

TO: Glenwood Springs City Council **DATE:** 12/12/13

FROM: Joe Elsen, Craig Gaskill, Decision Making Task Force

SUBJECT: Information Packet for South Connection to
New Pedestrian Bridge - Access for all Users
and Enhancing the Downtown

Background

At the November 7th City Council Meeting, City Council requested additional information to better evaluate the options for accessibility options at the south end of the new pedestrian bridge.

Following that meeting, the requested information was collected and developed by the project team, the Colorado Bridge Enterprise, the Downtown Development Authority and City Staff. This information was then reviewed by a Project Leadership Team (PLT) Task Force, specifically set up to help this decision making process. The PLT discussed the sources of the information, the validity of the information, and the best way to fairly present the information, given it was developed from several sources.

This packet of information is a culmination of that process. This packet includes renderings of the various options, bulleted information of the various considerations and a summary comparison matrix.

In addition to this packet, the PLT Task Force recommended providing renderings to the public via the newspaper in advance of the Council Meeting. If this can be scheduled, this information should run in the paper on about Tuesday, December 17th.

The PLT Task Force felt it was important to review the Critical Success Factors that were developed early in the process through the public input and scoping process. These Critical Success Factors (shown in box to the right) form the basis of the project's decision making process used by the Project Working Group (PWG) to evaluate and recommend alternative elements. The Context Sensitive Solution (CSS) process recognizes that selecting the best solution requires balancing a wide range of concerns and issues, as summarized in this packet.

As discussed at the October 3rd Council Workshop, the timing of this particular recommendation is important to the schedule of the Grand Avenue Bridge project. Whereas a delay in the recommendation as of October 3rd had the potential to delay start of construction, we are now at a point where a delay in the recommendation would likely cause the project to miss an entire construction season by not being able to start

Grand Avenue Bridge Project Critical Success Factors

- Meet current design standards
- Safety
- Pedestrian, bicycle, and ADA access
- Iconic structure
- Promote appropriate speeds
- Connection to 6th St.
- Minimize construction impacts
- Solve problems into the future
- Provide for activities and vibrant St. life under the bridge
- Avoid and minimize environmental impacts
- Accommodate traffic flow and demand
- Design for sustainability
- Looks like it grew out of the history of Glenwood Springs
- Positive economic impact, short and long-term
- Invigorates activity on Wing St.
- Accommodates traffic flow on I-70
- Maintain and enhance recreation on the river
- Affordable
- Doesn't impact aquifer and hot springs
- Source of community pride
- Engaged public and community

construction before winter of 2014. As a result the PWG is prepared to make a recommendation on the pedestrian bridge accessibility question following the Council Meeting. The PWG has two givens that affect this recommendation: 1) CBE can fund either the ramp option or the elevator option, but not both, and 2) An elevator only option would require an ADA access IGA with the City, but a ramp option would not. Council input could affect one or both of these givens regarding what can be funded and if an ADA IGA was acceptable.

The project team will be available to discuss the information at the December 19th Council Workshop.

Sources and References as provided:

1. Project Team (including Jacobs Engineering, AMEC, TSH Engineering, and StudioINSITE) + CDOT Civil Rights & Business Resource Center and Region 3.
 - a. *Jacobs Engineering Global Building staff (designers and engineers)*
 - b. *AMEC architects and engineers*
 - c. *TSH Engineering staff*
 - d. *StudioINSITE architects*
 - e. *CDOT Civil Rights & Business Resource Center (ADA experts)*
 - f. *Regional Transportation District (RTD)*
2. Charlier and Associates (consultant to Downtown Development Authority) – also included following references:
 - a. *American Society of Mechanical Engineers' Standard – ASME 17 (Design standards for elevators)*
 - b. *Telephone interviews with Colorado Custom Lift, Grand Junction; and Colorado Department of Law Enforcement, Oil and Public Safety Division*
 - c. *<http://finduslaw.com/americans-disabilities-act-1990-ada-42-us-code-chapter-126>*
 - d. *36 CFR Part 1191*
 - e. *<http://safety.fhwa.dot.gov/intersection/resources/fhwas09027/resources/Accessible%20Rights%20of%20Way%20-%20A%20Design%20Guide.pdf>*
 - f. *<http://www.access-board.gov/guidelines-and-standards/transportation/facilities/about-the-ada-standards-for-transportation-facilities/ada-standards-for-transportation-facilities-single-file#a4>*
 - g. *FHWA Guide ADA Design Guide*
 - h. *Rocky Mountain ADA Center*
 - i. *Regional Transportation District (RTD)*
 - j. *<http://www.dot.gov/highlights/buyamerica>*
 - k. *[http://www.coloradodot.info/business/eema/documents/2012/2012%20Cost%20Data%20Book.pdf/view 12/3/13](http://www.coloradodot.info/business/eema/documents/2012/2012%20Cost%20Data%20Book.pdf/view%2012/3/13)*
 - l. *<http://www.amtrak.com/ccurl/730/658/FY13---Record---Ridership---ATK---13---122.pdf>*
3. AECOM (consultant to Colorado Bridge Enterprise)
 - a. *Regional Transportation District*
 - b. *AECOM architectural staff*
4. City Staff
 - a. *Telephone interviews with RFTA, Colorado Mountain Express and High Mountain Taxi*
 - b. *Washington Metropolitan Area Transit Authority- Elevator and Escalator Performance Reports- www.wmata.com/.../BRS%20December%202012-January%202013_FINAL.pdf*
 - c. *New York City Transit-Elevator and Escalator Performance Report - www.mta.info/mta/news/books/docs/ElevatorEscalator... · PPT file*



Figure 1 - Modified Ramp Option from Pullman area (with or without elevator)



Figure 2 - Single Elevator Option from Pullman area



Figure 3 - Double Elevator Option from Pullman area



Figure 4 - Modified Ramp Option from 7th and Cooper



Figure 5 - Single Elevator Option from 7th and Cooper



Figure 6 - Double Elevator Option from 7th and Cooper



Figure 7 - Modified Ramp Option from Juicy Lucy's



Figure 8 - Single Elevator Option from Juicy Lucy's



Figure 9 - Double Elevator Option from Juicy Lucy's



Figure 10 - Modified Ramp Option from 7th E. of Colorado



Figure 11 - Elevator Options from 7th E. of Colorado



Figure 12 - Modified Ramp Option with west end bike ramp variation from 7th E. of Colorado



Figure 13 - Modified Ramp Option from Grand Avenue Wing Street area



Figure 14 - Single Elevator Option from Grand Avenue Wing Street area



Figure 15 - Double Elevator Option from Grand Avenue Wing Street area

Comparison Information

Elevators and Lifts

- This installation would fall under the requirements of ASME 17. If an elevator option was included, an elevator would be required. A lift could not be used.
- The project will pay for a elevator or a ramp with a clock tower designed as an elevator shaft. The City would be responsible for paying for the elevator and mechanical equipment.

Capital costs

The following are comparative costs as provided by the project team, Charlier & Associates and AECOM. Project will pay for costs up to the cost of the ramp, stairs, and a clock tower designed for a future elevator.

Ramp only option

- Capital costs range from \$0.6M to \$1.2M – all paid for by project.

Ramp and single elevator option

- Capital costs range from \$1.0M to \$1.4M – City responsibility cost range: \$0.15M to \$0.3M.

Single elevator option

- Capital costs range from \$0.4M to \$0.6M – all paid for by project.

Double elevator option

- Capital costs range from \$0.7M to \$0.95M – City responsibility cost range: \$0 to \$0.15M

Annual operations and maintenance costs

The following are comparative costs as provided by Charlier & Associates and City staff. There is a wide range based on assumptions and sources, hence the range from each source is reported. More detail is provided in the attachments.

Ramp only option

- \$3,000 (City) to \$10,000 (Charlier)/year

Ramp and single elevator option

- \$19,000 (Charlier) to \$47,000 (City)/year

Single elevator option

- \$9,000 (Charlier) to \$44,000 (City)/year

Double elevator option

- \$18,000 (Charlier) to \$79,000 (City)/year

Life-cycle costs (replacement costs)

Ramp only option

- Has 75 year life-span.

Ramp and single elevator option

- Elevator has 20 year life-span. All major maintenance costs and replacement cost of elevator are City costs. City would own elevator after replacement.

Single elevator option

- Elevator has 20 year life-span. All major maintenance costs and replacement cost of elevator are City costs. City would own elevator after replacement.

Double elevator option

- Elevators have 20 year life-span. All major maintenance costs and replacement cost of elevators are City costs. City would own elevators after replacement.

ADA compliance

The City would be responsible to provide ADA compliance for options without a ramp. The City has reported that a bus bridge should be assumed to provide this compliance during service disruption. The Rocky Mountain ADA Center has reported that it is highly unlikely that Glenwood Springs would have liability for shuttles or taxis in the event of elevator breakdown (see Charlier report). All bus bridge costs (costs to bus disabled users around the bridge when ADA access is not available due to an elevator service disruption) are provided by the City considering service being provided by either Ride Glenwood (only available 7 am to 8 pm) or through use of a special MV-1 para-transit vehicle available 24-7. Supplemental information on the bus-bridge is provided in the attachments.

Ramp only option

- Provides compliance (per CDOT ADA)
- ADA IGA not required between CDOT and City
- No bus bridge costs

Ramp and single elevator option

- Provides compliance (per CDOT ADA)
- ADA IGA not required between CDOT and City
- No bus bridge costs

Single elevator option

- Provides compliance except when elevator is out of service
- ADA IGA **required** between CDOT and City
- Bus bridge assumed if elevator out of service for over 24 hours, if not due to negligence
- Bus bridge costs of \$205,000 to \$375,000 the first year of operation
- Bus bridge costs of \$105,000 to \$275,000 yearly after the first year

Double elevator option

- Provides compliance except when elevators are out of service
- ADA IGA **required** between CDOT and City
- Bus bridge assumed if elevator out of service for over 24 hours, if not due to negligence
- Bus bridge costs of \$205,000 to \$375,000 the first year of operation
- Bus bridge costs of \$105,000 to \$275,000 yearly after the first year

Multimodal – bikes & pedestrians & accessibility for all users

Ramp only option

- Many bicyclists and pedestrians will use stairs
- Stairs will have “bike channel”
- Bikes with trailers and strollers who cannot use stairs must use ramp. Adequate width and turning radii are provided on ramp to accommodate bikes with trailers
- Individuals with physical challenges may have difficulty using both the 300’ + ramp and the ~600 pedestrian bridge. No alternative access to the ramp is provided in this option.

Ramp and single elevator option

- Many bicyclists and pedestrians will use stairs
- Stairs will have “bike channel”
- People with strollers can use the ramp or elevator
- Bikes with trailers who cannot use stairs must use ramp as the elevator in this option is too small. Adequate width and turning radii are provided on ramp to accommodate bikes with trailers
- Individuals with physical challenges can gain access by use of the elevator

Single elevator option

- Many bicyclists and pedestrians will use stairs
- Stairs will have “bike channel”
- Bikes with trailers and strollers who cannot use stairs must use the elevator. Depending upon demand there could be a wait
- Individuals with physical challenges can gain access by use of the elevator

Double elevator option

- Many bicyclists and pedestrians will use stairs
- Stairs will have “bike channel”
- Bikes with trailers and strollers who cannot use stairs must use an elevator. Depending upon demand there could be a wait
- Individuals with physical challenges can gain access by use of the elevator

Views

Multiple opinions were provided regarding views, but in summary it depends upon the view point. Key view sheds were identified from locations along 7th Street between Cooper and Grand, 7th Street between Grand and Colorado, from Grand Avenue (7th south), and from a user on the pedestrian bridge facility.

