evaluate alternatives in which the structure was below the bridge deck, to minimize visibility of the structure. Based on the evaluation criteria, the weathering steel deck arch is the preferred bridge alternative for both crossings of the Roaring Fork River on Alignment Option 1.

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

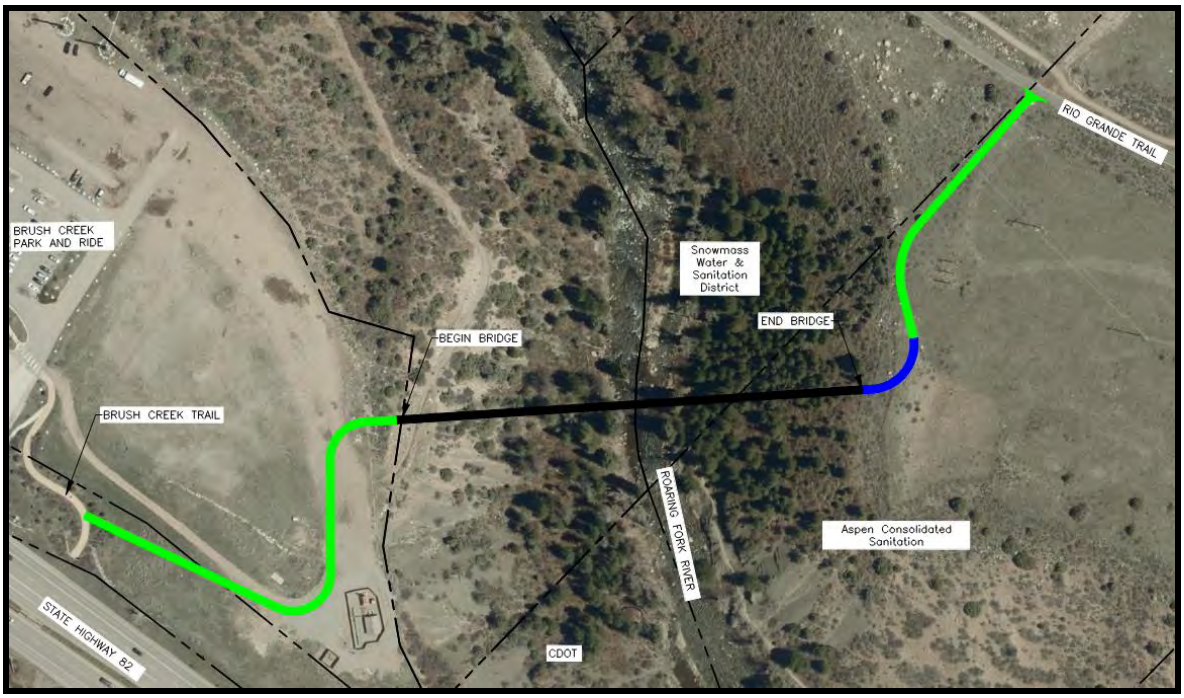


Figure 4-2: Vicinity Map – Brush Creek Bridge

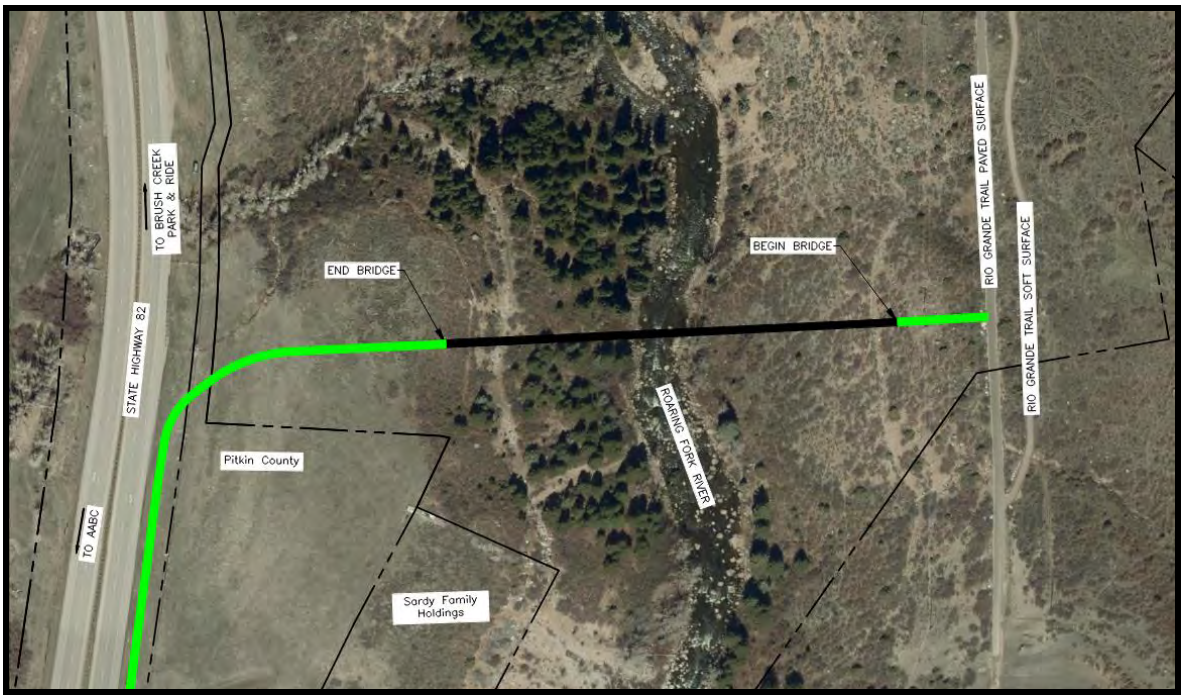


Figure 4-3: Vicinity Map – AABC Bridge

4.1 Steel Deck Arch

The steel deck arch alternative consists of the arch structure entirely below the bridge deck. The main span would be 453 feet (AABC) and 430 feet (Brush Creek). Longitudinal steel girders would support the bridge deck and connect to the arch with spandrel columns. Both crossings have two approach spans on each side, for five total spans with total bridge length of 655 feet (AABC) and 592 feet (Brush Creek). The approaches on either side of the arch would consists of longitudinal steel girders supported on steel piers. We propose using weathering (patina) steel for all structural steel elements. See Figure 4-4 for an example of this bridge type and Figure 4-5 and Figure 4-6 for renderings of the bridge at the proposed river crossing locations.

Figure 4-4: Terral Wade Bridge (Tiehack Nordic Bridge, 605 LF) Aspen, Colorado. Weathering Steel Deck Arch

Figure 4-5: AABC Bridge Rendering Looking Northwest Steel Deck Arch

Figure 4-6: Brush Creek Bridge Rendering Looking Northwest from SH82 Steel Deck Arch

4.1.1 Constructability

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

This site is characterized by steep, rocky, and vegetated riverbanks which are approximately 170 feet (AABC) and 160 feet (Brush Creek) high. Both alignments attempt to utilize flat benches clear of vegetation where possible. However, clearing and grading will be required to provide a flat bench for the foundation elements and crane pad.

The flat benches above the steep riverbanks generally provide reasonable access to the bridge locations. The west side of the Brush Creek Bridge can be accessed easily from the BCPR. The east side of the Brush Creek Bridge will require construction equipment to access the RGT at either McClain Flats Road or Stevens Street (if permitted), drive south on the RGT and west to the project site. The west side of the AABC Bridge would likely require access from the shoulder of SH82 south of the highway crossing of Owl Creek. The east side of the AABC Bridge would likely require the same access as the east side of the Brush Creek Bridge and travelling approximately 1.5 miles south along the RGT.

An 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 RGT should be explored in detail during final design.

All bridge types for each alternative will require cranes to get partially down the riverbanks to shorten the pick length. Likely a graded access road would need to be built. 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.

Due to the challenging site, we reviewed the feasibility of erecting these bridges with representatives from PSI Crane. Their conclusion was that erecting a bridge along each alignment was challenging but feasible. They recommended using a cantilever construction method like what was used at the Terrel Wade Bridge. The steel arch would be erected in segments equally on both sides by cranes. A tall tower would be erected at the end of each arch and cables would be anchored into the hillside on each end to support the erected segments. This would continue until the arch is completed in the middle. A photo of this method is shown in Figure 4-7. Overhead electrical lines generally run parallel to the RGT through here. We anticipate that these will need to be relocated for the construction of these bridges. See utility sections for additional details.

Construction of the AABC Bridge would likely require a closure and detour of the paved surface RGT onto the parallel soft surface trail. Construction of the Brush Creek Bridge would likely only require temporary closures of the RGT when construction equipment is being moved in and out. Construction operations and staging at the west side of the Brush Creek Bridge will require some area at the BCPR for the Contractor.

Figure 4-7: Terral Wade Bridge During Construction
(Imagery Courtesy of Modjeski and Masters)

Construction at both bridge locations will likely impact aircraft using Aspen/Pitkin County Airport. The Federal Aviation Administration (FAA) requires a permit on construction cranes any time that they will exceed a 100:1 sloped surface from the nearest point of the nearest runway out to 20,000 feet or 200 feet above ground level and beyond.

The AABC Bridge and Brush Creek Bridge are approximately 1,200 and 6,000 feet respectively from the nearest point of the nearest runway. We anticipate that crane operations at both bridges will require a permit. A form FAA 7460-1 will need to be submitted at least 30 days before or more either before the date the proposed construction is to begin or the date an application for a construction permit is to be filed. All crane operators should be familiar with this requirement and will be responsible for obtaining it. Since the structures will both be tucked into the riverbanks, the bridges, once erected, should not have any impacts to the operations at the airport.

While airport impacts were not addressed for the structures on Alignment 2, it should be noted that they will also trigger this permitting requirement.

4.1.2 Aesthetics

Opinions on aesthetics are subjective. The following is our opinion and generally informed by feedback from clients and the public. The structural components of all three options are below the deck. Once the user is on the bridge, all options will provide an open structure with an unobstructed view of the river valley. While the bridges will be “tucked” into the gorge, they will still be visible along the trail and SH82 as the renderings show.

A deck arch would provide an elegant structure that would blend in well with the natural environment of the gorge. This would be a signature bridge aesthetic with a slender appearance. The center of the arch would approximately match the center of the river. It has a more open appearance than the steel truss options due to fewer vertical elements. The geometry of the steep river gorge lends itself to this type of structure.

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.

4.1.3 Feasibility

This structure type is the most feasible of the three. The Terral Wade Bridge has a 406-foot main span in a similar steep sloping gorge. The arch was built using the cantilevered construction method with temporary towers for bracing during erection. The similarities of scale provide a reasonable cost basis with adjustments for inflation and the current construction climate. The deck arch, like most long span bridge options, would require a specialty contractor to erect.

4.1.4 Maintenance

Weathering steel bridges are fairly low maintenance structures. Weathering steel is a corrosion protection system in which a patina forms when exposed to the environment that protects the base metal. While these systems provide reliable corrosion protection, they do eventually fail and will require painting of the bridge. This will be the primary maintenance item and will be a significant expense. With that said, a corrosion protection system generally fails first at the connections. Connections are locations at which water and debris get trapped and can accelerate corrosion. This structure type has the fewest connections

and the least complex connections. Therefore, we would anticipate that this structure type will require the least maintenance.

In addition to painting to extend the life of the structure, another significant maintenance item for this type of structure is seasonal cleaning. This will prevent the buildup of debris which can accelerate the corrosion process. Additionally, graffiti removal, deck cleaning, and snow removal will likely be other maintenance items.

4.2 Steel Deck Truss

The steel deck truss alternative consists of the truss structure entirely below the bridge deck. The main span is 450 feet (AABC) and 420 feet (Brush Creek). Both crossings have one approach span on each side for three total spans with total bridge length of 650 feet (AABC) and 580 feet (Brush Creek). The approach spans (or back-spans) are continuous with the main truss span. The depth of the truss varies along the length of the bridge, the tallest section is at the interior piers and the shallowest section is at the abutments and the mid-point of the main span. The bottom chord of the truss is chorded into straight segments that will resemble an arch shape. We propose using painted steel for all structural steel elements. See Figure 4-8 for an example of a steel deck truss bridge and Figure 4-9 for the proposed bridge elevation. This alternative was dismissed due to the aesthetics and the higher maintenance cost.

Figure 4-8: Deception Pass Bridge Whidbey Island, Washington. Steel Deck Truss (Imagery Courtesy of Frank Schulenburg)

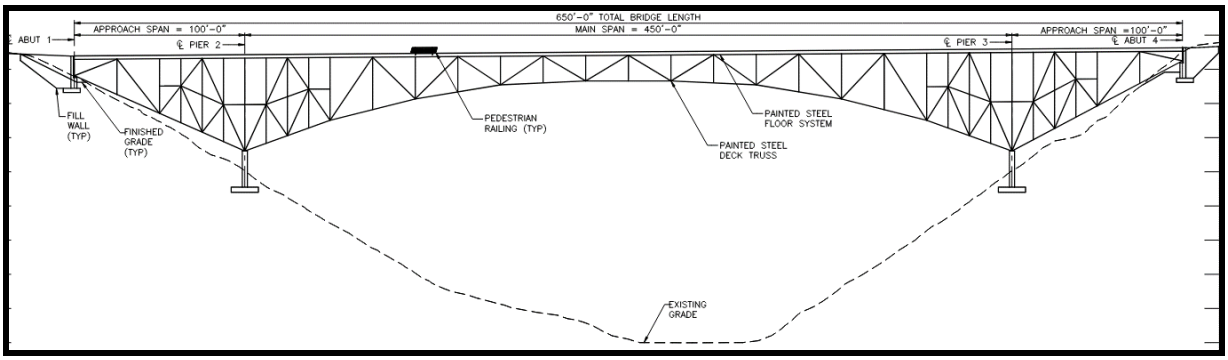


Figure 4-9: Proposed Elevation of AABC Bridge (Steel Deck Truss)

4.2.1 Constructability

The truss would be constructed using the balanced cantilever method. This is a similar concept to the deck arch construction except that the truss sections are built out in a balance configuration over the pier. This structure would have significantly more field connections than the arch. We anticipate that this construction would take significantly longer but may be able to use smaller cranes due to the larger number of bridge elements. See Figure 4-10 for an example of this construction method.

Figure 4-10: Deception Pass Bridge during Construction, Whidbey Island, Washington. (Imagery Courtesy of WSDOT)

4.2.2 Aesthetics

The steel deck truss would also provide an elegant structure that would blend in well with the natural environment of the river gorge. However, it has a more bulky and industrial appearance than the steel deck arch due to the additional vertical and diagonal truss members.

4.2.3 Feasibility

This structure type is considered feasible but more challenging than the steel deck arch. This bridge type is uncommon today and would certainly require a specialty steel erector and an immense amount of labor to make all the steel connections. At least two large steel cranes would be required.

4.2.4 Maintenance

This type of structure would require significantly more maintenance than the deck truss. Because of the large amount of field connections, this structure is not conducive to weathering steel. Instead, this structure would need to be painted. The paint system will typically last from 30-50 years with good maintenance and will eventually need to be repainted. The cleaning and repainting would be slightly more costly due to the additional members and connections. As mentioned above, any corrosion protection system typically fails first at the connections. Since this will have significantly more and complex connections, there are more locations for corrosion to initiate. Otherwise, the typical maintenance should be similar to the steel deck truss.

4.3 Multi-span Prefabricated Steel Truss

The prefabricated steel deck truss alternative consists of the truss structure entirely below the bridge deck. The main span is 338 feet (AABC) and 325 feet (Brush Creek). Both crossings have one approach span on each side for three total spans with total bridge length of 625 feet (AABC) and 565 feet (Brush Creek). The approach spans cantilever over the interior piers to support the center truss span. The truss has a constant depth along the length of the bridge. It has the shallowest cross section of all three alternatives. We propose using weathering steel for all structural steel elements. See Figure 4-11 for an example of a prefabricated truss and Figure 4-12 for the proposed bridge elevation.

Figure 4-11: Prefabricated Weathering Steel Truss Bridge, Hat Creek, CO (Imagery Courtesy of Excel Bridge) (Note this is a half through truss)

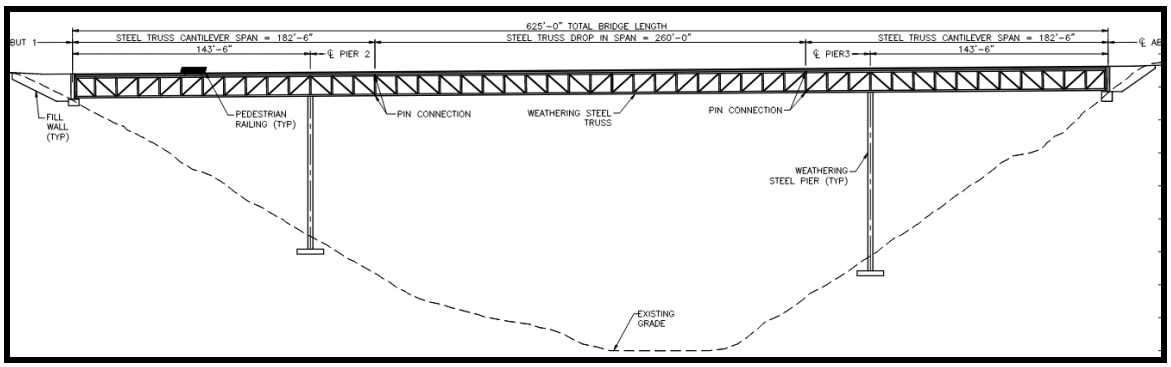


Figure 4-12: Proposed Elevation of AABC Bridge (Prefabricated Steel Truss)

4.3.1 Constructability

The truss will come pre-assembled in sections to the bridge site. The length of the segments will be limited by the truck turning radius on the delivery route and the pick weight. Access to the west side of the Roaring Fork River/SH 82 abutments will be relatively straight forward, however access to the RGT abutments will be more complicated. Access to the east side of the Roaring Fork River will likely be via Smith Way and McLain Flats Road. Navigating the curves will likely require a temporary road closure or flagging.

The truss segments will be assembled into four sections on the ground. The cantilever spans will be installed first and connected to the steel piers. The main span drop-in span will be installed in two sections and will require an in-air moment connection splice at mid-span. The pier locations are located closer to the river than the other two alternatives. This will require a longer temporary access road to construct the piers and foundations and greater impacts to the riverbanks. These sections will be extremely heavy and will require the largest cranes available position far down into the gorge to erect this structure.

4.3.2 Aesthetics

The prefabricated steel deck truss has a constant depth, which does compliment the river gorge topography as well as the other alternatives. It has the shallowest depth of the three alternatives. This type of structure has the most industrial and generic appearance of the types considered. This is because the prefabricated truss will resemble a box while the other two structure types have a variable depth. Most people will have seen similar structures in other places.

4.3.3 Feasibility

Unlike the other two options, the feasibility of the prefabricated truss option is questionable. The benefit of prefabricated truss structures are that they are “off the shelf” and are typically good applications at standard sites. This alternative is putting a square peg in a round hole because it is not a standard site. The main issues are the large pick weights, the tall pier that would need to be constructed, and this would provide the smallest opening for the river. The cranes would need to get way down into the gorge which may not be feasible. We anticipate that two 400 Ton cranes would likely be required to erect this structure. Cranes of this size may not be readily available in the area.

4.3.4 Maintenance

These are typically low maintenance structures. The primary maintenance item is that the weathering steel, which provide corrosion protection, will eventually fail and require repainting. The maintenance for this structure would be similar to the steel deck arch but with significantly more connections.

4.4 Bridge Alternatives Cost Analysis

The cost estimate for the bridges and alignments are presented in Section 5. The following is a summary of how the cost information was developed.

Planning level cost estimates were developed for the deck arch bridge and prefabricated truss bridge alternatives. Since the steel deck truss alternative was dismissed by the project team, planning level cost information was not determined for this alternative. The following information was used in the development of the planning level cost information:

- Preliminary Plans for the Maroon Creek Bridge Received from the City of Aspen
- CDOT Cost Data Information from 1999 to Current
- FHWA Highway Cost Inflation Database
- General Square Foot Cost Data for Specific Bridge Structure Types

The construction industry is going through a significant period of uncertainty. Major issues such as supply chain issues, labor shortages, and material shortages have resulted in an uncertain period for construction pricing and certainty. Further, with labor shortages, the passage of the Infrastructure Investments and Jobs Act, a significant amount of money will be flowing into the transportation industry. All this is to say, contractors will be busy over the next five years. Further, add in that a specialty Contractor will be required to do this work, large cranes from all over the state and possibly the country will be required, the construction pricing climate will be uncertain at best.

To develop the cost estimate for the deck arch, a few approaches were taken. Since the deck arch option was modeled off the Maroon Creek Bridge, the summary of quantities from that bridge was used to develop a quantity tabulation for the proposed bridge. The numbers from the summary of quantities were scaled to match the differences in geometry and complexity on this project from that project. Using the assumed quantities, the CDOT cost data books from 2019, 2020, and 2021, and other local projects, a present-day cost per square foot for the construction of this bridge was determined. A 3% annual inflation factor was applied for each year after that to bring it from present day costs to costs in the assumed year of construction. The year of construction was assumed to be 2025.

The present-day numbers were compared to other recent projects put out to bid in Colorado as a reality check on the numbers. The team also reached out to the AISC Steel Solutions Center and local fabricators for cost information. A 30% contingency factor was applied to this number to account for the uncertainties highlighted above.

To develop the cost estimate for the prefabricated truss, recent local projects utilizing prefabricated trusses were reviewed. The costs of those projects were then inflated to present day dollars using an inflation factor computed from the CDOT cost data books.
Then, a 3% annual inflation factor was applied for each year after that. The year of construction was assumed to be 2025. These projects were also scaled up to reflect the

complexity of this project. The present-day numbers were compared to other recent projects put out to bid in Colorado as a sanity check on the numbers. A 30% contingency factor and a complexity factor were applied to this number to account for the uncertainties highlighted above.

4.5 Preferred Bridge Alternative

The steel deck arch is the preferred bridge alternative. This is the most aesthetic, efficient, and constructible. We believe this will be the lowest maintenance of the alternatives considered.

5.0 Alignment Option Comparison

5.1 Cost Analysis

SGM generated costs estimates for alignment Options 1 and 2. Unit costs have been created from each typical section per linear foot of trail/bridge and per square foot of wall. These are items such as asphalt pavement, concrete deck, boulder walls, MSE block walls, pedestrian railing, and earthwork. Miscellaneous costs are those items that apply across the entire project and not by typical section type. These items include clearing and grubbing, traffic control, utility relocations, and erosion control.

Inflation has been added to the overall cost estimate, assuming an inflation rate of 3% per year, and a construction year of 2025. Mobilization cost of 10% is assumed. The cost estimates are conceptual in nature and therefore include a 30% contingency. Table 5-1 shows a summary of each construction cost estimate. A detailed cost estimate per segment of trail can be found in Appendix C. For this type, scale, and level of complexity of project, design and construction engineering fees will likely range between 15-25% of the total construction costs. The design and construction engineering estimated cost range for both alignment options is also included in the cost estimate table.

Table 5-1: Trail Cost Estimate

Trail Segment/Difficulty	Option 1 Twin Bridges	Option 2 SH82 East Alignment
Least Difficult	**$846,000**	**$1,151,000**
More Difficult	**$203,000**	**$545,000**
Most Difficult	**$16,381,000**	**$21,269,000**
Total Construction Cost	$17,430,000	$22,965,000
Design and Construction Engineering	$2,615,000- $4,358,000	$3,445,000- $5,741,000
Total Project Cost	$20,045,000- $21,788,000	$26,410,000- $28,706,000

5.2 Option Evaluation

5.2.1 Evaluation Criteria

Alignment Options 1 and 2 were compared in the following categories:

- Cost
  - Total Construction Cost
  - ROW or Easements Needed
- Maintenance
  - Structure Maintenance (cleaning, painting, railing, expansion joints)
  - Trail Maintenance (plowing, pedestrian railing, asphalt crack sealing)
- User Experience
  - Safety
  - Recreation Users
  - Commuters
  - General Public/Vehicle Traffic
  - Aesthetics
- Complexity of Construction
  - Construction / Equipment Access
  - Construction Techniques
  - Existing Trail Impacts
  - Roadway Impacts
  - Utility Impacts
- Environmental
  - Wildlife Habitat Impacts
  - Wetland Impacts
  - Geological Hazards

5.2.2 Evaluation Matrix

Each alternative alignment was evaluated based on the above criteria and assigned a color. Positive features are highlighted in green, neutral features are highlighted in yellow, and negative features are highlighted in red. See Table 5-2 below for evaluation matrix.

Table 5-2: Options Evaluation Matrix

Comparison Item	Option 1 Twin Bridges Alignment	Option 2 SH82 East Alignment
Cost		
Total Cost (2025 Construction Only)	Construction: $17.3 Million Design & Const. Engineering: $3.5 Million	Construction: $22.9 Million Design & Const. Engineering: $4.6 Million
ROW or Easements Needed	Special Use Permit needed from CDOT and Easement needed from Aspen Consolidated Sanitation and Snowmass Water and Sanitation	Special Use Permit permit needed from CDOT and extensive approvals and coordination required
Maintenance		
Structure Maintenance	Moderate maintenance concerns due to preferred bridge type selected	Significant due to large amount of structure, structure types required, proximity to snow plowing and traffic, and rockfall hazard
Trail Maintenance	Minimal maintenance concerns (large portion of trail overlaps with existing RGT)	Higher maintenance concerns due to difficulty of trail access along Highway 82 corridor. Longer additional trail length.
User Experience		
Safety	No concerns	Potential for debris and snow throw from Highway 82 to impact trail
Recreational Users	A good connection between W/J, RGT, BCPR and AABC utilizing existing trail	Not an ideal location for recreational users due to proximity to Highway 82
Commuters	A good connection between W/J Ranch, RGT, Park and Ride and AABC utilizing existing trail BCPR to AABC trail length = 2.55 miles	A more direct route to and from AABC BCPR to AABC trail length = 2.28 miles
General Public / Vehicle Traffic	View of bridges would be limited since majority of structure is below deck, structure would blend into gorge.	Construction would have impacts to Highway 82, Trail location proximity to highway could be distraction to drivers
Aesthetics	Bridges spanning Roaring Fork River provide new perspectives of valley, Bridges would blend into natural environment	Trail bridges separate from existing Highway 82 bridges and different structure type. New trail piers to match existing vehicle bridge pier locations.
Constructability		
Construction / Equipment Access	Large crane operations and work platforms needed to construct long span bridges	Significant crane operations needed to construct long and mid span bridges and structures, extensive coordination and approval with CDOT
Existing Trail Impacts	Temporary RGT closures required to deliver materials for bridge construction and detour needed at AABC Bridge east abutment	No impacts
Roadway Impacts	Minimal impacts to Highway 82 and McLain Flats Road to reach bridge construction site	Significant impacts due to closures necessary to build structures adjacent to Highway 82
Utility Impacts	Potential impacts to overhead electric lines during bridge construction	No impacts
Environmental Impacts		
Wildlife Habitat Impacts	Negligible impacts	Negligible impacts
Wetland Impacts	No impacts	Potential impacts at Owl Creek
Geological Hazards	No impacts	Construction on unstable Shale Bluffs area

6.0 Project Delivery Methods

Based on the complexity of the structural design and construction risks, SGM recommends that the Pitkin County Open Space and Trails considers the CM/GC (Construction Manager/General Contractor) delivery method. In this delivery method, the owner has a separate contract with the designer and with a contractor serving as the construction manager during the design phase. The owner initially selects the construction manager based on qualifications rather than lowest qualified bidder. Once the project is close to final design, the construction manager will submit a "guaranteed maximum price". If the owner agrees, a contract for construction services is executed. At this point, the construction manager transitions to the general contractor role. This contracting method was used for the City of Aspen Terral Wade (Tiehack) steel arch pedestrian bridge.

The benefit of this contracting method is that the contractor is brought on the project team prior to final design. The contractor provides input on construction methods, value engineering, schedule, and ways to minimize or mitigate risk. Having a contractor on-board will be very helpful to design the steel deck arch. The loads during construction may control the design of the arch rib, so having the contractor available during the design process will provide the bridge designers with precise construction loads. Another potential cost and time savings element is coordination between the bridge designer and the steel fabricator. The steel fabricator will be able to review member sizes and details and make recommendations for more economical details. If schedule is critical to the project delivery, the contractor could begin earthwork and foundation construction prior to all the steel details being finalized.