Ramp only option

- See renderings
- From 7th Street Cooper to Grand - Modified ramp blocks about ½ the view of previous ramp options
- From 7th Street Grand to Colorado – Modified ramp partially blocks view, primarily of new Grand Avenue bridge, railroad, and river.
- From Grand Avenue (7th South) – Clock tower visible
- Pedestrian Bridge user – From ramp: Views of 7th Street businesses, Cooper to Colorado as well as views to north. From bridge: views east and west

Ramp and single elevator option

- See renderings
- Same views as ramp only option

Single elevator option

- See renderings
- From 7th Street Cooper to Grand – Provides the largest view shed of all options
- From 7th Street Grand to Colorado – Provides the largest view shed of all options
- From Grand Avenue (7th South) – Clock tower visible
- Pedestrian Bridge user - From elevator area, views of 7th and Grand area east side. From bridge: views east and west

Double elevator option

- See renderings
- From 7th Street Cooper to Grand – Blocks more view than single elevator. Blocks different view than ramp option.
- From 7th Street Grand to Colorado – Provides the largest view shed of all options
- From Grand Avenue (7th South) – Clock tower visible
- Pedestrian Bridge user – From elevator area, views of 7th and Grand area east side. From bridge: views east and west

Economic

- Economic impacts of decisions about access to the new pedestrian bridge include:
 - Direct project costs, including ongoing operations and maintenance;
 - reduced or increased value of important downtown assets;
 - decreases or increases in retail sales volume; and,
 - decreases or increases in the valuation of downtown properties.
- Direct project costs comparison are listed above
- Downtown assets: The choice of access infrastructure provides a 50-year opportunity to leverage the physical assets present in downtown. Important downtown assets that would be directly affected by the choice of bridge access option would include:
 - the south---side Colorado Riverfront area of downtown;
 - the Amtrak station;
 - the pedestrian bridge itself; and,
 - the 7th Street buildings and streetscape.
- Retail sales:
 - Downtown retail sales (hotels + restaurants + stores) can be conceptualized as being the product of the average daily de facto downtown population (residents + workers + visitors) and average per capita expenditures.
 - Increases in retail sales volume could be driven by increases in the average daily de facto population of downtown, which could come from growth in visitorship, from increased downtown employment, and/or from increased patronage of downtown businesses by area residents.
 - At a 7.6% sales tax rate, the amount of annual sales volume required to generate a positive return in sales tax collections on the difference between the lowest and the highest cost would be \$250,000. At an average per capita expenditure of \$100/ day, this would be equivalent to about +/- 7 people in average daily defacto population in downtown. An average per capita expenditure of \$50/ day would require about +/- 14 people per day to produce a \$250K annual difference in total sales tax.
 - This information assumes costs differences as reported by Charlier & Associates. Using different costs would result in different numbers. receipts.

Consistency with Community and Opportunity for Redevelopment

Input related to this factor is summarized below:

- Bicycle, pedestrian and ADA access were identified as critical success factors. This includes a safe, convenient and attractive pedestrian environment and a barrier free place that welcomes people with physical challenges.
 - The lack of a ramp may discourage bicyclists from coming into the downtown area, as they would be forced to dismount and potentially wait for service at the elevator.

Bicycle tourists may choose to bypass the downtown area through Two Rivers Park if the access is poor. This may cause a loss of business to downtown merchants.

- Public spaces was identified as important – places that accommodate events and social gatherings.
- Views of the riverfront, the river, and the north bank of the river from various perspectives were considered important, primarily for visitors along 7th Street and on the pedestrian bridge.
- The ability to extend visitor activities to the west along 7th Street was considered important.

Ramp only option

- Best accommodates bicycle access listed in bullet point 1 above.

Ramp and single elevator option

- Best accommodates bicycle access listed in bullet point 1 above.

Single elevator option

- Best accommodates public spaces, views, and the ability to extend visitor activities listed in bullet points 2, 3, and 4 above.

Double elevator option

- Best accommodates views and ability to extend visitor activities listed in bullet points 3 and 4 above.

Public space

The PLT Task Force recognized that area under the ramp with adequate clearance could be used as public space, although may limit some uses that require more vertical room. Some of the space on the ramp could also be used for some viewing of public events. Figures showing available space by option are included in the reference material.

Ramp only option

- Provides the least amount of useable space west of the Grand Avenue vehicular bridge
- Provides the most amount of useable space east of the Grand Avenue vehicular bridge
 - East of the Grand Avenue vehicular bridge additional useable space is provided under the ramp with clearances of 10' to 16'.
- Space on the ramp could also be used for some viewing of public events.

Ramp and single elevator option

- Same as ramp only option

Single elevator option

- Provides the most amount of useable space west of the Grand Avenue vehicular bridge

Double elevator option

- Provides the most amount of useable space west of the Grand Avenue vehicular bridge
- Provides the least amount of useable space east of the Grand Avenue vehicular bridge

Future options

Ramp only option

- Allows for future installation of a normal sized elevator (approx. cab size of 4' by 6') within clock tower space provided by project
- Does not accommodate an oversized elevator or second elevator in the future

Ramp and single elevator option

- Does not allow for a second elevator in the future

Single elevator option

- Allows for installation of an additional elevator in the future, however clock tower would have to be reconstructed.
- Does not accommodate the ramp option as shown, if desired in the future. A ramp that is located east of the elevator could be constructed in the future.

Double elevator option

- Does not accommodate the ramp option as shown, if desired in the future. A ramp that is located east of the elevator could be constructed in the future.

Parking

Ramp only option

- Loss of 6 parking spaces on north side of 7th Street to accommodate ramp

Ramp and single elevator option

- Loss of 6 parking spaces on north side of 7th Street to accommodate ramp

Single elevator option

- No change to parking

Double elevator option

- No change to parking

Security and Safety

Comparative information was provided by City staff and discussed with the PLT Task Force. Several general safety concerns are summarized under the options. Costs to provide security are dependent upon level of security provided from no security to 24 hours a day, 365 days a year.

Ramp only option

- Concern of fast moving modes such as bikes and skateboards conflicting with slower moving pedestrians on the ramp but noted that Ordinances and restrictions can reduce the negative impact.
- Range of security costs: \$0 to \$500,000 (dependent upon level of security provided)

Ramp and single elevator option

- Safety concerns can be mitigated through designs lending visibility and the option to “turn off” the elevator (available to do with a ramp as in this option)
- The elevator appears to offer an easy target for vandalism and property damage which is a frequent occurrence in downtown at bar closing hours. (Elevator could be closed during closing hours, since ramp is available)
- Making the interior visible through glass construction will help with passenger safety but also increase damage potential.
- Concern that the prevalence of panhandling for money in the pedestrian bridge area will be more frequent with the shielded conditions of an elevator.
- Concern that an elevator will provide a climate controlled napping location during late night hours. (Elevator could be closed during closing hours, since ramp is available)
- Range of security costs: \$0 to \$650,000 (dependent upon level of security provided)

Single elevator option

- Safety concerns can be mitigated through designs lending visibility and the option to “turn off” the elevator
- The elevator appears to offer an easy target for vandalism and property damage which is a frequent occurrence in downtown at bar closing hours.

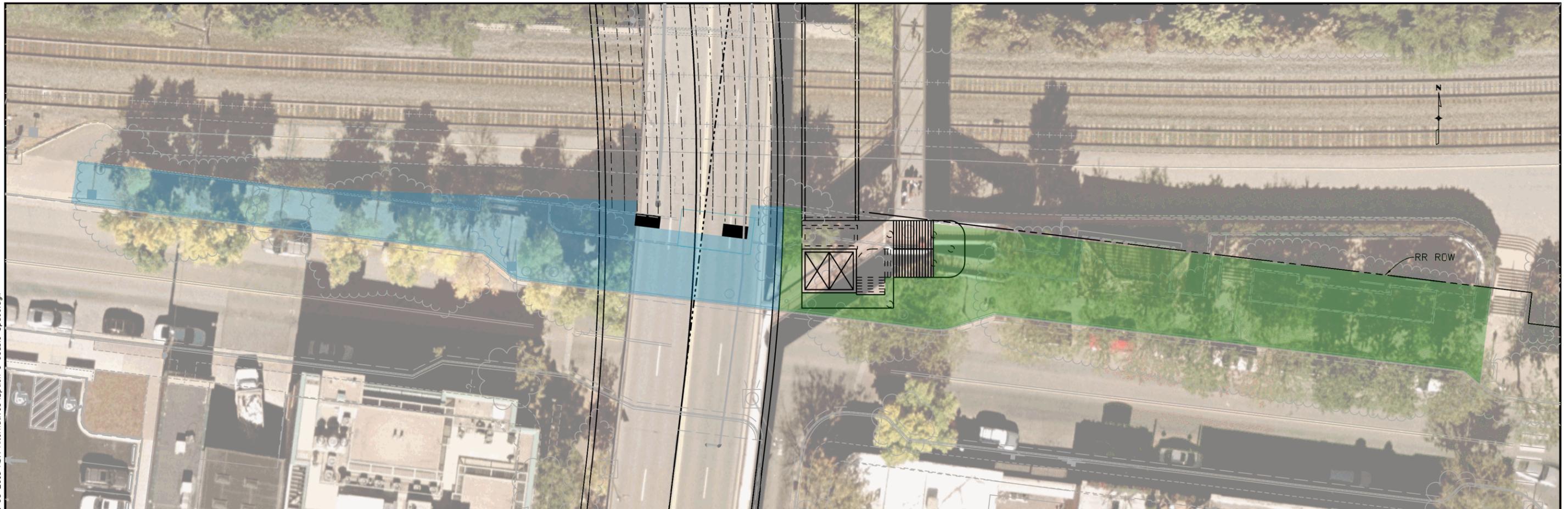
- Making the interior visible through glass construction will help with passenger safety but also increase damage potential.
- Concern that the lack of a ramp will force bicyclists to dismount and instead will encourage some to ride across the "car" bridge in a more dangerous condition.
- Concern that the prevalence of panhandling for money in the pedestrian bridge area will be more frequent with the shielded conditions of an elevator.
- Concern that an elevator will provide a climate controlled napping location during late night hours.
- Range of security costs: \$0 to \$740,000 (dependent upon level of security provided)

Double elevator option

- Safety concerns can be mitigated through designs lending visibility and the option to "turn off" the elevator
- The elevator appears to offer an easy target for vandalism and property damage which is a frequent occurrence in downtown at bar closing hours.
- Making the interior visible through glass construction will help with passenger safety but also increase damage potential.
- Concern that the lack of a ramp will force bicyclists to dismount and instead will encourage some to ride across the "car" bridge in a more dangerous condition.
- Concern that the prevalence of panhandling for money in the pedestrian bridge area will be more frequent with the shielded conditions of an elevator.
- Concern that an elevator will provide a climate controlled napping location during late night hours.
- Range of security costs: \$0 to \$980,000 (dependent upon level of security provided)

Attachments

1. Figures of Public Space Comparisons
2. White Paper: Access Options, South End of Colorado River Pedestrian Bridge, Charlier and Associates
3. Memo – Ramp vs. Stairs, AECOM
4. Bus Bridge Assumptions
5. Operating and Maintenance Costs (City)



USABLE SPACE EAST - 5545 SF



USABLE SPACE WEST - 4329 SF

TOTAL USABLE SPACE - 9874 SF

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Designed By	Checked By	INITIAL	DATE	INITIAL	DATE	INITIAL	DATE

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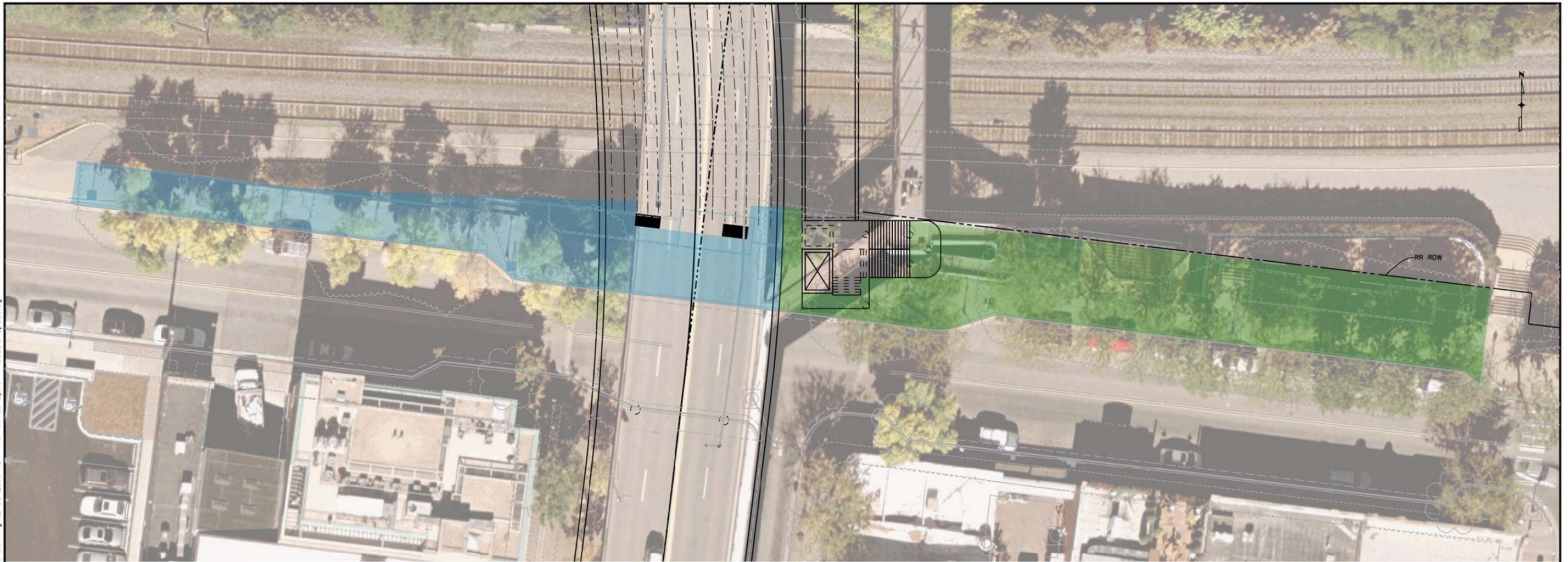
Colorado Department of Transportation