This type of project is challenging for a design-build delivery method. Design-build projects are typically more successful on projects with a large number of standard and repeatable structures. It is less ideal for complex bridge designs. There are various project risks that would be difficult for the contractor to estimate prior to the design being substantially complete.

The more traditional design-bid-build delivery method could be utilized here. However, we anticipate that it would require a significant amount of coordination during construction between the Contractor and Engineer. This is because the construction method will likely impact the ultimate loads on the structure. If this was the case, members may need to be changed or upsized during construction. The Engineer would try to assume a construction sequence during design, but if the Contractor's sequence or methods were different, it could result in significant changes to the design during construction. This has potential to result in delays and cost overruns.

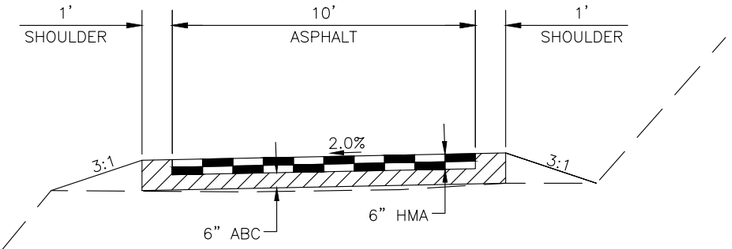
Appendix A

01 – Trail Typical Sections

02 – Bridge Layout and Typical Sections

03 – Alternate Bridge Alignment

04 – Full Size Report Exhibits



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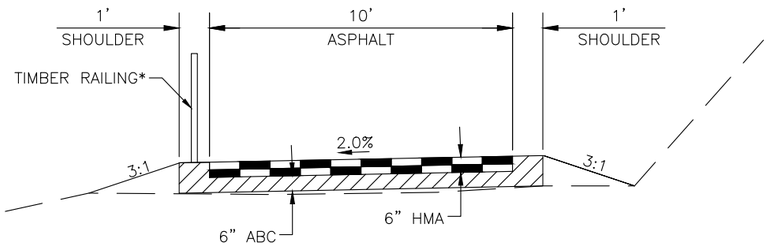

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*TIMBER RAILINGS MAY BE ON LEFT, RIGHT, OR BOTH SIDES OF SECTION

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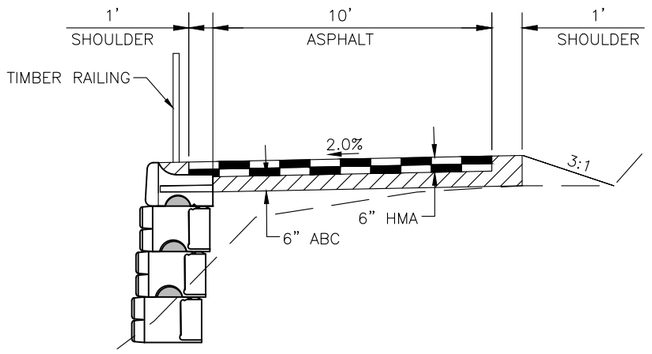

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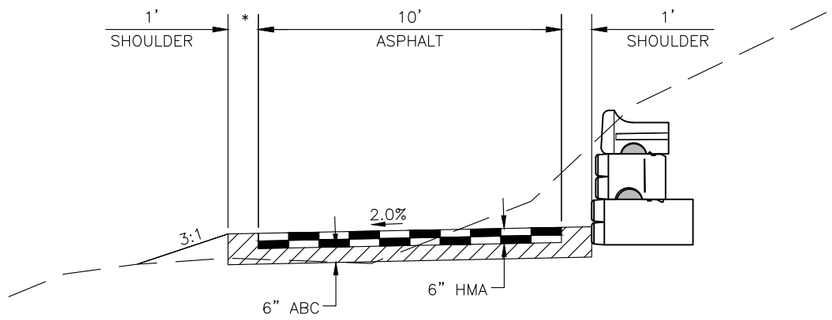

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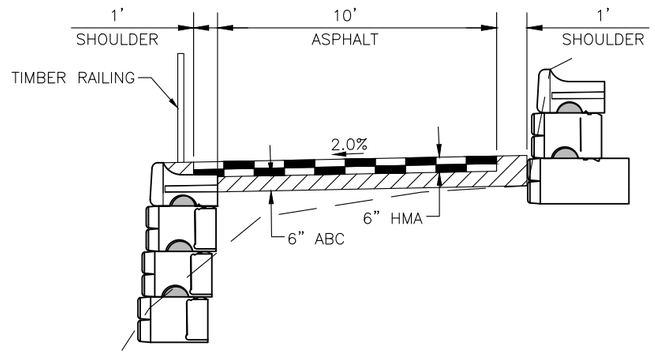

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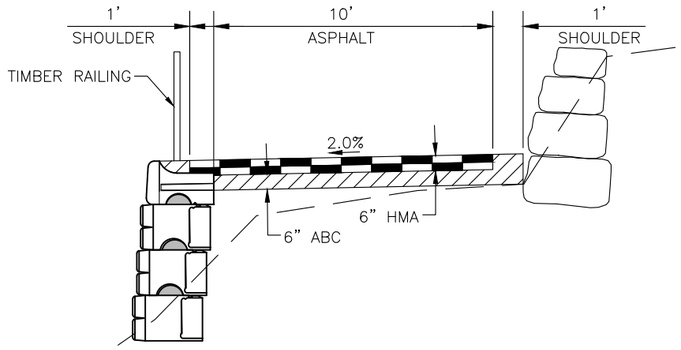

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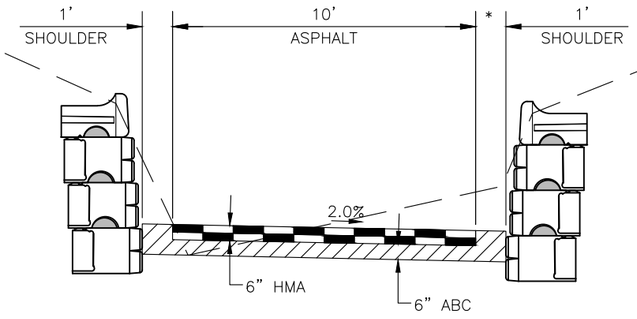

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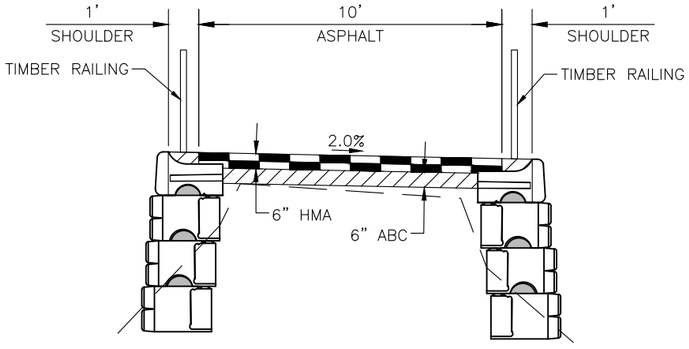

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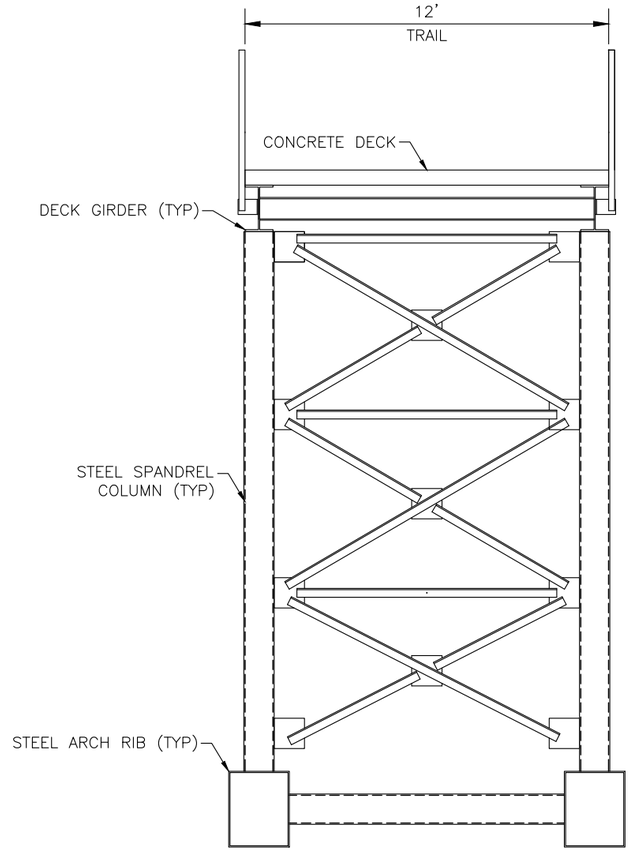

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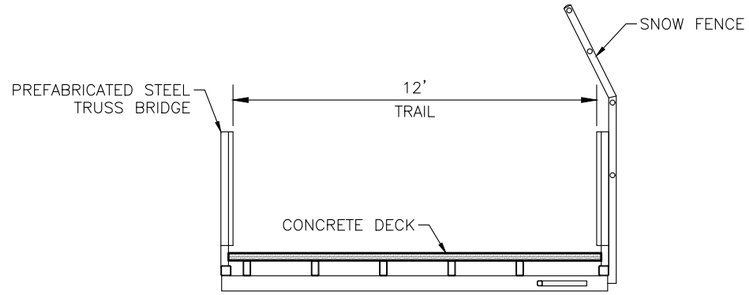

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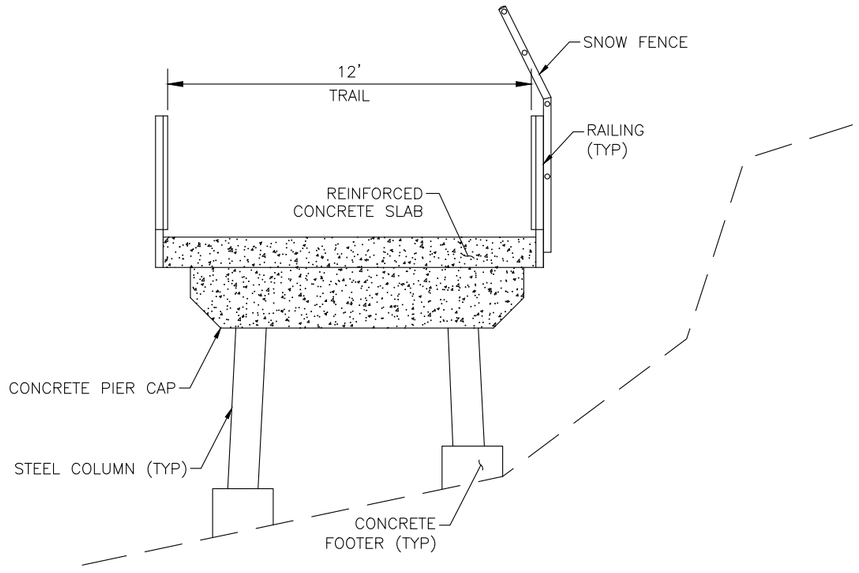

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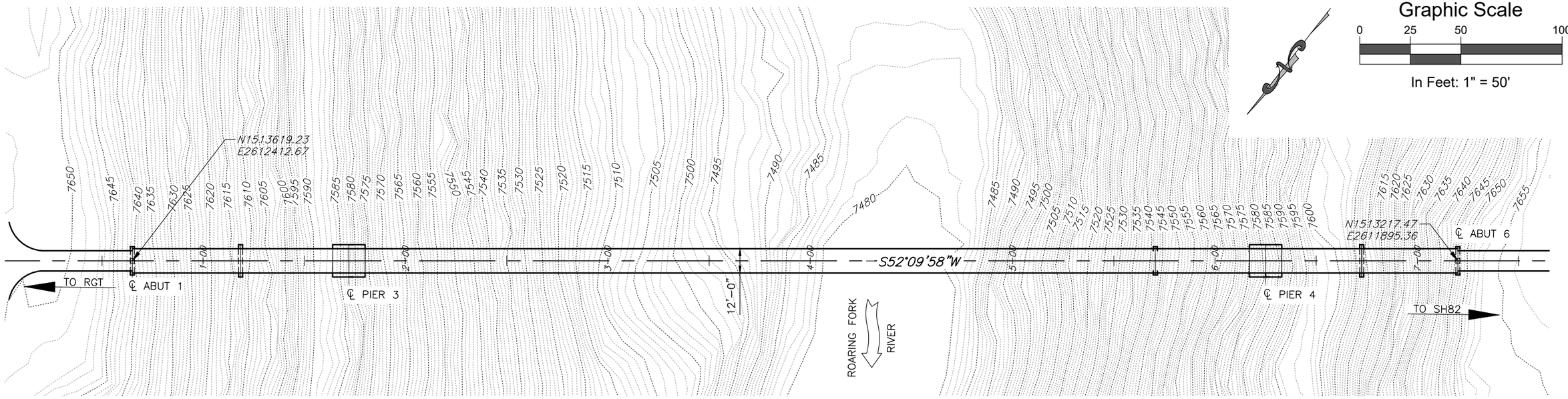

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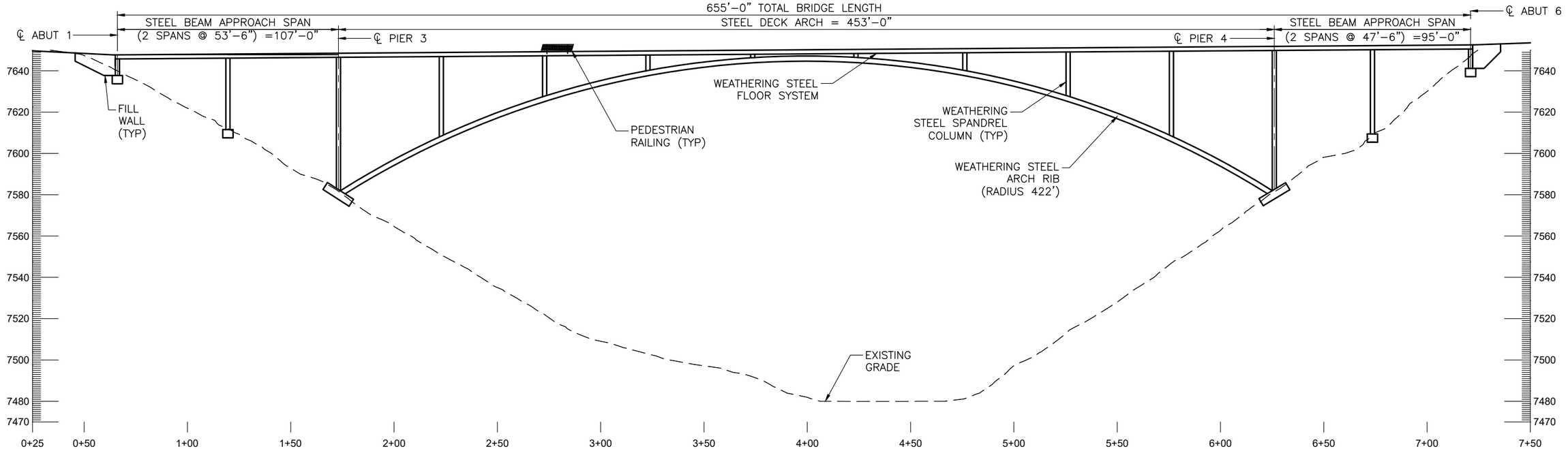

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AABC Bridge - Alternative #1

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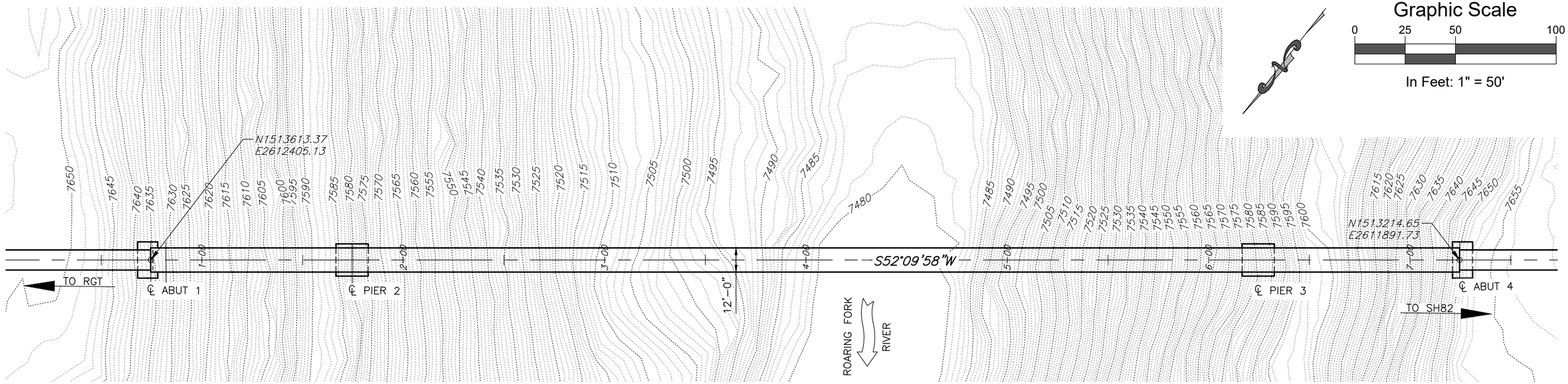

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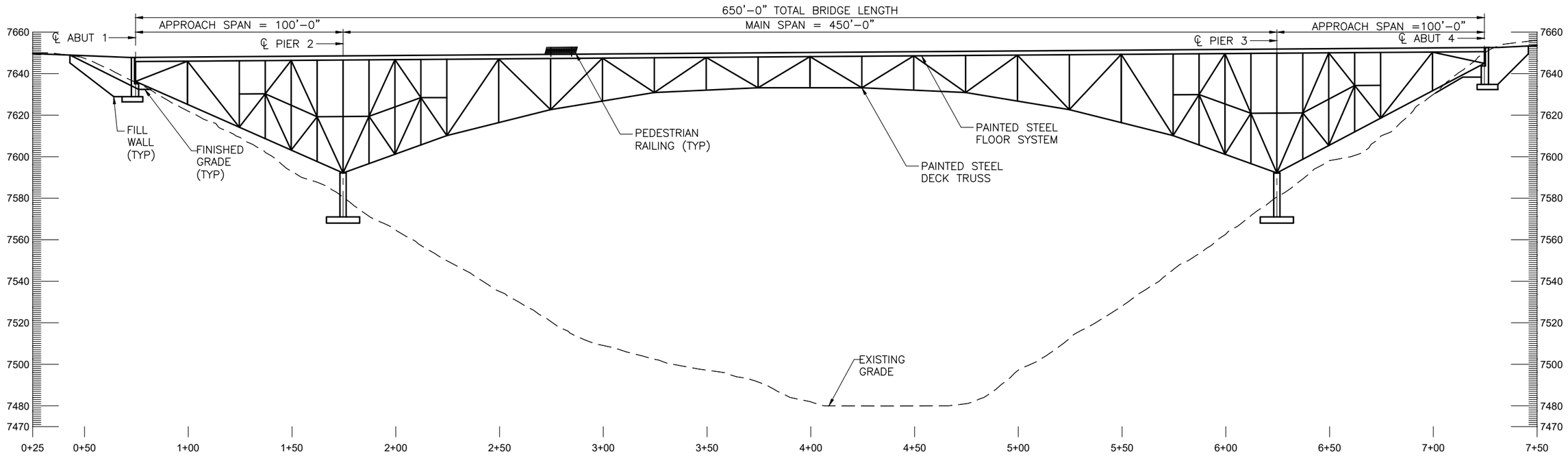

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BRUSH CREEK P&R TO ASPEN ABC TRAIL
AABC Bridge - Alternative #2

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Drawn By:	CWG		
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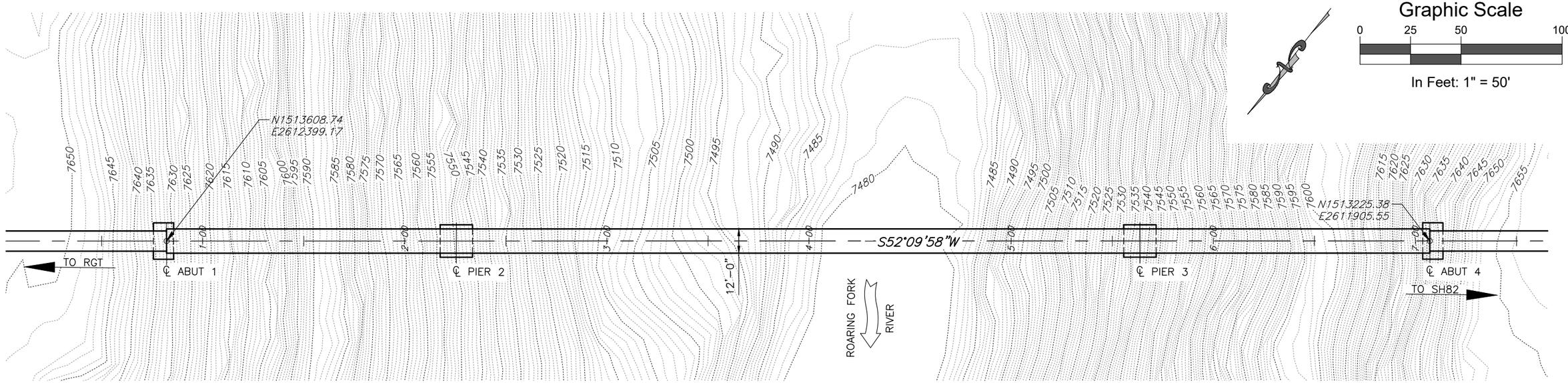

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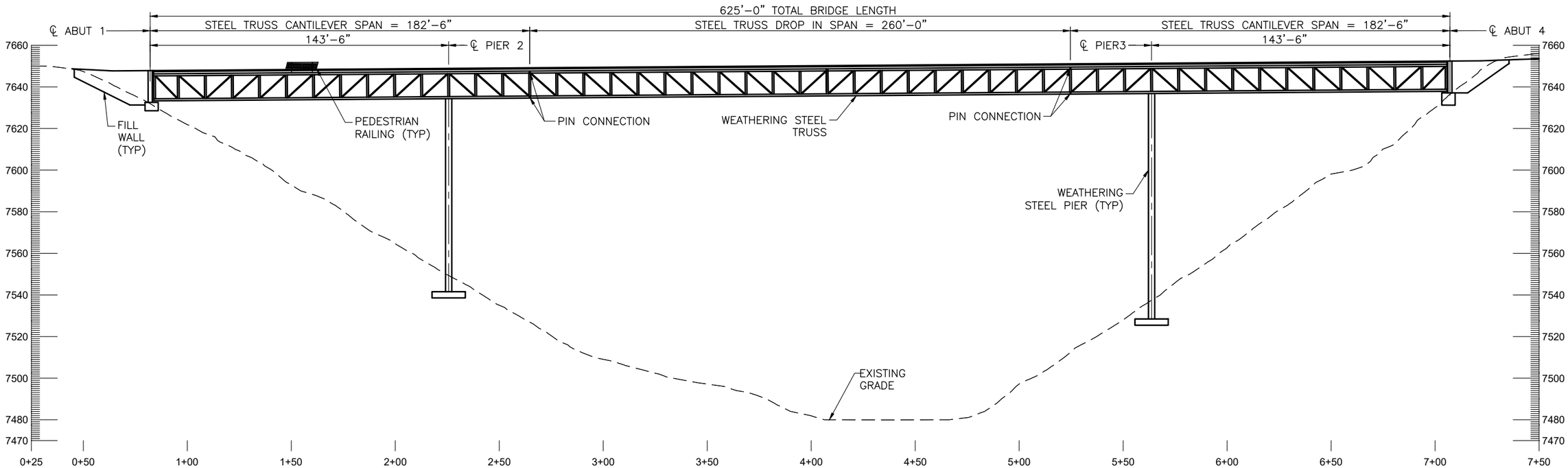

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AABC Bridge - Alternative #3

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Drawn By:	CWG		
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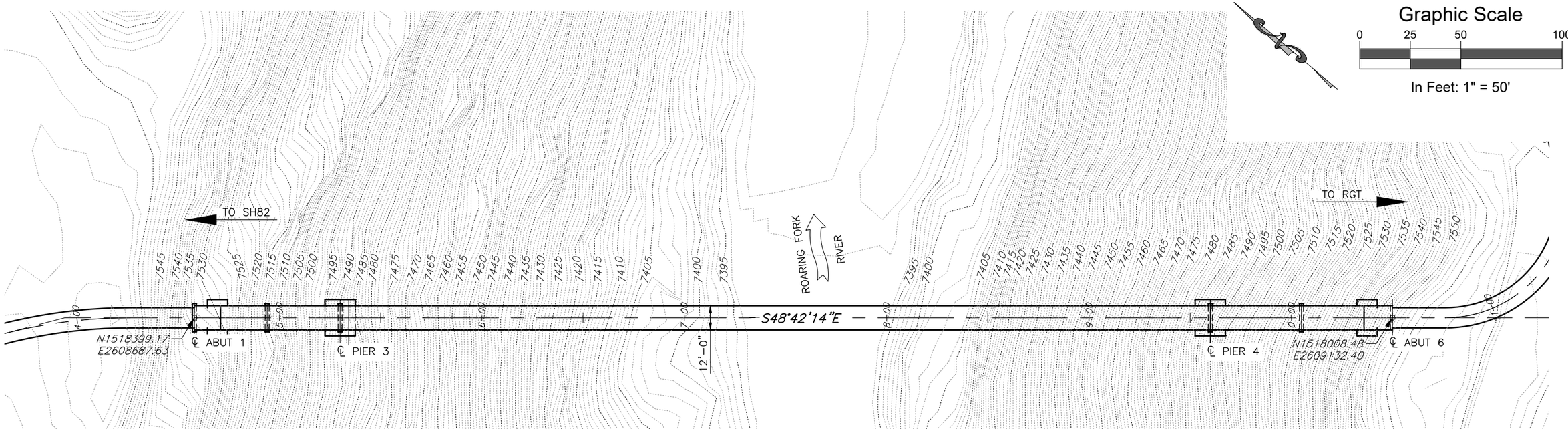

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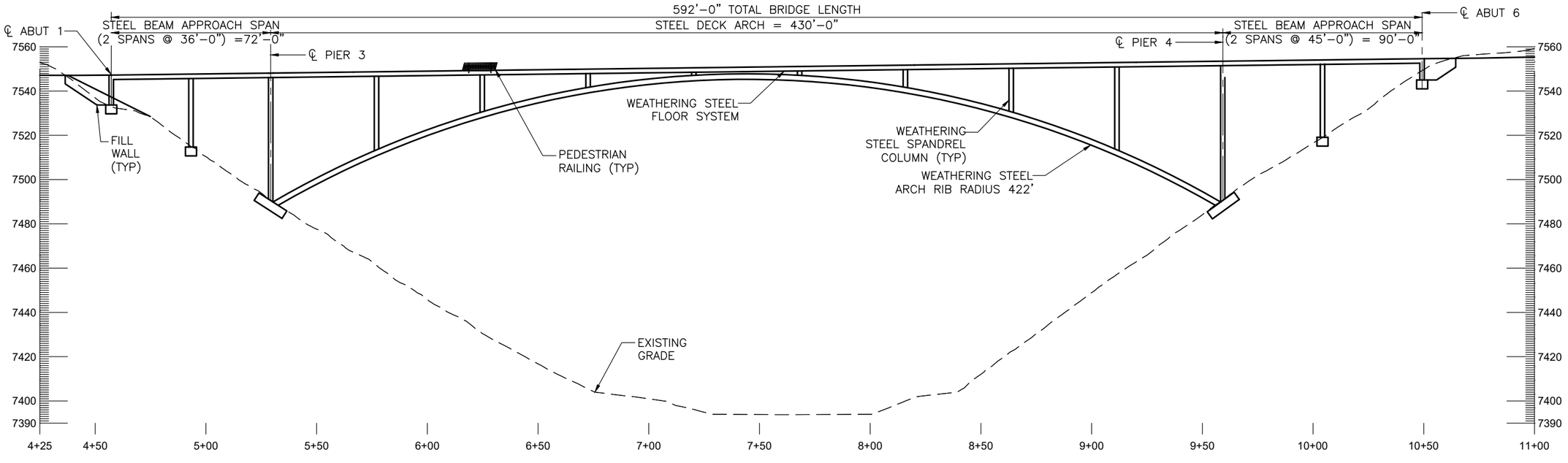

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Void:

BRUSH CREEK P&R TO ASPEN ABC TRAIL
Brush Creek Bridge - Alternative #1

Engineer:	MCF	Structure Numbers	
Drawn By:	CWG		
Sheet Subset:	Bridge	Subset Sheets:	B4 of B7

Project No./Code	
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Sheet Number	70 4

PRELIMINARY DESIGN FOR FEASIBILITY STUDY - NOT FOR CONSTRUCTION

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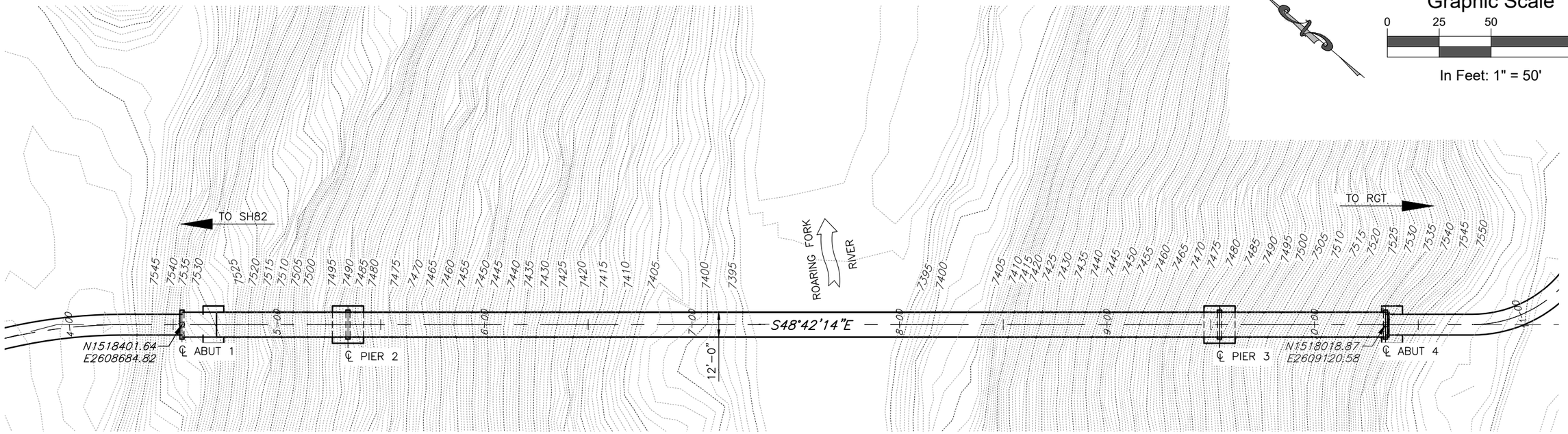
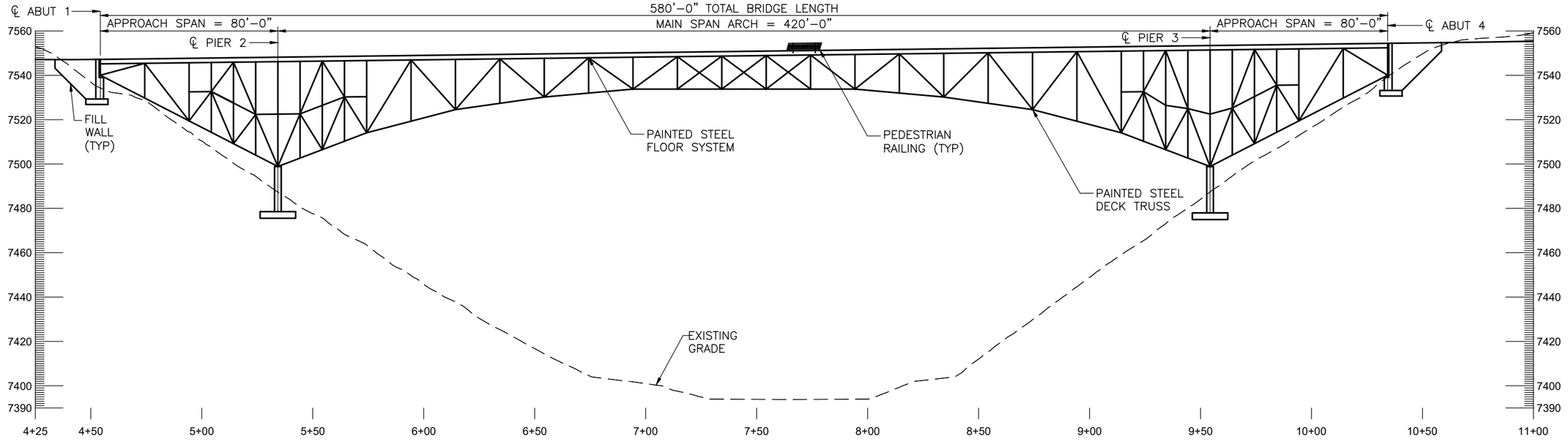


PLAN



ELEVATION

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SGM Project No.: 2021-401.001	Quality Control: MLF

Sheet Revisions			
Rev.	Date	Comments	Init.
1			

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BRUSH CREEK P&R TO ASPEN ABC TRAIL
Brush Creek Bridge - Alternative #2

Engineer:	MCF	Structure Numbers	
Drawn By:	CWG		
Sheet Subset:	Bridge	Subset Sheets:	B5 of B7

Project No./Code
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Sheet Number 71 5

PRELIMINARY DESIGN FOR FEASIBILITY STUDY - NOT FOR CONSTRUCTION

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Graphic Scale

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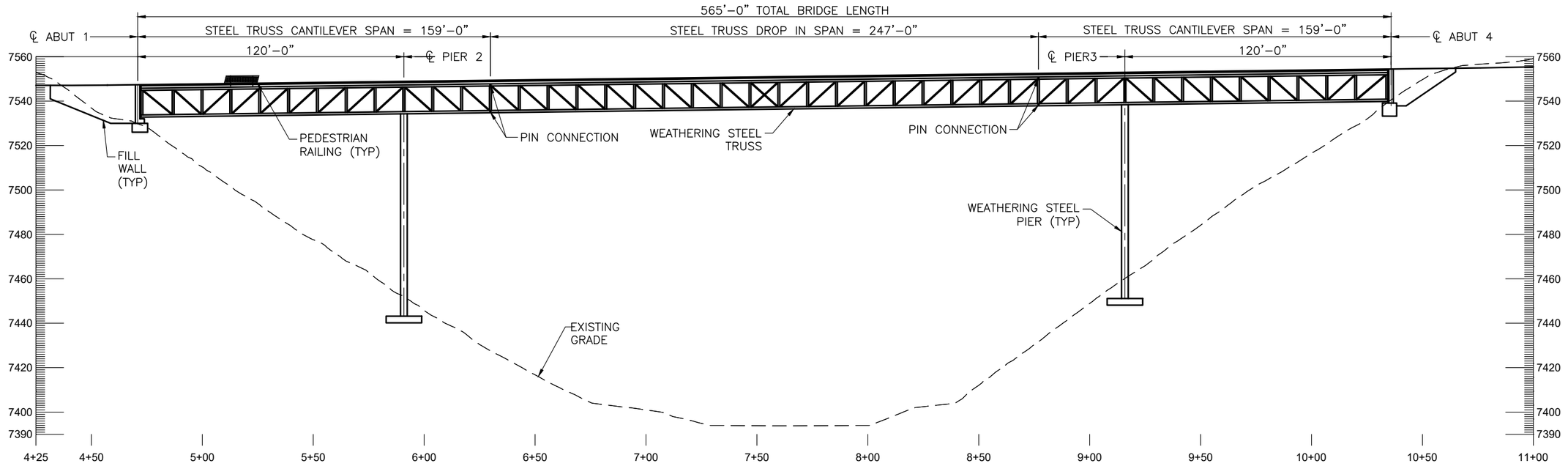
In Feet: 1" = 50'

PLAN



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Autocad Ver. 2018	Scale: As Shown
SGM Project No.: 2021-401.001	Quality Control: MLF

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Rev.	Date	Comments	Init.
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BRUSH CREEK P&R TO ASPEN ABC TRAIL
Brush Creek Bridge - Alternative #3

Engineer:	MCF	Structure Numbers	
Drawn By:	CWG		
Sheet Subset:	Bridge	Subset Sheets:	B6 of B7

Project No./Code
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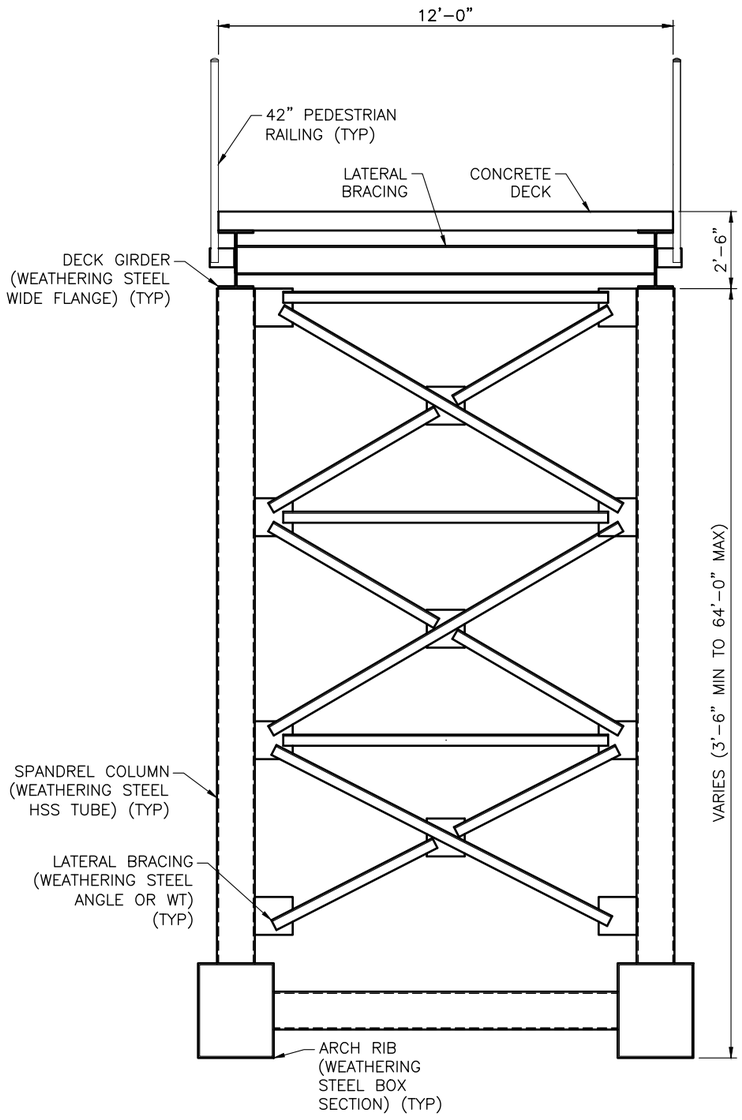
Sheet Number 72 6



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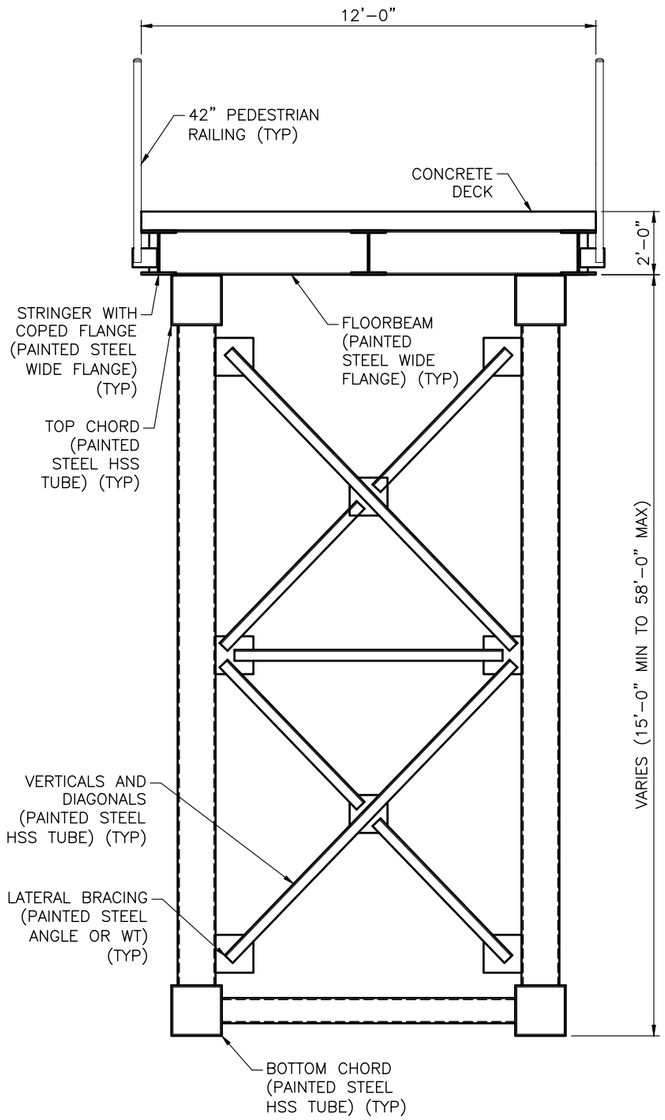

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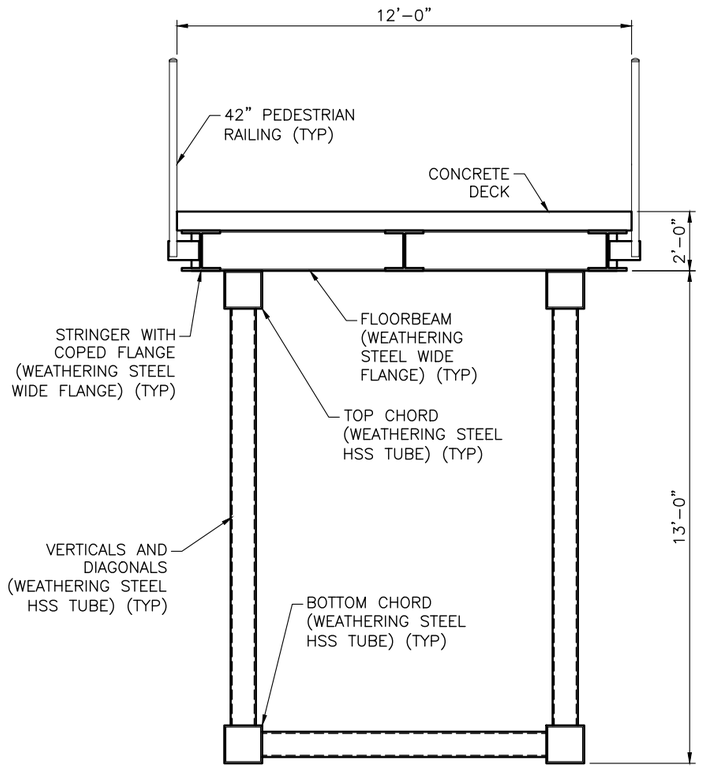

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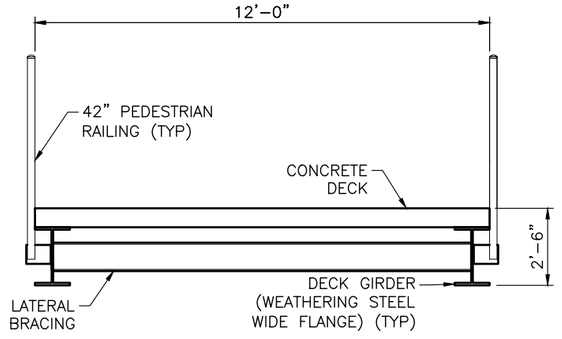

ALTERNATIVE #1 STEEL MULTI BEAM
APPROACH SPAN TYPICAL SECTION

PRELIMINARY DESIGN FOR FEASIBILITY STUDY - NOT FOR CONSTRUCTION

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SGM Project No.: 2021-401.001	Quality Control: MLF

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Rev.	Date	Comments	Init.
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BRUSH CREEK P&R TO ASPEN ABC TRAIL
Typical Sections

Engineer:	MCF	Structure Numbers	
Drawn By:	CWG		
Sheet Subset:	Bridge	Subset Sheets:	B7 of B7

Project No./Code
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Sheet Number 73 7

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SGM Project No.: 2021-405.001	Quality Control: XX

Sheet Revisions			
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BRUSH CREEK P&R TO AABC TRAIL
TRAIL OPTIONS BY DIFFICULTY

Engineer:	XX	Structure Numbers	
Drawn By:	XX		
Sheet Subset:	--	Subset Sheets:	-- of --

Project No./Code
--
--
Sheet Number 74 ----

Graphic Scale

0 500 1000 2000

In Feet: 1" = 1000'

BRUSH CREEK PARK AND RIDE

OPTION 1 BRUSH CREEK BRIDGE

RIO GRANDE TRAIL

OPTION 1 AABC BRIDGE

ROARING FORK RIVER

OWL CREEK

OPTIONS 1&2

AABC

STATE HIGHWAY 82

OPTION 2

TO GLENWOOD SPRINGS

TO ASPEN

PITKIN COUNTY AIRPORT

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Autocad Ver. 2020 Scale: As Shown	
SGM Project No.: 2021-405.001	Quality Control: AMC

Sheet Revisions			
Rev.	Date	Comments	Init.
1			

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BRUSH CREEK P&R TO AABC TRAIL
TRAIL OPTIONS 1&2 - OVERVIEW

Engineer:	AMC	Structure Numbers	
Drawn By:	MWM		
Sheet Subset:	EXHIBIT	Subset Sheets:	1 of 9

Project No./Code
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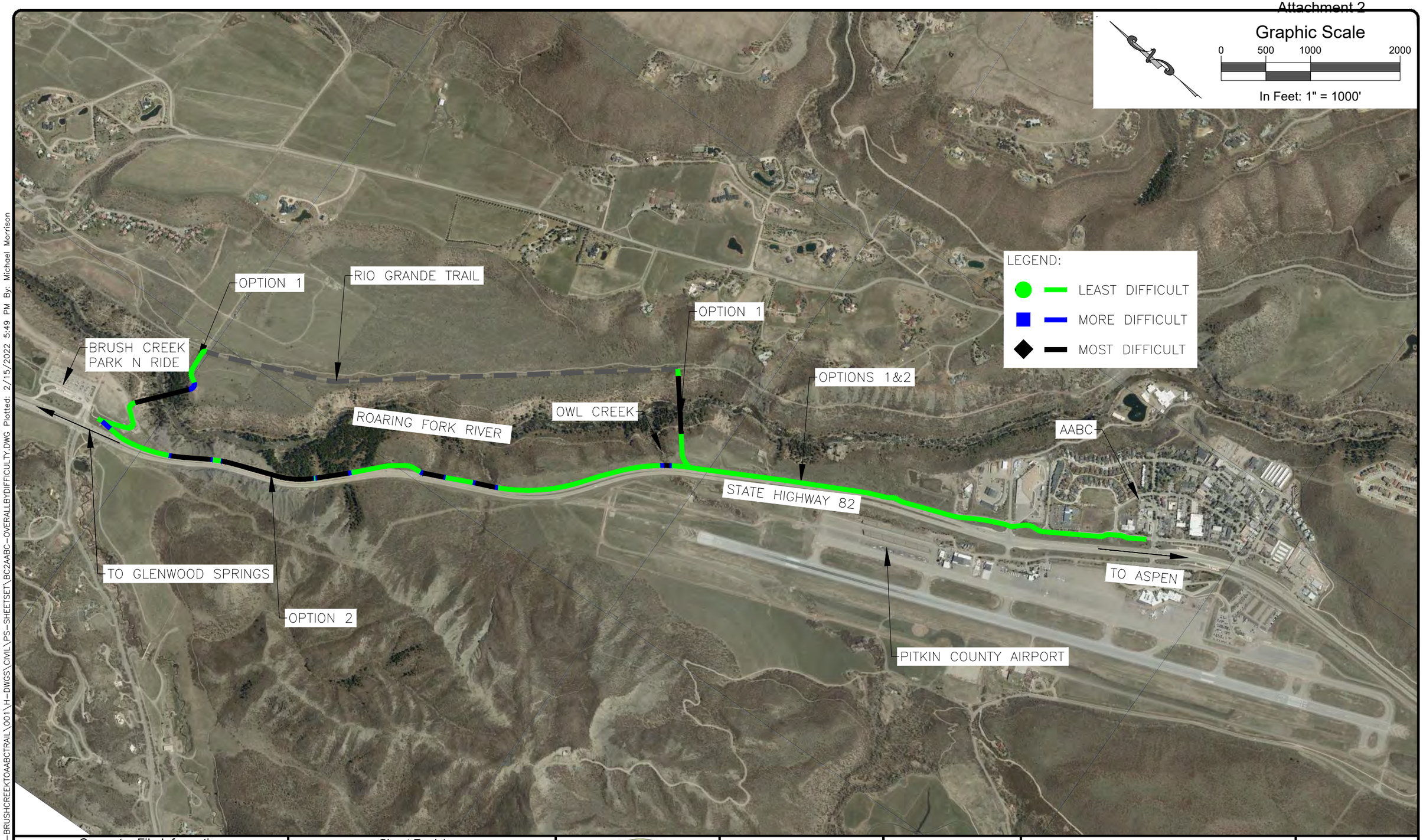
Sheet Number: 75 1



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SGM Project No.: 2021-405.001	Quality Control: AMC

Sheet Revisions			
Rev.	Date	Comments	Init.
1			

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BRUSH CREEK P&R TO AABC TRAIL
OVERALL SITE PLAN BY DIFFICULTY

Engineer:	AMC	Structure Numbers	
Drawn By:	MWM		
Sheet Subset:	EXHIBIT	Subset Sheets:	2 of 9

Project No./Code
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Sheet Number: 2

Graphic Scale

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In Feet: 1" = 1000'

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Autocad Ver. 2020	Scale: As Shown
SGM Project No.: 2021-405.001	Quality Control: AMC

Sheet Revisions			
Rev.	Date	Comments	Init.
1			

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BRUSH CREEK P&R TO AABC TRAIL
TRAIL OPTION 1

Engineer:	AMC	Structure Numbers	
Drawn By:	MWM		
Sheet Subset:	EXHIBIT	Subset Sheets:	3 of 9

Project No./Code

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Sheet Number 3

Graphic Scale

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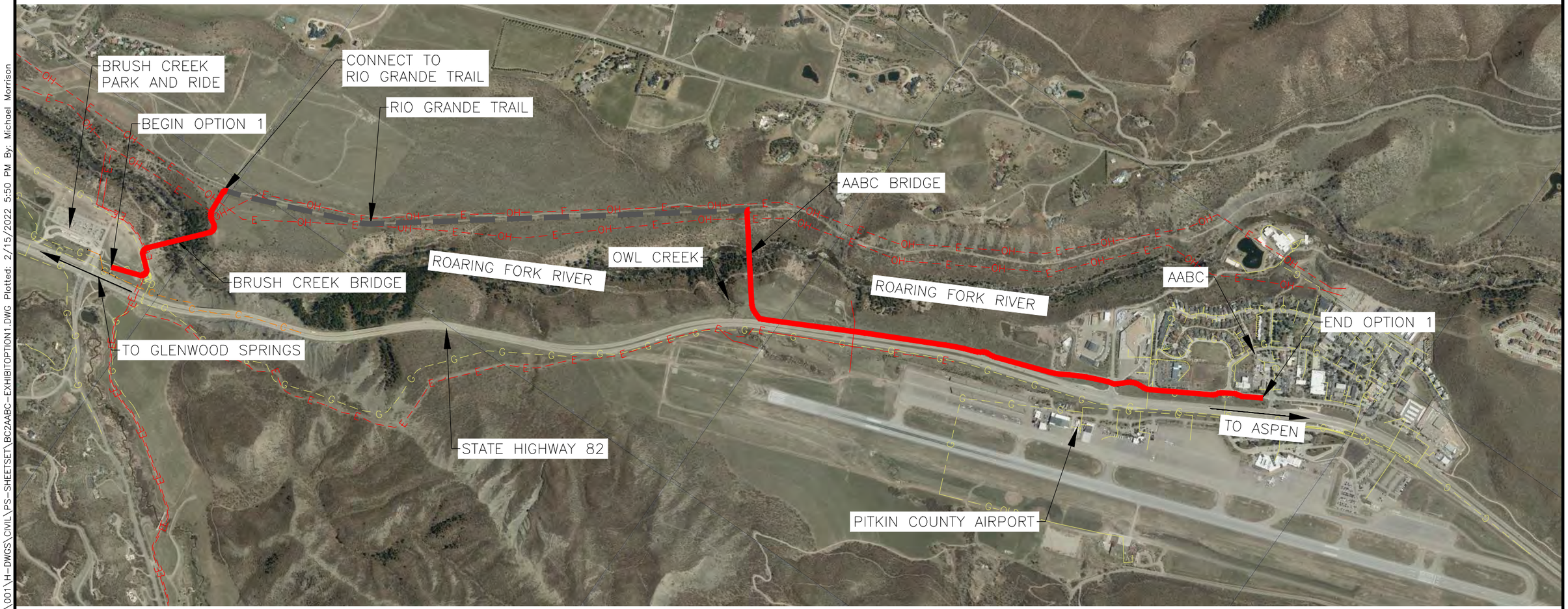
In Feet: 1" = 1000'



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SGM Project No.: 2021-405.001	Quality Control: AMC

Sheet Revisions			
Rev.	Date	Comments	Init.
1			

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BRUSH CREEK P&R TO AABC TRAIL
TRAIL OPTION 1 - UTILITIES

Engineer:	AMC	Structure Numbers	
Drawn By:	MWM		
Sheet Subset:	EXHIBIT	Subset Sheets:	4 of 9

Project No./Code	
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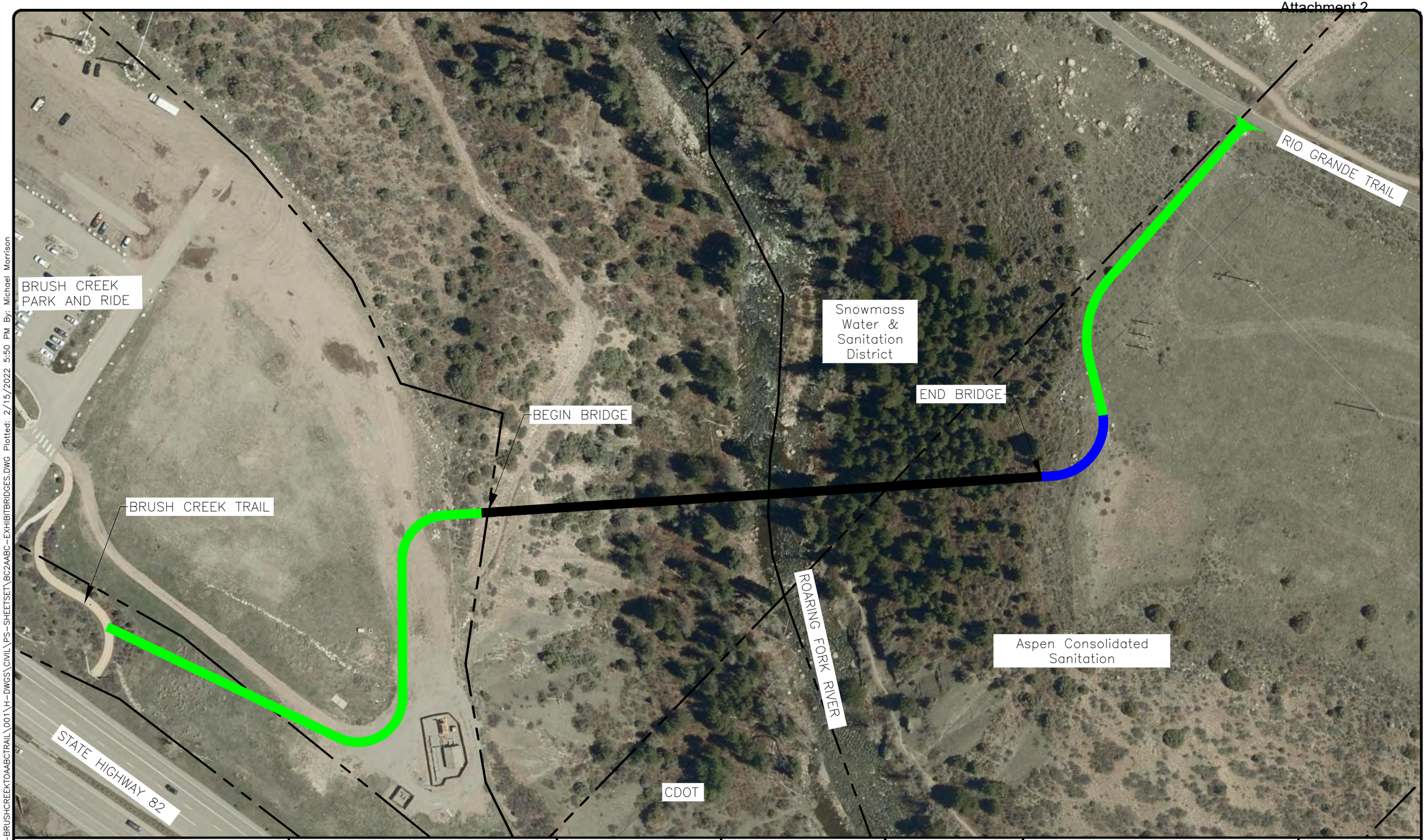
Sheet Number	4