 202 Centennial Street
 Glenwood Springs, CO 81601
 Phone: 970-384-334 FAX: 970-947-5133
Region 3 **RW**

As Constructed
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TWO ELEVATORS USABLE SPACE			
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 USABLE SPACE EAST • 5717 SF
 USABLE SPACE WEST • 4329 SF
 TOTAL USABLE SPACE • 10046 SF

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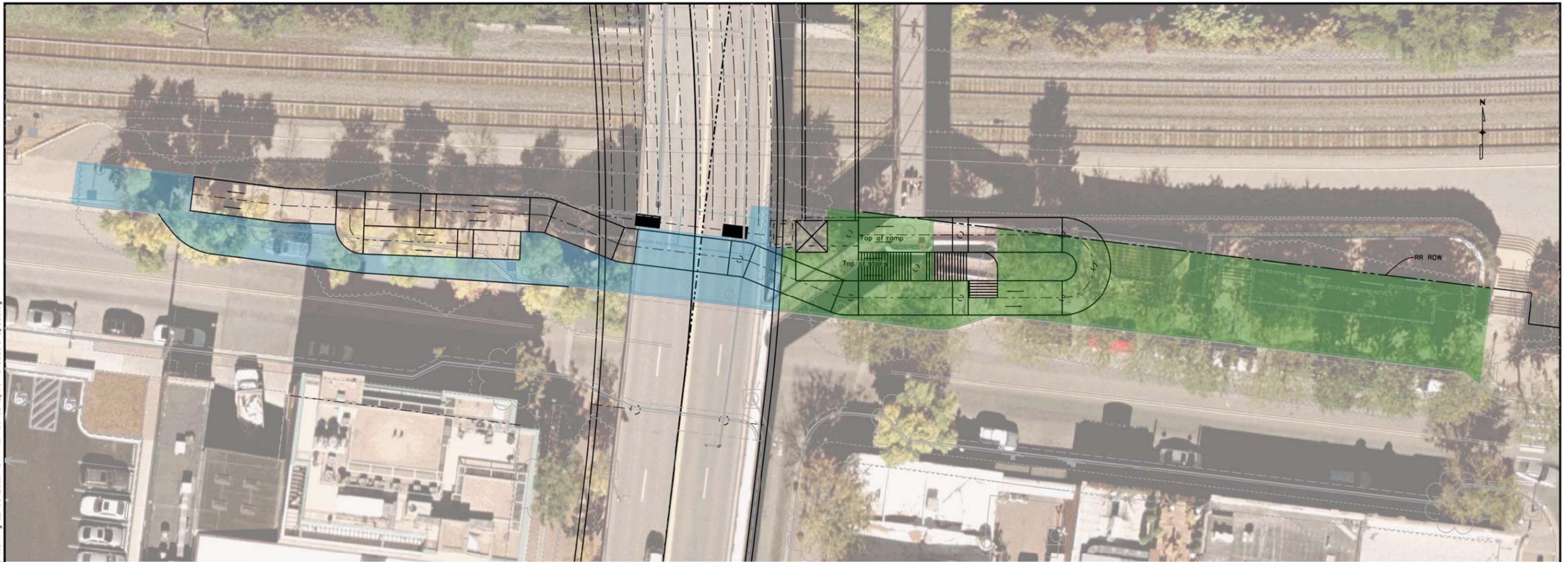
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ONE ELEVATOR USABLE SPACE			
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USABLE SPACE EAST = 6019 SF



USABLE SPACE WEST = 3115 SF

TOTAL USABLE SPACE = 9134 SF

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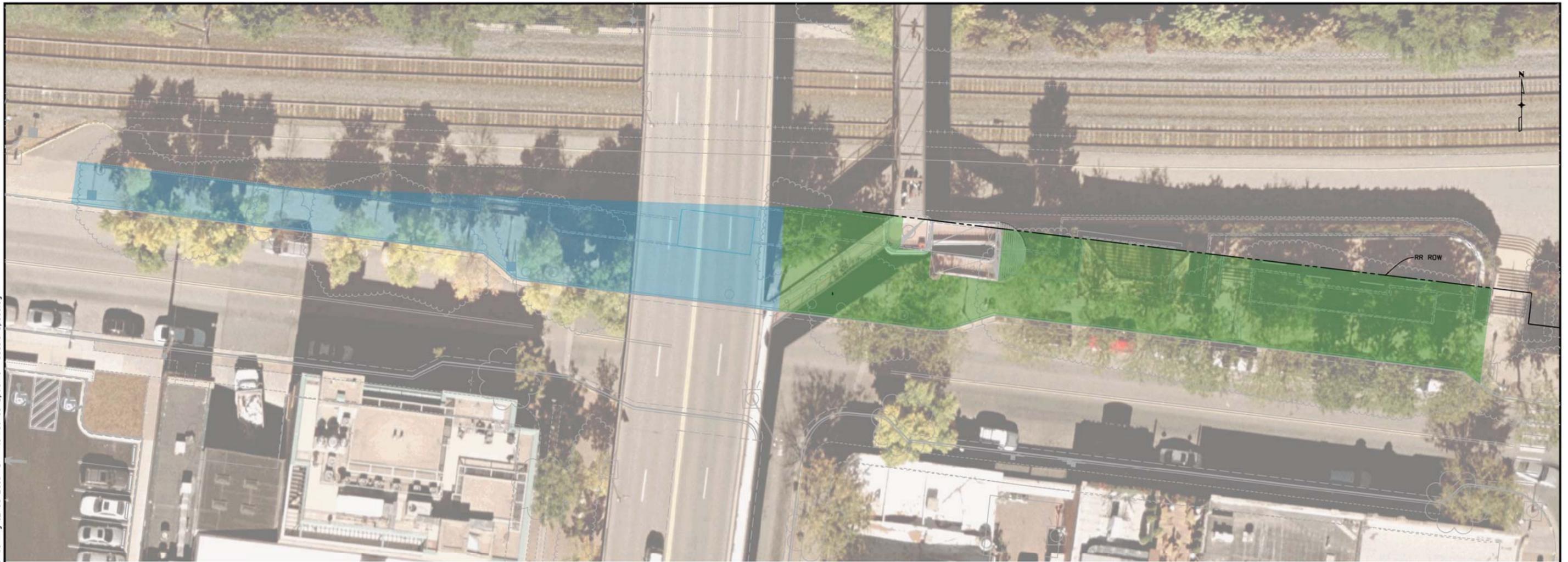
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RAMP & ELEVATOR USABLE SPACE			
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USABLE SPACE EAST = 6154 SF

 USABLE SPACE WEST = 4679 SF
 TOTAL USABLE SPACE = 10833 SF

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Region 3 **RW**

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EXISTING USABLE SPACE			
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ACCESS OPTIONS

South End of Colorado River Pedestrian Bridge

Glenwood Springs, Colorado

(revised)

Prepared for
Glenwood Springs Downtown Development Authority

Prepared by



Charlier Associates, Inc.

Boulder, Colorado
www.charlier.org

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1. INTRODUCTION

The purpose of this white paper is to evaluate and compare access options for the south end of a new pedestrian bridge over the Colorado River in downtown Glenwood Springs. This paper addresses alternative means of connecting between ground-level sidewalks along 7th Street and the southern end of the pedestrian bridge, which will end at a point about 23' above the grade of 7th Street.

As is often true of public works and infrastructure, the feasible options for access to the bridge all entail tradeoffs. This paper provides definitive information about three of the key issues: proposed options that would not be feasible; universal design/ADA; and, life cycle costs. The remaining issues are more qualitative in nature.

Decisions concerning access to the new bridge must be made in the face of uncertainty and risk. Specific risks include the risks of undesirable outcomes and risks of failing to capitalize on opportunities. Risk assessment matrices comparing the options according to risks and opportunities is provided in Section 8, below.

This report has been organized in a “bullet” format to facilitate ease of access to information. Resources relied upon in writing this paper are indicated in *[brackets and italics]* within the text. Key words in the margin are intended to help readers locate specific topics.



2. ACCESS OPTIONS CONSIDERED

- ELEVATORS**
- To be viable, access options should provide 23' of rise between the 7th Street sidewalk and the end of the new bridge, appropriate for use by the general public, including persons with physical disabilities. *[Design standards for elevators are found in the American Society of Mechanical Engineers' Standard – ASME 17.]*
- LIFTS**
- The option of a “lift” has been proposed as a less-expensive alternative to an elevator, but there is no low-cost vertical transport option for this situation. Various types of lifts are used in homes (stair lifts) and in low-rise situations where wheelchair access to building entrances is impeded by stairs. Wheelchair lifts are limited to use for vertical distances of less than 14'. Freight lifts are used within buildings and for deliveries to and from buildings, but these are not approved for general public/passenger use. (The lift used at Glenwood Caverns, which has been suggested as an example, is a “grandfathered” piece of equipment that could not be installed new for this purpose today.) *[Telephone interviews with Colorado Custom Lift, Grand Junction; and Colorado Department of Law Enforcement, Oil and Public Safety Division]*
 - Theoretically there are a wide range of other potential access options, including paternosters, trams, and gondolas. Use of paternosters (single-cable, conveyor systems of rotating cars) is precluded by safety issues and by ASME 17.
- TRAMS AND GONDOLAS**
- There are a variety of tram systems in use around the world. Funiculars are mounted on steep slopes and propelled either by elevator-style cables (two cars on one cable – one goes up, one goes down) or by cog drives. Gondolas (rotating cable systems) are common across the world in resort settings. All of these tram systems are used to cover longer distances and/or greater heights than is needed in Glenwood Springs and all would be much more expensive than a simple elevator(s).
- ESCALATORS**
- Escalators are another possible solution, but are uncommon in outdoor environments and would almost certainly be more expensive to build and maintain than an elevator(s).
 - This white paper will evaluate and compare three options:
 - Stairs, elevator(s) and ramp;
 - Stairs and ramp, no elevator(s); and,
 - Stairs and elevator(s), no ramp.



3. UNIVERSAL DESIGN/ADA

ADA

- The term, “ADA,” is used to refer to requirements resulting from the Americans With Disabilities Act of 1990. [<http://finduslaw.com/americans-disabilities-act-1990-ada-42-us-code-chapter-126>]

UNIVERSAL
DESIGN

- While ADA provides guidance for accessibility, most modern planning and design is done using a “Universal Design” framework to account for the fact that access to public facilities is difficult for a broad range of people, not just those with disabilities. People with children in strollers, bicyclists, persons carrying or pushing loads, seniors and small children all face accessibility challenges. In public settings like downtown Glenwood Springs, minimum ADA criteria must be met but also should be integrated into broader considerations about safety, convenience and comfort for all users.
- For the new pedestrian bridge and associated access facilities, this means that the needs of people with disabilities, groups of pedestrians walking together and bicyclists should all be part of the planning and design framework. All of these user types are well-represented on the current bridge and the new facility should be designed to accommodate these users in a mixed-activity setting.

FEDERAL
REGULATIONS

- Rules and standards for accessibility resulting from the ADA Act have been developed specifically for public facilities that are not within or attached to buildings. These affect sidewalks, bridges, ramps, streets, viewing platforms, campgrounds and other public works facilities.
- Federal design criteria were published in draft form years ago, but the rule was adopted and published in the Federal Register on September 26, 2013 to be effective November 25, 2-13. [*36 CFR Part 1191*].
- The new access regulation was promulgated by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board) and contains design criteria for stairs, sidewalks, ramps, cross walks, and trails, among other facilities. Standards for external elevator accessibility are the same as those for elevators in buildings and are not discussed in this paper.
- Because it is a separate facility not directly attached to the side of a roadway, the new pedestrian bridge and any associated ramps should be designed as a “shared use pathway.”



*SHARED USE
PATHWAYS*

- Standards for “shared use pathways” are being developed separately by the Access Board. A notice of intent to promulgate a rule was published in the Federal Register in 2011 and was supplemented on February 13, 2013. Some of the specific guidance discussed below is based on this Supplemental proposed rule.

RAMPS

- Note: the term, “ramp,” is used two ways in 36 CFR Part 1191. One use refers to curb ramps – cuts and slopes where cross walks connect with sidewalks. The other use, more relevant here, refers to sloped facilities that do not run with the surface grade and provide access to bridges and other elevated facilities.