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Autocad Ver. 2020	Scale: As Shown
SGM Project No.: 2021-405.001	Quality Control: AMC

Sheet Revisions			
Rev.	Date	Comments	Init.
1			

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BRUSH CREEK P&R TO AABC TRAIL
TRAIL OPTION 1 - BRUSH CREEK BRIDGE

Engineer:	AMC	Structure Numbers	
Drawn By:	MWM		
Sheet Subset:	EXHIBIT	Subset Sheets:	5 of 9

Project No./Code
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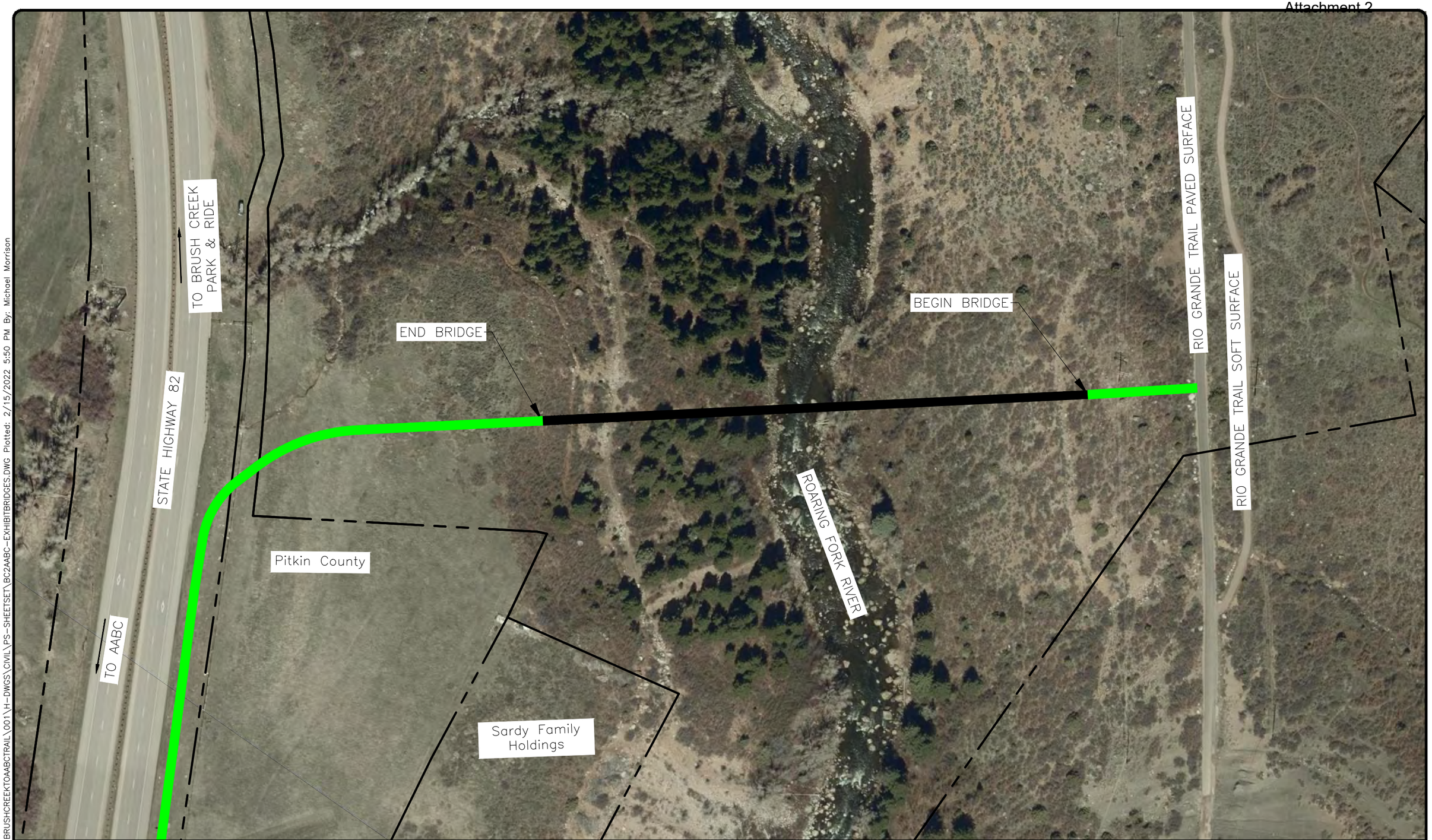

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SGM Project No.: 2021-405.001	Quality Control: AMC

Sheet Revisions			
Rev.	Date	Comments	Init.
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TRAIL OPTION 1 - AABC BRIDGE

Engineer:	AMC	Structure Numbers	
Drawn By:	MWM		
Sheet Subset:	EXHIBIT	Subset Sheets:	6 of 9

Project No./Code	
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Sheet Number:	6

Graphic Scale

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In Feet: 1" = 1000'

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SGM Project No.: 2021-405.001	Quality Control: AMC

Sheet Revisions			
Rev.	Date	Comments	Init.
1			

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BRUSH CREEK P&R TO AABC TRAIL
TRAIL OPTION 2

Engineer:	AMC	Structure Numbers	
Drawn By:	MWM		
Sheet Subset:	EXHIBIT	Subset Sheets:	7 of 9

Project No./Code
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Sheet Number: 7

Graphic Scale

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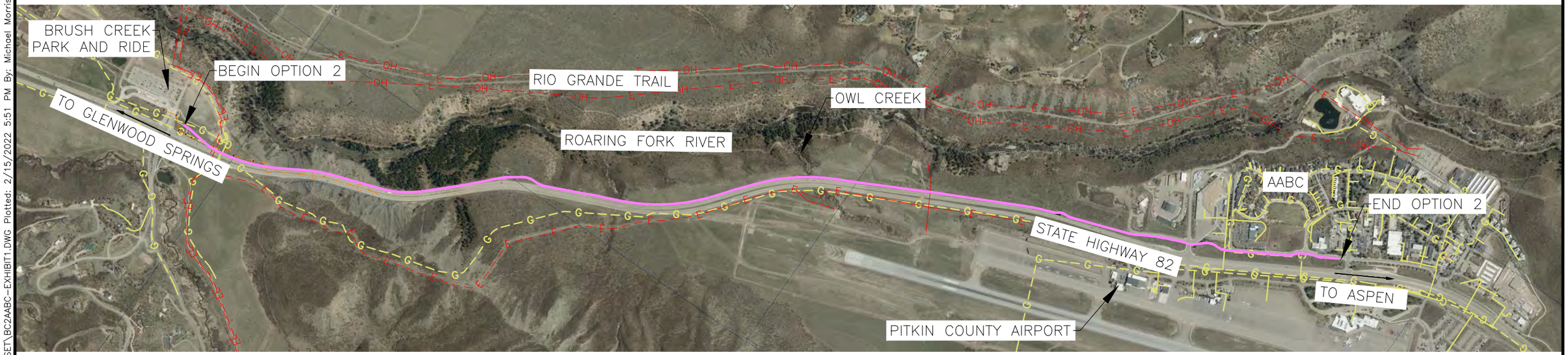
In Feet: 1" = 1000'



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SGM Project No.: 2021-405.001	Quality Control: AMC

Sheet Revisions			
Rev.	Date	Comments	Init.
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BRUSH CREEK P&R TO AABC TRAIL
TRAIL OPTION 2 - UTILITIES

Engineer:	AMC	Structure Numbers	
Drawn By:	MWM		
Sheet Subset:	EXHIBIT	Subset Sheets:	8 of 9

Project No./Code
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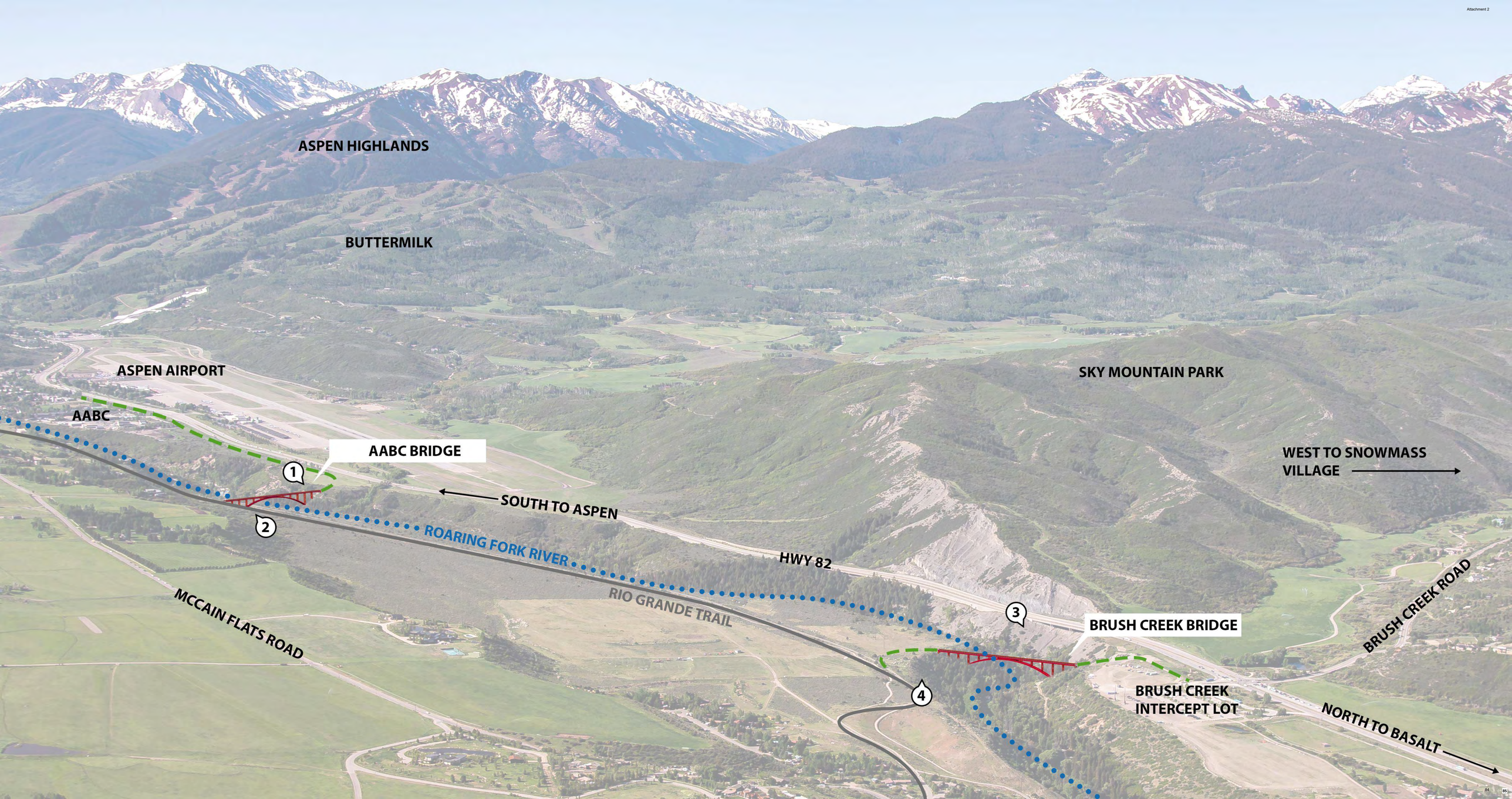
Sheet Number: 82 8

Appendix B

01 –Aerial View

02 –Option 1 Alignment Renderings

03 –Option 2 Alignment Renderings


ASPEN HIGHLANDS
BUTTERMILK
ASPEN AIRPORT
AABC
AABC BRIDGE
1
2
SOUTH TO ASPEN
ROARING FORK RIVER
RIO GRANDE TRAIL
HWY 82
MCCAIN FLATS ROAD
SKY MOUNTAIN PARK
WEST TO SNOWMASS VILLAGE
3
BRUSH CREEK BRIDGE
BRUSH CREEK ROAD
4
BRUSH CREEK INTERCEPT LOT
NORTH TO BASALT

Aspen Airport Business Center (AABC) Bridge, Looking North (towards McClain Flats) from proposed trail on west side of the Roaring Fork River

Aspen Airport Business Center (AABC) Bridge, Looking South (towards Aspen) from existing Rio Grande Trail

Brush Creek Bridge, Looking Northeast (towards Woody Creek) from SH82

Brush Creek Bridge, Looking Southwest (towards Sky Mountain Park) from existing Rio Grande Trail

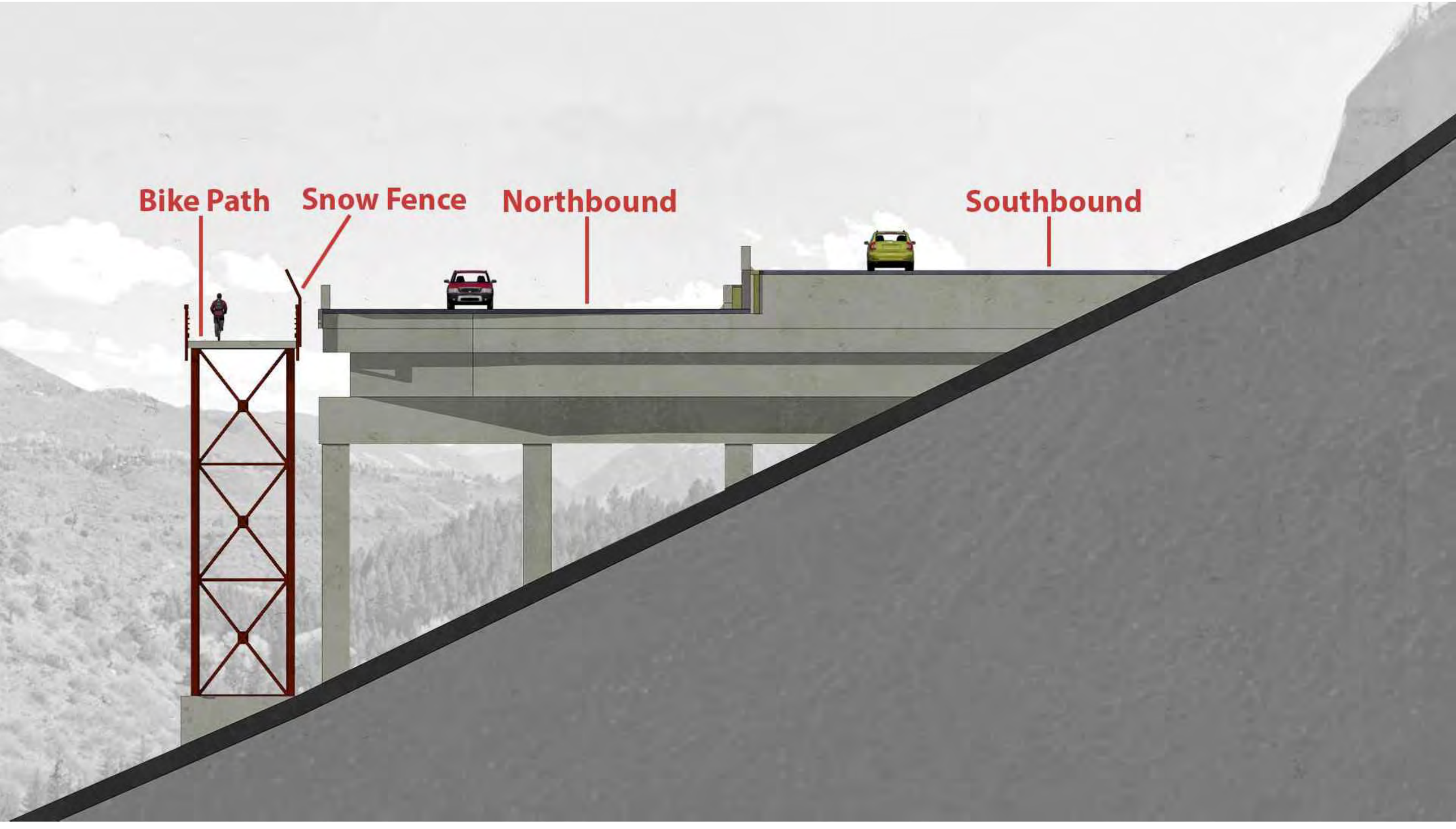
Alignment Option 2 - SH82 East Alignment, Looking Southeast (towards Aspen), near Brush Creek

Alignment Option 2 - SH82 East Alignment, Looking West (towards Sky Mountain Park), near Brush Creek

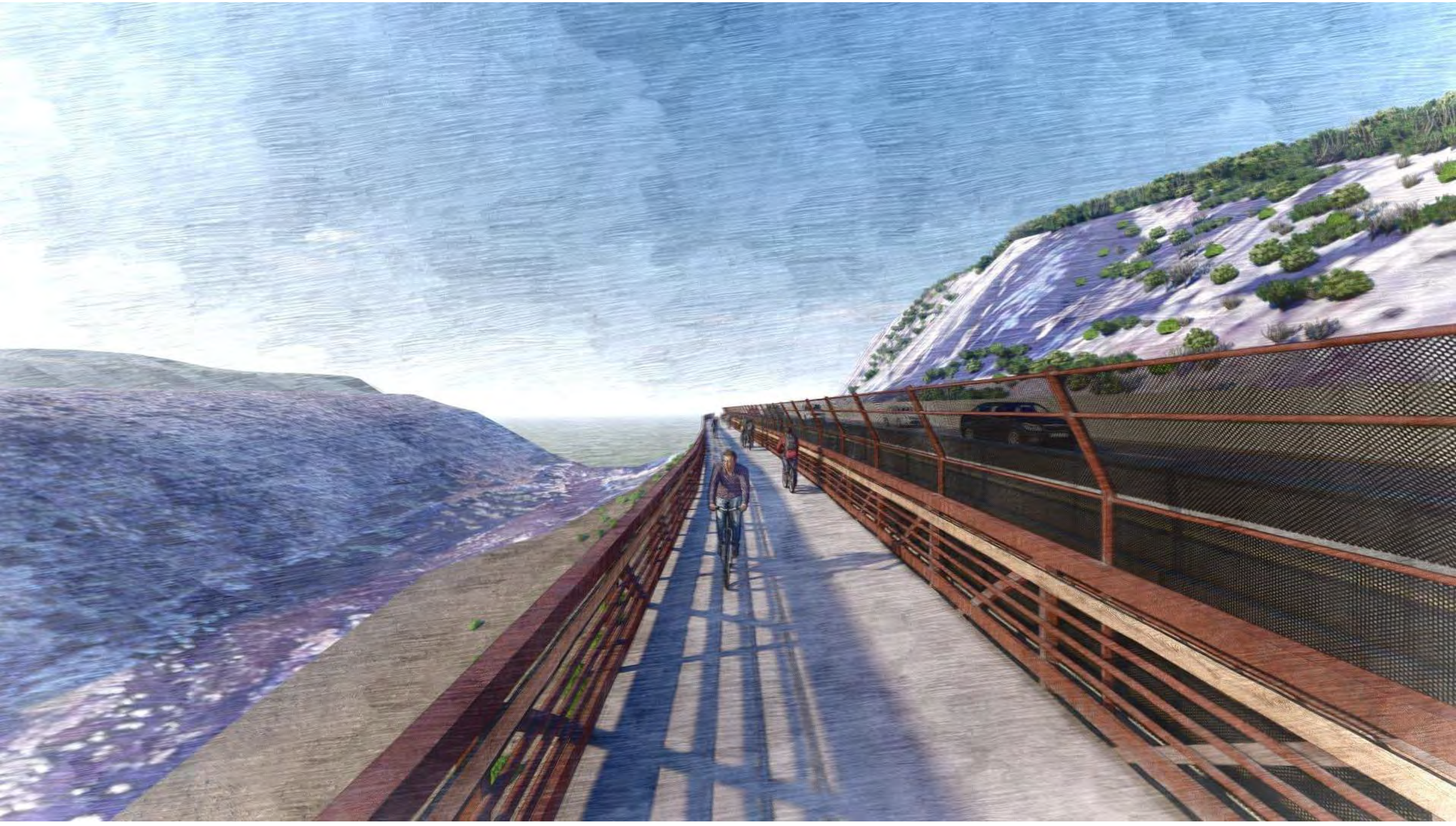
Alignment Option 2 - SH82 East Alignment, Looking Southeast (towards Aspen), near Brush Creek

Left Image: Existing Condition of SH82 and Shale Bluffs

Right Image: Proposed Trail Bridge



Alignment Option 2 - SH82 East Alignment, Looking Southeast (towards Aspen), Cross Section of Trail and SH82 at Shale Bluffs



Alignment Option 2 - SH82 East Alignment. Looking South (towards Aspen)

Alignment Option 2 - SH82 East Alignment. Aerial View. Looking West (towards Sky Mountain Park)

Appendix C

01 – Engineers Estimate of Probable Cost

Brush Creek Park and Ride to Aspen Airport Business Center Trail

Trail Unit Costs (per foot of trail/bridge and per squre foot of retaining wall)

Item	Unit	Cost	Unit Wt. (lb/ft^3)
HMA	TON	$ 155.00	146
ABC Class 6	TON	$ 40.00	136
Timber Railing	LF	$ 50.00	-
Snow Throw Fence	LF	$ 75.00	
Block Wall	SF	$ 100.00	-
Boulder Wall	SF	$ 60.00	-
Geotextile (weed barrier)	SF	$ 0.39	-

Easy Section Trail Segments

Typical Section	Asphalt (HMA) Trail				ABC Class 6						Railing		Geotextile (weed barrier)		Total Cost per foot of Trail
					Shoulder		Base Course		Combined						
	Width	Depth	Volume	Cost	Width	Depth	Width	Depth	Volume	Cost	Length	Cost	Area	Cost	
	ft	ft	ft3/ft	$/ft	ft	ft	ft	ft	ft3/ft	$/ft	ft	$/ft	SF/ft	$/ft	$/ft
1A	10	0.5	5.0	$ 56.58	2	1	10	0.5	7.0	$ 19.04	0	$ -	10	$ 3.89	$ 80
1B	10	0.5	5.0	$ 56.58	2	1	10	0.5	7.0	$ 19.04	1	$ 50.00	10	$ 3.89	$ 130

More Difficult Trail Segments

Typical Section	Uphill Wall		Downhill Wall		Railing	
	Block	Boulder	Block	Boulder	Length	Cost
	$/SF	$/SF	$/SF	$/SF	ft	$/ft
2A	$ -	$ -	$ 100	$ -	1	$ 50
2B	$ 100	$ -	$ -	$ -	0	$ -
2C	$ 100	$ -	$ 100	$ -	1	$ 50
2D	$ -	$ 60	$ 100	$ -	1	$ 50
2E	$ 100	$ -	$ 100	$ -	0	$ -
2F	$ 100	$ -	$ 100	$ -	1	$ 50

Note: Includes cost from Typical Section 1A for Trail

Most Difficult Trail Segments

Typical Section	Bridge/Structure Type	Width	Cost	Cost
		ft	$/SF	$/ft
3A	Steel Deck Arch	12	$ 700	$ 8,400
3B	Prefabricated Steel Pony Truss	12	$ 500	$ 6,000
3C	Reinforced Concrete Slab	12	$ 350	$ 4,200

Note: Structure costs include concrete deck and railing, snow throw fence is separate line item for SH82 East Alignment

Brush Creek Park and Ride to Aspen Airport Business Center Trail

Option 1 - Twin Bridges

		Station					Railing		Trail		Uphill Wall				Downhill Wall				Structure	
	Segment No.	Begin	End	Length (ft)	Difficulty	Typical Section	Cost/ft	Segment Cost	Cost/ft	Segment Cost	Area Left (SF)	Area Right (SF)	Cost/SF	Segment Cost	Area Left (SF)	Area Right (SF)	Cost/SF	Segment Cost	Cost/ft	Segment Cost
Brush Creek	1	00+00	04+36	436	Least Difficult	1 A	$ -	$ -	$ 80	$ 34,700			$ -	$ -			$ -	$ -	$ -	$ -
	2	04+36	04+57	21	More Difficult	2 C	$ 50	$ 2,080	$ 80	$ 1,654			$ -	$ -	197	197	$ 100	$ 39,400	$ -	$ -
	3	04+57	10+49	592	Most Difficult	3 A	$ -	$ -	$ -	$ -			$ -	$ -			$ -	$ -	$ 8,400	$ 4,972,884
	4	10+49	10+64	15	More Difficult	2 C	$ 50	$ 1,517	$ 80	$ 1,206			$ -	$ -	112	112	$ 100	$ 22,400	$ -	$ -
	5	10+64	17+93	728	Least Difficult	1 A	$ -	$ -	$ 80	$ 57,913			$ -	$ -			$ -	$ -	$ -	$ -
Aspen ABC	6	00+00	00+47	47	Least Difficult	1 A	$ -	$ -	$ 80	$ 3,707			$ -	$ -			$ -	$ -	$ -	$ -
	7	00+46	00+66	20	More Difficult	2 A	$ 50	$ 2,044	$ 80	$ 1,625			$ -	$ -	154	154	$ 100	$ 30,800	$ -	$ -
	8	00+66	07+22	656	Most Difficult	3 A	$ -	$ -	$ -	$ -			$ -	$ -			$ -	$ -	$ 8,400	$ 5,510,400
	9	07+22	07+36	14	More Difficult	2 A	$ 50	$ 1,350	$ 80	$ 1,073			$ -	$ -	125	125	$ 100	$ 25,000	$ -	$ -
	10	07+36	63+31	5,595	Least Difficult	1 A	$ -	$ -	$ 80	$ 444,824			$ -	$ -			$ -	$ -	$ -	$ -
			Total Length	8,124																

Summary of Costs*		
Itemized Construction Costs		
Railing		$ 6,991
Trail		$ 546,703
Downhill Wall		$ 117,600
Bridge		$ 10,483,284
Subtotal		$ 11,154,578
Mobilization	10%	$ 1,115,458
Contingency	30%	$ 3,681,011
2022 EOPC		$ 15,951,046
2025 Adjusted EOPC	3%	$ 17,430,139

Summary of Costs* - by Difficulty	
2025 Adjusted EOPC	
Least Difficult	$ 845,593
More Difficult	$ 203,371
Most Difficult	$ 16,381,175
Total Trail Cost	$ 17,430,139

*Construction Costs Only, Design Engineering and Construction Management not Included