*ADA DESIGN
GUIDANCE*

- The Federal Highway Administration (FHWA) has also published a document, “Accessible Rights-of-Way: A Design Guide.” The FHWA Design Guide repeats key provisions of 36 CFR 1191 and offers guidance on selected issues. [<http://safety.fhwa.dot.gov/intersection/resources/fhwasa09027/resources/Accessible%20Rights%20of%20Way%20-%20A%20Design%20Guide.pdf>]
- See also [<http://www.access-board.gov/guidelines-and-standards/transportation/facilities/about-the-ada-standards-for-transportation-facilities/ada-standards-for-transportation-facilities-single-file#a4>]

*RAMP DESIGN
CRITERIA*

- Key provisions from 36 CFR 1191 applicable to elevated ramps include:
 - Maximum running slope is 8.33% (1/12).
 - Level areas – “landings” – must be provided between every 30” of rise. Assuming the south end of the pedestrian bridge will be 23’ above grade, 9 or 10 such landings would be required. Each landing must be at least 5’ long.
 - The resulting ramp would have to be about 320’ in total effective length to gain the required 23’ in elevation.
 - Ramps of more than 5% grade must be provided with handrails.
 - Maximum cross slope is 2%.
 - Minimum width for elevated ramps is not specifically stated.
- The FHWA Guide ADA Design Guide states, “...ramp/landing runs over 300 feet long are not uncommon. Although such ramps meet accessibility criteria, many pedestrians with disabilities would not consider them usable at such lengths. Research with a small group of manual wheelchair users revealed that a majority could not complete a continuous ramp comprising three 1:12 slopes, each rising 30 inches to a level landing between segments) in one sustained effort. Other research suggests that many manual wheelchair users and people who use walking aids have difficulty completing even a single run of this length



and slope. Where it is necessary to provide lengthy ramps, it is useful to design more frequent landings and lesser slopes for each successive segment. In urban areas, elevators are increasingly being installed to serve elevated crossings and upper level walkways in much the same way that two- or three-stop hydraulic elevators have become the common route for below grade transit access. Elevators are also being used to provide an accessible route on hilly sites.”

*DIFFICULTY
USING RAMPS*

- Figure 40 in the FHWA Guide further states that *“Even with landings at every 30 inches of rise, continuous ramps are not the most usable choice for differences in elevation of a story or more. Elevator access to subway and elevated rails lines is now commonly provided by elevator and should be considered for highway, railroad, and other crossings and for steeply sloping terrain.”*
- Because it is a separate facility not directly attached to the side of a roadway, the new pedestrian bridge and associated ramps should be designed as a “shared use path.”
- In addition to the minimum ADA provisions of 36 CFR 1191, guidance for shared use pathways is provided in the AASHTO (American Association of State Highway and Transportation Officials) “Guide for the Development of Bicycle Facilities.”

*SHARED USE
PATHWAY
DESIGN
GUIDANCE*

- Key provisions of this guidance relevant to the new pedestrian bridge are as follows:
 - The minimum width of a pathway facility (including both bridges and approach ramps) is 10’. The AASHTO guide also recommends that 2’ wide clear zones be provided on both sides of the 10’ path, but allow for narrower facilities under “constrained conditions.”
 - The recommended width for a pedestrian bridge and any ramp or sidewalks accessing it would be 10’, with a preferred width of 14’.
 - Minimum vertical clearance should be 10’.
 - Protective railings, fences or barriers should be provided on both sides of bridges and approach ramps and should be a minimum of 42’ high, with 48’ preferred.
 - Maximum cross slope is 2%, with 1% preferred.
 - The AASHTO Guide does not specifically address running slope other than to state that a 5% maximum is preferred.
- *[The AASHTO Guide can be ordered here:*
https://bookstore.transportation.org/collection_detail.aspx?ID=39.*]*
- *[A useful website resource can be found here:*
http://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/design_guidance/design_flexibility.cfm*]*



ADA AND
ELEVATOR
FAILURE

- Maintenance and repair of facilities required for accessibility is also important and should be part of planning and design for access to the new pedestrian bridge.
- There have been court cases and regulatory decisions concerning providing alternative means of travel when access to overhead or below-grade transit stations is affected by elevator/escalator breakdowns. This has been interpreted to apply to the pedestrian bridge and to suggest that Glenwood Springs would have to provide taxi services across the river for people affected by breakdown of elevators or ramp closures at the south end of the bridge. However, that is not confirmed by existing rulings or decisions.
- Transit agencies have been required to provide shuttles to other stations for persons with disabilities when equipment failures occur because otherwise those persons would not be able to use the transit service. This violates Federal Transit Administration (FTA) rules related to station access. These cases and decisions require transit agencies to provide:
 - notification (web, newspapers, etc.) when access issues are occurring; and,
 - connecting shuttles when repairs take more than 24 hours.
- ADA experts [*Rocky Mountain ADA Center*] advise that transit stations are a special case and it is highly unlikely that Glenwood Springs would have liability for shuttles or taxis in the event of elevator breakdown or ramp closure, so long as there is a routine maintenance and repair program and the City responds to breakdowns in a timely manner. If access facilities are unavailable for an extended period of time (weeks) due to failure to repair elevators or ramps, there would be potential for complaint from ADA advocates. However, there are no examples of ADA court cases or regulatory actions occurring in this type of situation.
- Elevator contractors consulted for this paper indicated that properly-written maintenance contracts and the general availability of parts would virtually eliminate the potential for extended duration of equipment failure.

GENERAL ADA
PREFERENCE

- ADA experts [*Rocky Mountain ADA Center*] also advise that ADA advocates would prefer elevators to ramps, especially ramps as long as would be required to access the pedestrian bridge. They also advise that complaints from ADA advocates would be more likely in response to the decision not to provide elevators than in response to short term breakdowns in access facilities or failure to provide shuttles or taxis.



4. LIFE CYCLE COSTS

COST ESTIMATION BASIS

- Life cycle cost analysis provides a means of comparing the potential costs of each of the three bridge access options. The primary components of an access facility's life cycle cost would be the initial capital costs, the costs of recapitalization, and the ongoing operations and maintenance costs (O & M).
- These costs are estimated below and compared in a summary table at the end of this section. The costs are accumulated in a stream of initial and future costs and compared on the basis of average annual costs in nominal dollars. While it might be interesting to calculate the present value of this future stream of costs, that would require making assumptions about future interest and inflation rates. Instead the costs are compared in simple, nominal, annualized amounts.
- Initial capital costs would include design, right of way, procurement of equipment, construction and construction management.
- Recapitalization costs would include the periodic future costs of replacement or reconstruction due to aging of equipment and wear from use and climate.
- Ongoing O & M costs would include routine maintenance, repair, lighting, and any special law enforcement costs. For elevators, routine maintenance would include cleaning, removing graffiti, electrical repair/mechanical repair, parts replacement, and so forth.

TYPES OF ELEVATORS

- Two types of drive mechanisms are used in elevators: traction (cable) and hydraulic. Generally, above three floors, elevators must rely on traction drive systems. For a rise of 23', either traction or hydraulic machinery could be used.
- The Regional Transportation District (RTD) in the Front Range (the Denver area transit agency) has installed 75 elevators at stations along the FasTracks system in recent years. For the most part, these are stand-alone facilities associated with elevated pedestrian crossings of freeways. The elevators provide access to the overhead walkways and to different floors of associated park 'n ride parking garages.



*ELEVATOR
DESIGN AND
CONSTRUCTION*

- The design of RTD’s elevators is similar to what Glenwood Springs would need to build if it decided to provide one or more elevators for access to the new pedestrian bridge. They are enclosed in stand-alone buildings or towers. Generally they display a high level of finish, with brick or stone exteriors and extensive use of glass. They also tend to be taller than what would be required in Glenwood Springs.
- Elevator systems are usually built using an elevator contractor to provide and install the elevators themselves along with a general contractor to build the elevator towers and associated infrastructure. There are a number of elevator contractors in Colorado, with at least a couple in western Colorado. There is nothing about the towers that requires special skills on the part of the general contractor, but RTD believes successful elevator installations benefit from professional design by architects and engineers with elevator experience.

*ELEVATOR
COST BASIS*

- RTD has been spending up to \$200K per elevator and about \$500K for each stand-alone tower. Because the vertical rise of an elevator(s) in Glenwood Springs would be less than the 3- and 4-story elevators needed for RTD’s sites, a reasonable estimate for the initial capital costs of an elevator tower with one elevator would be up to about \$475K (\$125 for the elevator and \$350 for the building).
- A 2-elevator installation would cost up to about \$750K (\$125K per elevator and \$500K for the building). This includes the cost of electrical service. *[Telephone interviews on November 26 with RTD staff]*
- O & M costs for RTD’s elevators run about \$700 per elevator per month. The RTD maintenance contracts cover routine cleaning as well as minor repair. Major repair is covered by warranties for a period of time, but then becomes another cost line item. Using the high end of costs experienced by RTD, a reasonable estimate for elevator O & M would be about \$9K per year per elevator.

BUY AMERICA

- Projects funded with federal highway funds must comply with the “Buy America Act” (BA) as implemented through FHWA (Federal Highway Administration) rules, which are similar but not identical to FTA (Federal Transit Administration) rules. BA requires that manufactured products containing steel or iron be built entirely in the US with materials sourced in the US. [\[http://www.dot.gov/highlights/buyamerica\]](http://www.dot.gov/highlights/buyamerica)



RAMP COST
BASIS

- RTD (which generally must respond to FTA rules) reports that BA provisions have limited elevator purchases to those manufactured by the TyssennKrup elevator company, although RTD was able to seek and consider bids from different elevator contractors. TyssennKrup elevator equipment is currently 100% American-made. Other elevator manufacturing companies do not currently meet BA provisions.
- For elevators, recapitalization costs would include substantial rehabilitation and installation of critical parts every 20 years or so. A rough estimate for this kind of major work would be about \$60,000 per elevator, every 20 years. A sinking fund for recapitalization would require deposits of about \$3K annually, per elevator (\$6K annually for two elevators).
- A ramp providing access to the pedestrian bridge would be about 320' in running length, which at 10' wide would result in about 3,200 square feet of structure. Recent initial capital costs for similar structures in Colorado have run about \$180 per square foot. This provides an estimate for the ramp capital cost at about \$576K. [*Colorado data* <http://www.coloradodot.info/business/eema/documents/2012/2012%20Cost%20Data%20Book.pdf/view> 12/3/13.]
- O & M costs for the ramp would be similar to the costs of maintaining bicycle and pedestrian bridges, which run about \$3 to \$5 per square foot annually, depending on surface type, size of structure and other variables. Using the low end of that range, annual O & M costs for a ramp would run about \$10,000 per year.
- A well-designed, well-built ramp would be expected to last about 40 years with periodic painting and rehabilitation of the deck. Without knowing details of deck material and other factors, a rough estimate of \$8 - \$10 per square foot every 5 years would represent a reasonable recapitalization plan costing about \$120K over 20 years. A sinking fund for recapitalization would require deposits of about \$6K annually.
- The table below presents estimated annualized costs. Annualization of capital costs assume a 40-year facility life, with recapitalization as described in this section.
- A complete estimate of initial capital costs should include design and construction management, which should run about 15% of capital costs. That amount has been included in the initial capital costs below.



LAND COSTS

- To provide a full accounting, land costs also should be included. Properties on the south side of 7th Street in the affected block show an average land value, based on County Assessor’s data, of about \$20 per square foot (without improvements). However, recent land sales in the vicinity would peg land values closer to \$100/sf. An elevator building would occupy about 200 sf with one elevator and 300 sf with two, and a ramp would occupy about 3,200 sf.
- Annualized costs in the table below are based on a 40-year asset life, with recapitalization costs and O & M costs as described above. It is important to note that some portion of these costs will be borne by CDOT and some portion by the City. The table shows total costs and does not assign them to the individual entities.
- Because the land that would be used for all four options is already publicly-owned and would not actually be bought or sold, it is not included in the cost summary, but is presented below separately as an opportunity cost.

COST SUMMARY*

COST CATEGORY	Ramp	1 Elevator	2 Elevators	1 Elevator + Ramp
Initial Capital Costs	\$576,000	\$475,000	\$750,000	\$1,051,000
Annual Recapitalization	\$6,000	\$3,000	\$6,000	\$9,000
Annual O & M	\$10,000	\$9,000	\$18,000	\$19,000
Total Annualized Cost/Year	\$32,560	\$25,656	\$45,563	\$58,216

OPPORTUNITY COSTS – LAND*

COST CATEGORY	Ramp	1 Elevator	2 Elevators	1 Elevator + Ramp
Land Cost	\$320,000	\$20,000	\$30,000	\$340,000

* See section 8 for a more detailed assessment of opportunity costs.