Brush Creek Park and Ride to Aspen Airport Business Center Trail

Option 2 - SH 82 East Alignment

	Station					Railing		Trail		Uphill Wall				Downhill Wall				Structure	
Segment No.	Begin	End	Length (ft)	Difficulty	Typical Section	Cost/ft	Segment Cost	Cost/ft	Segment Cost	Area Left (SF)	Area Right (SF)	Cost/SF	Segment Cost	Area Left (SF)	Area Right (SF)	Cost/SF	Segment Cost	Cost/ft	Segment Cost
1	00+00	00+59	59	Least Difficult	1 A	$ -	$ -	$ 80	$ 4,653			$ -	$ -			$ -	$ -	$ -	$ -
2	00+59	00+92	33	More Difficult	2 B	$ -	$ -	$ 80	$ 2,662			$ 100	$ -			$ -	$ -	$ -	$ -
3	00+92	01+66	74	More Difficult	2 E	$ -	$ -	$ 80	$ 5,883	485	296	$ 100	$ 78,100			$ -	$ -	$ -	$ -
4	01+66	01+81	15	More Difficult	2 B	$ -	$ -	$ 80	$ 1,193			$ 100	$ -			$ -	$ -	$ -	$ -
5	01+81	09+11	730	Least Difficult	1 A	$ -	$ -	$ 80	$ 58,026			$ -	$ -			$ -	$ -	$ -	$ -
6	09+11	09+33	22	More Difficult	2 F	$ 50	$ 2,223	$ 80	$ 1,767			$ -	$ -	82	82	$ 100	$ 16,400	$ -	$ -
7	09+33	13+83	450	Most Difficult	3 B	$ -	$ -	$ -	$ -			$ -	$ -			$ -	$ -	$ 6,000	$ 2,699,520
8	13+83	14+00	17	More Difficult	2 F	$ 50	$ 1,700	$ 80	$ 1,352			$ -	$ -	68	68	$ 100	$ 13,600	$ -	$ -
9	14+00	14+95	95	Least Difficult	1 A	$ -	$ -	$ 80	$ 7,553			$ -	$ -			$ -	$ -	$ -	$ -
10	14+95	15+06	11	More Difficult	2 F	$ 50	$ 1,100	$ 80	$ 875			$ -	$ -	46	46	$ 100	$ 9,200	$ -	$ -
11	15+06	25+55	1,049	Most Difficult	3 B	$ -	$ -	$ -	$ -			$ -	$ -			$ -	$ -	$ 6,000	$ 6,294,000
12	25+55	25+65	10	More Difficult	2 F	$ 50	$ 1,000	$ 80	$ 795			$ -	$ -	38	38	$ 100	$ 7,600	$ -	$ -
13	25+65	25+80	15	Least Difficult	1 B	$ 50	$ 1,500	$ 80	$ 1,193			$ -	$ -			$ -	$ -	$ -	$ -
14	25+80	25+95	15	More Difficult	2 F	$ 50	$ 1,500	$ 80	$ 1,193			$ -	$ -	48	48	$ 100	$ 9,600	$ -	$ -
15	25+95	29+50	355	Most Difficult	3 B	$ -	$ -	$ -	$ -			$ -	$ -			$ -	$ -	$ 6,000	$ 2,130,000
16	29+50	29+87	37	More Difficult	2 F	$ 50	$ 3,700	$ 80	$ 2,942			$ -	$ -	122	122	$ 100	$ 24,400	$ -	$ -
17	29+87	37+82	795	Least Difficult	1 A	$ -	$ -	$ 80	$ 63,206			$ -	$ -			$ -	$ -	$ -	$ -
18	37+82	38+12	30	More Difficult	2 D	$ 50	$ 1,500	$ 80	$ 2,385		17	$ 60	$ 1,020	140		$ 100	$ 14,000	$ -	$ -
19	38+12	40+50	238	Most Difficult	3 C	$ -	$ -	$ -	$ -			$ -	$ -			$ -	$ -	$ 4,200	$ 999,600
20	40+50	40+71	21	More Difficult	2 F	$ 50	$ 2,100	$ 80	$ 1,670			$ -	$ -	75	75	$ 100	$ 15,000	$ -	$ -
21	40+71	43+81	310	Least Difficult	1 A	$ -	$ -	$ 80	$ 24,646			$ -	$ -			$ -	$ -	$ -	$ -
22	43+81	44+09	28	More Difficult	2 F	$ 50	$ 2,800	$ 80	$ 2,226			$ -	$ -	121	67	$ 100	$ 18,800	$ -	$ -
23	44+09	46+35	226	Most Difficult	3 C	$ -	$ -	$ -	$ -			$ -	$ -			$ -	$ -	$ 4,200	$ 949,200
24	46+35	46+69	34	More Difficult	2 F	$ 50	$ 3,400	$ 80	$ 2,703			$ -	$ -	125	57	$ 100	$ 18,200	$ -	$ -
25	46+69	65+15	1,846	Least Difficult	1 A	$ -	$ -	$ 80	$ 146,764			$ -	$ -			$ -	$ -	$ -	$ -
26	65+15	65+60	45	More Difficult	2 F	$ 50	$ 4,500	$ 80	$ 3,578			$ -	$ -	262	176	$ 100	$ 43,800	$ -	$ -
27	65+60	66+20	60	Most Difficult	3 B	$ -	$ -	$ -	$ -			$ -	$ -			$ -	$ -	$ 6,000	$ 360,360
28	66+20	66+45	25	More Difficult	2 F	$ 50	$ 2,494	$ 80	$ 1,983			$ -	$ -	100	77	$ 100	$ 17,700	$ -	$ -
29	66+45	120+44	5,399	Least Difficult	1 A	$ -	$ -	$ 80	$ 429,238			$ -	$ -			$ -	$ -	$ -	$ -
	Total Length		12,044																

Brush Creek Park and Ride to Aspen Airport Business Center Trail

Option 2 - SH 82 East Alignment

Summary of Costs*		
Itemized Construction Costs		
Railing		$ 29,517
Trail		$ 768,482
Uphill Wall		$ 79,120
Downhill Wall		$ 208,300
Bridge		$ 13,432,680
Snow Fence		$ 178,350
Subtotal		$ 14,696,449
Mobilization	10%	$ 1,469,645
Contingency	30%	$ 4,849,828
2022 EOPC		$ 21,015,922
2025 Adjusted EOPC	3%	$ 22,964,666

Summary of Costs* - by Difficulty	
2025 Adjusted EOPC	
Least Difficult	$ 1,151,288
More Difficult	$ 544,788
Most Difficult	$ 21,268,590
Total Trail Cost	$ 22,964,666

*Construction Costs Only, Design Engineering and Construction Management not Included

Traffic Control Costs not included. Assuming the right lane of SH82 northbound used to construct bridge structures, an additional $600,000 is estimated for two construction seasons.

Appendix D

01 – Natural Resources Assessment

ERO

Consultants in Natural Resources and the Environment

Natural Resources Assessment
Brush Creek to AABC Trail Study
Pitkin County, Colorado

Prepared for—

SGM, Inc.
118 West Sixth Street, Suite 200
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Prepared by—

ERO Resources Corporation
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Denver, Colorado 80218
(303) 830-1188
ERO Project #21-230

January 2022

Contents

Tables

Figures

Appendices

Executive Summary

SGM, Inc., on behalf of Pitkin County, retained ERO Resources Corporation (ERO) to provide a natural resources assessment for the proposed Brush Creek to Aspen Airport Business Center (AABC) Trail Study in Pitkin County, Colorado (project area). ERO assessed the project area for potential wetlands and waters of the U.S., threatened and endangered species, and general wildlife use (2021 site visit). Below is a summary of the resources found at the project area and recommendations or future actions necessary based on the current site conditions and federal, state, and local regulations.

The natural resources and associated regulations described in this report are valid as of the date of this report and may be relied upon for the specific use for which it was prepared by ERO under contract to SGM, Inc. Because of their dynamic natures, site conditions and regulations should be reconfirmed by a qualified consultant before relying on this report for a use other than that for which ERO was contracted.

Noxious Weeds – No List A species were found in the project area during the 2021 site visit. Three Colorado Department of Agriculture and Pitkin County noxious weed List B species and two List C species were documented.

Wetlands and Other Waters of the U.S. – ERO recommends conducting a formal wetland delineation once a final trail alignment has been determined. If any work is planned within the Roaring Fork River, Owl Creek, or their adjacent wetlands a Clean Water Act (CWA) Section 404 permit would be required for the placement of dredged or fill material below the ordinary high water mark (OHWM) or in wetlands. If any work is planned within the stormwater pond south of the Brush Creek and Highway 82 Park and Ride, ERO recommends requesting an approved jurisdictional determination to determine if the wetlands in the stormwater pond are jurisdictional.

Threatened and Endangered Species – The project area contains potential habitat for Monarch butterfly and Ute Ladies' Tresses Orchid (ULTO). There is potential for milkweed plants (*Asclepiadoideae*) to occur within the wetlands in the project area. There is potential for ULTO to occur within the wetlands along the Roaring Fork River and Owl Creek in the project area due to presence of commonly associated species, alluvial soils, and due to the presence of known ULTO populations downstream near Carbondale.

ERO recommends avoiding impacts to wetland areas in order to avoid impacts to potential Monarch butterfly or ULTO habitat. If impacts to wetland areas cannot be avoided consultation with the U.S. Fish and Wildlife Service (Service) may be required.

Migratory Birds – No bird nests were observed in the project area during the 2021 site visit. However, suitable nesting habitat is present within the project area for a variety of species. Additionally, the riparian community along the Roaring Fork River and Owl Creek provides suitable nesting habitat for raptor species.

The Denver Field Office of the U.S. Fish and Wildlife Service (2009) and Colorado Department of Transportation (CDOT)(2011) have identified the primary nesting season for migratory birds in Colorado as occurring between April 1 and mid to late August. However, some birds, such as the red-tailed hawk and great horned owl, can nest as early as February or March. Because of variability in the breeding seasons of various bird species, ***ERO recommends a nest survey be conducted within one week prior to***

construction to determine if any active nests are present in the project area so they can be avoided. If active nests are found, any work that would destroy the nests could not be conducted until the birds have vacated the nests.

Other Wildlife – The project area occurs in the winter range for the bald eagle, in the osprey foraging area, in the overall range of American elk, mule deer, and mountain lion, and in the human conflict area and fall concentration area of black bear. Additionally, the Roaring Fork River in the project area is designated as a wild trout water between Holum Lake and the Woody Creek bridge due to the presence of a wild trout population. The proposed trail alignments that immediately parallel Highway 82 or that would span the Roaring Fork River and utilize the Rio Grande Trail to the east would minimally impact these species. Trail alignments closer to the Roaring Fork River have more potential to disturb these species.

Summary of Potential Impacts

Three options are being considered for this trail study – Option 1: Bridges over the Roaring Fork River, Option 2: Along Highway 82, and Option 3: Along Roaring Fork River.

Option 1 would have the least potential resource impacts due to minimal ground disturbance and its location away from the Roaring Fork River and Owl Creek riparian corridors, and would have no impact to wetland and Threatened and Endangered Species. Option 2 would have moderate impacts due to ground disturbance and impacts to the Owl Creek riparian corridor, and has potential impacts to wetlands and Threatened and Endangered Species. Option 3 would have the greatest impact due to its location along the Roaring Fork River riparian corridor, and has potential impacts to wetlands and Threatened and Endangered Species.

Natural Resources Assessment
Brush Creek to AABC Trail Study
Pitkin County, Colorado

January 2022

Introduction

SGM, Inc, on behalf of Pitkin County, retained ERO Resources Corporation (ERO) to provide a natural resources assessment for the proposed Brush Creek to AABC Trail Study in Pitkin County, Colorado (project area; Figure 1). On September 8, 2021, Hidde Snieder with ERO assessed the project area for natural resources (2021 site visit). During this assessment, activities included a review of potential wetlands and other waters of the U.S., identification of potential federally listed threatened and endangered species habitat, and identification of other natural resources. This report provides information on existing site conditions and resources, as well as current regulatory guidelines related to those resources. ERO assumes the landowner is responsible for obtaining all federal, state, and local permits for construction of the project.

The natural resources and associated regulations described in this report are valid as of the date of this report and may be relied upon for the specific use for which it was prepared by ERO under contract to SGM, Inc. Because of their dynamic natures, site conditions and regulations should be reconfirmed by a qualified consultant before relying on this report for a use other than that for which ERO was contracted.

Project Area Description

The project area occurs between the Brush Creek and Highway 82 Park and Ride and the AABC along both sides of the Roaring Fork River north of Aspen. The project area is in Sections 21, 27, 28, and 34, Township 9 South, Range 85 West of the 6th Principal Meridian in Pitkin County, Colorado (Figure 1). The UTM coordinates for the approximate center of the project area are NAD 338518mE, 4344412mN, Zone 13 North. The longitude/latitude of the project area is 106.870982°W/39.234001°N. The elevation of the project area is approximately 7,500 feet above sea level. Photo points of the project area are shown on Figures 2 through 3 and the photo log is in Appendix A.

The project area is generally bounded by Highway 82 to the west, the Brush Creek and Highway 82 Park and Ride to the north, the Rio Grande Trail to the east, and the AABC to the south (Figure 1). The Project area consists of two potential trail alignments on the west side of the Roaring Fork River and three potential trail alignments on the east side of the Roaring Fork River which would utilize the existing Rio Grande Trail and would require crossing the Roaring Fork River. The Roaring Fork River occurs approximately 150 feet downhill in the valley bottom below Highway 82 to the west and the Rio Grande Trail to the east. Within the project area the Roaring Fork River generally flows from the southeast to northwest. Owl Creek occurs to the east of the Roaring Fork River and flows into the

project area from the southwest near the Aspen-Pitkin County Airport. Owl Creek is an intermittent drainage and is a tributary to the Roaring Fork River.

Vegetation Communities

During the 2021 site visits, vegetation community classifications were established based primarily on the dominant species occurring in the project area. The proportion of native and nonnative species, the degree of noxious weed and aggressive species infestations, the presence of riparian vegetation, and other parameters that influence vegetation were also considered. ERO identified eight communities in the project area – conifer forest, disturbed area, montane shrublands, riparian forest, sagebrush shrublands, shale hillslope, upland herbaceous, and wetland (Figure 2 to 3). Table 1 contains a list of the vegetation communities in the project area.

Table 1. Vegetation communities in the project area.

Vegetation Community	Abbreviation
Conifer forest	CF
Disturbed area	D
Montane shrubland	MS
Riparian forest	RF
Sagebrush shrubland	SBS
Shale hillslope	SH
Upland herbaceous	UH
Wetland	W

Conifer forest

The conifer forest community occurs in the project area along both sides of the Roaring Fork River on northwest to northeast facing hillslopes. The conifer forest community is dominated by an overstory of Douglas fir (*Pseudotsuga menziesii*) with a deeply shaded canopy (Photos 1 and 2). Understory cover is sparse within the conifer forest community and prevalent species include Utah service berry (*Amelanchier utahensis*), Gambel oak (*Quercus gambelii*), common chokecherry (*Prunus virginiana*), western snowberry (*Symphoricarpos occidentalis*), smooth brome (*Bromus inermis*), slender wheatgrass (*Elymus trachycaulus*), and Virginia strawberry (*Fragaria virginiana*).

Disturbed area

The disturbed area community occurs in the project area immediately to the south of the Brush Creek and Highway 82 Park and Ride. This area consists of a mixture of natural gas facilities, a temporary homeless encampment, and gravel access roads. Upland vegetation is sparse and consists of smooth brome, and western wheatgrass (*Pascopyrum smithii*), with scattered rubber rabbitbrush (*Ericameria nauseosa*), and mountain sagebrush (*Artemisia tridentata*). Due to the high level of disturbance this community provides little ecological function.

Montane shrubland

The montane shrubland is the most prevalent vegetation community in the project area and occurs on the majority of the valley side slopes above the Roaring Fork River. The montane shrubland community is dominated by shrub species including Gambel oak, Utah service berry, mountain mahogany (*Cercocarpus montanus*), woods rose (*Rosa woodsii*), antelope bitterbursh (*Purshia tridentata*), wax currant (*Ribes inerme*), and common juniper (*Juniperus communis*) (Photos 3 and 4). Understory vegetation in the montane shrubland community is dominated by smooth brome, western wheatgrass, slender wheatgrass, ricegrass (*Achnatherum hymenoides*), hairy false goldenaster (*Heterotheca villosa*), and mountain muhly (*Muhlenbergia montana*).

Riparian Forest

The riparian forest occurs in the project area in a narrow corridor along the Roaring Fork River and along Owl Creek. The riparian community is dominated by an overstory of narrowleaf cottonwood (*Populus angustifolia*) with a shrub understory of thinleaf alder (*Alnus incana*), river birch (*Betula occidentalis*), sandbar willow (*Salix exigua*), western snowberry, and redosier dogwood (*Cornus sericea*), and common chokecherry (Photos 5 and 6). Herbaceous species within the riparian forest community consist of a mixture of mesic and upland species including smooth brome, redtop (*Agrostis gigantea*), meadow foxtail (*Alopecurus pratensis*), timothy (*Phleum pratense*), field horsetail (*Equisetum arvense*), and slender wheatgrass.

Sagebrush shrubland

The sagebrush shrublands occur in the project area on terraces above the valley side slopes. Vegetation in the sagebrush shrublands is dominated by mountain sagebrush, rubber rabbitbrush, common juniper, fringed sage (*Artemisia frigida*), crested wheatgrass (*Agropyron cristatum*) smooth brome, ricegrass, and mountain muhly (Photo 7).

Shale hillslope

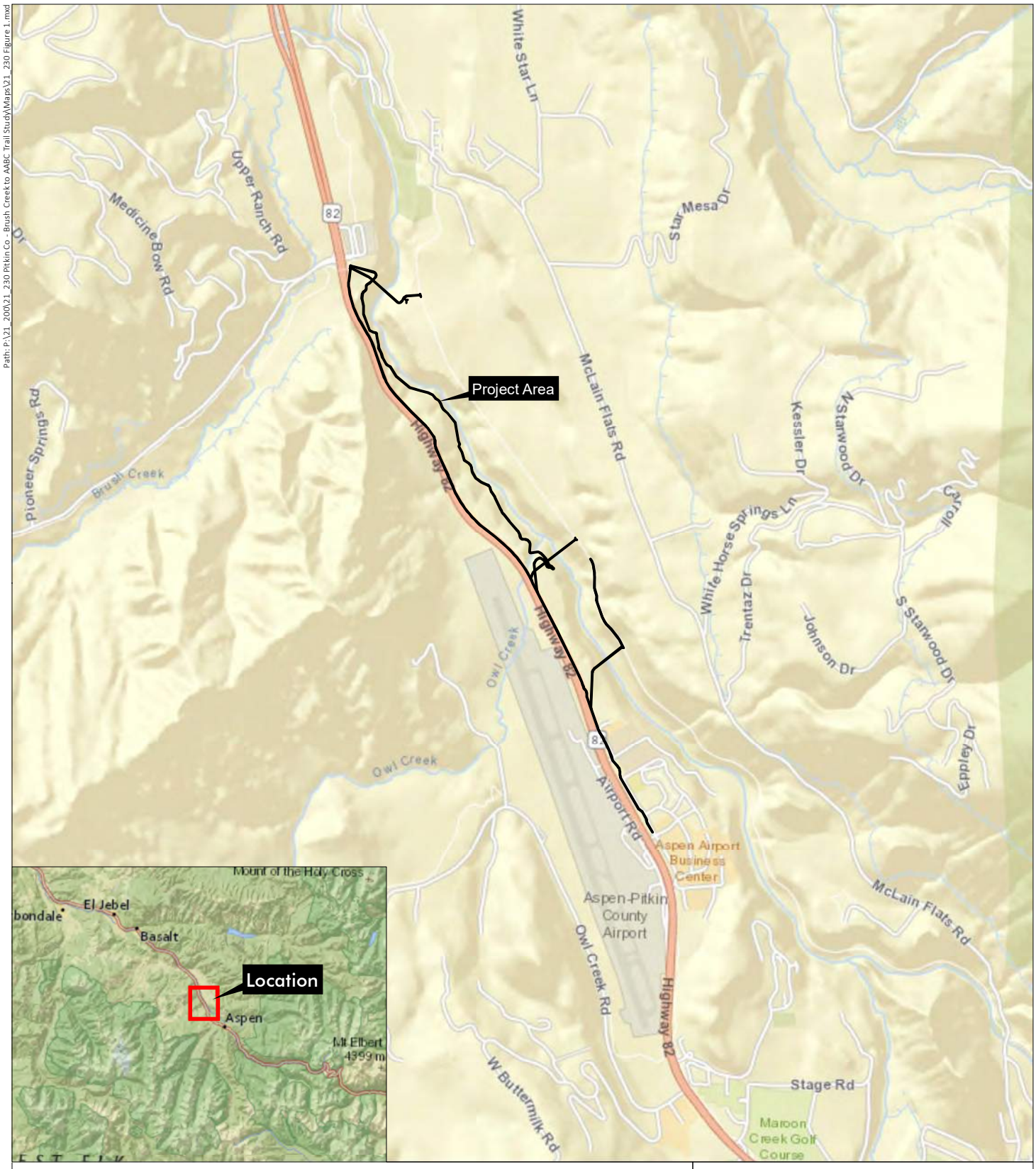
The shale hillslope community primarily occurs along Highway 82 along the western border of the project area. Due to steep topography and unstable soils, limited vegetation is present within this community (Photo 8). Where vegetation is present it consists of scattered patches of rubber rabbitbrush, mountain mahogany, antelope bitterbrush, ricegrass, smooth brome, and rocky mountain penstemon (*Penstemon strictus*).

Upland Herbaceous

The upland herbaceous community occurs in the project area along the Highway 82 and the Rio Grande Trail. The upland herbaceous community is dominated by a mixture of native and non-native pasture grasses and forbs including smooth brome, western wheatgrass, slender wheatgrass, prickly lettuce (*Lactuca serriola*), alfalfa (M*edicago sativa*), sweetclover (*Melilotus officinalis*), curly top gumweed (*Grindelia squarrosa*), fringed sage and crested wheatgrass (Photo 9).

Wetland

The wetland community occurs in the project area in a stormwater pond south of the Brush Creek and Highway 82 Park and Ride and in narrow fringes along the Roaring Fork River and Owl Creek. Wetlands in the stormwater pond are dominated by narrowleaf cattail (*Typha latifolia*), common threesquare (*Schoenoplectus pungens*), and Baltic rush (*Juncus arcticus*). Wetlands along the Roaring Fork River and Owl Creek are dominated by sandbar willow, narrowleaf cottonwood, redtop, meadow foxtail, Baltic rush, field horsetail, northwest territory sedge (*Carex utriculata*), common mint (*Mentha arvensis*), Canada golden rod (*Solidago canadensis*), and sword leaf rush (*Juncus ensifolius*) (Photo 10).



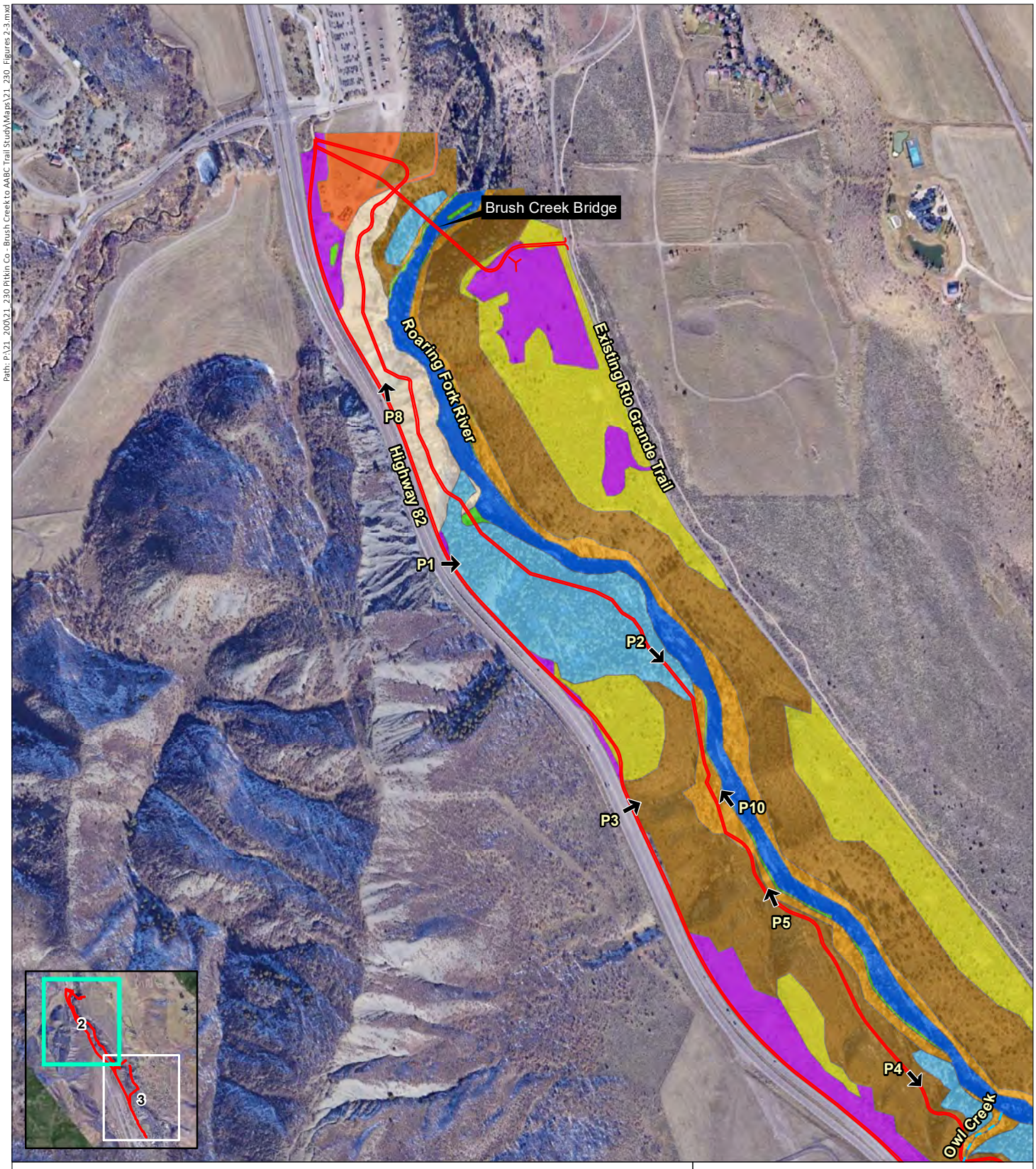
Brush Creek to AABC Trail Study

Sections 21, 27, 28, and 34, T9S, R85W; 6th PM
UTM NAD 83: Zone 13N; 338518mE, 4344412mN
Longitude 106.870982°W, Latitude 39.234001°N
USGS Highland Peak and Aspen, CO Quadrangles
Pitkin County, Colorado

Figure 1
Vicinity Map

Prepared for: SGM
File: 21_230 Figure 1.mxd (GS)
January 18, 2022

ERO Resources Corp.



Brush Creek to AABC Trail Study

- Photo Point
- Potential Trail Alignment
- Conifer Forest
- Disturbed
- Montane Shrubland
- Riparian Forest
- Sagebrush Shrubland
- Shale Hillslope
- Upland Herbaceous
- Water
- Wetland

0 350 700 Feet

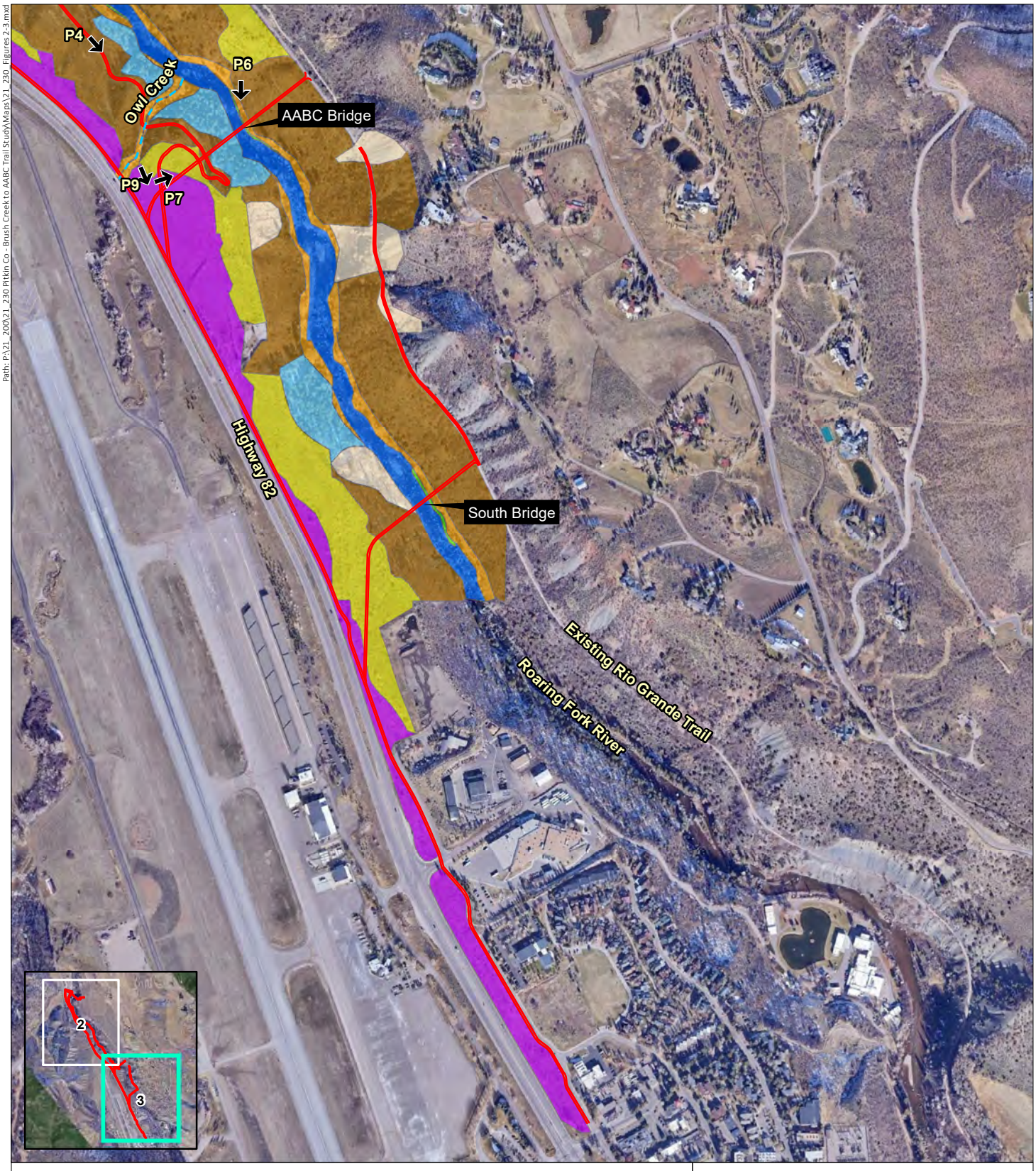
N

Figure 2
Vegetation

Image Source: Google Earth©, September 2020

Prepared for: SGM
File: 21_230_Figures 2-3.mxd (GS)
February 1, 2022

ERO Resources Corp.



Path: P:\21_200\21_230 Pitkin Co - Brush Creek to AABC Trail Study\Maps\21_230_Figures 2-3.mxd

Brush Creek to AABC Trail Study

- Photo Point
- Potential Trail Alignment
- Conifer Forest
- Disturbed
- Montane Shrubland
- Riparian Forest
- Sagebrush Shrubland
- Shale Hillslope
- Upland Herbaceous
- Water
- Wetland

0 350 700 Feet

N

Figure 3
Vegetation

Image Source: Google Earth©, September 2020

Prepared for: SGM
File: 21_230_Figures 2-3.mxd (GS)
February 1, 2022

ERO Resources Corp.

Noxious Weeds

ERO surveyed the project area for all noxious weeds on the Colorado Department of Agriculture (CDOA) A, B, and C lists (CDOA 2021) and the and the Pitkin County Noxious Weed List (Pitkin County Noxious Weed List 2021). No List A species were found in the project area during the 2021 site visit. Three CDOA noxious weed List B species and two List C species were documented.

List B Species

Three list B species – Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), and diffuse knapweed (*Centaurea diffusa*) – were found adjacent to Highway 82 in the project area.

List C Species

Two list C species – cheatgrass (*Bromus tectorum*) and field bindweed (*Convolvulus arvensis*) – were found scattered throughout the project area during the 2021 site visit.

Wetlands and Waters of the U.S.

Background

The Clean Water Act (CWA) protects the chemical, physical, and biological quality of waters of the U.S. (WOTUS). The U.S Army Corps of Engineers' (Corps) Regulatory Program administers and enforces Section 404 of the CWA. Under Section 404, a Corps permit is required for the discharge of dredged or fill material into wetlands and other WOTUS (streams, ponds, and other waterbodies). On June 22, 2020, the Environmental Protection Agency (EPA) and Corps' Navigable Waters Protection Rule (NWPR) to define "waters of the United States" became effective in 49 states and in all U.S. territories. A preliminary injunction was granted for Colorado. On March 2, 2021, the United States Court of Appeals for the 10th Circuit vacated the stay on the NWPR in Colorado, thereby ruling the NWPR effective in Colorado. After April 23, 2021, jurisdiction of wetlands and other potential WOTUS in Colorado was to be determined using the NWPR. However, on August 30, 2021 the Arizona District Court remanded and vacated the NWPR. In response, the EPA and Corps have halted implementation of the NWPR and, until further notice, are interpreting WOTUS consistent with the pre-2015 regulatory regime (also referred to as the "Rapanos" guidelines). As such, the identification of WOTUS in this report follows the Rapanos guidelines. Potential rulings and guidance in the future could change the results of this report regarding the jurisdictional status of waters and wetlands in the project area. While ERO may provide its opinion on the likely jurisdictional status of wetlands and waters, the Corps will make the final determination of jurisdiction based on the current rulings.

Under the Rapanos guidelines, the Corps considers traditionally navigable waters (TNWs), wetlands adjacent to a TNW, and tributaries to TNWs that are relatively permanent waters (RPWs) and their abutting wetlands jurisdictional waters. Other wetlands and waters that are not TNWs or RPWs will require a significant nexus evaluation to determine their jurisdiction. A significant nexus evaluation assesses the flow characteristics and functions of a tributary and its adjacent wetlands to determine if they significantly affect the chemical, physical, or biological integrity of downstream TNWs.

Site Conditions and Regulations

During the 2021 site visit, ERO surveyed the project area for wetlands, streambeds, and open waters; however, a jurisdictional wetland delineation following Corps guidelines was not conducted during this assessment. Prior to the 2021 site visit, ERO reviewed U.S. Geological Survey (USGS) quadrangle topographic maps and aerial photography to identify mapped streams and areas of open water that could indicate wetlands or waters of the U.S. ERO also reviewed the proximity and potential surface water connection of wetlands to known jurisdictional waters of the U.S. using aerial photo interpretation, landowner information, and information from the 2021 site visit.

The Roaring Fork River and Owl Creek occur within the project area. The Roaring Fork River generally flows from the southeast to northwest, while Owl Creek occurs to the east of the Roaring Fork River and flows into the project area from the southwest near the Aspen-Pitkin County Airport. Owl Creek is an intermittent drainage and is a tributary to the Roaring Fork River. The Roaring Fork River is a tributary to the Colorado River, a TNW. Wetlands occur in a stormwater pond south of the Brush Creek and Highway 82 Park and Ride and in narrow fringes along the Roaring Fork River and Owl Creek. The wetlands in the stormwater pond are likely non-jurisdictional since they appear to be excavated in the uplands and do not appear to have direct surface connection to any potential waters of the U.S. The Roaring Fork River, Owl Creek, and adjacent wetlands to both drainages would be considered jurisdictional by the Corps due to their apparent surface connection to a TNW.

Recommendations

ERO recommends conducting a formal wetland delineation once a final trail alignment has been determined. If any work is planned within the Roaring Fork River, Owl Creek, or their adjacent wetlands a Section 404 permit would be required for the placement of dredged or fill material below the ordinary high water mark (OHWM) or wetlands. If any work is planned within the stormwater pond south of the Brush Creek and Highway 82 Park and Ride, ERO recommends requesting an approved jurisdictional determination to determine if the wetlands in the stormwater pond are jurisdictional.

Threatened, Endangered, and Candidate Species

ERO assessed the project area for potential habitat for threatened, endangered, and candidate species under the Endangered Species Act (ESA). Federally listed threatened and endangered species are protected under the ESA of 1973, as amended (16 United States Code 1531 et seq.). Significant adverse effects on a federally listed species or its habitat require consultation with the Service under Section 7 or 10 of the ESA. The Service lists several threatened and endangered species with potential habitat in Pitkin County, or that would be potentially affected by projects in Pitkin County (Table 2).

Table 2. Federally listed threatened, endangered, and candidate species potentially found in Pitkin County or potentially affected by projects in Pitkin County.

Common Name	Scientific Name	Status*	Habitat	Habitat Present
Mammals				
Canada lynx	*Lynx canadensis*	T	Climax boreal forest with a dense understory of thickets and windfalls	No
Birds				
Mexican spotted owl	*Strix occidentalis*	T	Closed canopy forests in steep canyons	No
Yellow-billed cuckoo	*Coccyzus americanus*	T	Wooded habitat with dense cover and nearby water	No
Fish				
Bonytail chub	*Gila elegans*	E	Backwaters with rocky or muddy bottoms and flowing pools	No
Colorado pikeminnow	*Ptychocheilus Lucius*	E	Warm rivers that have large snowmelt runoff and lower, relatively stable base flows	No
Humpback chub	*Gila cypha*	E	Pools with substrates of silt, sand, boulder, or bedrock	No
Razorback sucker	*Xyrauchen texanus*	E	Large river species in areas with strong current and backwaters	No
Monarch butterfly	*D*anaus plexippus plexippus	C	Dependent on milkweeds (*Asclepiadoideae*) as host plants and forage on blooming flowers; a summer resident.	Potential
Uncompahgre fritillary butterfly	*Boloria acrocnema*	E	Cool, wet areas with large patches of snow willow above 12,000 feet in elevation	No
Plants				
Ute ladies'-tresses orchid (UTLO)	*Spiranthes diluvialis*	T	Moist to wet alluvial meadows, floodplains of perennial streams, and around springs and lakes below 7,800 feet in elevation	Yes

*T = Federally Threatened Species; E = Federally Endangered Species; Candidate Species
Source: Service 2021.

Site Conditions and Recommendations

The proposed project would not directly affect the Canada lynx, Mexican spotted owl, yellow-billed cuckoo, Monarch butterfly, or Uncompahgre fritillary butterfly because of the lack of habitat in the project area. The proposed project is not anticipated to result in depletions to the Roaring Fork River, a tributary of the Upper Colorado River Basin; therefore, the Colorado River fish (bonytail chub, Colorado pikeminnow, humpback chub, and razorback sucker) would not be affected by the proposed project.

There is potential for milkweed to occur within the wetlands in the project area. There is potential for ULTO to occur within the wetlands along the Roaring Fork River and Owl Creek in the project area due to presence of commonly associated species (Service 1992), alluvial soils, and due to the presence of known ULTO populations downstream near Carbondale.

ERO recommends avoiding impacts to wetland areas in order to avoid impacts to potential Monarch butterfly or ULTO habitat. If impacts to wetland areas can't be avoided consultation with the Service may be required.

Other Species of Concern

Raptors and Migratory Birds

Migratory birds, as well as their eggs and nests, are protected under the Migratory Bird Treaty Act (MBTA). The MBTA does not contain any prohibition that applies to the destruction of a bird nest alone (without birds or eggs), provided that no possession occurs during the destruction. While destruction of a nest by itself is not prohibited under the MBTA, nest destruction that results in the unpermitted take of migratory birds or their eggs is illegal and fully prosecutable under the MBTA (Migratory Bird Permit Memorandum, Service (2003)). The regulatory definition of a take means to pursue, hunt, shoot, wound, kill, trap, capture, or collect; or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect.

Under the MBTA, the Service may issue nest depredation permits, which allow a permittee to remove an active nest. The Service, however, issues few permits and only under specific circumstances, usually related to human health and safety. Obtaining a nest depredation permit is unlikely and involves a process that takes, at a minimum, 8 to 12 weeks. The best way to avoid a violation of the MBTA is to remove vegetation outside of the active breeding season, which typically falls from April 1 through August 31, depending on the species. Public awareness of the MBTA has grown in recent years, and most MBTA enforcement actions are the result of a concerned member of the community reporting a violation.

Potential Habitat and Effects

ERO surveyed the project area for nests during the 2021 site visit and did not find any nests. However, ground-nesting bird nests and nests in dense stands of shrubs are difficult to detect and may be present in the uplands and shrublands in the project area. Additionally, the riparian habitat along the Roaring Fork River and Brush Creek provides suitable raptor nesting habitat. The breeding season for most birds in Colorado is March through August, with the exception of a few species that begin breeding in February, such as great-horned owls.

Recommendations

To avoid destruction of potential migratory bird nests, vegetation removal should be conducted outside of the April 1 through August 31 breeding season. Both the Denver Field Office of the Service (2009) and the Colorado Department of Transportation (2011) have identified the primary nesting season for migratory birds in Colorado as occurring from April 1 through August 31. However, a few species such as bald eagles, great horned owls, and red-tailed hawks can nest as early as December (eagles) or late February (owls and red-tailed hawks). Because of variability in the breeding seasons, ERO recommends that a nest survey be conducted within one week prior to construction to determine if any other active nests are present in the project area so that they can be avoided. Additional nest surveys during the nesting season may also be warranted to identify active nesting species that may present additional development timing restrictions (e.g., eagles or red-tailed hawks).

If active nests are identified in or near the project area, activities that would directly affect the nests should be restricted. Habitat-disturbing activities (e.g., tree removal, grading, scraping, and grubbing) should be conducted during the nonbreeding season to avoid disturbing active nests, or to avoid a "take" of the migratory bird nests in the project area. Nests can be removed during the nonbreeding season to preclude future nesting and avoid violations of the MBTA. There is no process for removing nests during the nonbreeding season; however, nests may not be collected under MBTA regulations. If the construction schedule does not allow vegetation removal outside of the breeding season, a nest survey should be conducted immediately prior to vegetation removal to determine if the nests are active and by which species. If active nests are found, any work that would destroy the nests or cause the birds to abandon young in the nest could not be conducted until the birds have vacated the nests.

State-Listed Threatened and Endangered Species and Other Sensitive Wildlife

Colorado Parks and Wildlife (CPW) has mapped six wildlife species that are active in the project area as shown in Table 3. Only one species, the bald eagle, is listed in the State Special Concern category (CPW 2021a). The project area occurs in bald eagle winter range.

The other mapped wildlife species are tracked by CPW because of their economic importance, potential for human conflict, or other reasons.

Table 3. Wildlife species activity within the project area (CPW 2021).

Common Name	Scientific Name	State Status*	CPW Mapped Activities in Project Area
Bald eagle	*Haliaeetus leucocephalus*	SC	Within winter range
American elk	*Cervus canadensis*	None	Within overall range
Black bear	*Ursus americanus*	None	Within overall range, human conflict area, and fall concentration area
Mountain lion	*Puma concolor*	None	Within overall range
Mule deer	*Odocoileus hemionus*	None	Within overall range
Osprey	*Pandion haliaetus*	None	Within foraging area

*Status Codes: SC =State Special Concern (not a statutory category).

American Elk and Mule Deer – The project area occurs in the American elk and mule deer overall range. The project area does not occur in any other designated ranges for both American elk and mule deer. The proposed trail alignments that immediately parallel Highway 82 or that would span the Roaring Fork River and utilize the Rio Grande Trail to the east would minimally impact these species. Trail alignments close to the Roaring Fork River have more potential to disturb these species although impacts are anticipated to be minor due to existing recreational use along the Roaring Fork River.

Black Bear and Mountain Lion – The project area occurs in the mountain lion overall range. Additionally, the entire project area occurs in the human conflict area and fall concentration area for black bear. Black bear foraging habitat, such as large stands of chokecherry (*Prunus virginiana)* and other fruit-bearing shrubs, occur in the montane shrublands, riparian forest, and conifer forest communities in the project area. Similar to the American elk and mule deer, the proposed trail

alignments that immediately parallel Highway 82 or that would span the Roaring Fork River and utilize the Rio Grande Trail to the east would minimally impact these species. Trail alignments close to the Roaring Fork River have more potential to disturb these species although impacts are anticipated to be minor due to existing recreational use along the Roaring Fork River.

Osprey – The project area occurs in the foraging area of osprey. The Roaring Fork River provides a food source for osprey and the riparian trees along the Roaring Fork River provide hunting perches for osprey. ERO recommend avoiding impacts to riparian vegetation to extent practicable to minizine disturbance to the osprey foraging area.

Other Wildlife

Carnivores such as coyote (*Canis* sp.), raccoon (*Procyon lotor*), red fox (*Vulpes vulpes*), grey fox (*Urocyon cinereoargenteus*), and striped skunk (*Mephitis mephitis*) are likely to occur in the project area. These species are typically observed in open grasslands and close to riparian corridors. Additionally, the Roaring Fork River in the project area is designated as a wild trout water between Holum Lake and the Woody Creek bridge due to the presence of a wild trout population. If any impacts to the Roaring Fork River are proposed, ERO recommends coordinating with the CPW regarding any construction activities in the Roaring Fork River that have the potential to impact trout spawning.

Summary of Impacts from the Proposed Project

For this trail study, SGM and the planning team identified three trail alignment options and three potential bridge locations in the study area. The alignment options include:

- **Option 1: Bridges over the Roaring Fork River** – Uses the proposed Brush Creek Bridge to access the existing Rio Grande Trail, before crossing back on the proposed AABC Bridge to access the Highway 82 corridor.
- **Option 2: Along Highway 82** – Follows the Highway 82 corridor for the entire length of the study area, using multiple short bridges and cut and fill benches to cross steep shale hillslope areas and Owl Creek.
- **Option 3: Along Roaring Fork River** – Follows old road beds and new trail construction into the canyon and along the west bank of the Roaring Fork River.

An additional option that uses a bridge further south, rather than the proposed AABC Bridge, has been removed from consideration due the poor feasibility of a bridge at that location.

Potential impacts from the proposed trail project, by alignment option, are summarized in Table 4.

Table 4. Potential Impacts from the Proposed Alignment Options

Resource	Option 1 – Bridges over the Roaring Fork River	Option 2 – Along Highway 82	Option 3 – Along Roaring Fork River
Vegetation	Lower impact due to minimal new ground disturbance	Moderate impact due to extensive new ground disturbance, including riparian habitat at Owl Creek	Greater impact due to extensive new ground disturbance, including wetland and riparian communities along the Roaring Fork River and Owl Creek
Wetlands	No impact	Potential impact to Owl Creek	Potential impact to Owl Creek and along the Roaring Fork River
Threatened and Endangered Species	No impact	Potential impacts at Owl Creek	Potential impacts at Owl Creek and along the Roaring Fork River
Migratory Birds	No known impact – bird nests may be found at bridge locations and along upland trail corridors	No known impact – bird nests may be found at AABC Bridge location and along upland trail corridors	No known impact – bird nests more likely to be found along Roaring Fork River and Owl Creek
Other Wildlife	Minimal impact	Minimal impact	Habitat disturbance and potential impact along Roaring Fork River
Noxious Weeds	Few weeds present; least impact due to least new ground disturbance	Some weeds present; potential impacts due to ground disturbance	Few weeds present; potential impacts due to ground disturbance

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Appendix A Photo Log

Photo Log
Brush Creek to AABC Trail Study
September 8, 2021

Photo 1 - Overview of the conifer forest community in the project area. View is to the east.

Photo 2 - Overview of the conifer forest community in the project area. View is to the southeast.

Photo Log
Brush Creek to AABC Trail Study
September 8, 2021

Photo 3 - Overview of the montane shrubland community in the project area. View is to the northeast.

Photo 4 - Overview of the montane shrubland community in the project area. View is to the southeast.

Photo Log
Brush Creek to AABC Trail Study
September 8, 2021

Photo 5 - Overview of the riparian forest community in the project area. View is to the northwest.

Photo 6 - Overview of the riparian forest community in the project area. View is to the south.

Photo 7 - Overview of the sagebrush shrubland community in the project area. View is to the northeast.

Photo 8 - Overview of the shale hillslope community in the project area. View is to the north.

Photo Log
Brush Creek to AABC Trail Study
September 8, 2021

Photo 9 - Overview of the herbaceous upland community in the project area. View is to the southeast.

Photo 10 - Overview of the wetland community in the project area. View is to the northwest.

Appendix E

01 –Cultural Resources Memorandum

ERO

Consultants in Natural Resources and the Environment

Technical Memorandum
File and Literature Review
Brush Creek to AABC Trail Study
Pitkin County, Colorado

Prepared for:
SGM, Inc.
January 19, 2022

SGM, Inc., on behalf of Pitkin County, retained ERO Resources Corporation (ERO) to provide a resource assessment for the proposed Brush Creek to Aspen Airport Business Center (AABC) Trail Study in Pitkin County, Colorado (project area; Figure 1). The results of the file and literature review will provide information on cultural resources in the project area to inform methodology for identifying potential historic properties if a cultural resource survey is required. If a federal nexus is identified for the project, the lead federal agency would consult with the Colorado State Historic Preservation Officer on project effects under Section 106 of the National Historic Preservation Act (NHPA) and per implementing regulations 36 Code of Federal Regulations (CFR) 800.

Project Area

The project area consists of two trail alternatives on the west side of the Roaring Fork River and three trail alternatives on the east side of the Roaring Fork River, which would use the existing Rio Grande Trail and would require crossing the Roaring Fork River (Figure 1). The Roaring Fork River occurs approximately 150 feet downhill of the project area in the valley bottom below State Highway (SH) 82 to the west and the Rio Grande Trail to the east.

The project area is generally bounded by SH 82 to the west, the Brush Creek and SH 82 Park and Ride to the north, the Rio Grande Trail to the east, and the AABC to the south. The project area's legal location is Sections 21, 27, 28, and 34, Township 9 South, Range 85 West of the 6th Principal Meridian in Pitkin County, Colorado (Figure 1).

Methodology

The purpose of the cultural resource file and literature review is to determine if any previously documented cultural resources listed in or eligible for listing in the National Register of Historic Places (NRHP) or State Register of Historic Places (SRHP) could be impacted by the proposed project. A

"cultural resource" is defined as an archaeological site, structure, or building constructed 50 or more years ago (Little et al. 2000). A cultural resource listed in or eligible for listing in the NRHP/SRHP is a "historic property." To assist with project planning and potential consultation obligations under Section 106 of the NHPA (36 CFR 800) and the State Register Act (Colorado Revised Statutes 34-80.1-104), ERO reviewed the previous cultural resource surveys and resource documentation completed in the project area by conducting a file review using the Office of Archaeology and Historic Preservation (OAHP) Compass online database on January 17, 2022. The file search area included the entirety of the project area as defined above.

Results

The file search identified eight previous cultural resource surveys that intersect the project area (Figures 2 and 3; Table 1). The previous surveys were conducted between 1993 and 2013 and covered about 17 percent of the project area. The surveys were mostly linear surveys associated with transportation and utilities projects including transmission, electric, and pipelines. The block surveys were conducted in association with the Aspen-Pitkin County Airport and with SH 82.

Table 1. Previous cultural resource surveys that intersect the project area.

State Project No.	Report Title (Date)	Institution
MC.LM.R122	*Holy Cross Basalt to Aspen 115 KV Rebuild Project Eagle and Pitkin Counties, Colorado Class III Cultural Resource Inventory² Limited Testing of 5PT596 Addendum to: Holy Cross Basalt to Aspen 11KV Rebuild Project Eagle and Pitkin Counties, Colorado Class III Cultural Resource Inventory* (1996)	Metcalf Archaeological Consultants, Inc. for Bureau of Land Management
MC.PA.R78	*Class III Cultural Resources Survey for the Roaring Fork Transportation Authority Bus Rapid Transit Project Along Colorado State Highway 82, Garfield, Eagle, and Pitkin Counties, Colorado* (2010)	Parsons
PT.CH.R2	*An Archaeological Inventory of the State Highway 82 - Brush Creek Road Intersection Between Basalt and Aspen, Pitkin County, Colorado (STR-FC(CX) 082-1(14))* (1993)	Centennial Archaeology, Inc. for Colorado Department of Transportation (CDOT)
PT.CH.R4	*An Intensive Cultural Resources Survey of Six Parcels Associated with State Highway 82 Improvements West of Aspen, Pitkin County, Colorado (Project STA 082A-008)* (1966)	CDOT
PT.CO.R1	*Kinder Morgan Retail Brush Creek 6 Inch Pipeline, Pitkin County, Colorado: Results of an Intensive Cultural Resource Inventory (URS 22238253.00003)* (2005)	URS Corporation for the Colorado Department of Public Health and Environment
PT.FA.R3	*Mead And Hunt, Inc. Airport Survey Project: Report of the Class III Cultural Resources Inventory, Pitkin County, Colorado* (2009)	Metcalf Archaeological Consultants for the Federal Aviation Administration
PT.LG.R24	*Class III Cultural Resources Inventory Report for the Proposed Aspen Valley 10 Inch Pipeline for SourceGas in Pitkin County, Colorado (GRI # 2013-69)* (2013)	Grand River Institute for Pitkin County
PT.RE.R1	*Holy Cross Energy Snowmass Buried Electric Line, Class III Cultural Resource Inventory, Pitkin County, Colorado* (2003)	Metcalf Archaeological Consultants for the Rural Electric Administration

OAHP records indicate one previously documented cultural resource, the Denver & Rio Grande Western (D&RGW) Railroad grade (5PT123) intersects the project area. The resource was initially documented in

1988 and was reevaluated in 1999 as officially eligible for listing in the NRHP. The railroad grade in the project area vicinity has been converted to the paved multiuse Rio Grande Trail. Evaluation of the segment that intersects the project area has not occurred; however, recent documentation of other similarly repurposed segments of railroad have resulted in determinations of supporting the eligibility of the entire resource as recently as 2020.

In addition to the OAHP file search, ERO reviewed the Colorado Historic Highway Inventory, which evaluated SH 82 as eligible for listing in the NRHP under Criteria A and C, and as an Aesthetic Route under the Multiple Property Submission (Mead & Hunt, Inc. and Dill Historians LLC. 2016). SH 82 has been documented in Pitkin County as Independence Pass Road under the Smithsonian number 5PT505 and was determined eligible in 2008. ERO also reviewed historical maps and aerial images to determine if historical buildings or structures may have been present in the project area. ERO reviewed historical maps that date from 1893 to 1964 to identify undocumented potential historical resources such as roads, ditches, and buildings (U.S. Geological Survey 1893, 1895, 1909, 1911, 1957, 1960a, 1960b, 1964).

In the project area vicinity, SH 82 is located on the former Colorado Midland (CM) Railroad grade (Mead & Hunt, Inc. and Dill Historians LLC. 2016), which predates the earliest map from 1893 (U.S. Geological Survey 1893). An unimproved road that follows Brush Creek and crosses the Roaring Fork River is first mapped in 1893 and, by 1909, is mapped as a maintained road that served to connect the community of Rathbone to the D&RGW Railroad, CM Railroad, and other roads in the Roaring Fork River valley. Buildings are mapped where the road crosses the Roaring Fork River along Brush Creek, near the project area's northern terminus (U.S. Geological Survey 1893, 1895, 1911). Lemond Ditch and Wiese Upper Ditch parallel the north and south sides of Brush Creek, respectively, and are mapped in 1960 (U.S. Geological Survey 1960a). A review of modern aerial images suggests neither the road nor the ditches intersect the project area. Unimproved roads are mapped in 1960 as intersecting the project area east of SH 82, following the construction of the Aspen-Pitkin County Airport after its construction in 1946 (Aspen/Pitkin County Airport 2022; U.S. Geological Survey 1960b). Unnamed, unimproved two-tracks are generally not documented as historical resources.

Summary

The project area intersects two linear cultural resources that have been evaluated as eligible for listing in the NRHP (5PT123 and 5PT505). A review of historical maps and aerial images indicates the project area intersects the abandoned grade of the CM Railroad, which has been repurposed in the vicinity as SH 82. Although historic-period structures are present in the vicinity, given the small size of the project area, it is unlikely the project area will intersect the structures. Unknown resources may be present in unsurveyed portions of the project area.