5. DESIGN CONTEXT AND CHARACTER

ESSENTIAL DOWNTOWN QUALITIES

- Cities thrive when their downtowns thrive. This is especially true of cities like Glenwood Springs that depend in part on visitorship and tourism. Strong downtowns, resulting from sound design and management decision-making, can give communities a “beating heart” that makes them attractive destinations – for visitors, for regional travelers and for locals.
- The essential qualities that enable downtowns to serve as character-based destinations are:
 - walkability – a safe, convenient and attractive pedestrian environment;
 - accessibility – a barrier-free place that welcomes people with physical challenges;
 - human scale – comfortable buildings and infrastructure that do not overwhelm;
 - authenticity – “real places” that reflect a genuine history and a unique culture;
 - mixed use – a variety of reasons to be downtown and lots to do while there; and,
 - public spaces – places that accommodate events and social gatherings.

PLACE- MAKING

- The riverfront area of downtown Glenwood Springs along 7th Street represents a crucial opportunity to implement “place-making” improvements encompassing these qualities. Success would require:
 - extending the look and feel of the existing downtown to the riverfront – not in a duplicative manner, but creatively;
 - mitigating to the maximum extent possible the mass and scale of architecture and infrastructure along the river, including especially the highway and pedestrian bridges;
 - creating a pedestrian plaza or promenade along the river to supply much-needed public gathering areas and space for festivals and events in downtown;
 - providing a safe, comfortable and scenic place for locals and visitors to stand or sit and look at the river and its canyon, the trains and the freeway;
 - opening up views to the riverfront, the river and the north bank;
 - allowing the rail station the visual exposure and scenic frame it deserves; and,
 - taking measures to extend a retail storefront street wall to the west of the Grand Avenue Bridge along the south side of 7th Street.



*BARRIERS TO
PEDESTRIANS*

- The two parts of downtown – north and south – will have interlocking fates and will need the retail and entertainment synergies that could result from improving multimodal connections between the uses on opposite sides of the river.
- In most settings, a 500' bridge – no matter how attractive – would represent a barrier to walking for many seniors, people with children and others who must be aware of physical limitations. People travel in groups. If one member of the group can't get somewhere without being driven, or doubts they can based on what they see, or thinks it will require too much effort, then often the whole group will drive.
- Downtown Glenwood Springs may have too many cars but it also has too few pedestrians. A clear sign of success will be the day we notice the pedestrian bridge is full of people.

6. VISITOR EXPERIENCE

*TRAVELER
PREFERENCE
FOR
PEDESTRIAN
AMENITIES*

- Throughout North America and worldwide, today's travelers prefer and will select destinations that offer high levels of "pedestrian amenity." Most resort towns (and places that would like to be resort towns) market their "walkability." Not all of them achieve it.
- Conventional wisdom has been that people won't walk very far. However, in the right environments they do. World Showcase Lagoon at EPCOT in Orlando is over a mile in circumference but people who wouldn't walk 100 yards at home will go around and around it on vacation. While downtown Glenwood Springs does not need to be a theme park – it is after all an authentic place – it can benefit from people being able to walk short, medium and long distances on safe facilities in attractive environments.

*TRAVELER
PREFERENCE
FOR
AUTHENTIC
PLACES*

- People have grown accustomed to the comfort and convenience of the contrived "walkable villages" found at destination resorts while at the same time they have become bored with them. Glenwood Springs offers an opportunity for visitors to experience a high level of amenity in a genuine place. Where else can a visitor walk out onto a bridge over a major continental river on their way to a dip in the hot pool? Or if they're staying on the north side, on their way to dinner on the south?



*AMTRAK
STATION*

- Passenger rail ridership is booming and is growing on Amtrak routes. Today, Glenwood’s Amtrak station is a busy place twice a day when the California Zephyr stops, once in each direction. The long distance rail travel market will continue to grow and Glenwood Springs could benefit from that. What people see as they step off the trains will not only shape their first impressions, but will appear in photos posted across the social media landscape.
[\[http://www.amtrak.com/ccurl/730/658/FY13-Record-Ridership-ATK-13-122.pdf\]](http://www.amtrak.com/ccurl/730/658/FY13-Record-Ridership-ATK-13-122.pdf)

*BUSINESS
TRAVELERS*

- Visitors to Glenwood Springs include more than vacationers. Professionals and business people from across Colorado have occasion to meet in Glenwood or pass through. Business travelers who can choose where they stay will give preference to locations that offer in-room functionality (modern hotels), coupled with an out-of-room, walkable, amenity-rich environment. Glenwood is uniquely situated to offer that combination. The synergies and uniqueness of the north and south sides of the river, if well-connected, could create an appealing environment for choice business travelers – a valuable market segment.

*WATERFRONT
APPEAL*

- The Glenwood Springs riverfronts – Roaring Fork and Colorado Rivers – represent assets of enormous value and international significance. The mechanical rivers in Downtown Oklahoma City and along San Antonio’s River Walk show the power that waterfronts have to attract people at leisure. How much more appealing to be able to stand in Glenwood Springs looking at a real, wild river in a spectacular setting?
- The optimum outcome would be that the new pedestrian bridge becomes a place in its own right, not just a facility, while also strengthening the viability of downtown Glenwood as a destination by stitching together the north and south sides of the river.

7. ECONOMIC IMPACTS

- Economic impacts of decisions about access to the new pedestrian bridge will include:
 - direct project costs, including ongoing operations and maintenance;
 - reduced or increased value of important downtown assets;
 - decreases or increases in retail sales volume; and,
 - decreases or increases in the valuation of downtown properties.



- Direct project costs were estimated in the Life Cycle Costs section, above. Assuming initial capital costs would be borne by CDOT, the range of recurring annual costs for the City would be between \$10K and \$30K (annualized recapitalization plus annual O & M).
- DOWNTOWN ASSETS*
- The choice of access infrastructure provides a 50-year opportunity to leverage the physical assets present in downtown. Important downtown assets that would be directly affected by the choice of bridge access option would include:
 - the south-side Colorado Riverfront area of downtown;
 - the Amtrak station;
 - the pedestrian bridge itself; and,
 - the 7th Street buildings and streetscape.
- DE FACTO POPULATION AND RETAIL SALES*
- Downtown retail sales (hotels + restaurants + stores) can be conceptualized as being the product of the average daily de facto downtown population (residents + workers + visitors) and average per capita expenditures.
 - Increases in retail sales volume could be driven by increases in the average daily de facto population of downtown, which could come from growth in visitorship, from increased downtown employment, and/or from increased patronage of downtown businesses by area residents. I
- FESTIVALS, EVENTS AND DE FACTO POPULATION*
- Increased per capita expenditures could also drive increases in retail sales, through longer duration of stay and reduced leakage of resident expenditures. A key factor in this respect would be the opportunity to bring more festivals and other events to downtown, which in turn could be enabled by providing more or less outdoor public plaza space.
 - Because of the importance of the pedestrian bridge to the City and to the downtown, the project costs associated with the bridge and its access infrastructure should be regarded as investments.
 - The net difference between the three investment options in terms of estimated annual costs to the City would be in the range of a +/- \$20K difference between the least expensive (1 elevator) and most expensive (1 elevator + ramp) options. At a 7.6% sales tax rate, the amount of annual retail sales volume required to generate a positive return in sales tax collections on the difference between lowest and highest cost would be about +/- \$250K. At an average per capita expenditure of \$100/day, this would be equivalent to about +/- 7 people in average daily de facto population in downtown. An average per capita expenditure of \$50/day would require about +/- 14 people per day to produce a \$250K annual difference in total sales tax receipts.



*LEVERAGING
THE PROJECT
INVESTMENT*

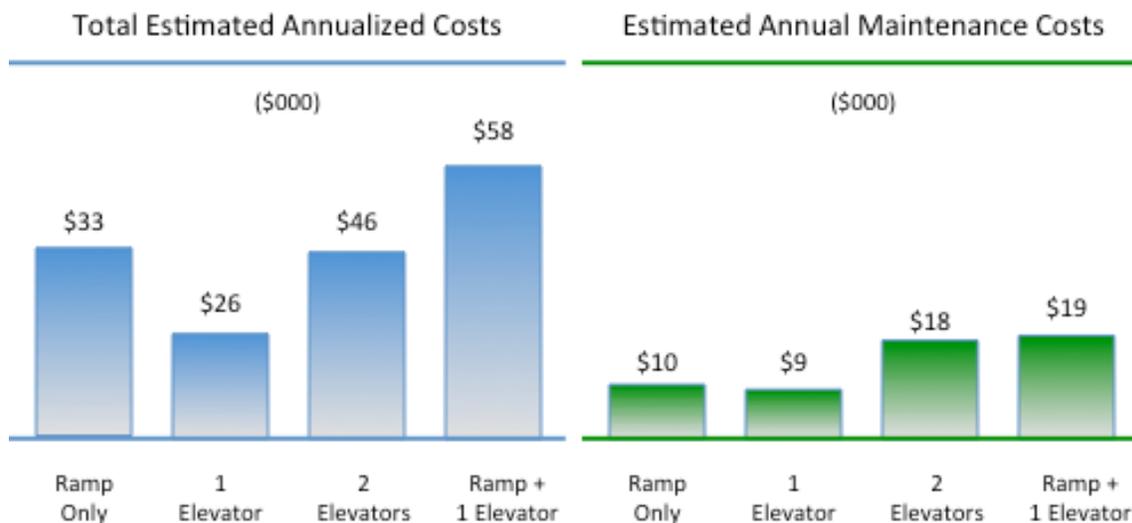
- Looking just at gross retail sales, a +/- \$20K difference in annual costs to the City would be equivalent to about +/- 0.5 persons per day in downtown at an average per capita expenditure of \$100 and +/- 1 person per day at an average per capita expenditure of \$100.
- The bottom line is that relatively small increases or decreases in downtown de facto population would generate differences in retail sales and sales tax revenues easily more than sufficient to cover the differences between options in terms of annual costs to the City.
- Successful, strategic investment in downtown Glenwood Springs also should drive property valuations upward, especially investment in critical infrastructure that makes the downtown function more efficiently or more effectively. Theoretically, properties on both sides of the river could be affected. The corollary would be that poor or inadequate investment in downtown could erase this opportunity.

8. SUMMARY

- Feasible options for vertical connections between the end of the new pedestrian bridge and the 7th Street sidewalk include:
 - Stairs, elevator(s) and ramp;
 - Stairs and ramp, no elevator(s); and,
 - Stairs and elevator(s), no ramp.
- Modern planning and design for accessibility should be grounded in minimum ADA provisions but also should incorporate Universal Design elements benefiting a range of users, including bicyclists, seniors, families with children, and others with physical challenges.
- From an accessibility perspective, elevators are preferable to ramps in this case because of the long, steep grade that would be required for an ADA-compliant ramp to achieve a 23' rise. Elevators provide much better access for people with physical disabilities than ramps.
- From a project cost perspective, the most expensive option considered here (ramp + 1 elevator) would incur estimated life cycle costs about twice the least expensive (1 elevator).



- Similarly, in terms of estimated annual maintenance costs, the most expensive option considered here (ramp + 1 elevator) would cost about twice the least expensive (1 elevator).



- While all of the options represent significant life cycle costs, the accessibility options should be evaluated as investments. In this regard, the City should seek to minimize risks and fulfill opportunities.
- Infrastructure investment in downtown Glenwood Springs should reflect and build upon the unique design context and character of the historic downtown and its natural setting.
- One key factor influencing the City's risks is the physical scale and mass that a long, linear inclined ramp entirely on the east side of the bridge would have and the effect of that on the visual and connection between downtown Glenwood Springs and the Colorado River. The physical presence of such a ramp would also further exacerbate the impacts of the Grand Avenue Bridge on the human scale of the 7th Street setting.
- Both a ramp and an elevator(s) would be somewhat inauthentic (modern, urban) in this setting. However it would be easier to design an elevator building that fits with existing downtown design themes than it would a long, elevated ramp.



- The risks of failing to take advantage of opportunities fall into two general categories: failure to leverage the existing physical assets of downtown Glenwood Springs and failure to use this project to generate economic growth.
- A critically-important difference between the access options would be the potential loss of valuable public plaza space along the riverfront on the north side of 7th Street, between the Amtrak Station and the Grand Avenue Bridge. This could be avoided by not building a ramp, or mitigated by building a ramp that tucks under the bridges.
- The pedestrian bridge and its connection to 7th Street give rise to the opportunity to develop a pedestrian plaza or promenade along the north side of 7th Street. Downtown Glenwood Springs today has no significant public space suitable for festivals and special events. It also has almost no park space where the general public can comfortably and safely congregate and linger at leisure. Providing a significant public space along 7th Street, which would be supported by some design options and precluded by others, offers the potential of increasing the de facto population of downtown and the retail sales and property values that result from that.
- The analysis suggests is that differences between options in terms of life cycle costs, while significant, are not as large as might have been expected and may not be the most important consideration.
- Accessibility represents a key issue for downtown, not just because of the need to comply with ADA regulations, but because accessibility generates downtown activity and pedestrian presence. One of the advantages downtowns have over suburban destinations is walkability and accessibility for all.
- Finally, the potential to make a strategic investment that opens up space for a pedestrian promenade and plaza on 7th Street and improves visual connections between the downtown and the river may be a once-in-a-lifetime opportunity that dwarfs the other, more technical considerations. This may, in fact, be the most important opportunity associated with the design of access infrastructure.



MEMO – Elevator vs. Ramp (from AECOM 12/9/13)

Introduction

The Colorado Department of Transportation (CDOT), in conjunction with the City of Glenwood Springs, is examining vertical circulation options for the southern terminus of a new, shared-use bicycle and pedestrian bridge. The southern terminus lands at approximately 7th Street and Grand Avenue, and will replace an existing pedestrian bridge providing connection to the town's main restaurant and retail district, as well as a historic, still-active passenger rail depot. The pedestrian bridge will provide grade-separated access across Interstate 70, the Colorado River, and freight/passenger rail tracks.

Vertical circulation options currently under consideration include a ramp and one or two elevators, or a combination thereof; all options would also include stairs. Primary considerations in choosing between the ramp and elevator options include up-front equipment and installation costs, long-term maintenance costs, footprint/available land, public safety and security, ease of use, and aesthetics. This white paper will discuss the primary considerations within each of these categories.

Technical Parameters and Assumptions

The following technical parameters are assumed for the purposes of this evaluation.

Elevator

- Cab: front and rear doors, 5' clear access on 3 sides
- Power: traction
- Height/Stops: 23.5' vertical rise, one stop

The elevator cab(s) should be selected with standard bicycle sizes and anticipated users in mind: standard upright bicycle 70", standard recumbent 83", tandem 96". Pull-behinds such as child trailers (47") or trailer bikes (45") add additional length. In addition, dual doors (front and rear) facilitate bicycle usage by allowing cyclists to roll in and through the cab without having to back up. Although not required by code, it should also be evaluated whether the cab should be sized to accommodate a gurney for emergency use; if this functionality is desired, side-opening doors are required, as is a front-to-back width of nine feet.

A clear zone of 5' is required on a minimum of 3 sides of the elevator core, for maintenance access. It is strongly recommended that the elevator cab and hoist way be transparent or at a minimum translucent on all four sides, excluding doors, to allow for natural surveillance and enhance safety and security.

Both hydraulic and traction systems have an approximate temperature rating of 30-100 degrees Fahrenheit, and will work adequately in the Glenwood Springs environment; manufacturer recommendation indicates that traction power may, however, work better in this cold climate. A hydraulic system will require a tank heater to keep the system oil warm, and will perform somewhat more sluggishly than a traction system when temperatures drop below freezing. A traction system will require a heated hoist way. A heated/air-conditioned cab may be considered with either type of power; while not required, heat or cooling may be desired based on the specific aspect of the elevator in

MEMO – Elevator vs. Ramp (from AECOM 12/9/13)

relation to sun angles; beyond standard user comfort, another reason to consider a heated cab would be to prevent extreme temperature exposure in the case of an extended elevator malfunction in which a user is stranded in the cab. A heated cab, however, may make the cab more attractive as a cold-climate refuge during cold months, an issue discussed in the Safety and Security section of this White Paper.

Both hydraulic and traction systems have similar life of approximately 30 years. Traction power, due to the larger number of parts and greater complexity of the system are more expensive to install and maintain.

The elevator will also require a sump pit (with access for clean-out), electric and communications (both verbal and video).

Ramp

Height: 23.5' vertical rise

Grade: 5% max without landings, 8.3% max with landings (5' min) at every 30" of rise

Length: approx. 333' at 8.3% (283' + 50' (10-5' landings))

Ramps may be configured in a variety of ways, depending upon available space and adjacent origin/destinations; straight ramp, switchback ramp, or a circular 'helix' ramp are some options. If a ramp doubles back on itself to create a 'double-decker' situation or passes over a pedestrian way such as a sidewalk or trail, the minimum clear distance as defined by AASHTO is 10'; 12' clear is preferred.

Ramp width should comply with local regulations for shared-use paths, and should assume a 24" shy distance from vertical structure (i.e., railing) in addition to the minimum functional width.

ADA regulations require a handrail or fence when ramp height is 30" or more above adjacent grade. If the under-ramp area is unenclosed, as opposed to an enclosed ramp build on MSE wall and backfill, ADA regulations also require some type of circulation-limiting device or design at grade until the structure reaches a clear height of 7'. This requirement is meant to assist vision-impaired individuals in navigating or avoiding an otherwise hazardous overhead environment. Enclosing all or part of the under-ramp area with a fence or railing is one strategy to meet this requirement. Benches or furnishings which block circulation into the under-ramp area, or a low curb which can be detected by an individual using a cane, may also be used.

Costs

The following technical parameters are assumed for the purposes of this evaluation.

Elevator

Equipment and Installation:	\$150,000 - \$180,000/elevator (hydraulic) \$185,000 - \$210,000/elevator (traction)
• Option:	heated/air conditioned cab, add \$20,000
Mechanical Maintenance:	\$200-250/month (hydraulic)

MEMO – Elevator vs. Ramp (from AECOM 12/9/13)

- Option: \$350-\$400/month (traction)
24-hour emergency service, add 25%

Equipment and installation costs do not include design or construction of the elevator hoist way/shaft.

Estimated equipment and installation costs assume a Buy America requirement. At the present time, ThyssenKrupp, Schindler and Koenig meet this regulation. It is not uncommon, however, for companies to make changes to their sourcing and manufacturing, and Buy America compliance should be verified as part of any project.

It should be noted when pricing installations in Glenwood Springs, that labor and expenses for projects outside the Denver Metro area, 'in the mountains' as characterized by some vendors, tend to be higher than those within the metropolitan area. The double-door cab entails an upcost of approximately \$10,000, due the additional door system, more complex electronics and increased installation time. All of these additional costs have been included in the general prices listed in this section.

Maintenance costs include standard mechanic maintenance of the elevator, typically done every-other month and including oiling and replacing any worn parts, as well as yearly inspection. Standard maintenance requires shut-down of approximately an hour. In addition, traction power systems require a full-load test every five years; this test typically requires shut-down of a half-day or more. Standard maintenance does not include rust and water damage. Other non-functional maintenance such as window cleaning, cab cleaning, and trash removal are also not included in the elevator maintenance contract and would typically be handled by the bridge owner or other party/department responsible for maintenance of the public realm.

It is possible for the elevator hoist way/shaft to be designed to accept equipment from a variety of manufacturers, if a vendor has not been selected at the time of design. Maintenance, however, must be completed by company-certified technicians, i.e., Company X technician cannot service a Company Y elevator. Each manufacturer typically requires that its equipment be maintained only by company-certified technicians. Maintenance will typically be contracted to a third-party.

Ramp

The most significant ongoing maintenance costs for ramps, particularly in the Glenwood Springs climate, are likely to be winter snow and ice clearing. In addition, ramps will require regular structural inspection as well as standard maintenance of lighting and pavement surfacing.

User and Design Considerations

Ease of Use

- *Elevator*

Elevators are the more convenient options for individuals with strollers, wheelchairs or any other mobility impairment. Due to their direct point-to-point nature, elevators (and stairs) are also the most

MEMO – Elevator vs. Ramp (from AECOM 12/9/13)

convenient and quickest option for unimpaired users who do not want to travel the extra distance required by a ramp.

Elevators do, however, have the risk of mechanical failure. In this case, or even in the case of routine maintenance, the pedestrian bridge would be without ADA-compliant access. In some cases, two elevators may be installed in an effort to mitigate this issue. There is also the risk of a person becoming trapped without means to evacuate the bridge, if the elevator is broken and access to the other side of the bridge and the north landing ramp are blocked.

Elevators are the less convenient option for cyclists, who must dismount to use them. For this reason the cycling community typically exhibits a strong preference for ramps, even if the route is less direct or involves out-of-direction movement. Some design features may help mitigate but not entirely eliminate this inconvenience: two-sided elevators (as specified in the assumptions of this document) allow a cyclist to enter the elevator, roll straight through, and exit through the other door, eliminating the need to back up. This feature is especially valuable for larger or more unwieldy cycles, such as those with child trailers. Elevators are typically accompanied by stairs, and bike ramps (also called wheeling ramps or push ramps) on the stairs can allow cyclists to roll their bike up the stairs, instead of picking up the bike and carrying it. This type of ramp may be a simple inclined plane, or a grooved channel (either molded into the plane or retrofit as a standing channel); a cyclist would place front and rear wheels on the ramp/in the channel while he or she walks alongside the bike on the stairs. Such ramps are extremely popular in Europe and throughout Asia; various examples also exist in the US but it should be noted that local and federal codes and standards do make it more challenging to create an efficient design in the US. In particular, it is important that the bike ramp be far enough from an adjacent wall or railing for clear passage by a bike with panniers (side saddlebags). This desired offset can often result in the bike ramp or channel being judged a tripping hazard. In addition and particularly for heavier bicycles, the lower the grade the easier it is to push the cycle up the ramp; the ideal grade to push a bike, however, may result in a less-than-ideal riser tread/height ratio for the stairs.

- *Ramp*

Ramps are the most convenient option for cyclists, allowing them to transition from bridge- to street-level without dismounting as long as any switchbacks or curves have sufficient radius to navigate with a bicycle. The lengthy distance needed to descend to grade, however, makes ramps less convenient for users with strollers, wheelchairs, or other mobility impairments. Like elevators, ramps are typically accompanied by stairs so that many users may choose the faster, more direct route they offer.

Depending on configuration, ramps may require out-of-direction movement. For example, a straight ramp can take advantage of a narrow sliver of property for a landing, but in the case of the 23.5' vertical difference of the Grand Avenue bridge, the landing point will be up to 333 feet from the terminus of the bridge. Depending upon a user's destination, this distance could require a significant doubling back to get where he or she wants to go. Switchback or helix ramps, however, do not have this issue.

Ramps offer the advantage of continuous access, without risk of mechanical failure.

MEMO – Elevator vs. Ramp (from AECOM 12/9/13)

Safety and Security

- *Elevator*

Elevators have additional safety and security concerns, primarily related to opportunities for concealment, not present with ramps. The enclosed nature of the elevator cab offers an enclosed, sheltered space that may be occupied without malicious intent, many times simply for shelter from the elements; such use may still be considered threatening or a discouragement to other users.

In a worst-case scenario, the cab offers opportunity for concealment, entrapment and resulting crimes. As a first line of deterrence, the use of transparent elevators and housing is strongly encouraged. Next is surveillance cameras and emergency telephones, but while these elements may discourage they cannot stop crimes as they occur. In-person patrols are another security measure often used in tandem with video surveillance, and it is up to the community to determine the appropriate level and type of surveillance for their particular situation.

Elevators also pose additional hygiene issues than generally found with ramps, requiring regular-sometimes extensive-cleaning.

- *Ramps*

Depending on layout and adjacent context ramps (and stairs) can offer opportunity for concealment, most commonly underneath open-construction ramps/stairs where the structure approaches grade. This risk can be mitigated by fencing or otherwise prohibiting access to this space (as briefly described in the preceding discussion of ADA requirements), although doing so does come with other aesthetic considerations as well.

Aesthetics

- *Elevator*

Elevators offer a compact footprint requiring significantly less property than a ramp. Overhead mechanicals, however, do create a taller and more solid structure than ramping, a consideration for context with more distant, natural or landscape-type sightlines. A standard passenger elevator shaft will extend approximately 15' above top of cab, and approximately 25' above the landing/bridge deck level.

- *Ramps*

Ramps have a much larger footprint than elevators, and can have significant visual impacts on adjacent streetscape or landscape. Ramps may be constructed with supporting piers or with solid retaining wall, and each type of ramp will have a different impact on the surrounding context. Additionally, both piers and retaining walls can be an attractive target for graffiti or other defacement.

MV-1 Grand Avenue Pedestrian Bridge Elevator Contingency Plan 12-09-13

This budget assumes only 24 hours per year of “revenue service”, or actual passenger transport (one passenger move each month at two hours per move) - this is based on an assumption of one elevator outage per month.