Certification of Results

Shayleen Ottman, Staff Archaeologist

Attachments

Figure 1. Project location (USGS 1:24,000 topographic quadrangle)

Figures 2-3. Previously conducted cultural resource surveys and documented cultural resources

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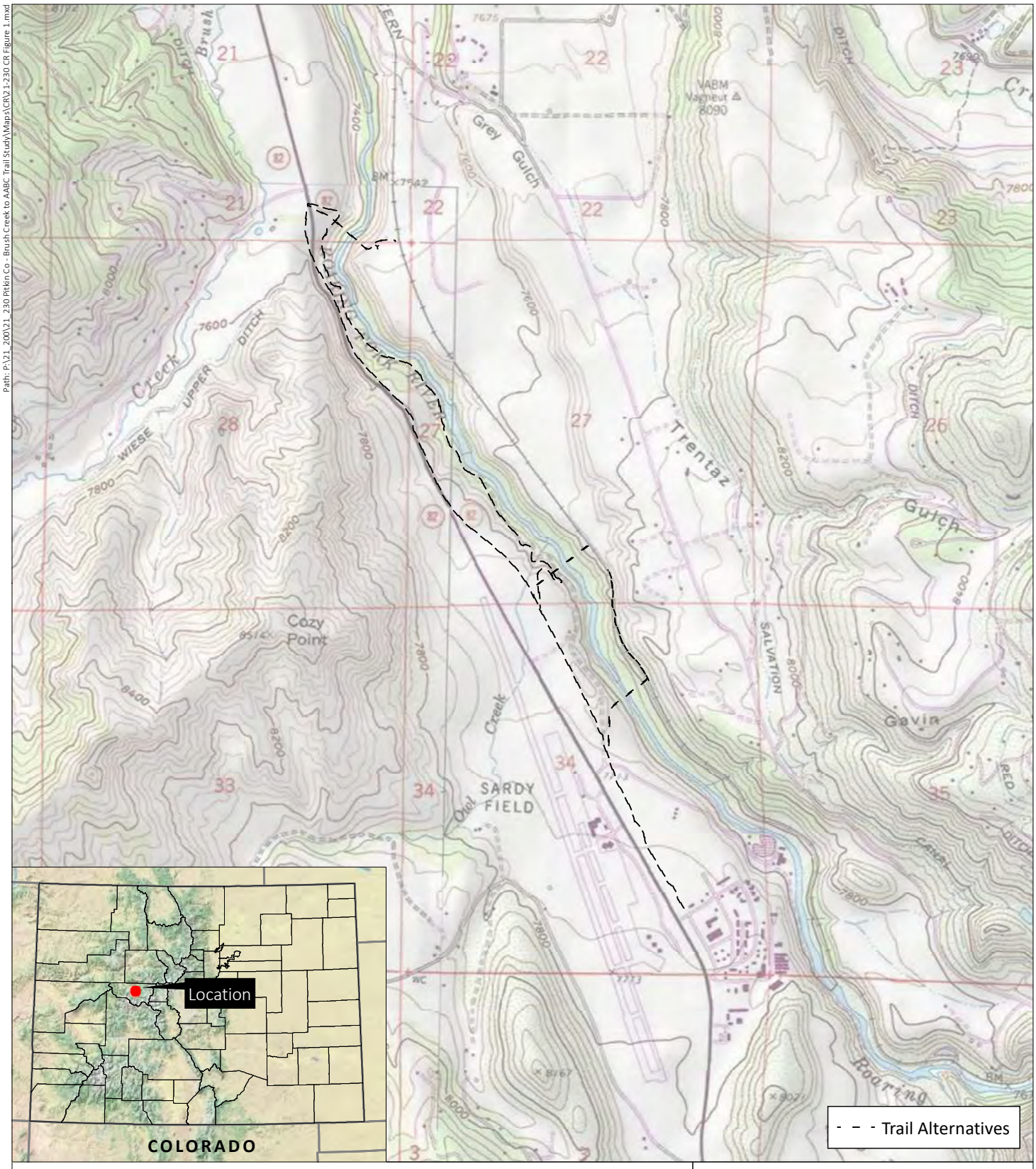
Path: P:\21_200\21_230 Pitkin Co - Brush Creek to AABC Trail Study\Maps\CR\21-230 CR Figure 1.mxd



Technical Memorandum
File and Literature Review
Brush Creek to AABC Trail Study
Pitkin County, Colorado

Sections 21, 27, 28, and 34, T9S, R85W; 6th PM
USGS Aspen and USGS Highland Peak, CO Quadrangles (1:24,000; 1964)
Pitkin County, Colorado

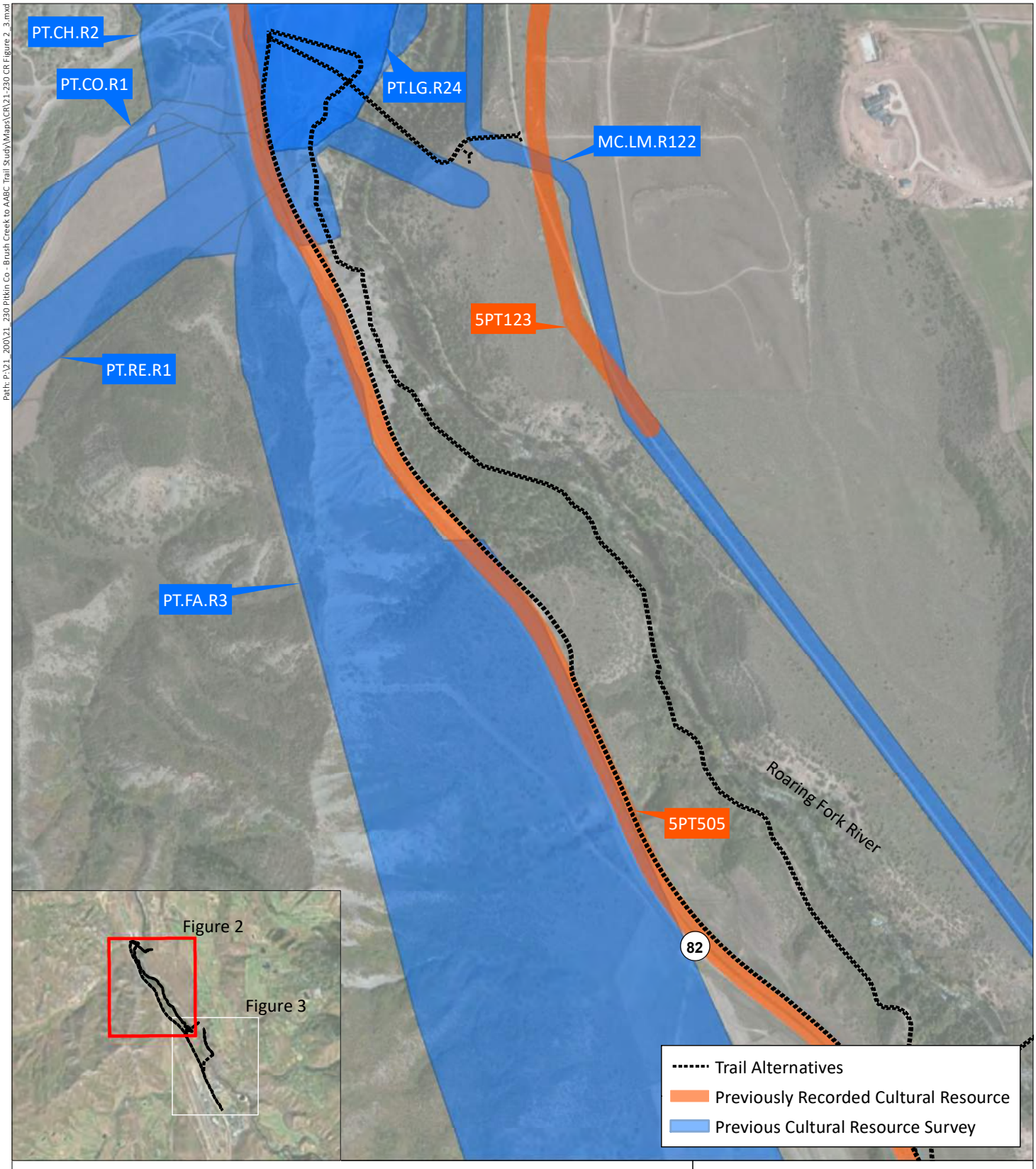
N

0 1,000 2,000 Feet
1:24,000

Figure 1
Project Location

Prepared for:
SGM, Inc.
File: 21-230 CR Figure 1.mxd (ME)
January 19, 2022

ERO Resources Corp.



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File and Literature Review
Brush Creek to AABC Trail Study
Pitkin County, Colorado

Sections 21, 27, 28, and 34, T9S, R85W; 6th PM
USGS Aspen and USGS Highland Peak, CO Quadrangles (1:24,000; 1964)
Pitkin County, Colorado

N

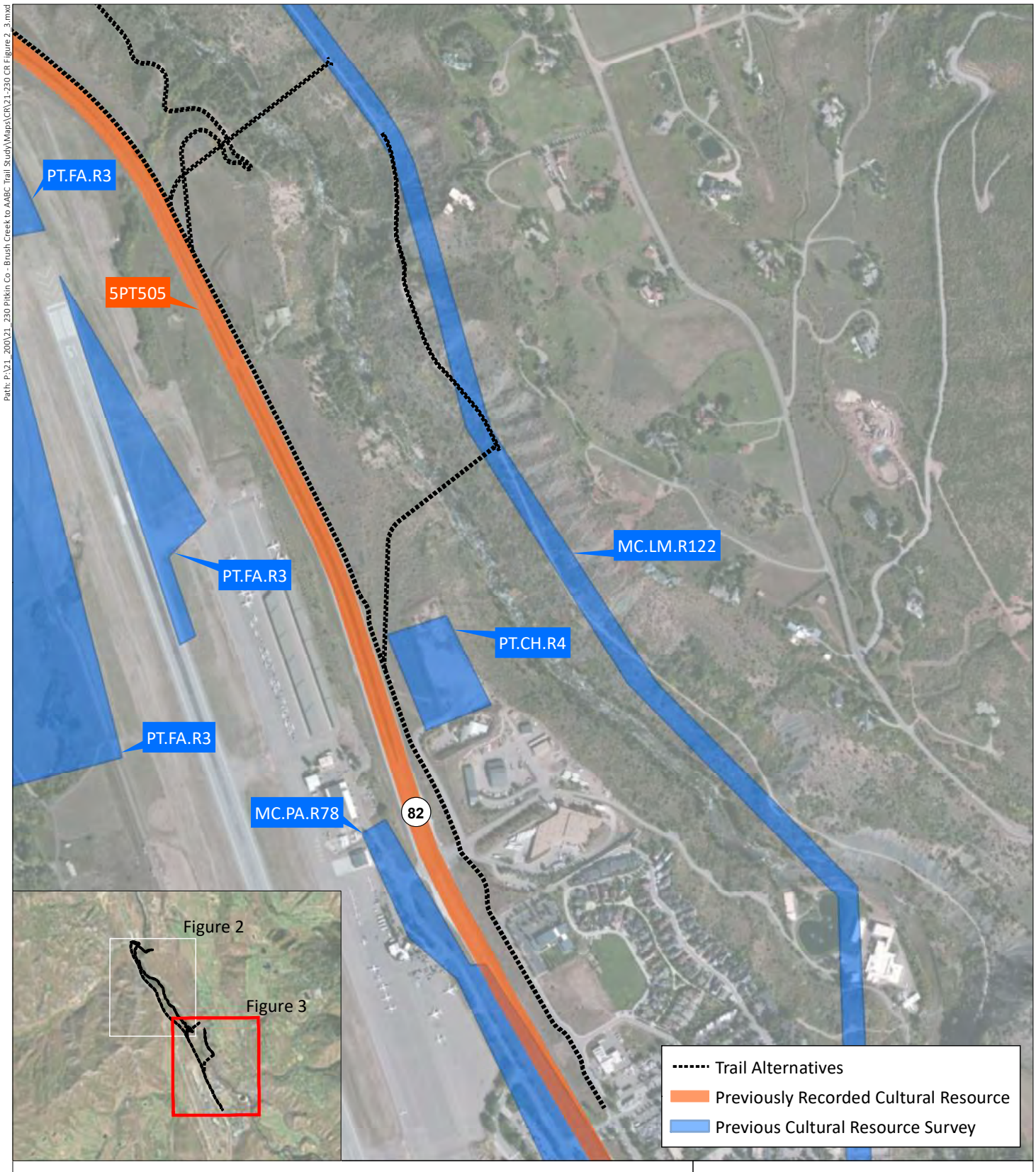
0 350 700 Feet

1:8,400

Figure 2
Previously Conducted
Cultural Resource Surveys and
Documented Cultural Resources

Prepared for:
SGM, Inc.
File: 21-230 CR Figure 2_3.mxd (ME)
January 19, 2022

ERO Resources Corp.



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Pitkin County, Colorado

N

0 350 700 Feet

1:8,400

Figure 3
Previously Conducted
Cultural Resource Surveys and
Documented Cultural Resources

Prepared for:
SGM, Inc.
File: 21-230 CR Figure 2_3.mxd (ME)
January 19, 2022

ERO Resources Corp.

AGENDA ITEM SUMMARY

EOTC MEETING DATE: May 26, 2022

AGENDA ITEM TITLE: High Occupancy Vehicle (HOV) Lane Enforcement

STAFF RESPONSIBLE: David Pesnichak, Regional Transportation Administrator

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ISSUE STATEMENT: Utilizing the results of the 2021 Fehr and Peers Integrated Mobility System (IMS) study in combination with the 2021 Upper Valley Transit Enhancement Study conducted by Mead and Hunt, the EOTC adopted the Near Term Transit Improvement Program in July 2021. This Near Term Transit Improvement Program set out a strategic tiered approach to tackling individual projects and efforts to best advance the EOTC's Strategic Plan and CVTP.

The EOTC's Near Term Transit Improvement Program prioritizes the most productive and feasible efforts identified in these two studies into three priority tiers. The efforts identified in the first and second tiers are those projects that are most in need, feasible in the near term, and/or are necessary to progress later efforts. Staff utilizes the direction provided from the EOTC 2021 Near Term Transit Improvement Program as guidance to develop the EOTC Budgets and Work Plans starting with 2022.

All feasible projects identified in Tier 1 are currently in development including:

- Design of the Truscott to Owl Creek Trail along Highway 82,
- Design and feasibility of the grade separated Buttermilk bicycle and pedestrian crossing at Highway 82 and Owl Creek Road
- An analysis of up valley and down valley transit service connections to Snowmass Village
- Design and installation of permanent automated vehicle counters throughout the upper valley.

Also on the list of Tier 1 priorities is a High Occupant Vehicle (HOV) Lane Enforcement Analysis. It is worth noting that this effort was identified as a Tier 1 priority since increasing compliance with the HOV lane is an important first step to increasing carpooling. As the Committee may recall, the development or implementation of a carpool app to match riders to drivers is a Tier 2 priority that is to be started once a plan for HOV lane enforcement is established. This memo and subsequent EOTC discussions is to serve as a starting point to developing a plan to enforce the HOV lanes from Basalt to the Aspen / Pitkin County Airport.

STAFF RECOMMENDATION:

While roadside camera based technology is not fully proven or able to be coupled with automated enforcement, staff does not recommend pursuing this technology at this time.

App-based verification systems do appear to hold promise in the longer term at both the State and National levels particularly as they become more widely used. However, this technology is very new with limited applications and vendors to date along with potentially high vendor turnover. Further, such a system will have a high up front and ongoing maintenance cost and demand on staff resources while having relatively low effectiveness if deployed only on Highway 82 between Basalt and the Aspen / Pitkin County Airport. As a result, the overall effectiveness of an app-based system appears to be low, particularly since the HOV lane is not otherwise tolled, relative to the amount of staff resources and monetary inputs required. While such a system may make sense at some point in the future, it does not appear that it is ready for deployment within this limited HOV context at this time.

To this end, staff recommends that a plan be developed with CSP and the Pitkin County Sheriff's Office for the EOTC to provide funds to either hire or allow overtime to officers to patrol for HOV compliance. This should also be combined with educational awareness utilizing press releases as well as the Highway 82 Brush Creek DMS and, if permitted, CDOT's message signs.

BACKGROUND:

HOV Lane Origins and Parameters: The Environmental Impact Statement (EIS) for Highway 82 between Basalt and Buttermilk started in 1987. From 1996 to 2004, the Colorado Department of Transportation (CDOT) constructed HOV lanes to accommodate vehicles with two or more passengers during peak travel times on this stretch of Highway 82 between Basalt and the Aspen / Pitkin County Airport. The development of these lanes are part of the Record of Decision (ROD) stemming from the EIS for the enlargement of this section of Highway 82 to four lanes and has been implemented as a Transportation Demand Management (TDM) measure. The lanes are intended to increase transit efficiency and encourage carpooling.

As a part of the design, it is understood that the HOV lanes were installed in the right lane, diverging from standard national practice, in order to accommodate RFTA buses that need to enter and exit the highway regularly to service stops. In addition, the hours of operation for the up valley lane and down valley lane are only in effect for peak traveling times. Outside of these peak traveling timeframes, the HOV lanes are not in effect and are utilized as general travel lanes. Specifically, the HOV lanes are in effect Monday through Friday from 6:00 a.m. to 9:00 a.m. up valley (to Aspen) and from 3:00 p.m. to 6:00 p.m. down valley (to Basalt).

It is worth noting that children do count as occupants for use of the HOV lane. In addition, motorcycles and alternative fuel vehicles are also permitted to use the HOV lanes at all times, even if the vehicle has only one occupant.

Current Enforcement: While Colorado State Patrol (CSP) and the Pitkin County Sheriff's Office acknowledge the need to patrol the HOV lanes on Highway 82, enforcement of these lanes is often not a priority for either organization. This is due to other higher competing priorities for law enforcement that directly affect life, safety and property. In addition, the Pitkin County Sheriff's Office and CSP are often short staffed, further decreasing the priority for the remaining officers.

Statewide, all HOV compliance is determined via a law enforcement officer, including Express Lanes on I-70 and Highway 36 between Boulder and Denver. Within Colorado, to use the High Occupancy Toll (HOT) lanes, also known as Express Lanes, it is necessary to have a transmitter where the driver self-selects whether they are travelling as a tolled vehicle or HOV. The law enforcement officer can then see the color of the tag mounted on the windshield and is thereby alerted to look for a minimum number of occupants if HOV is declared. For those who do not have a transponder, these facilities utilize license plate tolling where the toll bill is sent to the registered owner of the vehicle. Within these HOT lanes in the Denver region, the threat of having to pay a toll increases compliance with HOV laws although there are always those that try to evade the system by switching the transponder to "HOV" even when the minimum occupancy is not actually met.

Highway 36 between Boulder and Denver Managed HOT Lanes and Gantries

For HOV lanes that are not also tolled (HOT lanes), compliance is entirely up to law enforcement officers. In these cases, such as Highway 82, the law enforcement officer does not have the assistance of the transponder to alert them to look into certain vehicles claiming to meet the minimum occupancy to ensure compliance. Similarly, since Highway 82 is not tolled there is no threat of having to pay a toll if occupancy is not met. As a result, the threat of a citation is the prime motivation for users to abide by the HOV restrictions.

Highway 82 HOV Lanes

Possible avenues addressed in this memo to increase compliance of the HOV lanes on Highway 82 are as follows:

- Increase Sheriff and/or Colorado State Patrol staffing or funding for overtime
- Automate verification and / or enforcement
- Driver education

The following sections describe these three approaches along with their possibilities and drawbacks. It is worth noting that these options can, and in some cases should, be implemented together as a package to be most effective.

Option 1 - Increase Sheriff and/or Colorado State Patrol staffing or funding for overtime

Within Colorado, the only way to issue a citation for unauthorized use of an HOV lane is through a live law enforcement officer. As a result, increasing staff or providing additional funding for overtime to the Pitkin County Sheriff or CSP for compliance of the HOV lanes is the only way to achieve true enforcement of the lanes through the issuance of citations for unauthorized use.

From the perspective of the EOTC, the solution here is straightforward: provide funding to CSP and / or the Pitkin County Sheriff's Office specifically for additional staff and / or overtime to enforce the HOV lanes.

Some of the practical drawbacks to implementing this approach include difficultly recruiting for a new position even if it is funded and possibly stretching already over taxed law enforcement officers even if overtime is available.

Some other issues facing officers trying to enforce compliance of HOV lanes include, but is not limited to:

- Difficulty viewing the inside of vehicles to accurately determine the number of occupants (particularly child occupants or when windows are tinted),
- Difficulty determining which vehicles are powered by an alternative fuel (alternative fuel vehicles are permitted to use the HOV lane even with only one occupant),
- Safety of the officer and potential violators who are pulled over on the side of the highway,
- Traffic backups caused by vehicles pulled over on the side of the highway,
- Added backups and safety concerns for the traveling public caused by vehicles pulled over along the highway.

Over the longer term, however, the presence of officers will likely positively affect overall HOV lane compliance within the corridor. In addition, relative to other options, utilizing law enforcement officers can be implemented more quickly.

After speaking with CSP and the Pitkin County Sheriff's Office, both are willing to engage on efforts including additional funding from the EOTC to enable long-term financial capacity for HOV lane enforcement. It is anticipated that this funding would pay for overtime for troopers and deputies to conduct HOV lane enforcement. While the exact details or costs have not yet been determined, having willing law enforcement partners is an important component.

Option 2 - Automate verification and / or enforcement

Within Colorado, enforcement action can only be achieved with a law enforcement officer. In other words, citations for HOV noncompliance cannot be mailed or otherwise provided to an offending driver through any other means other than a enforcement officer who witnessed the violation.

Roadside Camera Based Verification: While camera technology through images or other detection device can be utilized in some states to automatically issue citations, the technology has not yet been proven effective enough to be fully automated. And while there have been deployments of this kind of technology to date, its use has been limited.

Further, where automated camera technology is used, it has been deployed in locations that are administered as managed HOT lanes where HOV drivers have reduced or free travel and non-HOV drivers pay a toll. No applications of camera technology on HOV only roadways (no toll) have been identified.

As currently applied, where camera technology detects an occupancy violation within HOT lanes, that image is then post-processed manually before any correspondence is sent to the offending driver. This correspondence is then typically in the form of 'education' on the use of the HOT lanes and then the driver is charged the toll that they should have otherwise paid. No other fees or fines are charged to the driver in these instances and no formal citation is issued.

Camera based technology would be paired with license plate readers in order to identify the vehicle's registered owner and address.

It is worth noting that in other states and cities that have looked to implement camera technology for enforcement purposes, that privacy concerns have been significant barriers to implementation.

Due to the unproven effectiveness of camera technology to reliably determine vehicle occupants, the legal inability to automatically levy a citation for violations under State law, and that the HOV lanes on Highway 82 are not otherwise tolled, it is staff's opinion that the use of roadside cameras to enforce the Highway 82 HOV lanes has limited applicability.

It is understood that CDOT will be hosting a test of an occupancy detection system(s) in the near future. One of these systems could be from In Vision Artificial Intelligence (invision.ai). Should this test go forward, it will be very helpful to determine how well the technology works in the conditions in Colorado. Should the technology be adopted by CDOT, then it will allow a seamless integration onto Highway 82 in the future.

In Vision Artificial Intelligence – Examples of Camera Installations in Virginia and Israel

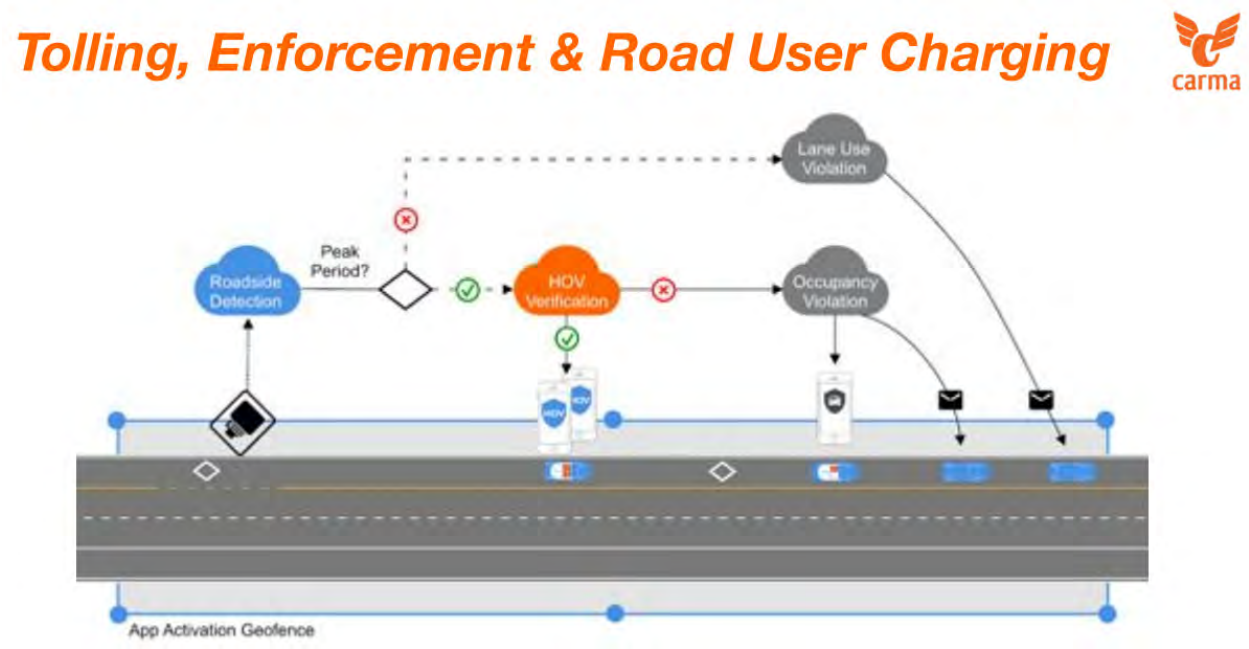
App Based Verification: There are a couple app based HOV verification platforms on the market today. The primary players in this field are GoCarma (gocarma.com) and RideFlag (rideflag.com). Both of these platforms can be described as 'verification' as opposed to 'enforcement' systems. The primary difference between verification and enforcement is the ability to levy a financial penalty for non-compliance.

Similar to camera-based technologies, app based verification systems are typically deployed on managed HOT lanes. In these instances, the app verifies the number of occupants to determine whether the vehicle qualifies for a free or reduced toll. If it is determined that the appropriate number of occupants are not within the vehicle, then the system will charge the appropriate toll to the vehicle and issue an 'educational' letter following manual post-processing of the information.

Both GoCarma and RideFlag utilize roadside license plate readers to determine the owner and address for a vehicle as well as to determine whether a certain vehicle using the app is actually within the HOV lane and not an adjacent general use lane. The system then verifies in real time the app user claiming to have the appropriate number of occupants to use the HOV lane with the lane they are actually travelling.

Both GoCarma and RideFlag have been deployed in major US cities for HOV verification within existing HOT lanes. Currently, GoCarma is widely used in Dallas, Texas while RideFlag is being piloted in Salt Lake City, Utah. It is understood that both of these cities went with these respective providers due to the unreliability and privacy concerns associated with roadside camera based technologies.

The primary difference between GoCarma and RideFlag from the user perspective is how they interact with the system. Most notably from the user's perspective, the GoCarma app does not require the user to open or enter any information into the app for each trip in order for the system to verify occupancy with the system. The GoCarma system recognizes each smart phone within the vehicle that also has the app in order to verify occupancy and then utilizes a geofence to know when the vehicle has entered the HOV area to start the app for verification purposes. While GoCarma does require all occupants of the vehicle to download and have the app installed on their smart phone (the company offers provisions for those who do not have a smart phone), it is advertised as requiring minimal inputs from the users past that point.



GoCarma Representation of Tolling, Enforcement, and Road User Charging System

RideFlag, however, requires the driver to take a photo of the vehicle occupants before the trip and then end the trip on the app. Functionally this app moves the camera based technology discussed earlier from the roadside to the smart phone. While this does require input from the user prior to and at the end of each trip, it does not require each user to have the app on their smart phone. It is understood that the images are maintained locally on the user's device and as a result, has been further embraced by Salt Lake City due to privacy concerns associated with roadside cameras where the images are managed by a public agency or private company.

RideFlag App Usage Demonstration (from RideFlag website)

As noted previously, neither app-based verification platform can issue fees, fines or citations for infractions of the HOV lane within Colorado. However, should a user be identified as misusing the lane, each company offers back office services to manually process non-compliant user information and send notifications both to the app and via letter for education on appropriate use of the HOV lanes. Since the HOV lanes on Highway 82 are not tolled, the financial encouragement of free or reduced lane usage for HOV users cannot be realized as it is in other locations.

The implementation of any app-based platform would also require significant public engagement and education as well as annual monetary operational support. As a result, the elected officials would need to be fully engaged and support this approach should it move forward. Due to the public educational effort required prior to any implementation, an app based verification system should be viewed as a medium-term effort and not one that can be implemented immediately.