Driver salary costs are figured at \$17.00 per hour based on RFTA starting wage (\$17.00/hr) and COGS Public Works Equipment Operator I starting wage (\$16.37/hr). This budget also assumes five and one-half (5.5) full-time drivers each working 2,080 hours per year for a total of 11,440 yearly labor hours. This is the minimum staffing requirement for providing 24-hour, year-round coverage.

<i>Grand Avenue Bus Bridge</i>	INITIAL OPERATING YEAR:	ANNUAL BUDGET THEREAFTER:
OPERATING EXPENSES:		
Fixed Hourly Cost ¹	\$1,936.25	\$1,936.25
Direct Hourly Cost ²	\$262,548.00	\$262,548.00
Direct Mileage Cost ³	\$5,750.00	\$5,750.00
Allocated Training Cost ⁴	\$3,135.00	\$2,860.00
Allocated Capital Cost ⁵	\$102,000.00	\$0.00
TOTAL OPERATING EXPENSES:	\$375,369.25	\$273,094.25

FOOTNOTES:

1. Fixed Hourly Costs:
 - a. City Transportation Staff administrative salary @ one hr/week, 52 wks/yr= \$1,356.25
 - b. Cell phone service @ \$40 per month, 2 phones= \$480.00
 - c. Cell phone acquisition, 2 phones= \$100.00

2. Direct Hourly Costs:
 - a. Driver salary \$17/hr @ 11,440 hrs per year (5.5 FTE X 2,080 hrs/yr)= \$194,480.00
 - b. Driver benefits package, 5.5 FTE (\$194,480.00 X 35%)= \$68,068.00

3. Direct Mileage Costs:
 - a. Mechanics’ wages + repair parts @ \$75.00 per hour, 50 hours/year= \$3,750.00
 - b. Gasoline/oil/lubricants per year= \$200.00
 - c. Vehicle insurance per year @ \$900/year/ 2 vehicles= \$1,800.00

- | | |
|--|-------------|
| 4. <u>Allocated Training Costs:</u> | |
| a. CTAA P.A.S.S. online course, 5.5 drivers @ \$50.00 per course= | \$275.00 |
| b. Route training, 5.5 drivers @ \$65.00/hr for 8 hours each/year= | \$2,860.00 |
| c. City random drug & alcohol testing @ 5.5 drivers/year= | ? |
| 5. <u>Allocated Capital Cost:</u> | |
| a. Two (2) MV-1 vehicle purchases @ \$45,000 per vehicle= | \$90,000.00 |
| b. Two (2) bus stop shelters @ \$6,000.00 each= | \$12,000.00 |

ADDITIONAL NOTES:

Footnote 2b: assumes City employee benefits package to be valued at 35% of base salary.

Footnote 3c: insurance costs are based on data from the City Clerk as provided by CIRSA. Insurance premiums for the City's two 15-passenger commuter vans were used in this comparison as vehicles with comparable purchase prices.

Footnote 4a: allocated training costs drop after the initial year due to P.A.S.S. certification being completed with no yearly re-certification requirements. The CTAA P.A.S.S. course is the Passenger Service and Safety online course offered by the Community Transportation Association of America. This course is designed to teach vehicle operators sensitivity in dealing with people with special needs. Completion of this course by City drivers may result in reduced insurance premiums for the City. More information can be found online here: <http://training.ctaa.org/session.php?id=6802>

Footnote 5a: vehicle purchase price is approximated based on used MV-1 prices for model year 2012 vehicles. Further information about the MV-1 may be found here: <http://mv-1.us/commercial-version.html>

Footnote 5b: assumes one bus shelter to be installed at each end of pedestrian bridge for waiting passengers if the elevator is not working. Further information can be found here: <http://www.theparkcatalog.com/smokingbus-shelters/dome-roof-open-frontsmokingbus-shelterwith-bench/374-1012?gclid=CK22jZDT07sCFeg-MgodOFUA8Q>

FTA Funding for Special Needs Passengers

FTA Section 5310 grant funding is available for “public transportation capital projects planned, designed and carried out to meet the special needs of elderly individuals and individuals with disabilities.” The FTA states that CDOT may allocate 5310 funds to

“a governmental authority that: (1) is *approved by the State* to coordinate services for elderly individuals and individuals with disabilities” **OR**

“(2) certifies that there are not any non-profit organizations readily available in the area to provide the special services.”

FTA Section 5310 funding is awarded via a competitive application process, administered by CDOT and open to all statewide public transit operators. Discussions between City staff and CDOT Division of Transit and Rail (DTR) grant administrators regarding funding for this particular service have shown that the City does not stand much of a chance being awarded FTA Section 5310 funding. The reasoning for this is that the Traveler currently services the project area using Section 5310 operating/administrative/capital funding. With limited Federal money made available to rural transit operators for elderly and disabled transportation, CDOT DTR staff is not of the opinion that funding a “contingency plan” such as this is a reasonable use of Federal money. FTA Section 5310 grant awards are made based on a demonstrated need for service within the project area. If there is already one Federally funded para-transit operator within said project area, then a project with this scope of work (i.e., service available only in the event of elevator failure versus traditional complementary demand-response service like the Traveler) would most likely not meet State criteria for FTA funds awarding.

From: Tom J. Barnes
Sent: Friday, December 06, 2013 5:07 PM
To: Jeff Hecksel
Cc: Al Laurette
Subject: Custodial Costs related to Outdoor Elevator and Ramp Snow Removal Estimate

Maintenance costs, including weekly washing and snow removal costs associated with a ramp that is 8-10 feet wide would include an employee, vehicle with a plow, broom, or snowblower, and use of snow melt products. This does not include hand shoveling, and also allows for the snow to remain on site, not trucked away from the immediate area. The conservative estimate for this work is \$40/hr., each visit to the site being charged off as one hour. The expectation would be that an employee would clear the ramp if snow has accumulated to 2 inches or more, and washing the ramp and decks would take approximately 90 minutes weekly. The weekly washing would be an expense of \$3,120 annually.

Maintenance of a single outdoor elevator in addition to a ramp would include the maintenance as explained below. In addition to the custodial and snow removal, I would suggest, at minimum, weekly power washing of the ramp to clear debris, waste, and other material to maintain a clean and non-slippery surface. A conservative estimate, excluding snow removal, is \$47,000 based on 90 minutes per week cleaning the ramp and 4 hours daily for custodial service.

Maintenance of an outdoor elevator system, single shaft, would include the following: cleaning of interior and exterior of the unit, floors/doors/walls/windows, cleaning the walk immediately adjacent to the elevator, simple vandalism repair and bloodborne pathogens (blood, vomit, fecal material, urine) cleaning. This would not include maintenance to any part of the mechanisms. One custodial employee, with vehicle and cleaning supplies, \$30/hr. I would estimate a minimum of 4 hours average daily for multiple cleanings, more if the elevator operates 24 hours per day. For this service 365 days per year the conservative estimate is \$43,800 for a single elevator. The estimate if a second elevator is in place is approximately 80% more, \$35,000, assuming there is a low maintenance exterior surface.

Tom Barnes, CPRP
City of Glenwood Springs, CO
Parks & Recreation Director
970-384-6315 ~ 970-309-5824

"People rarely succeed unless they have fun in what they are doing." ~ *Andrew Carnegie*

(Local \$CDOTWRK)
PROJECT # FBR 0821-094 (18158)
REGION 3/(wma)
Rev 10/03

SAP # 331000 TBD

FOR CDOT TRACKING PURPOSES
(subject to change).

CONTRACT

THIS CONTRACT made this ___ day of _____ 20___, by and between the State of Colorado for the use and benefit of the Colorado Department of Transportation, hereinafter referred to as the “State” and the City of Glenwood Springs, [101 W. 8th Street], Glenwood Springs, Colorado, [81601], CDOT Vendor #: [TBD], hereinafter referred to as the “Local Agency”, the State and the Local Agency together shall be referred to as the “Parties.”

RECITALS

1. Required approval, clearance and coordination have been accomplished from and with appropriate agencies.
3. Pursuant to 43-2-104.5 C.R.S. as amended, the State may contract with Local Agencies to provide maintenance and construction of highways that are part of the state (or local agency) highway system.
4. Local Agency anticipates the construction of the Grand Avenue Pedestrian Bridge, in the City of Glenwood Springs, CO. The Project will include a new 16’ wide pedestrian bridge crossing the Colorado River, UPRR tracks, I-70, and North River Road connecting downtown Glenwood Springs with the 6th Street area near the Hotel Colorado. On the south side of the new pedestrian bridge the project will include one elevator [two elevators] and a set of stairs with a built-in bike channel. The Local Agency and/or the State has completed and submitted a preliminary version of CDOT form #463 describing the general nature of the project work. The Local Agency understands that before the project work begins, the form #463 may be revised as a result of design changes made by CDOT, in coordination with the Local Agency, in its internal review process.
5. The Local Agency has made funds available for Project # [\$0 if ONE elevator and (\$150,000 +/- if TWO elevators (to cover capital cost)] and agrees to contribute funds for the Project, as evidenced by an appropriate ordinance or resolution duly passed and adopted by the authorized representatives of the Local Agency, which expressly authorizes the Local Agency to enter into this contract and to expend its funds for the Project. A copy of this ordinance or resolutions is attached hereto and incorporated herein as **Exhibit B**.
6. This contract is executed under the authority of §§ 29-1-203, 43-1-110; 43-1-116, 43-2-101(4)(c) and 43-2-144, C.R.S. and **Exhibit B**.
7. The parties hereto desire to agree upon the division of responsibilities with regard to the project.

THE PARTIES NOW AGREE THAT:

Section 1. Scope of Work

CDOT will construct the Grand Avenue Pedestrian Bridge in the City of Glenwood Springs. In addition to the new pedestrian bridge the Project will construct one elevator [two elevators], and stairs, as detailed in **Exhibit A**.

Section 2. Order of Precedence

In the event of conflicts or inconsistencies between this contract and its exhibits, such conflicts or inconsistencies shall be resolved by reference to the documents in the following order of priority:

1. This contract
2. **Exhibit A** (Scope of Work)
3. Other Exhibits in descending order of their attachment.

Section 3. Term

This contract shall be effective upon approval of the Chief Engineer or designee. The term of this contract shall continue as long as the pedestrian bridge is in operation or is no longer owned by CDOT or until elevator [two elevators] are no longer owned by CDOT.

Section 4. Project Funding Provisions

A. The Local Agency has estimated the total cost of the work and is prepared to provide their portion of the funding for the Work, as evidenced by an appropriate ordinance or resolution duly passed and adopted by the authorized representatives of the Local Agency, which expressly authorizes the Local Agency to enter into this contract and to expend its funds for the Project. The local agency cost for capital improvements includes the additional cost to construct an elevator [two elevators] over the base cost to construct an ADA accessible ramp. The base cost of this ADA accessible ramp is in the range of \$600,00 to \$1,200,000 (estimate at 30% plans – final bid price TBD). A copy of this ordinance or resolution is attached hereto and incorporated herein as **Exhibit B**.

B. The maximum amount payable for initial construction by the Local Agency under this contract shall be \$[insert LA contribution], unless such amount is increased by an appropriate written modification to this contract executed before any increased cost is incurred. It is understood and agreed by the parties hereto that the total cost of the work stated hereinbefore is the best estimate available, based on the design data as approved at the time of execution of this contract, and that such cost is subject to revisions (in accord with the procedure in the previous sentence) agreeable to the parties prior to bid and award.

Local Agency Funds

\$[insert LA contribution]

Total Funds

#[insert total cost of work]

C. The parties hereto agree that this contract is contingent upon all funds designated for the project herein being made available from state sources, as applicable. Should these sources fail to provide necessary funds as agreed upon herein, the contract may be terminated by either party, provided that any party terminating its interest and obligations herein shall not be relieved of any obligations which existed prior to the effective date of such termination or which may occur as a result of such termination.

Section 5. Project Payment Provisions

Reserved.

Section 6. State and Local Agency Commitments

The Local Agency Contract Administration Checklist in **Exhibit C** describes the Work to be performed and assigns responsibility of that Work to either the Local Agency or the State. The “Responsible Party” referred to in this contract means the Responsible Party as identified in the Local Agency Contract Administration Checklist in **Exhibit C**.