In addition, before a specific app-based platform could be chosen, a public procurement process would need to be under taken. Through this process, the elected officials and staff would have the opportunity to learn more about the details, operations, and cost of each product from vendors that submit proposals.

On the cost side, it is currently difficult to gauge what the cost of an app-based system would be to implement at this point. Aside from the pre-implementation and ongoing public engagement and education components, there would be initial physical infrastructure costs associated with license plate readers and annual costs to the provider for use of the app as well as back office compliance support. In addition, the system would require annual administrative support resources locally along with ongoing infrastructure maintenance costs. Within other HOT lane systems, the cost of the program is paid for or offset through tolls and, it is understood, often times pays for itself through increased compliance and the reduced need for law enforcement. For Highway 82, however since it is not tolled, the cost of the system would be borne entirely by the supporting public agencies.

Looking at the Highway 82 user base, we have a significant number of road users from outside the Roaring Fork Valley who are not otherwise familiar with the roadway. Should an app-based verification system be implemented that is not otherwise widely used (particularly on I-70 and in the Denver metro area), it is likely that many visitors would continue to use the HOV lane even with significant signage and other public outreach efforts. While these violators would receive a letter notifying them of improper usage of the lane, since they are not regular users it is unlikely that education would be effective. As a result, it is likely that even with an app-based verification system Highway 82 would continue to have a higher noncompliance rate than other metro areas also using a similar system.

Similar to roadside camera based verification systems discussed previously, it is understood that CDOT will be undergoing a pilot with one or more app based systems in the near future. As an app-based verification system could have a much higher effectiveness on Highway 82 if it were a part of a larger statewide system, allowing this CDOT pilot to play out would be a prudent next step before proceeding with a different system for Highway 82.

Finally, it is important to note that while app-based HOV verification has been embraced by some large public and private tolling agencies across the country, this technology and players continue to evolve. As a result, for a small region like the Roaring Fork Valley, considering the significant initial and ongoing public education and investment effort that would be required to have a system like this running, there is always a danger that the vendor may change or otherwise not be available within a relatively short timeframe. This landscape increases the risk to local agencies over the long term. Should CDOT select a vendor for a statewide system, however, then this could increase overall vendor stability and effectiveness over the longer term.

Option 3 - Driver Education

With either Option 1, Increase Sheriff and/or Colorado State Patrol staffing or funding for overtime, or Option 2, Automate verification and / or enforcement, driver education would be an important component. However, without implementing driver education in conjunction with either Option 1 or Option 2, it is unlikely that an educational effort regarding the use of the HOV lane on its own would have much impact.

If Option 1 or Option 2 move forward, the use of the Brush Creek DMS can be utilized to notify drivers that the HOV lane is being enforced and / or to promote use of the verification system. In addition, the use of print and social media to inform drivers of new enforcement efforts should also be conducted.

Larger scale public outreach campaigns, including any implementation of an app-based verification system, should include hiring a public outreach firm to ensure that any education campaign is thorough, targeted and sufficiently gets the word out about the efforts to those who utilize Highway 82.

BUDGETARY IMPACT: None at this time. Staff will further develop a plan to provide funding, if necessary, to CSP and the Pitkin County Sheriff's Office for HOV enforcement and include the effort within the 2023 EOTC Budget as appropriate.

RECOMMENDED EOTC ACTION: Administrative Direction to develop a plan for HOV lane compliance with CSP and the Pitkin County Sheriff's Office and include a financial request, if necessary, for EOTC review within the 2023 EOTC Budget.

ATTACHMENTS: None.

AGENDA ITEM SUMMARY

EOTC MEETING DATE: May 26, 2022

AGENDA ITEM TITLE: Transportation Administrator Updates

STAFF RESPONSIBLE: David Pesnichak, Transportation Administrator

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ISSUE STATEMENT: This memo is intended to keep the EOTC up to date on efforts that are within or could affect areas within the EOTC's purview. The updates included in this memo are as follows.

a) Status Update on 2021 EOTC Near Term Transit Improvement Program
b) Food Truck at Brush Creek Park and Ride

BACKGROUND: The following update is provided for EOTC information.

a. Status Update on 2021 EOTC Near Term Transit Improvement Program

As the EOTC members may recall, at the July 29, 2021 EOTC meeting, the Committee adopted the 2021 EOTC Near Term Transit Improvement Program.

The purpose of this Program is to identify the near term priority projects to improve transit within the Upper Valley. As originally anticipated, starting with the 2022 budget year staff will continue to utilize this document to development the upcoming EOTC budgets and work plans.

Staff is currently working through the identified Tier 1 priorities, which have been appropriately budgeted and / or identified in the 2022 Work Plan.

Please see Attachment 1 for an update overview of each of the projects within the Near Term Transit Improvement Program.

b. Food Truck at Brush Creek Park and Ride – Progress Update

A one-year food truck / farm stand experiment is currently permitted by Pitkin County to take place for one season between 2022 and 2025. The current County permit limits a food truck/farm stand for one season with any additional seasons requiring additional County permitting pending favorable data on the food truck promoting transit and carpooling from the Park and Ride. Through the 2022 EOTC Work Plan amendment process that took place in February 2022, Staff heard from the elected officials that having a food truck at the Park and Ride in 2022 was a high

priority. As a result, transportation staff worked with the Pitkin County Community Development Department, CDOT, and the City of Aspen Attorney's Office to make this happen in 2022.

While Pitkin County Community Development worked to streamline the permit amendment and approval process, CDOT amended their typical process to allow the City of Aspen to sublet to the vendor instead of having a lease signed directly with CDOT (saving up to two months). In order to streamline the vendor selection process, the Transportation Administrator contacted vendors who had previously expressed interest but did not submit a proposal in previous years to see if there was current interest (this is the first time a vendor has submitted a proposal). One vendor expressed interest in setting up at the Park and Ride in 2022. Staff from the City of Aspen and the Transportation Administrator are currently working to finalize a lease with this vendor for the 2022 summer season. Electric service was also installed onsite for the vendor's use this season.

As a reminder, the vendor is permitted to operate between 6 am and 6 pm between May 1 and September 30. While the current permit is only for one season and the Park and Ride is anticipated to be under construction in 2023, the vendor understands that it is unlikely the food truck will be able to be onsite in 2023. In the longer term, should the food truck be shown to support transit ridership and carpool usage from the Park and Ride, Staff will submit to Pitkin County and CDOT in 2023 to make the placement of a food truck at the Park and Ride a regular seasonal event starting in 2024.

BUDGETARY IMPACT:
None at this time.

RECOMMENDED ACTION:
None at this time.

ATTACHMENTS:
1. 2021 EOTC Near Term Transit Improvement Program with Project Tracking

2021 EOTC Near-Term Transit Improvement Program - Approved July 29, 2021 - Administrative Direction - UPDATED 04-21-22						
	Project Name	IMS Tenant	Project Attribute(s)	Relative Implementation Cost ($-$$$)	Notes	Project Tracking
Tier 1	First Priority - Higher value* to dollar ratio and / or Important preliminary effort					
	Aspen Country Inn Trail Improvements to Bike / Ped Underpass and Transit Stops at Truscott and Buttermilk **	BRT Enhancements	Higher value to dollar ratio	$	Important bike / ped connection to transit for senior housing and service destinations. Basic infrastructure connection. Move to concept plan in 2021.	PROGRAMMING: 2022 Feasibility, Planning, Design, Stakeholder Engagement, Construction Funding Identification - Budget $200k & Work Plan; Cost Estimate: $200k total design, $1,050,000 total construction = Total $1.25M (Mead and Hunt - 8-19-21). RFP closed April 8, 2022. 2 proposals received. Proposals under review.
	Design and Feasibility Review of Maroon Creek Roundabout Down Valley Channelization and Down Valley Queue Jump at Cemetery Lane **	BRT Enhancements	Higher value to dollar ratio	$$ (design only)	Move to design and permitting to further evaluate feasibility. Initial rollout anticipated as an experiment. Requires CDOT approved design and permitting. Potential benefit to all motorized roadway users including transit. Channelization likely to be seasonal due to snow removal issues. Move to concept plan in 2021.	Fatal Flaw Identified, STOP 8-26-21 - Radii analysis shows incompatibility with WB-67s and RFTA MCI Coaches; Cost Estimates: $30k queue jump & $25k channel design, $200k queue jump & $21,500 channelization install = Total $276,500 (Mead and Hunt - 8-19-21).
	Design and Feasibility Review of Harmony / Owl Creek Transit Signal Bypass Lane and Buttermilk Bike / Ped Underpass **	BRT Enhancements	Higher value to dollar ratio	$$ (design only)	First move to design to make eligible for funding. Superior bike / ped protection crossing Hwy 82 and increased transit speed and reliability. High construction cost. Move to concept plan in 2021.	PROGRAMMING: 2022 Feasibility, Stakeholder Engagement, and Initial Design - Budget $200k & Work Plan; Cost Estimate: $830k underpass / bypass lane design, $8.570M construction = Total $9.4M (Mead and Hunt - 8-19-21). RFP closed April 8, 2022. 1 proposal received. Proposal under review.
	HOV Lane Enforcement Analysis	HOV Lane Enforcement	Important Preliminary Effort	$ (analysis only)	Necessary to determine best alternatives for HOV enforcement options (automated vs. personnel). Could require a phased implementation.	PROGRAMMING: 2022 Staff Analysis - Budget $0 & Work Plan. In development - to be reported out to EOTC at May 2022 meeting.
	Analysis of Up Valley and Down Valley BRT Direct Service to Snowmass	BRT Enhancements	Higher value to dollar ratio	$ (analysis only)	Aspen to Snowmass, and Snowmass to down valley transit connection analysis to evaluate transit effectiveness and efficiency, and determine cost, frequency, and expected utilization of increased/enhanced service levels. Current BRT connecting service to remain in place.	PROGRAMMING: 2022 Budget $50k & Work Plan. Currently recruiting for consulting team - RFP advertised, closed 2/11/22. Marc Warner of Warner Transportation is under contract for study. Kick off meeting held 3-16-22.
	Additional Permanent Automated Vehicle Counters on Brush Creek Road, Owl Creek Road, Airport/AABC and Highway 82 in Pitkin County	Congestion Reduction Measures	Important Preliminary Effort	$$	Additional vehicle counters are necessary to monitor program success, VMT and greenhouse gas emissions over the long term.	PROGRAMMING: 2022 Planning, Permitting, Design, and Install Budget $200k & Work Plan. Currently recruiting for consulting team- RFP advertised, closed 2/11/22. No responses received - selection committee currently reviewing options.

Tier 2	Second Priority - Lower value* to dollar ratio and / or Dependent on Tier 1 effort					
	Pilot Ridesharing app for Commuters	Ride Sharing	Dependent on Tier 1 Effort	$-$$	Effort dependent on HOV lane enforcement implementation for highest level of effectiveness. May be able to use results of RFTA's 2021 First Last Mile Mobility (FLMM) Study to guide this effort. Ongoing cost and staff time unknown.	Pending
	Analysis of Regional Ride Hailing and Car Sharing Service	Ride Sharing and Ride Hailing	Lower value to dollar ratio	$ (analysis only)	Potentially lower relative benefits to transit ridership, GHG emissions, and VMT reductions. Analysis necessary to determine service scope, type and ensure service supports transit. May be able to use results of RFTA's 2021 First Last Mile Mobility (FLMM) Study to guide this effort.	Pending

	Analysis of Valley Wide Commuter Parking, EV Charging, and Ride Hailing / Sharing Pick Up / Drop Off Locations	Congestion Reduction Measures, Ride Sharing, and Ride Hailing	Important Preliminary Effort	$ (analysis only)	Necessary to determine amount and location of needed parking, appropriate parking pricing, and incentives via EV charging placement to encourage transit ridership.	Pending

Tier 3	Third Priority - Hold status due to dependence on efforts outside EOTC purview, Significant cost, and / or Significant legal hurdles					
	Service Center Road Signalization and Hwy 82 Brush Creek P&R to Airport Speed Limit Reduction	BRT Enhancements	Hold status due to dependence on efforts outside EOTC purview and Significant legal hurdles	$$	Relatively expensive improvement. Gains in vehicular and bike / ped safety accessing transit. Hold due to ongoing design of new airport terminal and layout. Speed limit reduction to be reviewed by CDOT and possibly incorporated with signalization of intersection. Would require amending Access Control Plan with CDOT.	Hold
	Extension of HOV Lanes Up Valley from Airport and / or Down Valley of Maroon Creek Roundabout	BRT Enhancements	Significant legal hurdles and Significant cost	$$	Initial construction cost of exclusive bus lanes must be reimbursed to EOTC if any loss of exclusive bus lanes occurs. Source of reimbursement funds is unknown and amount of initial construction cost reimbursement could be high. Potential conflicts with ROD. Only to be pursued if 1) no loss to bus only lane can be achieved and 2) effective HOV lane enforcement is in place.	Hold
	Dynamic Road Pricing (Cordon Pricing or Managed / HOT Lane)	Congestion Reduction Measures	Significant legal hurdles and Significant cost	$$$	Significant legal hurdles as State law would need to be amended to allow for cordon pricing. Cordon pricing or managed lane would require significant permitting, operational infrastructure, and partnerships. Implementation, public relations and maintenance costs expected to be high for either cordon or managed lanes. Potential legal hurdles if bus only lanes are converted to HOT lanes. Amendment or new Hwy 82 EIS / ROD is necessary. Additional analysis is necessary. Could have significant positive impacts on GHG emissions and VMT if implementable.	Presentation and Discussion of Alternatives at April 28, 2022 EOTC Retreat
	Sage Way Sidewalk Extension	BRT Enhancements	Hold status due to dependence on efforts outside EOTC purview	$	Hold pending implementation of Access Control Plan to be triggered by Airport redevelopment and/or large developments within the AABC.	Hold. Potential implementation as a part of BC P&R to AABC Trail Connection.

Other Efforts Considered - Not to be Pursued at this Time						
	Signal Timing for Transit Speed and Reliability Improvement	BRT Enhancements	Not to be pursued at this time	$$	Limited deployment in Pitkin County modeling showed very little effectiveness. Additional modeling for entire Hwy 82 corridor may demonstrate ability to substantively improve transit speed and reliability.	N/A

	Airport Terminal BRT Routing	BRT Enhancements	Not to be pursued at this time	$$$	Dependent on Airport terminal redevelopment. Very expensive improvement as down valley BRT line would need to be grade separated to and from the Airport in order to maintain current transit times. Gains in access at airport terminal only with possible detriment to greater BRT system. Significant transit operational issues to be overcome. Other options should be analyzed first.	N/A
	HAWK Beacon at Aspen Country Inn	BRT Enhancements	Significant cost	$$	Relatively significant implementation cost relative to number of users.	N/A

* "Value" is determination based on efforts' ability to support transit through increased access, speed and reliability; reduce greenhouse gas emissions (GHG); and reduce vehicle miles traveled (VMT)

** Efforts are proposed to be carried forward in the second half of 2021 for development of conceptual design by Mead and Hunt utilizing remaining UVTE study funds

CITY OF ASPEN

MEMORANDUM

TO: Mayor Torre and City Council

FROM: Tessa Schreiner, Sustainability Manager
Tim Karfs, Sustainability Programs Administrator

THRU: CJ Oliver, Environmental Health and Sustainability Director
Phillip Supino, Community Development Director

MEMO DATE: May 13, 2022

MEETING DATE: May 17, 2022

RE: Fleet Electrification

REQUEST OF COUNCIL:
Staff requests City Council's direction to develop a fleet electrification plan for Council review and adoption. This plan will accelerate the adoption of electric and zero-emission vehicles in the City's internal fleet in line with City greenhouse gas (GHG) emissions reduction goals. Staff also seeks approval from Council for Aspen to become a GoEV City, which is a coalition of cities and counties pushing for 100% electric or zero-emission vehicles in Colorado, as a sign of its commitment to transition from fossil-fuel powered vehicles and equipment.

BACKGROUND:
Summary: The City will not reach its carbon reduction goals for 2030 or 2050 without electrifying all transportation options, starting with the City's own internal fleet. Moving City vehicles away from fossil fuels and towards electric and zero-emission will reduce the City's emissions from transportation, help demonstrate Aspen's climate values and set a strong precedent for electrification to the rest of the community. This memo focuses on organizational efforts to reduce the City's emissions from fleet and mobile/stationary equipment, and how Council approval to develop an internal fleet electrification plan and support for Aspen to become a GoEV City will help the community reach Council's net-zero emissions goal. This memo and the recommended actions herein support Council's carbon goal, which directs staff to reduce Aspen's GHG emissions by taking meaningful action and providing leadership, and specifically directs action in the transportation sector.

Previous Council Action: Aspen has been an early supporter of the transition to zero-emission vehicles and the infrastructure needed to decarbonize the transportation sector. Alternative transportation options such as walking, biking, bikeshare, public transportation, and carpooling are encouraged as the lowest emission transportation

options. However, if residents and visitors must drive, then electric vehicles powered by 100% renewable energy are the preferred choice in Aspen's GHG emissions reduction strategy.

Council has taken several steps to advance electric vehicles (EVs), and low emission alternatives to internal-combustion engine (ICE) vehicles. To date, Council has:

- Adopted the Aspen Area Community Plan (AACP), which emphasizes the importance of supporting and incentivizing EV adoption in the community.
- Adopted the 2018 - 2020 Climate Action Plan (CAP), which lists adopting EVs in the community as one of the recommended actions to reduce community GHG emissions.
- Adopted the Aspen Community Electric Vehicles Readiness Plan in 2017, which outlines strategies for the City to support EV adoption in the Aspen area.
- Adopted the Aspen Electric Vehicle Public Charging Infrastructure Masterplan in 2021 which lists the required steps for Aspen to expand its public charging infrastructure over the next five years.
- Included support for low and zero emission transportation, including EVs, in the City of Aspen 2022 Regional, State, and Federal Policy Agenda.

Why Reduce Transportation Emissions: In 2021, Aspen doubled down on its commitment to reduce community emissions and mitigate the impacts of global climate change by adopting ambitious science-based targets (SBTs). These SBTs call for a 63% reduction in emissions by 2030 and 100% reduction by 2050 based on 2017 levels. Both nationally, and in Colorado, transportation is the largest source of GHG emissions across all sectors. In Aspen, where efforts to limit the flow of traffic coming into town have secured some minor wins, on-road transportation is responsible for 11% of community emissions, the third largest source (as seen in the adjacent graph, Aspen's 2020 Emissions by Sector). Aviation emissions are included in the GHG inventory and count towards Aspen's overall transportation emissions totals, but the City's ability to control emissions coming from the Aspen/Pitkin County Airport is jurisdictionally limited and is, therefore, not the focus of staff's efforts.

DISCUSSION:

Aspen's Fleet Emissions: According to the 2020 Municipal GHG Inventory, fleet fuel use was the second largest source (23%) of emissions in 2019, and the largest source (24%) in 2020 for the City of Aspen's municipal operations. To put this in perspective, emissions primarily from on-road gasoline use, and on-road diesel, originating from City owned vehicles contributed to 614 metric tons of CO_2e or 1,524,074 miles driven by an average gasoline powered vehicle. These emissions are directly within the City's span of control and represent one of the most direct opportunities for GHG reductions among City owned assets. The Aspen Community EV Readiness Plan and the Aspen EV Public Charging Infrastructure Masterplan both signal the need for greater numbers of EVs in the City fleet. Those plans do not provide clear directions for staff to prioritize which vehicles should be replaced or how they will be charged. This decision-making rests with Department Directors, fleet and budget managers, and the annual budgeting process. Presently, GHG reduction is not a standard for decision making in those internal processes.

Aspen's Fleet Electrification Progress: In 2016, the City added two Nissan Leafs with a battery range of 84-107 miles marking the first EVs to be included in the City's internal fleet. As the EV market has developed, so has the City's interest in acquiring EV replacements for existing internal combustion engine (ICE) vehicles when they are up for replacement. In early 2022, the Aspen Police Department carried over their fleet budget to purchase five Tesla Model Ys with a maximum battery range of 244-330 miles. The Teslas are part of a pilot program to test the effectiveness of EVs on the frontlines of police work. Staff are still in the early stages of tracking the benefits of the Teslas and their ability to take on roles normally assigned to ICE vehicles but are encouraged by early feedback from the police department. The purchase of the Teslas and the intent behind reducing police fleet emissions are an exciting demonstration of the advancements in EV technology since the purchase of the Nissan Leafs and the willingness of City departments to make the switch to EVs.

Aspen currently operates a total of 125 fleet vehicles and 110 mobile/stationary equipment. There are currently 13 fully electric vehicles and equipment in the City fleet, 3 Plug-in Electric Hybrids (PHEVs), and 9 Hybrids. Looking at the total number of vehicles including EVs, PHEVs, and Hybrid Vehicles, as well as mobile/stationary equipment in the City's fleet, relative to the size of the City fleet, there are opportunities reduce organizational GHG emissions by building on recent successes with acquiring replacement EVs.

Opportunities Associated with Fleet Electrification: Converting the City fleet to electric will not only reduce GHG emissions but substantially save on fueling and annual operating costs. For example, the estimated annual operating costs of Aspen Police Department's Tesla Model Ys (charging, tires, maintenance, license, registration, and insurance) were about half of the costs of the previous Toyota Highlander Hybrids. In addition, the five Teslas are predicted to remove around 3,000 pounds of tailpipe emissions previously attributed to the Toyota Highlanders annually. Furthermore, improvements to EV technology, including the use of lighter and more efficient batteries, vastly increased the driving range and overall reliability of EVs. The promise of equipment manufacturers like Ford and General Motors committing to 100% EV production by 2025 means that EVs and the associated infrastructure will become more pervasive in the near-term. City fleet electrification is an opportunity to create operational efficiencies, achieve long-term cost savings, and reduce human-generated impacts on the environment.

The addition of EVs in the internal fleet will support Council's emissions reduction goal and demonstrate leadership in climate action. EVs are an easily observed and recognized metric of the City's efforts to reduce its emissions footprint. As the community shifts towards electric and zero-emission vehicles, the City will be in a position to respond to questions and share best practices.

The Need for a Fleet Electrification Plan: Developing a fleet electrification plan will allow staff to create a roadmap for fleet adoption and strategically address the following:

- Supply chain issues: Global supply chains have been greatly affected due to factory shutdowns due to the COVID-19 pandemic and increased demand. EV production was stalled, and increased demand for fewer vehicles has made it difficult to purchase new vehicles. Staff conversations with representatives from Ford, General Motors, Tesla, and Rivian pointed to wait times of up to three years for new vehicles. These delays also present an opportunity by providing breathing room to create a strategic plan to accommodate future EVs.
- EV procurement: Despite the upfront costs of EVs becoming substantially less than what they were when the technology was first introduced to market, EVs still require a larger capital investment to purchase than most ICE vehicle options. This is in contrast to the long-term cost savings from EVs. Currently, the capital budget for fleet replacement projects underserves the City's ability to purchase EV replacements. A fleet electrification plan will include the development of estimated capital needs and procurement strategies on an extended timeline. Over time, such financial planning will help budget managers and Council understand the short-term costs and long-term goals of greater electrification.
- Fleet analysis: The process to select viable alternatives to ICE fleet vehicles is currently performed annually. Staff provide an analysis at the beginning of each budget cycle showing the upfront and annual operational costs of the EV compared to the ICE alternative. A plan would formalize this process and include out years.
- Internal fleet charging: A fleet electrification plan would include a plan for internal fleet charging to ensure that chargers accompany the purchase of new EVs and new load demands on the electrical grid are anticipated.

In the development of the fleet electrification plan, Climate Action staff will work with teams including Streets, Transportation, Finance, Engineering, Parking, and Community Development. In this process, Climate Action staff will support our sister departments serving as an internal service provider to assist departments in strategically planning enhanced EV adoption and understanding each work area's role in and contribution towards meeting the City's GHG reduction goals. The proposed fleet electrification plan would include a feasibility study and analysis of charging stations at City buildings, capital costs, and cross-departmental stakeholder engagement. Climate Action staff will act as subject matter experts and apply best practices and technology from other cities across the country to support the build out of the plan.

The second action on which staff seeks Council guidance is the recommendation to join GoEV City. GoEV City is a coalition of Colorado cities and counties that have made commitments to transition internal fleets to 100% electric and zero emission vehicles. The GoEV City pledge is in line with Aspen's SBTs to reach net zero emissions by 2050. If Aspen signs on to GoEV City, the City would benefit from access to and support from the other 10 members in the coalition.

For Council Discussion: Staff seeks Council direction on the following items relating to fleet electrification:

1. Does Council support staff developing a fleet electrification plan to bring to Council during the summer of 2022?

2. Does Council support Aspen joining GoEV City?

Conclusion and Next Steps:
Aspen has been a leader in low and zero emissions vehicle programs for over a decade, and City Council has demonstrated its support for EVs through various actions. On-road emissions in the Aspen area account for 11% of total community emissions and fleet fuel emissions represent one of the largest sources of emissions at the municipal level. The City has an opportunity to incorporate more EVs into its fleet to reduce emissions and maintenance costs as well as share the lessons learned with the community. An internal fleet electrification plan would help communicate the importance of EVs in the City fleet, assist staff's decision to replace ICE vehicles and introduce charging infrastructure on a timeline specified by Aspen's bold climate goals. Joining GoEV City would provide staff with additional support in the creation and implementation of this fleet electrification plan.

Should Council approve Staff's request to create an internal fleet electrification plan and commitment to GoEV City, staff will return with a draft plan for Council consideration and a resolution for the City of Aspen to join GoEV City.

ENVIRONMENTAL IMPACTS:
By supporting the transition to zero emission and electric vehicles in the City fleet, Aspen will be strongly positioned to meet its community carbon emission reduction goals Furthermore, replacing City-owned ICE vehicles with EVs will improve air quality in the Aspen area by removing up to 614 metric tons of CO_2 worth of local emissions. EV adoption reduces pollution emanating from tailpipes, including ozone and particulate matter pollution. A collaborative and well-vetted fleet electrification plan could also empower private businesses such as hotels, restaurants, and private businesses to electrify their own fleets.

FINANCIAL IMPACTS:
There are no expected costs to the City of Aspen to create a fleet electrification plan beyond the allocation of staff time. The finalized fleet electrification plan could recommend that the Council increase the capital budget for EV purchases and additional EV charging stations. As the City pursues electric and zero-emission vehicles there may be opportunities to offset costs with grant funding offered by state and federal sources. GoEV City membership is free.

STAFF RECOMMENDATION:
Staff recommends that Council approve the preparation of an internal fleet electrification plan and support a future resolution for Aspen to join GoEV City as a sign of its commitment to 100% electric and zero-emission transportation by 2050.

ALTERNATIVES:
Council could decide not to approve the preparation of an internal fleet electrification plan, and staff could instead continue to identify and replace ICE vehicles with EVs individually by department as funds are available. Council could also decide not to support a future

resolution to join GoEV City. Council could decide to approve or reject any combination of the two staff recommendations.

CITY MANAGER COMMENTS:

_____

_____

Attachment A: GoEV City 2022 Short Version

GoEV City

CoPIRG
Standing Up
To Powerful Interests

SWEEP
SOUTHWEST ENERGY EFFICIENCY PROJECT

CLEER

SIERRA CLUB

Conserva
Colorado

The GoEV Commitment –100% EVs

- GoEV City or County is committed to 100% electric or zero -emission transportation by 2050 (or sooner)
- Cities develop an EV Action Plan with intermediary steps over the next 20 -30 years
- Scope includes municipal fleets, local transit agency and school districts, taxis/Ubers/Lyfts and similar services, and all passenger vehicles in the community

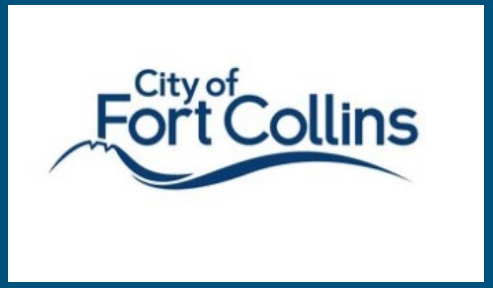
Why 100% Zero Emission Transportation

- Cities can accelerate the transition through leadership
- 100% zero emission eliminates inequities
- Redefines what's possible – sends signal to community that EVs are the future of transportation and that we are ready

GoEV City Coalition Support

- Highlights commitment via media and social media channels
- Support EV Action Plan development with policy recommendations
- Connect city and county staff with technical expertise and examples around the country

2022 GoEV Cities and Counties



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