A. Design [if applicable]

1. If the Work includes preliminary design or final design (the “Construction Plans”), or design work sheets, or special provisions and estimates (collectively referred to as the “Plans”), the responsible party shall comply with the following requirements, as applicable:
 - a. perform or provide the Plans, to the extent required by the nature of the Work.
 - b. prepare final design (Construction Plans) in accord with the requirements of the latest edition of the American Association of State Highway Transportation Officials (AASHTO) manual or other standard, such as the Uniform Building Code, as approved by CDOT.
 - c. prepare special provisions and estimates in accord with the State’s Roadway and Bridge Design Manuals and Standard Specifications for Road and Bridge Construction.
 - d. include details of any required detours in the Plans, in order to prevent any interference of the construction work and to protect the traveling public.
 - e. stamp the Plans produced by a Colorado Registered Professional Engineer.
 - f. provide final assembly of Plans and contract documents.
 - g. be responsible for the Plans being accurate and complete.
 - h. make no further changes in the Plans following the award of the construction contract except by agreement in writing between the parties. The Plans shall be considered final when approved and accepted by the parties hereto, and

when final they shall be deemed incorporated herein.

B. Construction [if applicable]

1. If the Work includes construction, the responsible party shall perform the construction in accordance with the approved design plans and/or administer the construction all in accord with the Local Agency Contract Administration Checklist. Such administration shall include project inspection and testing; approving sources of materials; performing required plant and shop inspections; documentation of contract payments, testing and inspection activities; preparing and approving pay estimates; preparing, approving and securing the funding for contract modification orders and minor contract revisions; processing contractor claims; construction supervision; and meeting the Quality Control requirements of the FHWA/CDOT Stewardship Agreement, as described in the Local Agency Contract Administration Checklist.
2. If the State is the responsible party:
 - a. it shall appoint a qualified professional engineer, licensed in the State of Colorado, as the State Agency Project Engineer (SAPE), to perform that administration. The SAPE shall administer the project in accordance with this contract, the requirements of the construction contract and applicable State procedures.
 - b. if bids are to be let for the construction of the project, the State shall advertise the call for bids will award the construction contract(s) to the low responsive, responsible bidder(s).
 - (1) in advertising and awarding the bid for the construction of a federal-aid project, the State shall comply with applicable requirements of 23 USC § 112 and 23 CFR Parts 633 and 635 and C.R.S. § 24-92-101 et seq. Those requirements include, without limitation, that the State/contractor shall incorporate Form 1273 in its entirety verbatim into any subcontract(s) for those services as terms and conditions therefore, as required by 23 CFR 633.102(e).
 - c. If all or part of the construction work is to be accomplished by State personnel (i.e. by force account), rather than by a competitive bidding process, the State will ensure that all such force account work is accomplished in accordance with the pertinent State specifications and requirements with 23 CFR 635, Subpart B, Force Account Construction.

Section 7. ROW Acquisition and Relocation

Reserved.

Section 8. Utilities

If necessary, the Responsible Party will be responsible for obtaining the proper clearance or approval from any utility company, which may become involved in this Project. Prior to this Project being advertised for bids, the Responsible Party will certify in writing that all such clearances have been obtained.

Section 9. Railroads

Reserved.

Section 10. Environmental Obligations

The State shall perform all Work in accordance with the requirements of the current federal and state environmental regulations including the National Environmental Policy Act of 1969 (NEPA) as applicable.

Section 11. Maintenance Obligations

The Parties agree to the maintenance obligations described in **Exhibit A**.

Section 12. Record Keeping

The State shall maintain a complete file of all records, documents, communications, and other written materials, which pertain to the costs incurred under this contract. The State shall maintain such records for a period of three (3) years after the date of termination of this contract or final payment hereunder, whichever is later, or for such further period as may be necessary to resolve any matters which may be pending. The State shall make such materials available for inspection at all reasonable times and shall permit duly authorized agents and employees of the Local Agency and FHWA to inspect the project and to inspect, review and audit the project records.

Section 13. Termination Provisions

This contract may be terminated as follows:

A. Termination for Convenience. The State may terminate this contract at any time the State determines that the purposes of the distribution of moneys under the contract would no longer be served by completion of the project. The State shall effect such termination by giving written notice of termination to the Local Agency and specifying the effective date thereof, at least twenty (20) days before the effective date of such termination.

B. Termination for Cause. If, through any cause, the Local Agency shall fail to fulfill, in a timely and proper manner, its obligations under this contract, or if the Local Agency shall violate any of the covenants, agreements, or stipulations of this contract, the State shall thereupon have the right to terminate this contract for cause by giving written notice to the Local Agency of its intent to terminate and at least ten (10) days opportunity to cure the default or show cause why termination is

otherwise not appropriate. In the event of termination, all finished or unfinished documents, data, studies, surveys, drawings, maps, models, photographs and reports or other material prepared by the Local Agency under this contract shall, at the option of the State, become its property, and the Local Agency shall be entitled to receive just and equitable compensation for any services and supplies delivered and accepted. The Local Agency shall be obligated to return any payments advanced under the provisions of this contract.

Notwithstanding the above, the Local Agency shall not be relieved of liability to the State for any damages sustained by the State by virtue of any breach of the contract by the Local Agency, and the State may withhold payment to the Local Agency for the purposes of mitigating its damages until such time as the exact amount of damages due to the State from the Local Agency is determined.

If after such termination it is determined, for any reason, that the Local Agency was not in default or that the Local Agency's action/inaction was excusable, such termination shall be treated as a termination for convenience, and the rights and obligations of the parties shall be the same as if the contract had been terminated for convenience, as described herein.

Section 14. Legal Authority

The Local Agency warrants that it possesses the legal authority to enter into this contract and that it has taken all actions required by its procedures, by-laws, and/or applicable law to exercise that authority, and to lawfully authorize its undersigned signatory to execute this contract and to bind the Local Agency to its terms. The person(s) executing this contract on behalf of the Local Agency warrants that such person(s) has full authorization to execute this contract.

Section 15. Representatives and Notice

The State will provide liaison with the Local Agency through the State's Region Director, Region 3, 222 South 6th, Room 308, Grand Junction, CO 81501. Said Region Director will also be responsible for coordinating the State's activities under this contract and will also issue a "Notice to Proceed" to the Local Agency for commencement of the Work. All communications relating to the day-to-day activities for the work shall be exchanged between representatives of the State's Transportation Region 6 and the Local Agency. All communication, notices, and correspondence shall be addressed to the individuals identified below. Either party may from time to time designate in writing new or substitute representatives.

If to the State:
Program Manager
Joseph Elsen
CDOT Region 3
202 Centennial Street
Glenwood Springs, CO 81601
970.945.7629
Joseph.elsens@state.co.us

If to the Local Agency:
City Program Manager, Title
City of Glenwood Springs
Address
Glenwood Springs, Colorado Zip
Phone
Email

Section 16. Successors

Except as herein otherwise provided, this contract shall inure to the benefit of and be binding upon the parties hereto and their respective successors and assigns.

Section 17. Third Party Beneficiaries

It is expressly understood and agreed that the enforcement of the terms and conditions of this contract and all rights of action relating to such enforcement, shall be strictly reserved to the State and the Local Agency. Nothing contained in this contract shall give or allow any claim or right of action whatsoever by any other third person. It is the express intention of the State and the Local Agency that any such person or entity, other than the State or the Local Agency receiving services or benefits under this contract shall be deemed an incidental beneficiary only.

Section 18. Governmental Immunity

Notwithstanding any other provision of this contract to the contrary, no term or condition of this contract shall be construed or interpreted as a waiver, express or implied, of any of the immunities, rights, benefits, protection, or other provisions of the Colorado Governmental Immunity Act, § 24-10-101, et seq., C.R.S., as now or hereafter amended. The parties understand and agree that liability for claims for injuries to persons or property arising out of negligence of the State of Colorado, its departments, institutions, agencies, boards, officials and employees is controlled and limited by the provisions of § 24-10-101, et seq., C.R.S., as now or hereafter amended and the risk management statutes, §§ 24-30-1501, et seq., C.R.S., as now or hereafter amended.

Section 19. Severability

To the extent that this contract may be executed and performance of the obligations of the parties may be accomplished within the intent of the contract, the terms of this contract are severable, and should any term or provision hereof be declared invalid or become inoperative for any reason, such invalidity or failure shall not affect the validity of any other term or provision hereof.

Section 20. Waiver

The waiver of any breach of a term, provision, or requirement of this contract shall not be construed or deemed as a waiver of any subsequent breach of such term, provision, or requirement, or of any other term, provision or requirement.

Section 21. Entire Understanding

This contract is intended as the complete integration of all understandings between the parties. No prior or contemporaneous addition, deletion, or other amendment hereto shall have any force or effect whatsoever, unless embodied herein by writing. No subsequent novation, renewal, addition, deletion, or other amendment hereto shall have any force or effect unless embodied in a writing

executed and approved pursuant to the State Fiscal Rules.

Section 22. Survival of Contract Terms

Notwithstanding anything herein to the contrary, the parties understand and agree that all terms and conditions of this contract and the exhibits and attachments hereto which may require continued performance, compliance or effect beyond the termination date of the contract shall survive such termination date and shall be enforceable by the State as provided herein in the event of such failure to perform or comply by the Local Agency.

Section 23. Modification and Amendment

This contract is subject to such modifications as may be required by changes in federal or State law, or their implementing regulations. Any such required modification shall automatically be incorporated into and be part of this contract on the effective date of such change as if fully set forth herein. Except as provided above, no modification of this contract shall be effective unless agreed to in writing by both parties in an amendment to this contract that is properly executed and approved in accordance with applicable law.

Section 24. Disputes

Except as otherwise provided in this contract, any dispute concerning a question of fact arising under this contract which is not disposed of by agreement will be decided by the Chief Engineer of the Department of Transportation. The decision of the Chief Engineer will be final and conclusive unless, within 30 calendar days after the date of receipt of a copy of such written decision, the Local Agency mails or otherwise furnishes to the State a written appeal addressed to the Executive Director of the Department of Transportation. In connection with any appeal proceeding under this clause, the Local Agency shall be afforded an opportunity to be heard and to offer evidence in support of its appeal. Pending final decision of a dispute hereunder, the Local Agency shall proceed diligently with the performance of the contract in accordance with the Chief Engineer's decision. The decision of the Executive Director or his duly authorized representative for the determination of such appeals will be final and conclusive and serve as final agency action. This dispute clause does not preclude consideration of questions of law in connection with decisions provided for herein. Nothing in this contract, however, shall be construed as making final the decision of any administrative official, representative, or board on a question of law.

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THE PARTIES HERETO HAVE EXECUTED THIS CONTRACT

CONTRACTOR:

**STATE OF COLORADO:
JOHN W. HICKENLOOPER
GOVERNOR**

City of Glenwood Springs

Legal Name of Contracting Entity

By _____
Timothy J. Harris, P.E., Chief Engineer
for Donald E. Hunt, Executive Director
Department of Transportation

SAP #

CDOT Vendor Number

Date _____

Signature of Authorized Individual

Print Name and Title of Authorized Individual

Date of Signature

Attest (Seal) By: _____

CORPORATIONS:

(A corporate seal or attestation is required.)

**Scope of Work - DRAFT
Project # FBR 0821-094
Grand Avenue Pedestrian Bridge
Subaccount # 18158**

Location

This Project is located along the Grand Avenue Bridge in the City of Glenwood Springs, Colorado.

Structures

CDOT responsibility:

- Construction of a new 16 foot wide pedestrian bridge including a set of stairs with bike channel and an elevator [two elevators] at the south end.
- Major maintenance of the pedestrian bridge and stairs.
- Replacement of the pedestrian bridge when its service life is completed.
- Replacement of the stairs when the service life is completed.

City of Glenwood Springs responsibility:

- Elevator capital costs to the extent the costs exceed \$1,200,000.00,
- All operations and maintenance costs of the elevator [both elevators]. This includes all minor and major maintenance, all security, all cleaning, all operations, all power, and other related costs.
- Replacement of the elevator when its service life is met [the elevators when their services lives are met]. The City will own this [these] replacement elevator [elevators].

Miscellaneous

City of Glenwood Springs responsibility:

- Providing ADA access to the Pedestrian bridge during times the pedestrian bridge is open for public use. These responsibilities include complying with all ADA regulations.
- If an ADA ramp is constructed in the future to accommodate ADA needs at the south end of the pedestrian bridge this requirement of this contract would no longer be in effect.

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LOCAL AGENCY
ORDINANCE
or
RESOLUTION

(If applicable)

LOCAL AGENCY CONTRACT ADMINISTRATION CHECKLIST

The following checklist has been developed to ensure that all required aspects of a project approved for Federal funding have been addressed and a responsible party assigned for each task.

After a project has been approved for Federal funding in the Statewide Transportation Improvement Program, the Colorado Department of Transportation (CDOT) Project Manager, Local Agency project manager, and CDOT Resident Engineer prepare the checklist. It becomes a part of the contractual agreement between the Local Agency and CDOT. The CDOT Agreements Unit will not process a Local Agency agreement without this completed checklist. It will be reviewed at the Final Office Review meeting to ensure that all parties remain in agreement as to who is responsible for performing individual tasks.